

Concreteness and language effects on advertisement recall

Amber Westerhoff (s4316029)

Supervisor: Dr. Speed

Assessor: Dr. Nederstigt

ABSTRACT

Our knowledge of the world is made up of concepts, and is quite important for our cognitive behaviour. There appears to be a difference between concrete and abstract concepts in how we store them *and* retrieve them. Studies suggest that concrete concepts are remembered better than abstract concepts. This is likely because we store concrete concepts as a copy of the experience in the brain and as the word, but abstract concepts are only stored verbally as they cannot be experienced. This research was interested in investigating whether this effect would be the same in advertising, as the goal of advertisements is to have people remember the brand or product. Advertisements are mostly written in foreign languages (L2), most often English as this is seen as a global language. Seeing as research suggests a foreign language is remembered worse than the native language (L1), this research also investigated whether using L1 versus L2 in advertisement mattered, and whether language played a role for the concreteness effect. A within subjects design was used, where 128 participants saw 12 advertisements: three concrete-Dutch, three concrete-English, three abstract-Dutch and three abstract-English. After a filler test participants answered a recall questionnaire. Analyses showed an effect of language: as in previous research, Dutch (L1) advertisements were remembered better than English (L2). Concrete advertisements were not remembered better than abstract ones. This could be because the manipulated words were not where participants focussed on. Another effect was an interaction between language and concreteness. For concrete advertisements, the ones in Dutch were remembered better than the English. This is likely because L1 facilitates concrete words better than L2. The answers to the research questions are therefore that concreteness unexpectedly does not appear to affect advertising recall, but that language does. Advertisements in L1 are remembered better than in L2. Concreteness also modifies this effect; as for concrete advertisements the language effect plays a bigger role. These results are quite useful for marketers and as basis for future research: marketers are advised to use their target groups' L1, especially if the advertisement is concrete.

Keywords: embodiment, concrete, abstract, language, advertisement, recall

Introduction

Language is linked to how we think and behave, but how could this be important to communicating things such as advertisements?

Knowledge is the basis of all our cognitive behaviour, and is thus very important to our daily lives since it affects how we think and talk about our lives and the world around us, how we create memories and how we process social interactions. The knowledge we all have is made up of concepts, which consists of information of different categories (Barsalou, Simmons, Barbey & Wilson, 2003). An example of a category given

by Barsalou and his colleagues is *bird*. So *bird* is the category, but exists of information such as the different kind of birds, their behaviour, the fact they fly and more of such information. All this information makes up the concept, and multiple concepts constitute 'knowledge'.

Although researchers agree that knowledge is made up of concepts, there has been some disagreement on the matter of how these concepts are stored. Scientists used to believe that concepts were stored using amodal symbol systems. According to those researchers, the amodal symbol systems would translate a concept into feature lists, schemata and frames, and store that translation. An example of this is when a concept of *chair* is stored, it is stored in a feature list as the separate features *back*, *seat* and *legs* (Barsalou, 1999). In schemata, the actions and relations regarding the object will also be stored. Barsalou (1999) gives the example of the concept *eat*. When storing that concept in the amodal symbol system, not only *eat* would be stored, but also for example *agent = horse* and *object = hay*. This gives the additional information that the horse is eating hay. The essence of the amodal symbol system theory is therefore that only the information stored in the schemata and feature lists is used when someone wants to retrieve the concepts *chair* or *eat*, and the memory of the original encounter is not used any more (Barsalou, Simmons, Barbey & Wilson, 2003).

Through the years a new theory about how concepts are stored has arisen, namely embodiment. Embodiment broadly means that cognition arises because of the fact that we interact with the world through our bodies. This means that what we perceive visually will be stored visually, what is perceived auditorily will be stored auditorily, etc. (Barsalou, 1999; Barsalou, Niedenthal, Barbey & Ruppert, 2003; Barsalou, Simmons, Barbey & Wilson, 2003; Borghi, 2007; Liang & Kale, 2010; MacInnis & Price, 1987; Sadoski, 2017). Based on embodiment, Barsalou (1999) proposed the perceptual symbol system. In the example of the chair, this means that the concept *chair* is stored as a general image of a chair. This happens because when observing a chair visually, a set of neurons is activated in a certain brain area. When trying to remember the concept *chair*, the same neurons are activated by the brain, thus re-enacting the original encounter with the chair (Barsalou, Niedenthal, Barbey & Ruppert, 2003; Barsalou, Simmons, Barbey & Wilson, 2003). This not only happens when we perceive concepts visually, but also when we for example hear or smell objects, or when we perform an action such as sitting on a chair. In these situations, neurons are activated in the mind, which are fired

