Radboud Universiteit Nijmegen

The influence of language and different type of appeals on persuasiveness in anti-vaping advertisements

Bachelor's thesis

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Abstract:

The Foreign Language Effect has never been investigated in terms of anti-vaping advertisements in combination with fear and informational appeals. The purpose of the current study will therefore be to investigate the effectiveness of a first/foreign language when being combined with two different types of appeals with regard to healthcare prevention advertisements about vaping. The study included 149 participants who filled in an online questionnaire consisting of questions and Likert scales about the four different advertisements. The results suggested that there was no Foreign Language Effect found within the current study, hence, it did not matter in which language the advertisements were presented. Limitations, contribution to the theory and practical implications of the study's results for practitioners and future research are provided.

Introduction:

Nowadays, e-cigarette use has been identified as a serious public health concern by many public health agencies and professional organizations, locally and across the globe (Feeney et al., 2022). Studies have shown that emotional appeals can be a powerful tool in persuasive communication as it efforts to influence beliefs, attitudes and behavior (Jorgensen, 1996; Dillard & Nabi, 2006), furthermore, emotional appeals are overall found to be more persuasive than informational appeals (Hadjimarcou, 2012). The use of multiple languages might be an important aspect in persuasive communication as well as people's reactions to a persuasive message in their first language compared to their second language may vary (Caldwell-Harris & Aycicegi-Dinn, 2016).

Advertisements about e-cigarette use have not been researched that much, especially not when combined with two different type of appeals and the Foreign Language Effect (FLE). The latter is a phenomenon that affects the way in which people make choices when processing and thinking about information in a language that is not their mother tongue (Cipolletti et al., 2016). The FLE was investigated as previous research states that bilingual speakers' sense that there is greater emotional arousal associated with their first language compared to their second language (Harris et al., 2006). The two types of appeals were included in this study as it is found that emotional appeals are perceived as more emotional in one's first language compared to their second language (Caldwell-Harris & Aycicegi-Dinn, 2016). As the investigation of type of appeals and the FLE have never been combined with (anti) vaping advertisements, this constitutes a research gap.

Therefore, the aim of this study was to combine the two independent variables, type of appeal (fear and informational) and language (Dutch and English), in order to examine if they evoke similar or different persuasive reactions amongst the participants when being used in an (anti) vaping advertisement.

The societal relevance of this study will consist of making young adolescents aware about the risks of e-cigarettes and to make them stop using e-cigarettes or to never start doing it. As a result, the purpose of this study was to investigate the effectiveness of a first/foreign language combined with fear and informational appeals with regard to healthcare advertisements about vaping.

Theoretical framework:

It is often taken for granted that moral judgments are driven by only one type of mental processing, for example reason or emotional responses (Cipolletti et al., 2016). Most of the time this is not the case and decisions are made on the basis of multiple elements. One of them can be the FLE, which refers to the process of thinking, evaluating and responding to certain information which can be different in a non-native language in comparison to a mother tongue. Recent studies have shown that there is some sort of emotional distancing that occurs when thinking in a non-native language (Cipolletti, et al. 2016). In fact, merely having circumstances in a foreign language can eliminate a number of cognitive framing problems. (Keysar, et al., 2012). For instance, it has been demonstrated that talking about humiliating topics is easier in a foreign than in one's mother tongue (Bond & Lai, 1986) and that swear words provoke lesser physiological arousal when experienced in a foreign language (Dewaele, 2004).

Additionally, earlier studies investigated whether fear appeals cause a persuasion effect in making decisions and processing certain information. Considerable laboratory research has shown that fear appeals (persuasive messages that arouse fear) motivate behaviour change across a variety of behaviours (Witte & Allen, 2000). Fear appeals have emphasized the most pressing public health issues by focusing on a wide variety of disease prevention/health promotion behaviours such as for example vaping and smoking cessation (Witte & Allen, 2000). The results of an earlier study Sun & Jiang (2021) indicate that a high-threat, high-efficacy fear appeal has an impact on the perceived threat of e-cigarettes experiences by young people; this may therefore increase their feelings of fear and anger, as well as their motivation to avoid the risks associated with e-cigarettes. The term ''vaping products/vaping'' describes e-cigarettes, refill containers and e-liquids and the action of using them (McNeill et al., 2021). E-cigarettes do not contain tobacco, in contrast to regular cigarettes. The tobacco in e-cigarettes is absent from conventional cigarettes. E-cigarettes are battery-operated cartridge devices with a heating element and a liquid-filled cartridge. Puffing on the device heats the liquid, which produces vapour (Pamela.Toman, n.d.). Nowadays, vaping is very popular amongst adolescents and their most common reasons for vaping were either ''to give it a try'', ''for fun/I like it'', ''other people use them, so I join in'' or ''to use them instead of smoking or to quit smoking'' (McNeill et al., 2021). Public health information about e-cigarette dangers is still developing, therefore, young adults are typically less informed and knowledgeable about them than they are about the dangers of cigarettes.

(Roditis et al., 2020). As a result of previous tobacco education advertisements, and because the body of evidence on harms of smoking cigarettes has had decades to grow and be shared, the public is better informed about the harms of cigarette use. Contrarily, the corpus of research on the dangers of e-cigarettes is still in its infancy, and the situation is more complex. (Roditis et al., 2020). The research demonstrates that there are known risks and harms for users, despite the belief among some users that vaping devices are less dangerous than combustible tobacco products (Feeney et al., 2022). E-cigarette use may elevate blood pressure, cause respiratory damage, and harm adolescent brain development (Rigotti, 2018). Moreover, e-cigarette use can lead to nicotine addiction and may also facilitate the uptake of combustible cigarette smoking among youth (Dai & Leventhal, 2019). Therefore, federal, state, and local tobacco prevention campaigns are increasingly focusing on vaping prevention (Kresovich et al., 2022).

Given that vaping prevention messages are spreading rapidly (Roditis et al., 2020), it is important to characterize the messaging approaches of existing campaigns (Kresovich et al., 2022). Formulating the message approaches correctly contributes to the societal relevance of the study as it focuses on making young adolescents aware of the risks of smoking e-cigarettes and to make them stop using e-cigarettes or to never start doing it. The current study aims to include the Foreign Language Effect in the investigation as earlier research has never done research about this effect in relation to (anti) vaping or smoking advertisements. Furthermore, this contributes to the study's research gap.