again when trying to remember the original experience (Barsalou, 1999; Barsalou, Niedenthal, Barbey & Ruppert, 2003; Barsalou, Simmons, Barbey & Wilson, 2003; Borghi, 2007; Liang & Kale, 2010; MacInnis & Price, 1987; Sadoski, 2017). So in short, in the perceptual symbol system the concepts – the knowledge of objects and categories - are stored by making a copy of it in the brain.

Concepts are often divided into concrete and abstract, and sometimes also emotional concepts. Concrete concepts are those concepts that most often describe objects, locations and behaviour in specific situations, whereas abstract concepts more often describe introspective states, persons, relationships, beliefs and communicative events (Barsalou & Wiemer-Hastings, 2005). Paivio and colleagues, however, offer a more basic distinction between concrete and abstract concepts: abstract concepts cannot be experienced by our senses, whereas concrete concepts can (Paivio, Yuille & Madigan, 1968).

This distinction of concrete and abstract concepts is of importance, because they appear to be retrieved from the mind differently. According to Paivio and Csapo (1973), concrete concepts seem to be remembered better than abstract concepts. Several experiments appear to agree with this. Using a free recall test, Begg (1972) tested whether concrete and abstract concepts differed from each other. The participants were shown a list consisting of word pairings of nouns and adjectives, in which either both words or only one word were manipulated to be concrete and/or abstract. Results showed that concrete words, whether they were nouns or adjectives, were recalled better than the abstract words. A similar result was found in studies where only single words were shown in a list (so no word pairs). Here, too, more concrete words were remembered than abstract concepts were (David, 1998; Dukes & Bastian, 1966; Paivio & Csapo, 1973).

Scorolli, Binkofski, Buccino, Nicoletti, Riggio and Borghi (2011) argue that the reason there is a distinction between concrete and abstract concepts is because of the mode of acquisition. Abstract words are more difficult to ascribe meaning to, so learning abstract words require a lot of social interaction, complex explanations and a repetition of those interactions and explanations. Concrete concepts are easier to understand and can therefore be learned in a single experience with those concepts. The fact that concrete concepts are easier to understand is demonstrated by a neuroimaging experiment. Participants were presented with a list containing concrete words, abstract

words and nonwords, and had to decide whether the word presented was a real word or a nonword. Response time was quickest for concrete words and slowest for nonwords, with the response time for abstract words in between. This suggests that concrete words are easier to process than both abstract words and nonwords. Abstract words are also easier to process than nonwords (Binder, Westbury, McKiernan, Possing & Medler, 2005).

Pavio and Csapo (1972) agree with Binder and colleagues (2005) that the processing of the concepts could be what makes concrete and abstract concepts differ from each other, because the processing influences how both concepts are stored. Earlier we saw that there are two main theories to describe the processing of concepts: the amodal symbol system, which states concepts are stored using feature lists and schemata; and the perceptual symbol system, which states concepts are stored by making a copy in the brain of the experience with the concept. Paivio and Csapo (1973) propose that the difference between the recall of concrete and abstract concepts could be due to the way they are processed: concrete words are supposedly processed as an image as well as verbally, while abstract concepts are only processed verbally. In an example this means that *chair*, a concrete word, is stored as an image of the chair itself using the neurons as described earlier, *and* as the feature list *chair, back, seat* and *legs*. This theory, which is named Dual Coding Theory (DCT), combines the amodal symbol system and the perceptual symbol system mentioned above. The reason that abstract concepts are only processed verbally is because abstract concepts cannot be experienced by our senses (Paivio, Yuille & Madigan, 1968). Since the perceptual symbol system stores concepts using the information from image, touch, smell and actions, it follows logically that that which cannot be seen, touched, smelled or used in action, cannot be stored in such a way. So this means that abstract concepts need to be stored differently by for example using feature lists and schemata.

Following up on the Dual Coding Theory, the Context Availability Theory (Schwanenflugel, Harnishfeger & Stowe, 1988) hypothesizes that the recall of abstract concepts can be improved when the concepts are put in more imageable contexts, increasing the possibility of encoding the abstract concepts as an image. According to this model, comprehension of concepts depends on the presence of contextual information. That is to say, information about how the concept is used or in what context the concept can be used. In the example of the chair, contextual information

would be that you use a dining room chair when having dinner with the family, or an armchair when watching television. As with the DCT, this model bears resemblance to the perceptual symbol system, because it operates on the notion that concepts are recorded using the information that was also used in experiencing the concept, for example how the concept looked, smelled or felt (Barsalou, 1999; Barsalou, Niedenthal, Barbey & Ruppert, 2003; Borghi, 2007; Liang & Kale, 2010; MacInnis & Price, 1987; Sadoski 2017). An experiment suggested that the difference between concrete and abstract concepts disappeared when increasing the context availability (Schwanenflugel, Harnisfeger & Stowe, 1988). When there was more context given for how a concept would be used or acted upon, there was no difference between the recall of concrete and abstract concepts. This suggests that the difference normally found between concrete and abstract concepts can be due to the difficulty of ascribing context to abstract concepts. This coincides with the notion of Scorolli and colleagues (2011) and Binder and colleagues (2005) that abstract concepts are harder to learn and understand. This difficulty in learning and understanding the concepts might be because of a low context availability.

So far we have discussed concepts, how they are stored and what underlies recall of concepts. However, concepts also need to be communicated. For this we use language. Language, too, is learned through experiential information, the experiences we have when using the words and the knowledge of what context the words can be used in. However, Vigliocco, Meteyard, Andrews and Kousta (2009) argue that a part of meaning in language is learned through linguistic information, that is to say the information about word order and sentence formation. According to them, the difference between concrete and abstract concepts as described above can be due to the fact that concrete and abstract words differ on the balance between experiential (information taken from experience) and linguistic information (information taken from language), but both types are used to learn a language. For example, the concrete word *chair* can be experienced: it can be seen, touched, and used to sit on. An abstract word such as *faith* cannot be touched or seen, and the meaning of it must be learned through the linguistic information.

Not only does there appear to be a difference on the balance of experiential and linguistic information for *concepts*, this theory can also be applied to different languages and how we learn them. When someone learns their mother tongue, their native

language (L1), this happens in a natural surrounding with experiences to back up what is learned. So the experiential information is plentiful, and that is what is used to store the language. However, when learning a second language (L2), this often happens in a classroom. The amount of linguistic information inside a classroom is more prevalent, and the experiential information much less available (Feroni, 2015). An example would be when learning the (i.e.) Spanish word for *bear*, one does not see a (picture of a) bear, just the Spanish word paired with the same word in the L1. Due to this clinical surrounding in which L2 is learned, this could mean that concepts in a second language are linked less to experiential information (information taken from experience), because this information was less present when learning the language. This could also mean that L2 is less embodied, since there is no (or less) experiential information available, and embodiment is based on the experiences we have with the concepts and language.

This theory that there are different levels of embodiment between languages is researched often. For example, in an experiment by Feroni (2015), participants were shown sentences that either described or did not describe emotional expressions which – when experienced – elicited the movement of a certain facial muscle. An example is the sentence ‘I am smiling’. According to embodiment theories, when reading the sentence ‘I am smiling’, the facial muscles would react as if you were actually smiling. This is because reading about smiling would fire off (mostly) the same neurons that were fired off when you smiled earlier. Because of these neurons being fired, the experience is recreated causing the muscles to respond. The sentences in the research were presented in the participants’ native language (Dutch) or their second language (English). The experiment showed that when the sentences regarding the facial muscle under consideration were presented in L1, the facial muscles in the participants showed more movement than when they were presented in L2. This suggests that there is less embodiment in L2, since the actions present when one is smiling was elicited by reading about the action in L1, but not in L2. The sentences in L2 therefore did not elicit the re-enacting of the action (by firing the neurons), which is imperative to embodiment.