In order to investigate whether or not there is a significant Foreign Language Effect and/or an effect of different appeals, a number of variables must be incorporated in the study in order to be able properly examine the research questions. Firstly, as already mentioned, the independent variables were language (Dutch vs. English) and the presence of a fear or informational appeal. The dependent variables were attitude towards the advertisements and vaping in general, emotionality, and behavioural intention. The attitude is important to incorporate in the study to know how the independent variables affect the opinions about vaping and the advertisement itself which is presented to them in the first place. Emotionality is important to investigate as people tend to react with more emotions in their L1 in comparison with their L2, as there is some sort of emotional distancing present when talking in a non-native language (Cipolletti et al., 2016). Furthermore, bilinguals experience a relative psychological and emotional distance in circumstances where a foreign language is used. (Ivaz et al., 2019), due to the fact that most bilinguals feel less awkward than native speakers when talking about emotionally upsetting, humiliating, or traumatic experiences as well as

when making or hearing demeaning remarks (such as swear words, taboo words, insults, or childhood reprimands) in a language that is not their native tongue (Bond & Lai, 1986). The background variables which were incorporated in the study were: self-assessed language proficiency test and a Cognitive Reflection Test. The language proficiency test was introduced in order to know what the level of English of the participants would be as this could have a big impact on whether or not a FLE would be present. As it is expected that Dutch-English bilinguals, who are typically highly proficient in English, will show no or a reduced FLE (Brouwer, 2019). The Cognitive Reflection Test consists of rational thinking questions that need to be answered by the participants in order to test them on their rational thinking. The test will consist of two rather easy questions for which the participants have to think logically and call on their rationality.

In this study, the effect of language and type of appeal in (anti) vaping advertisements were investigated in order to see how they influence persuasive communication. In order to examine this the following research questions were formulated:

RQ1: Is there a FLE present when testing different types of appeals in advertisements in Dutch and English?

RQ2: Is an (anti) vaping advertisement more persuasive when it contains a fear appeal than when it contains an informational appeal?

RQ3: To what extent is a message in participants' native language more persuasive/emotional than a message in a second language?

RQ4: To what extent does type of appeal or language, when incorporated in an anti-vaping advertisement, have influence on receivers' emotionality and rational thinking?

Method:

- ***Materials***

The materials used in this study were (anti) vaping advertisements in two different languages, namely English and Dutch, combined with fear and informational appeals. Every participant was exposed to one of the four possible advertisements, namely: Dutch language with a fear appeal, Dutch language with an informational appeal, English language with a fear appeal or English language with an informational appeal. The message of the fear and informational appeals were the same in the two languages, only the language differed.

The fear appeal advertisement that was used in this study was based on the first anti-smoking advertisement from Centers for disease control that referred to e-cigarettes (Mohney, 2015). This fear appeal tries to scare the audience with the information in order to make them to stop doing something. The text used in this ad was the following: 'I got a collapsed lung through smoking e-cigarettes – an anonymous source who smoked e-cigarettes for a year.'

The advertisement including an informational appeal was based on the ad from Hendricks County Health Partnership (n.d). An informational appeal intends to inform the audience and then let the reader decide what to do with the information. The text used in the ad was: 'Smoking e-cigarettes is unhealthy. The vapor of an e-cigarette contains harmful substances, such as nicotine. One e-cigarette contains the same amount of nicotine as 20 normal cigarettes.'

In the Dutch advertisements, the text was translated to Dutch in order to have the same information in both languages. The researchers and supervisor checked the texts in both languages for equivalence in order to make sure that the information in the texts was the same.

In all versions of the different conditions, the text was accompanied by a picture of a person smoking an e-cigarette. The face of the person was a silhouette as it should not be clear for the participants if it was a woman or a man, because this was expected to reduce the risk of participants basing their choices on gender prejudices. Underneath the text and the silhouette, there was a text referring to a website to get more information on how to quit smoking e-cigarettes. (See appendix A – D).

- ***Subjects***

Descriptive statistics:

In total, 149 Dutch native speakers took part in this study. Far more women than men completed the questionnaire, with 46 (30.9%) identifying as men, 100 (67.1%) identifying as women, and 3 (2%) indicating "I'd rather not say" when asked to state their gender. A Chi-square test showed no significant relation between gender and condition ($\chi2(6) = 4.23$, $p = .645$. The age of the participants ranged from 16 – 25 years ($M = 20.63$, $SD = 2.06$). We broadened the maximum age of our target group up until 25 because there are many young adults/students who vape nowadays (Grant, et al. 2019). A one-way ANOVA showed no significant effect of condition on age ($F(3,145) < 1$.

Educational level:

In terms of the educational levels of the participants, 58 (38.9%) of them were studying or had studied at a university, 32 (21.5%) at a university of applied sciences, 17 (11.4%) at an MBO: medium-level tertiary vocational education and 42 (28.1%) were still in high school. A Chi-square test showed no significant relation between educational level and condition ($\chi2(15) = 7.20$, $p = .952$.

Smoking habits:

When looking at the smoking habits of the participants, eight (5.3%) smoked normal cigarettes, 20 (13.2%) smoked e-cigarettes, 19 (12.6%) smoked both, seven (4.6%) smoked something else and 95 (64.3%) did not smoke at all. A Chi-square test showed no significant relation between smoking habits and condition ($\chi2(12) = 9.63$, $p = .648$).

The Cognitive Reflection Test:

A Chi-square test showed no significant relation between language of the test and correctness of the answers for question 1 of the Cognitive Reflection Test ($\chi2(1) = 1.30$, $p = .255$). Another Chi-square test also showed no significant relation between language of the test and correctness of the answers for question 2 of the Cognitive Reflection Test ($\chi2(1) = 1.78$, $p = .182$). Thus, the correctness of the answers was not determined by the language of the questions in the Cognitive Reflection Test. Tables 1

and 2 show the results of the Chi-square analysis of both questions of the Cognitive reflection test. (See tables 1 and 2 below).

Table 1. Chi-square analysis of question 1 of the *Cognitive Reflection Test*.

	Language of the ad		
	English	Dutch	Total
Correct			
Count	43a	40a	83
% within rationality question 1	51.8%	48.2%	100%
% within language of the ad	60.6%	51.3%	55.7%
% of total	28.9%	26.8%	55.7%
Incorrect			
Count	28a	38a	66
% within rationality question 1	42.4%	57.6%	100%
% within language of the ad	39.4%	48.7%	44.3%
% of total	18.8%	25.5%	44.3%
Total			
Count	71	78	149
% within rationality question 1	47.7%	52.3%	100%
% within language of the ad	100%	100%	100%
% of total	47.7%	52.3%	100%

Each subscript letter denotes a subset of 'Language of the ad' – Selected Choice categories whose column proportions do not differ significantly from each other at the .05 level.

Table 2. Chi-square analysis of question 2 of the *Cognitive Reflection Test*.

	Language of the ad		
	English	Dutch	Total
Correct			
Count	45a	41a	86
% within rationality question 1	52.3%	47.7%	100%
% within language of the ad	63.4%	52.6%	57.7%
% of total	30.2%	27.5%	57.7%
Incorrect			
Count	26a	37a	63
% within rationality question 1	41.3%	58.7%	100%
% within language of the ad	36.6%	47.4%	42.3%
% of total	17.4%	24.8%	42.3%
Total			
Count	71	78	149
% within rationality question 1	47.7%	52.3%	100%
% within language of the ad	100%	100%	100%
% of total	47.7%	52.3%	100%

Each subscript letter denotes a subset of 'Language of the ad' – Selected Choice categories whose column proportions do not differ significantly from each other at the .05 level.

Participants' self-assessed English and Dutch language proficiency:
A paired samples t-test showed a significant difference between participants' self-assessed language proficiency scores in English and Dutch (t (148) = 10.62, $p < .001$). Overall, self-assessed language proficiency in Dutch (M = 6.19, SD = 0.80) was rated higher by the participants than self-assessed language proficiency in English (M = 5.32, SD = 1.15). Furthermore, two one-sample t-tests showed that both the self-assessed language proficiency scores in Dutch (M = 6.19, SD = 0.80) and English (M = 5.32, SD = 1.15) were significantly higher than the midpoint of the scale, which was 4 (t (148) = 13.97, $p < .001$).

Reduced emotional resonance in English as a second language:
A one-sample t-test showed that reduced emotional resonance in English as a second language did not significantly differ from the midpoint of the scale, which is 4 (t (148) = 1.32, p = .188). The reduced emotional resonance in English as a second language was rated as average by the participants (M = 4.17, SD = 1.61) on a scale where 1 = ''completely disagree'' and 7 = ''completely agree''.

- ***Design***

The design chosen for this study was a 2x2 between-subjects design with the independent variables: language (Dutch/English) and appeal type (fear appeal / informational appeal). The whole group of participants filled in the questionnaire and had to fill in self-assessed language questions and a Cognitive Reflection Test.

- ***Instruments***

The study tested the following dependent variables: attitude towards the ad, emotionality, attitude towards e-cigarettes, behavioural intention, comprehensibility, rationality towards the advertisement, perceived message quality and rational thinking. The questions about the four advertisements were asked in Dutch. To test if the message of the advertisement was perceived as intended in terms of informativeness, a manipulation check was introduced. This was measured with a seven-point Likert scale item: ''informational'' introduced by the statement 'this advertisement is' and anchored by 'completely disagree – completely agree'.

Attitude towards the ad was measured using three seven-point Likert scales, introduced by the statement: ‘’The advertisement seems...‘’. 1) convincing, 2) appealing, 3) eye-catching. The 7-point Likert scale ranged from ‘’completely agree’’ (1) to ‘’completely agree’’ (7). These questions and 7-point Likert scale were based on Donthu, (1998) and Noar., et al. (2020). The reliability of ‘*attitude towards the ad*’ comprising three items was questionable: α = .68.

Emotionality towards the advertisement was measured using a 7-point Likert scale with the following statement: ‘’The advertisement is emotional’’ with anchoring points ‘’completely disagree’’ (1) to ‘’completely agree’’ (7). This scale was based on the work of Puntoni, et al. (2009).

Attitude towards vaping was measured by using four 7-point Likert scales following the statement ‘’I think e-cigarettes are…’’: 1) ‘bad for my health’, 2) ‘life shortening’, 3) ‘healthier than normal cigarettes’, 4) ‘enjoyable’. The 7-point Likert scale ranged from ‘completely disagree’ (1) to ‘completely agree’ (7). These Likert scales were adapted from Zhao et al., (2019) and Noar, et al. (2020). The reliability of ‘*attitude towards e-cigarettes*’ comprising four items was questionable: α = .62. When the item ‘healthier than normal cigarettes’ was removed, the reliability of attitude towards e-cigarettes was acceptable (α = .72). When one of the other items was removed the reliability was unacceptable or poor.

Behavioural intention was measured by using four seven-point Likert scales introduced by the statement: ‘After seeing this advertisement…’: 1) ‘I am open to try e-cigarettes in the next 30 days.’ 2) ‘I would consider using e-cigarettes more than once’, 3) ‘I expect to use an e-cigarette’ and 4) ‘I am still open to use e-cigarettes’. The 7-point Likert scale ranged from ‘completely disagree’ (1) to ‘completely agree’ (7). All of these scales were based on the work of McCaffrey et al., (2021). The reliability of ‘*behavioural intention’* comprising four items was excellent: α = .94.

Comprehensibility was measured using three seven-point semantic differential scales, following the statement: ‘I think the advertisement is…’ anchored by 1) ‘difficult – easy’, 2) ‘complicated – simple’ and 3) ‘incomprehensible – comprehensible’. These

scales were based on Hendriks et al., (2016). The reliability of '*comprehensibility'* comprising three items was excellent: α =.93.

Rationality towards the ad was measured using two seven-point Likert scales relating to the statements: 1) 'I have thought thoroughly about the advertisement.' and 2) 'Reading the advertisement, I thoroughly weighed the pros and cons of e-cigarettes.' The scale that was used to answer these statements ranged from 1) 'completely disagree' to 7) 'completely agree'. The reliability of '*rationality towards the advertisement*' comprising two items was acceptable: α = .76.

Perceived message quality was measured using three seven-point Likert scales relating to the following statements: 1) 'I feel that the advertisement conveyed their message effectively.', 2) 'The content and style of the advertisement were both good.', 3) 'I have learned something from this advertisement.'. The scales ranged from 1) 'completely disagree' to 7) 'completely agree' and were based on the work of Cacioppo et al., (1983). The reliability of '*perceived message quality*' comprising three items was acceptable: α = .73.