A different experiment also exposed participants to word lists consisting of words related to movement of the arms, legs and face (action words), as well as abstract words (Vukovic & Shtyrov, 2014). While reading the words the brain activity of the participants was measured. Results showed that the action words elicited less motor response in L2 than in L1, and also that there was no difference between action and

abstract words in L2, but there was in L1. In L1, action words elicited a quicker and larger motor response than the abstract words. This makes sense, as reading action words would fire off those neurons discussed earlier, whereas abstract words would not. However, the fact that action words elicited a similar response to abstract words in L2 would suggest there is less embodiment in L2, because the action words did not cause the neurons to fire, meaning the words did not elicit an embodied state.

If the hypothesis that there is less embodiment in L2 were true, this would predict that text presented in L2 could be harder to recall than text presented in L1. Argumentation for this is that abstract concepts are less embodied than concrete concepts, and there is ample evidence that abstract concepts seem to be harder to recall than concrete concepts (Altarriba, Bauer & Benvenuto, 1999; Barsalou, 1999; Barsalou & Wiemer-Hastings, 2005; Begg, 1972; David, 1998; Dukes and Bastian, 1966; Paivio, 1991; Paivio & Csapo, 1973; Sadoski, 2017; Schwanenflugel, Harnishfeger & Stowe, 1988). Surely, if L2 is embodied less than L1 this could mean that L2 will also be harder to recall than L1. This was also the conclusion of a couple of other experiments. When advertisements were shown in the participants' mother language (L1), the text was recalled better than when the advertisements were shown in the participants' second language (L2) (Ahn & LaFerle, 2008; Luna & Peracchio, 2001).

Another language effect reported in previous research is that the use of a foreign language diminished the mental imagery of the text (Hayakawa & Keysar, 2018), meaning it was harder for participants to imagine what was happening in the text in a foreign language than in their mother tongue. Think about the Context Availability Theory (Schwanenflugel, Harnishfeger & Stowe, 1988): abstract concepts are supposedly harder to remember than concrete concepts because it is harder to ascribe meaning to abstract concepts because of the lack of context. The same principle is seen in the L1 versus L2 research: it is harder to visualize what is happening in a text in L2, probably because the context is not clear enough. This suggests that a text written in L2 does not elicit the same experience as a text written in L1.

Although a text written in L2 appears to elicit a different experience from a text written in L1, neuroimaging studies suggest that the higher a person's proficiency in L2 is, the more the language is activated in the brain in a similar way as L1 (Perani & Abutalebi, 2005). The processing of L1 and L2 already happens in the same region of the brain, but with a low proficiency the brain needs additional neural resources to process

L2. When proficiency grows, the need for these additional neural resources declines. According to the results of this study, proficiency could have an effect on recall, as L2 is treated more as L1 in the brain when proficiency grows. Proficiency is therefore a factor that should be taken into account when researching language effect on recall.

In short, it is clear from the elaboration above that there are different processes going on in the processing of L1 and L2. Previously described research about embodiment suggests that the memory of concepts can be influenced by adapting the concreteness of the concepts, or by presenting the concepts in participants' first versus second language. Although this is very interesting in itself, these effects could be even more interesting in fields where memory and recall are important, such as in the field of advertising. As the main objective of advertisements is to have people purchase the products or services, one could imagine that it is important that the consumers remember the product, service or organization shown in the advertisement. This factor has also been noted by MacInnis and Price (1987, p. 477) who stated that "marketers need to explore the factors under their control that can influence imagery vividness and concreteness and that thus affect consumers' abilities to remember product-related information." For organizations it would thus be very useful to know whether using more concrete concepts in advertising would allow consumers to better remember the products and/or services, since this could mean people are more inclined to purchase the product and/or service later on.

A general hypothesis found in literature is that vivid advertisements attract and retain more attention for longer, and that concrete advertisements are supposed to be more vivid (Mackenzie, 1986). If this hypothesis were true, then concrete concepts in advertising would result in more attention towards the ad, which might positively affect recall. However, it could also be that abstract concepts fare better in advertising, because abstract language could be more unexpected, which might make people remember the advertisement better. When showing advertisements to participants, Lee and Mason (1999) manipulated the accompanying images to be either expected or unexpected from reading the text. Results show that the unexpected condition was remembered better than the expected condition. This result could possibly also be found in the present research, if the participants expect the advertisement texts to be concrete. Since there has not really been research to how concrete people expect advertisements to be, it will be difficult to predict this with certainty.