Background variables:

The background questions began with a task that tested participant's rational thinking. This was done using a *Cognitive Reflection Test (CRT)* which is a systematic approach that prevents experimental researchers from drawing conclusions regarding the (ir)rationality of agents. It provides a flexible toolkit for conducting rationality research by explicating key elements of the agent, task and task environment, and by comparing human performance to predefined benchmarks (Neth et al., 2016).

The *Cognitive Reflection Test (CRT)* was designed by Frederick (2005) and was composed of two questions, as follows:

(1) A bat and a ball cost $1.10 in total. The bat costs a dollar more than the ball. How much does the ball cost? ____ cents [Correct answer ¼ 5 cents; intuitive answer ¼ 10 cents].

(2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? ____ minutes [Correct answer ¼ 5 minutes; intuitive answer ¼ 100 minutes].

The participants who viewed the advertisement in English were asked to do the *Cognitive Reflection Test* in English and the participants who viewed the advertisement in Dutch were asked to do the *Cognitive Reflection Test* in Dutch in order to see if there would be any difference if the questions were asked and answered in English or Dutch.

Next, the participants were asked to state their age, gender, their highest educational level and if they currently smoked cigarettes, e-cigarettes, both or neither of them.

After these personal questions, the participants were asked to indicate both their English and Dutch language proficiency on the basis of four seven-point Likert scales. The self-assessments were introduced by the following statement: 'Please indicate how you would rate your English/Dutch in the following skills'. These statements were anchored by four items: 1) 'speaking', 2) 'writing', 3) 'reading', and 'listening' with a scale which ranged from 1) 'poor' to 7) 'excellent' (based on Krishna and Ahluwalia, 2008). The reliability of the English self-assessed proficiency questions was excellent: $\alpha = .93$. The reliability of the Dutch self-assessed proficiency questions was good: $\alpha = .88$.

Lastly, reduced emotional resonance in English as a second language was measured using three seven-point Likert scales relating to the following statements: 'I feel less emotional when I use English than when I use Dutch.', 'I feel a bigger emotional distance in English than in Dutch.' and 'Dutch feels more emotional to me than English.' (based on Toivo et al., 2022). The scale to answer these questions ranged from 1) 'completely disagree' to 7) 'completely agree'. The reliability of reduced emotional resonance in English as a second language was good: $\alpha = .88$.

- ***Procedure***

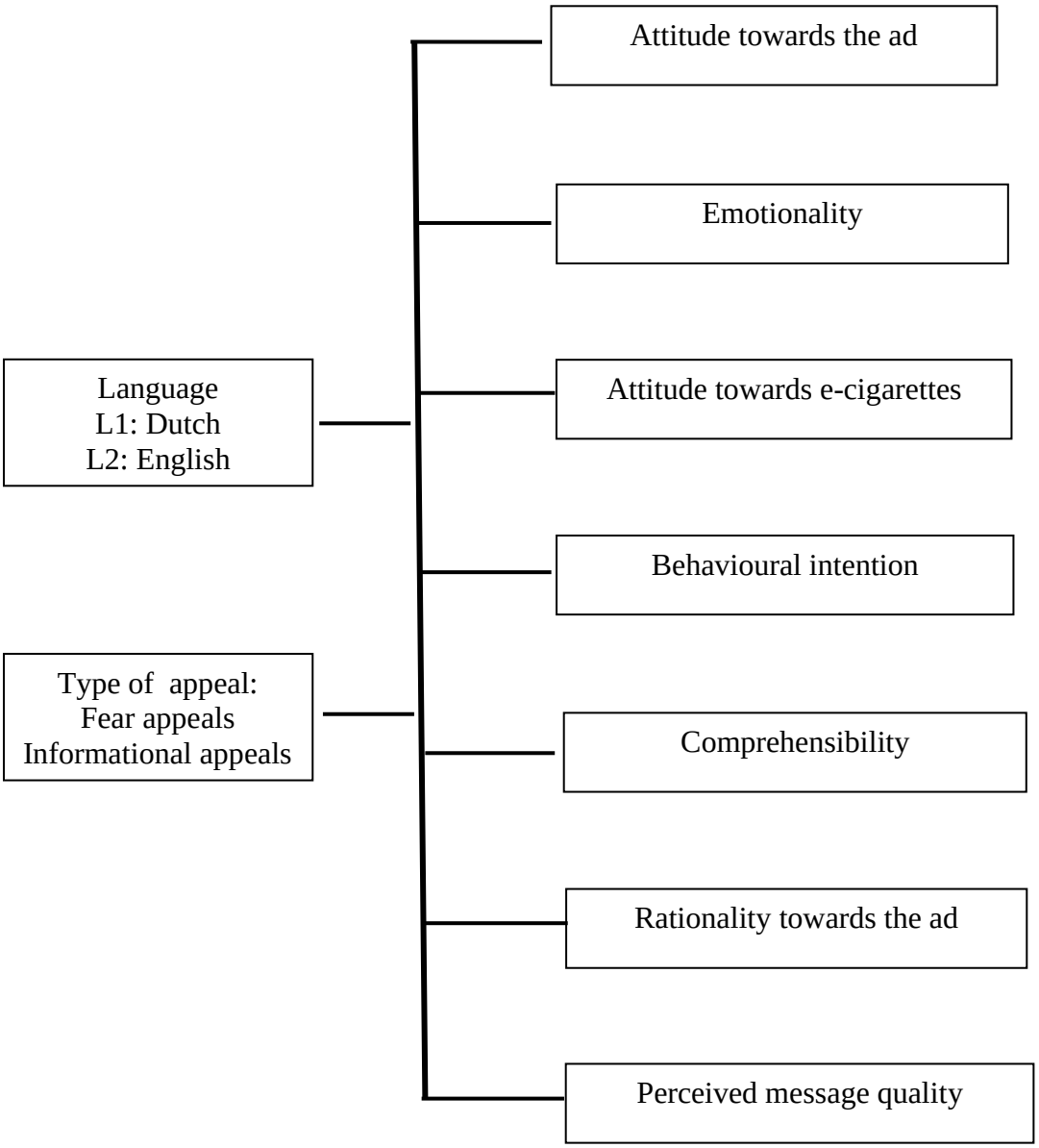
Participants in the personal network of the researchers, were approached to fill in the questionnaire. The participants were randomly assigned to one of the four advertisements. The platform used to send the questionnaire and to fill it in was Qualtrics. Before filling in the questionnaire, the participants gave their consent to the researchers for using and processing their answers. Then the participants filled in the questionnaire containing the Likert scales about the dependent variables, the rational task questions, the self-assessed language questions and the questions about their personal data. All of the results were processed anonymously and no personal data about the participants was further disseminated. If the participants had any questions about the questionnaire or would like to know more about the investigation, there was an email address provided for them to get in contact with the researchers. On average, the participants spend 5 minutes on filling in the questionnaire.

- ***Statistical treatment***

Two-way ANOVAs were conducted to compare the effects of language and message appeal on the dependent variables attitude towards the ad, attitude towards smoking, behavioural intention, emotionality, rational thinking, comprehensibility, and perceived message quality. Chi-square tests were conducted to determine the relation between the background variables (gender, educational level and smoking habits) and condition. Furthermore, multiple Chi-square tests were conducted in order to test the significance of the questions of the Cognitive Reflection Test.

- ***Analytical model***

In the analytic model underneath, the independent and dependent variables are shown. The independent variables were language (Dutch vs. English) and type of appeal (fear appeal vs. informational appeal). The dependent variables were attitude towards the ad, emotionality, attitude towards e-cigarettes, behavioural intention, comprehensibility, rationality towards the ad & perceived message quality.



Results:

The main goal of this study was to examine if the Foreign Language Effect had an impact on the persuasiveness of an (anti) vaping advertisement. Moreover, the study aimed to test if an (anti) vaping advertisement would be more persuasive when containing a fear appeal in comparison to the advertisement containing an informational appeal. Ultimately, the study aimed to investigate to what extent a message in the participants' native language would be considered as more persuasive/emotional than message in a second language. Table 3 shows the means and standard deviations for the manipulation check, attitude towards the ad, emotionality, comprehensibility and rationality towards the ad in function of language and type of appeal. Additionally, table 4 shows the mean and standard deviations for perceived message quality, attitude towards vaping and behavioral intention in function of language and type of appeal.

Manipulation check:

To test if the advertisement was perceived as intended in terms of informativeness, a one-way ANOVA was conducted for informativeness with type of appeal as factor. The one-way analysis of variance showed a significant difference in the informativeness of the ad between the different ad appeal conditions ($F(1,147) = 26.60$, $p < .001$). The informational appeal (M = 5.19, SD = 1.84) was perceived as significantly more informative than the emotional appeal (M = 3.80, SD = 1.41), which was intended by the study. (See table 3).

Attitude towards ad:

A two-way analysis of variance with 'language of ad' and 'ad appeal' as fixed factors showed a significant main effect of ad appeal on the dependent variable 'attitude towards the ad' ($F(1,145) = 14.56$, $p < .001$). Overall, the fear appeal was rated more positively by the participants (M = 3.78, SD = 1.22) than the informational appeal (M = 3.08, SD = 1.04) with regard to the attitude towards the ad. The two-way analysis of variance showed no significant effect of 'language of the ad' on 'attitude towards the ad' ($F(1,145) < 1$). The two-way analysis of variance showed no significant interaction between 'language of the ad' and 'ad appeal' ($F(1,145) < 1$. (See table 3).

Emotionality:

A two-way analysis of variance with 'language of the ad' and 'ad appeal' as fixed factors showed a significant main effect of 'ad appeal' on the dependent variable 'emotionality'

(F(1,145) = 14.74, p < .001). However, the two-way analysis of variance showed no significant main effect of ‘language of the ad’ on ‘emotionality’ (F(1,145) = 2.31, p = .130). There was no significant interaction between ‘language of the ad’ and ‘ad appeal’ (F(1,145) = 1.61, p = .206). The fear appeal (M = 3.46, SD = 1.59) was evaluated as more emotional by the participants than the informational appeal (M = 2.48, SD = 1.51). (See table 3).

Comprehensibility:

A two-way analysis of variance with ‘language of the ad’ and ‘ad appeal’ as fixed factors showed no significant main effect of ‘language of the ad’ on the dependent variable ‘comprehensibility’ (F (1,145) = 2.67, p = .104). There was no significant main effect of ‘ad appeal’ on the dependent variable ‘comprehensibility’ either (F (1,145) = 1.64, p = .203). Additionally, the two-way analysis of variance showed no significant interaction between the fixed factors ‘language of the ad’ and ‘ad appeal’ (F (1,145) = .022, p < 1). (See table 3).

Rationality towards the ad:

A two-way analysis of variance with ‘language of the ad’ and ‘ad appeal’ as fixed factors showed no significant main effect of ‘language of the ad’ on ‘rationality towards the ad’ (F (1,145) = 1.98, p = .161). Neither did the two-way ANOVA show a significant main effect of ‘ad appeal’ on ‘rationality towards the ad’ (F (1,145) = 3.12, p = .080). Furthermore, the two-way analysis of variance did not show a significant interaction between the factors ‘language of the ad’ and ‘ad appeal’ (F (1,145) = .68, p = .410). (See table 3).

Perceived message quality:

A two-way analysis of variance with ‘language of the ad’ and ‘ad appeal’ as fixed factors showed no significant main effect of ‘language of the ad’ on ‘perceived message quality’ (F (1,145) < 1). The same analysis of variance also showed no significant main effect of ‘ad appeal’ on ‘perceived message quality’ (F (1,145) < 1). Lastly, the two-way ANOVA showed no significant interaction between ‘language of the ad’ and ‘ad appeal’ (F (1,145) < 1). (See table 4).

Attitude towards vaping:

A two-way analysis of variance with ‘language of the ad’ and ‘ad appeal’ as fixed factors showed no significant main effect of ‘language of the ad’ on the dependent variable ‘attitude towards vaping’ (F (1,145) < 1). The two-way analysis of variance did not show a significant main effect of ‘ad appeal’ on the dependent variable ‘attitude towards vaping’ (F (1,145) < 1), nor did the two-way ANOVA show a significant interaction between the factors ‘language of the ad’ and ‘ad appeal’ (F (1,145) < 1). (See table 4).