Furthermore, the aspect of language effect on recall can also be of importance to organizations. Since many advertisements nowadays are written in multiple languages, most often a combination of L1 and L2 (Bhatia, 1992; Krishna & Ahluwalia, 2008), this could actually have a negative effect if advertisements in L2 are harder to remember than in L1. It is important to research if this is the case, because if so organizations might get better results by only using the target groups' L1 in advertisements.

From the various experiments we have discussed earlier it has become evident that concrete concepts seem to be remembered better than abstract concepts, and that someone's first language is remembered better than a second language. Since advertisements are made up of concepts, for example descriptions of products, services or the organization, it would be of importance to see if the same levels of concreteness and language effects arise in advertisements. Apart from the concreteness and language effects in themselves, it would be useful to know how both variables will interact with each other. It is possible that, because there is less embodiment in L2 that the concreteness effect will cease to exist in L2, resulting in less difference between concrete and abstract concepts. Another possibility is that since L2 is learned in a classroom, resulting in less context availability and sensory-motor experience, that abstract concepts are remembered better since L2 learners have more experience with abstractness, meaning abstract concepts are more facilitated. The following research questions will be investigated to see what kind of effect there will be:

RQ1: To what extent are concrete advertisements remembered better than abstract advertisements?

RQ2: To what extent are advertisements in L1 remembered better than advertisements in L2?

RQ3: To what extent is the concreteness effect affected by language choice and vice versa?

Method

Materials

The material of this experiment consisted of twelve different advertisements. For each advertisement there were four different versions: concrete-Dutch, concrete-English, abstract-Dutch and abstract-English. Four lists were made in which there was one version of every advertisement, making sure there was an equal amount of each manipulation per list. So each list contained three Concrete-Dutch, three Concrete-English, three Abstract-Dutch, and three Abstract-English advertisements, but none of the advertisements within one list was of the same brand. This brings the total number of stimuli to 48 (12 x 4). Each participant saw only one of the four lists. The advertisements within the lists were randomized per person by using the randomize option from Qualtrics. By randomizing each list a possible order effect was prevented.

When making the different versions of the advertisements the translation-back-translation technique was used to assure both language versions are equal. Choosing the concrete and abstract words was based on the concreteness ratings collected by Brysbaert, Warriner and Kuperman (2014). Real, short advertisements were taken from Facebook. The short advertisements were chosen because it was believed that it made it easier to let participants focus on the manipulated words within the advertisements. The short adverts were also used to allow people to move through the questionnaire quickly, seeing as it was a within subject design and we did not want to have participants spend too much time on the questionnaire to limit the non-response and quitting half-way through the experiment. Real advertisements were chosen to maintain the ecological validity, as the real adverts are what participants see in real life as well. Lastly, the products within the advertisements were selected on the premise that the products were general. That is to say, not one very particular group was targeted, but most people would be able to identify with the product, or at least be able to imagine buying the product.

An example for one advertisement across the four conditions:

- Concrete-Dutch:

Nog een Project Insides Clubnight! Onze hoofacts voor deze editie: de elektronische tovenaars Fairmont (live) en Christian Löffler (live).

Christian Löffler zal een live set spelen met zijn luide, ritmische gitaarmuziek

voor de geest en ziel. In zijn live optreden gebruikt hij veel geluiden die hij in de natuur heeft opgenomen dichtbij zijn blokhut op de zuidkust van de Baltische zee.

- Concrete-English:

Another Project Insides Clubnight! Our headlines for this edition: the electronic magicians Fairmont (live) and Christian Löffler (live).

Christian Löffler will play a live set with his loud, electric, guitar music for the mind and soul. In his live performance he uses many sounds he recorded in nature, near his log cabin on the southern coast of the Baltic sea.

- Abstract-Dutch:

Nog een Project Insides Clubnight! Onze hoofdacts voor deze editie: de elektronische tovenaars Fairmont (live) en Christian Löffler (live).