Behavioural intention:

A two-way analysis of variance with ‘language of the ad’ and ‘ad appeal’ as fixed factors showed no significant main effect of ‘language of the ad’ on the dependent variable ‘behavioural intention’ (F (1,145) < 1). The two-way analysis of variance did not show a significant main effect of ‘ad appeal’ on the dependent ‘behavioural intention’ (F (1,145) < 1). Furthermore, also no significant interaction was found between the factors ‘language of the ad’ and ‘ad appeal’ (F (1,145) < 1). (See table 4).

Table 3. Means, standard deviations and *n* for the manipulation check, attitude towards the ad, emotionality, comprehensibility and rationality towards the ad in function of language and type of appeal (1 = low; 7 = high)

	Fear appeal			Informational appeal			Total		
	M	SD	*n*	M	SD	*n*	M	SD	*n*
Manipulation check									
English	3.58	1.54	33	5.18	1.78	38	4.38	1.66	71
Dutch	3.98	1.29	41	5.19	1.93	37	4.59	1.61	78
Total	3.80	1.41	74	5.19	1.84	75	4.50	1.64	149
Attitude towards ad									
English	3.70	1.20	33	3.10	.87	38	3.38	1.07	71
Dutch	3.85	1.26	41	3.06	1.05	37	3.47	1.22	78
Total	3.78	1.22	74	3.08	.95	75	3.43	1.15	149
Emotionality									
English	3.42	1.39	33	2.13	1.32	38	2.73	1.49	71
Dutch	3.49	1.75	41	2.84	1.63	37	3.18	1.71	78
Total	3.46	1.59	74	2.48	1.51	75	2.97	1.62	149
Comprehensibility									
English	5.40	1.77	33	5.11	1.60	38	5.24	1.67	71
Dutch	5.86	1.44	41	5.50	1.45	37	5.69	1.45	78
Total	5.66	1.60	74	5.30	1.53	75	5.48	1.57	149
Rationality towards ad									
English	4.08	1.41	33	4.30	1.69	38	4.20	1.56	71
Dutch	3.54	1.51	41	4.16	1.21	37	3.83	1.40	78
Total	3.78	1.49	74	4.23	1.46	75	4.01	1.49	149

Table 4. Means, standard deviations and *n* for perceived message quality, attitude towards vaping, and behavioural intention in function of language and type of appeal (1 = low; 7 = high)

	Fear appeal			Informational appeal			Total		
	M	SD	*n*	M	SD	*n*	M	SD	*n*
Perceived message quality									
English	4.05	1.21	33	4.02	1.39	38	4.03	1.30	71
Dutch	3.73	1.10	41	4.03	1.41	37	3.87	1.25	78
Total	3.87	1.15	74	4.02	1.39	75	3.95	1.27	149
Attitude towards vaping									
English	3.27	1.23	33	3.05	1.12	38	3.15	1.17	71
Dutch	3.16	1.28	41	3.03	1.06	37	3.10	1.17	78
Total	3.21	1.25	74	3.04	1.08	75	3.12	1.17	149
Behavioural intention									
English	2.77	1.97	33	2.58	1.74	38	2.67	1.84	71
Dutch	2.44	1.72	41	2.58	1.54	37	2.51	1.63	78
Total	2.58	1.83	74	2.58	1.63	75	2.58	1.73	149

Conclusion/discussion:

The purpose of this study was to investigate whether there is a Foreign Language Effect present when using the Dutch and English language combined with fear and informational appeals with regard to healthcare advertisements about vaping and how it affects participants' attitude towards the ad, perceived emotionality, rational thinking, comprehensibility, perceived message quality, attitude towards vaping and their behavioural intention.

The research showed no Foreign Language Effect in terms of perceived emotionality of the advertisements. This finding was not expected and is not in line with previous research as recent studies have shown that there is some sort of emotional distancing that occurs when thinking in a non-native language (Cipolletti, et al. 2016). For example, it has been shown that talking about embarrassing topics is easier in a foreign than in a native language (Bond & Lai, 1986) and that swear words provoke lesser physiological arousal when experienced in a foreign language (Dewaele, 2004).

Furthermore, there was no Foreign Language Effect found with regard to rationality towards the advertisement and rational thinking. This is also in contrast to previous findings, as earlier research suggests that the FLE refers to the process of thinking, evaluating and responding to certain information which can be different in a non-native language in comparison to a mother tongue (Cipolletti, et al. 2016). The results of the Cognitive Reflection Test revealed that it did not matter in which language the questions were asked, as there was no significant difference between the two languages for the two questions. Besides, the results of rationality towards the ad showed that neither the two languages nor the two different types of appeals had an influence on the outcome of the questions. Therefore, these results are in contrast with previous research, and it should have mattered in which language the questions were asked as previous research showed that a foreign language is harder to use, which could increase cognitive load and lead to greater reliance on intuitive and affective processes (Keysar et al., 2012).

Both findings with regard to the Foreign Language Effect can be linked to the first research question: ''Is there a FLE present when testing different types of appeals in advertisements in Dutch and English?'' The answer to this question according to this study was found to be ''no''. An explanation for this can be that The Netherlands has been named the first country in the world (out of 80 countries) with the highest proficiency in the English language (Brouwer, 2019) and that therefore, English might not be necessarily a second

language for a Dutch person as their proficiency in both languages is the same. For example, Dutch-English bilinguals, who are typically highly proficient in English, will show no or a reduced FLE (Brouwer, 2019). An additional explanation could be that the participants were all between the ages of 16 and 25; thus, they are most likely to be proficient in English, as English is nowadays taught at a high level at secondary school, university and universities of applied sciences, and even complete study programmes are taught in English (Nunan, 2003).

Additionally, the second research question of this study was intended to investigate whether an (anti) vaping advertisement would be considered more persuasive when containing a fear appeal rather than containing an informational appeal. The present study found a significant main effect of ad appeal on the attitude towards the ad which indicated that the fear appeal was evaluated more positively than the informational appeal by the participants. Besides the effect on attitude towards the ad, a significant main effect of the appeal of the ad on perceived emotionality of the ad was found as well. This indicated that the advertisement containing a fear appeal was evaluated as more emotional by the participants than the informational appeal. These findings are in line with previous studies as the results indicate that a high-threat, high-efficacy fear appeal has an impact on the perceived threat of intimidating messages by young people, whereas informational appeals tend to only give information (Sun & Jiang, 2021).