Christian Löffler zal een live set spelen met zijn zwoele, melancholische en euforische muziek voor de geest en ziel. In zijn live optreden gebruikt hij veel geluiden die hij in de natuur heeft opgenomen dichtbij zijn blokhut op de zuidkust van de Baltische zee.

- Abstract-English:

Another Project Insides Clubnight! Our headlines for this edition: the electronic magicians Fairmont (live) and Christian Löffler (live).

Christian Löffler will play a live set with his sophisticated, melancholic and euphoric music for the mind and soul. In his live performance he uses many sounds he recorded in nature, near his log cabin on the southern coast of the Baltic sea.

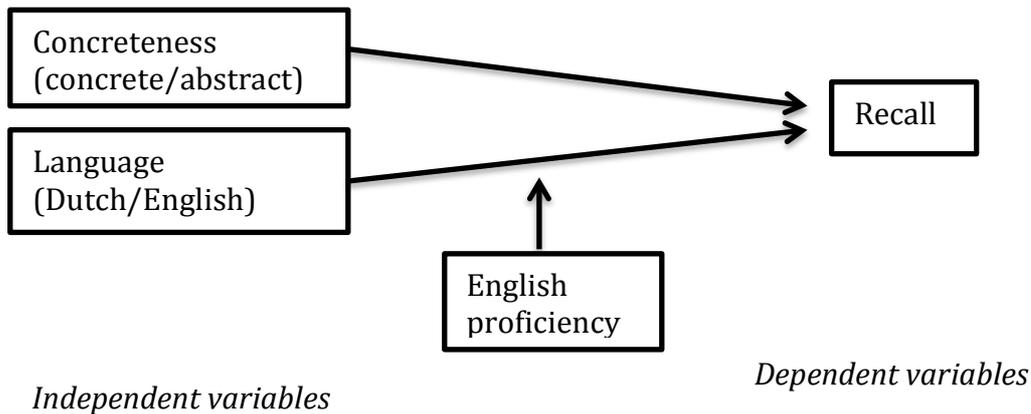
Subjects

There were 133 participants, but seeing as the objective of the present research was to research Dutch participants, those with a different nationality were removed from the dataset. 128 participants remained. Of those 128 participants, 61.7% was female. The average age of the participants was 27, with a minimum of 17 and a maximum of 71 and a standard deviation of 9.4. The average level of education was HBO.

Design

The design for this experiment was a 2 (concrete vs. abstract) x 2 (Dutch vs. English) within-subjects design. The independent variables are nominal variables, both containing two levels.

All subjects saw all four types of experimental conditions: C-D, C-E, A-D, A-E, all of which have 12 different executions of the different advertisement texts.



Instruments

After each advertisement participants answered questions on attitude towards the organization. This had a dual purpose as it would make sure participants really read the advertisements, and it was also possible to see if concreteness and language had an effect on attitude towards the organization. The attitude questions are based on the scale of Becker-Olsen, Taylor and Yalcinkaya (2011) and are statements answered on a 7-point Likert scale (1 = totally disagree, 7 = totally agree): “this is a good company”, “I like this company”, “I believe in this company”. The reliability of the scale attitude towards the organization consisting of three items was good: $\alpha = .90$.

To test the recall of the advertisement the subjects first performed a filler task of 12 minutes to allow some time to pass between seeing the manipulation and answering questions about it. The filler task was the Visual Vividness Imagery Questionnaire. This is a test designed to research how well participants are able to imagine objects, people and scenes. The test contained 16 descriptions of objects, people and scenes, which the participants had to rate on a 5 point Likert scale on how well they could imagine it. The questionnaire was to be done twice, once while thinking about the descriptions with the eyes open and once with the eyes closed. Besides this being a good filler task the

answers of the questionnaire can be used to see if there are individual differences in how well the participants can imagine objects, people and scenes. The questionnaire can be found in the appendix (in Dutch). The reliability of the scale of the Visual Vividness Imagery Questionnaire was good: $\alpha = .94$.

After the filler task the subjects answered a recall questionnaire, combined of questions from Drèze and Hussherr (2003), Zinkhan and Muderrisoglu (1985) as well as a question used in multiple experiments (Danaher & Mullarkey, 2003; Donthu, Cherian & Bhargave, 1993; Keller, Heckler & Houston, 1998; Okazaki, Kasukara & Nishiyama, 2007; Till & Baack, 2005), namely to list as many attributes they recall as possible. The questionnaire had been adapted to fit the present research and consists of four questions total, which could be answered without a time limit: first they were asked to list as many brand names they can remember from the advertisements. After that, they were presented with a list of the actual brands from the advertisement, and asked whether they remember seeing those brands. Participants were explicitly told it did not matter whether the answers to this question differed from the previous question. Subsequently the participants were asked to list as many attributes of the advertisements as they can remember. In the last recall question participants were presented with 24 statements, of which they had to answer whether these were correct or incorrect. For each advertisement there was one true and one false statement, and the order of the statements was randomized. The entire recall questionnaire can be found in the appendix.

To control for a possible language proficiency effect, the participants answered some questions about their language proficiency. The questions consisted of a self-rating of the proficiency, as well as a question about when they first started learning English, and if and how long they have lived in an English-speaking country.

Procedure

The questionnaire was sent to participants through an anonymous link. Personal connections as well as Facebook groups specifically designed to get research participants were used.

In the introduction of the questionnaire, the participants were filled in about only part of the research. They were told they would see 12 advertisements in either Dutch or English, and that they would have to answer some questions about it. The specific

goal of the research was not divulged, as mentioning a recall test would likely make participants try to remember the advertisements, which could influence results for the present research.

After reading the advertisements the participants did the filler task (the Visual Vividness Imagery Questionnaire) of about 12 minutes. The recall test was done immediately after the filler task, with the experiment ending with some general questions such as age and gender, and questions about English proficiency.

There was no specific time to answer each question: participants were free to think as long as they wanted. However, for reading of the advertisements participants were asked to read the advertisements once, but thoroughly.

Statistical treatment

To test the research questions four mixed ANCOVA's with as within-subject factors Concreteness (concrete vs. abstract) and Language (Dutch vs. English), and as between-subject factor Type of Imager (high vs. low) on Recall was run. Type of Imager was based on the answers on the VVIQ (the filler task) as an additional test to see whether being able to visualize images had an additional effect. Language proficiency was a covariate in these analyses to check if recall was influenced by the language proficiency.

There were multiple ANCOVA's, seeing as recall was a combination of four different items: number of correctly recalled brand names, number of brand names recognized, number of correctly recalled advertisement attributes, and number of statements about the advertisements answered correctly.

Results

For the significant results graphs have been given in the text. For the non-significant results please see the appendix.

Attitude towards the brand

Overall, the attitude towards the brands was average ($M = 4.56, SD = 0.61$) (on a 7-point Likert scale).

A mixed ANOVA for attitude towards the brand with as within subject factors Concreteness and Language and with as between-subject factor Type of Imager, after controlling for the effect of language proficiency, showed no main effect of Concreteness ($F(1, 125) = 0.59, p = .45, \eta_p^2 = .01$) or Language ($F(1, 125) = 0.59, p = .45, \eta_p^2 = .01$). There was also no interaction effect between Concreteness and Language ($F(1, 125) = 1.61, p = .21, \eta_p^2 = .01$), Concreteness, Language and Type of Imager ($F(1, 125) = 0.02, p = .89, \eta_p^2 < .01$), nor was there a main effect of Type of Imager ($F(1, 125) = 3.75, p = .55, \eta_p^2 = .03$).

Recall of brand name

On average, brand name recall accuracy was low ($M = 2.16, SD = 1.55$) (out of 12 brand names).

The same mixed ANOVA on recall of brand name showed no main effect of Concreteness ($F(1, 125) = 2.50, p = .12, \eta_p^2 = .02$) or Language ($F(1, 125) = 0.00, p = .96, \eta_p^2 = .00$). There was also no interaction effect between Concreteness and Language ($F(1, 125) = 0.52, p = .47, \eta_p^2 = .00$), Concreteness, Language and Type of Imager ($F(1, 125) = 0.03, p = .86, \eta_p^2 < .01$), nor was there a main effect of Type of Imager ($F(1, 125) = 0.50, p = .48, \eta_p^2 = .00$).