The third research question aimed to find an answer to the research question: ‘’To what extent is a message in a participants’ native language perceived as more persuasive/emotional compared to a message in a second language?’’. As described above, the results showed a significant main effect of the appeal of the ad on perceived emotionality. Therefore, the emotionality test has given new insights as the fear appeal was in general evaluated as more emotional by the participants. This contributes to earlier findings as it is found that fear appeals are perceived as more emotional in one’s first language compared to their second language (Caldwell-Harris & Aycicegi-Dinn, 2016).

Lastly, the final research question was formulated to find an answer on the following: ‘’ To what extent does a type of appeal or language, when incorporated in an anti-vaping advertisement, have influence on receivers’ emotionality and rational thinking?’’. The results of the emotionality test showed that the type of appeal does have an influence on perceivers emotionality as the advertisement with a fear appeal was evaluated as more emotional and persuasive by the participants. This finding is supported by previous research as it states that emotional appeals are overall found to be more persuasive than informational appeals

(Hadjimarcou, 2012). Contrarily, there has not been found any effect on rationality towards the advertisement in combination with language. This is not in line with previous findings as earlier research showed that a foreign language is harder to use, which could increase the cognitive load and lead to greater reliance on intuitive and affective processes which result in thinking rationally (Keysar et al., 2012).

Limitations for future research:

The study has a number of limitations. In order to implement these in future research, some limitations and suggestions will be introduced.

First of all, it is important that the balance between men and women will be more equal next time, since about 50 men participated in the study and about 100 women, which is twice as much. It would be wiser to include an equal number of men and women who complete the questionnaire next time, in order to be sure that gender will not influence the outcome of the results.

Furthermore, as we have seen, Dutch people are very proficient in the English language, especially the target group that was incorporated in this study, as they were all highly educated and indicated in the self-assessed language test that they had a high level of English. Therefore, it would be interesting to see if there would be a Foreign Language Effect if another language is used as a second language in which Dutch people are less proficient.

Additionally, another limitation of this study could be that a great amount of the participants incorporated in this study were non-smokers. This could lead to them responding differently to the advertisements and the associated questions, as people who do not smoke e-cigarettes have a totally different attitude towards vaping and smoking e-cigarettes in the first place. Therefore, it would be more valuable to incorporate more people into the experiment who already smoke as their attitude will be different (Hiscock et al., 2012).

Contribution to theory:

In conclusion, some insights from earlier studies have been confirmed and new insights were produced by the current research.

First of all, no Foreign Language Effect was found in terms of emotionality, despite the fact that earlier research did expect a FLE to be present as recent studies have shown that there is some sort of emotional distancing that occurs when thinking in a non-native language (Cipolletti et al., 2016).

Furthermore, there was also no FLE found in terms of rationality towards the advertisement. This is also in contrast to previous findings, as earlier research suggests that a foreign language is harder to use, which increases the chance for receivers to rely more on their rational thinking and intuitive and affective processes (Keysar et al., 2012). On the other hand, there was found a significant difference between type of appeal and attitude towards the advertisement, which resulted in the fear appeal being evaluated more positively and more emotionally. These findings are in line with previous studies as the results indicate that a high-threat, high-efficacy fear appeal has an impact on the perceived threat of intimidating messages by young people, whereas informational appeals tend to only give information (Sun & Jiang, 2021).

Additionally, there has not been found any effect on rationality towards the advertisement in combination with language. This is not in line with previous findings as earlier research showed that a foreign language is harder to use, which could increase the cognitive load and lead to greater reliance on intuitive and affective processes which result in thinking rationally (Keysar et al., 2012).

Finally, the results of the emotionality test showed that the type of appeal does have an influence on perceivers emotionality as the advertisement with a fear appeal was evaluated as more emotional and persuasive by the participants. This finding is supported by previous research as it states that emotional appeals are overall found to be more persuasive than informational appeals (Hadjimarcou, 2012).

Practical implications:

Implications for this study include whether or not it would be wise for future research to use the Dutch or English language and whether it would make a difference if a fear or informational appeal is used in anti-vaping advertisements aimed at Dutch young people. As already mentioned earlier, no Foreign Language Effect was found in the current study which implicates for future research that it does not matter whether the Dutch or the English language will be used in the advertisements. This is the result of the fact that The Netherlands has been named the first country in the world with the highest proficiency in the English language (Brouwer, 2019) and that therefore, English might not be necessarily a second language for a Dutch person as their proficiency in both languages is the same.

In terms of whether there is a difference in using a fear or an informational appeal in anti-vaping advertisements aimed at Dutch young people, it does matter which type of appeal

is used as the results showed a significant effect. Advertisements containing a fear appeal were evaluated as more positive and more emotional which was also foreseen by previous studies. It is therefore recommended to decide beforehand which type of appeal will be used in the advertisement as both of them evoke different emotions amongst the receivers.

In conclusion, it would not make a difference whether the Dutch or the English language is used in future research regarding anti-vaping advertisements aimed at Dutch young people. However, it would make a difference what type of appeal would be used in these advertisements.

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Appendix:

Appendix A: English language with a fear appeal.

Appendix B: Dutch language with a fear appeal.

Appendix C: English language with an informational appeal.

Appendix D: Dutch language with an informational appeal.

Appendix E: Questionnaire.

Inleiding

Beste deelnemer,

Wij zijn drie studenten International Business Communication aan de Radboud Universiteit in Nijmegen en doen voor onze afstudeerscriptie onderzoek naar advertenties tegen e-sigaretten. Je krijgt een advertentie te zien en daar stellen we wat vragen over. Het invullen van deze enquête kost ongeveer 6 minuten.

Wat wordt er van je verwacht?
Meedoen aan het onderzoek houdt in dat je een online vragenlijst gaat invullen. Je doet vrijwillig mee aan dit onderzoek. Daarom kan je op elk moment tijdens het onderzoek jouw deelname stopzetten en jouw toestemming intrekken. Je hoeft niet aan te geven waarom je stopt. Omdat de data meteen geanonimiseerd worden, is het na het voltooien van het experiment niet mogelijk om je onderzoeksgegevens te laten verwijderen.

Wat gebeurt er met mijn gegevens?
De onderzoeksgegevens die we in dit onderzoek verzamelen, zullen door wetenschappers gebruikt worden voor datasets, artikelen en presentaties. De anoniem gemaakte onderzoeksgegevens zijn tenminste 10 jaar beschikbaar voor andere wetenschappers. Als we gegevens met andere onderzoekers delen, kunnen deze dus niet tot jou herleid worden. We bewaren alle onderzoeksgegevens op beveiligde wijze volgens de richtlijnen van de Radboud Universiteit.

Heb je vragen over het onderzoek?
Als je meer informatie over het onderzoek wilt hebben, kunt je contact opnemen met Veerle Scheijvens, Veerle.scheijvens@ru.nl

TOESTEMMING: Geef hieronder je keuze aan. Door te klikken op de knop 'Ik stem ermee in te participeren in dit onderzoek' geef je aan dat:

- je de bovenstaande informatie gelezen hebt
- je ermee instemt volledig vrijwillig deel te nemen
- je begrijpt hoe de gegevens van het onderzoek bewaard zullen worden en waarvoor ze gebruikt zullen worden.
- je tussen de 16 en 25 jaar oud bent
- Nederlands jouw moedertaal is.

Als je niet wil meedoen aan dit onderzoek, kun je de pagina nu verlaten.

○ Ik stem ermee in te participeren in dit onderzoek.

2.2 At to ad & emot.

De advertentie is...

	1 - Volledig mee oneens	2	3	4	5	6	7 - Volledig mee eens
informatief	○	○	○	○	○	○	○
overtuigend	○	○	○	○	○	○	○
aantrekkelijk	○	○	○	○	○	○	○
opvallend	○	○	○	○	○	○	○
emotioneel	○	○	○	○	○	○	○

2.3 At to vap.

Ik vind dat e-sigaretten...

	1 - Volledig mee oneens	2	3	4	5	6	7 - volledig mee eens
slecht voor mijn gezondheid zijn	○	○	○	○	○	○	○
levensverkortend zijn	○	○	○	○	○	○	○
gezonder zijn dan normale sigaretten	○	○	○	○	○	○	○
plezierig zijn	○	○	○	○	○	○	○

2.3 Behav. inten.

Na het zien van deze advertentie...

	1 - Volledig mee oneens	2	3	4	5	6	7 - Volledig mee eens
sta ik ervoor open om e-sigaretten te proberen in de komende 30 dagen.	○	○	○	○	○	○	○
zou ik overwegen om meer dan eens een e-sigaret te gebruiken.	○	○	○	○	○	○	○
verwacht ik een e-sigaret te gebruiken.	○	○	○	○	○	○	○
sta ik er nog steeds voor open om e-sigaretten te gebruiken.	○	○	○	○	○	○	○

2.4 Comprehen.

Ik vind de tekst in de advertentie...

Moeilijk	○	○	○	○	○	○	○	Makkelijk
Ingewikkeld	○	○	○	○	○	○	○	Simpel
Onbegrijpelijk	○	○	○	○	○	○	○	Begrijpelijk

2.5 per. mes. & rat

De laatste vragen van deze pagina.

	1 - Volledig mee oneens	2	3	4	5	6	7 - Volledig mee eens
Ik heb het gevoel dat de advertentie de boodschap effectief heeft overgebracht.	○	○	○	○	○	○	○
De inhoud en de stijl van de advertentie waren allebei goed.	○	○	○	○	○	○	○
Ik heb iets geleerd van de advertentie.	○	○	○	○	○	○	○
Ik heb zorgvuldig nagedacht over de advertentie.	○	○	○	○	○	○	○
Bij het lezen van de advertentie heb ik zorgvuldig de voor- en nadelen van e-sigaretten afgewogen.	○	○	○	○	○	○	○

4.1 Rationality NL

Background var.

Vanaf hier starten de achtergrond vragen. Eerst wat korte rekenvragen:

Rationality NL

Een knuppel en een bal kosten €1,10 in totaal. De knuppel kost 1 euro meer dan de bal. Hoeveel kost de bal?

rationality nl

Als het 5 machines 5 minuten kost om 5 widgets te maken, hoe lang zouden 100 machines dan nodig hebben om 100 widgets te maken?

4.2 Rationality ENG

background var.

Vanaf hier starten de achtergrond vragen. Eerst wat korte rekenvragen:

rationality eng

A bat and a ball cost €1.10 in total. The bat costs one euro more than the ball. How much does the ball cost?

rationality eng

If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

5. background var

background var.

Nu volgen de laatste vragen.

age

Wat is je leeftijd?

gender

Hoe identificeer je je?

- Man
- Vrouw
- Anders, namelijk:
- Dit zeg ik liever niet

educational back.

Wat is je hoogste huidige of afgeronde opleidingsniveau?

- VMBO
- HAVO
- VWO
- MBO
- HBO
- WO
- Anders, namelijk

smoking yes or no

Rook je momenteel?

- Ja, sigaretten
- Ja, e-sigaretten
- Ja, allebei
- Ja, anders..
- Nee

Dutch self assess.

Geef aan hoe je je Nederlands zou beoordelen voor de volgende vaardigheden: (1 = slecht, 7 = uitstekend

	1 - slecht	2	3	4	5	6	7 - uitstekend
Spreken	○	○	○	○	○	○	○
Schrijven	○	○	○	○	○	○	○
Lezen	○	○	○	○	○	○	○
Luisteren	○	○	○	○	○	○	○

English self assess.

Geef aan hoe je je Engels zou beoordelen voor de volgende vaardigheden: (1 = slecht, 7 = uitstekend)

	1 - slecht	2	3	4	5	6	7 - uitstekend
Spreken	○	○	○	○	○	○	○
Schrijven	○	○	○	○	○	○	○
Lezen	○	○	○	○	○	○	○
Luisteren	○	○	○	○	○	○	○

Emotionality back.

De laatste vragen:

	1 - Volledig mee oneens	2	3	4	5	6	7 - Volledig mee eens
Ik voel me minder emotioneel wanneer ik Engels gebruik dan wanneer ik Nederlands gebruik.	○	○	○	○	○	○	○
Ik voel in het Engels een grotere emotionele afstand dan in het Nederlands.	○	○	○	○	○	○	○
Nederlands voelt emotioneler dan Engels.	○	○	○	○	○	○	○

End of Survey

Hartelijk dank voor je bijdrage aan aan ons onderzoek! Mocht je meer informatie willen hebben

over dit onderzoek, neem dan contact op met veerle.scheijvens@ru.nl

Appendix F: Statement of own work.

Statement of own work

Sign this *Statement of own work* form and add it as the last appendix in the final version of the Bachelor's thesis that is submitted as to the first supervisor.

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