Recognition of brand name

Overall, brand name recognition was high ($M = 8.39, SD = 2.36$) (out of 12 brand names).

The same analysis for recognition of brand name showed no main effect of Concreteness ($F(1, 125) = 0.01, p = .94, \eta_p^2 < .00$) or Language ($F(1, 125) = 0.59, p = .44, \eta_p^2 = .01$). There was also no interaction effect between Concreteness and Language ($F(1, 125) = 0.00, p = .95, \eta_p^2 < .01$), Concreteness, Language and Type of Imager ($F(1, 125) = 0.59, p = .45, \eta_p^2 = .01$), nor was there a main effect of Type of Imager ($F(1, 125) = 0.01, p = .93, \eta_p^2 < .01$).

Recall of advertisement attributes

On average, the correct recall of advertisement attributes was low ($M = 8.63, SD = 7.50$). There was no limit on how many attributes participants could fill in. On a list of 12 advertisements, this means that on average not even one attribute per advertisement was remembered. General attributes that were recalled about the advertisements were descriptions of what type of organisation was behind the advertisement. For the brand *Town & Country Arnhem*, for example, participants recalled that it was a clothing shop; for *Nationaal Park Hooge Veluwe*, they recalled that it was a bungalow park. If participants went into detail they most often mentioned the product. For example in the advertisement for *McDonald's* they mentioned the McMuffin, for *Bruna* they mentioned books.

Again, the analysis for recall of advertisement attributes showed no main effect of Concreteness ($F(1, 103) = 1.20, p = .28, \eta_p^2 = .01$) or Type of Imager ($F(1, 103) = 0.39, p = .54, \eta_p^2 = .00$). There was a significant main effect for Language ($F(1, 103) = 7.13, p = .009, \eta = .07$). Regardless of Concreteness, recall of the attributes was significantly higher for advertisements in Dutch ($M = 2.50, SD = 0.22$) than for advertisements in English ($M = 2.04, SD = 0.19$), as can be seen in Figure 1. There was also a significant interaction between Concreteness and Language ($F(1, 103) = 7.49, p = .007, \eta_p^2 = .07$). A paired samples t-test comparing the two languages for the concrete condition showed there to be a significant difference for recall of attributes for the concrete advertisements between the languages ($t(127) = 2.75, p = .007$). The attributes of the concrete advertisements presented in Dutch ($M = 2.59, SD = 2.82$) were remembered better than those presented in English ($M = 1.95, SD = 2.10$), as can be seen in figure 1. A second paired samples t-test showed there to be no significant differences between the languages for the abstract advertisements ($t(105) = -0.26, p = .80$). Another paired samples T-test was conducted comparing the abstract and concrete version for the Dutch advertisements. There appeared to be no significant difference between Concrete and Abstract advertisements for how many attributes were recalled ($t(127) = 1.07, p = .29$). The same proved true for the English advertisements ($t(105) = -1.28, p = .20$). The interaction effect of Concreteness and Language appears to be solely on Concrete advertisement, meaning the participants recalled the attributes of the concrete advertisements better in Dutch than in English. For the abstract advertisements the Language did not play a role.

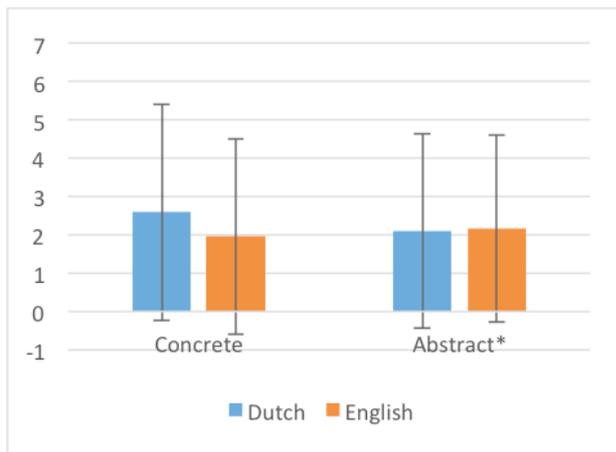


Figure 1 Mean recall of advertisement attributes for concreteness and language (no maximum) * = non-significant

There was no interaction effect between Concreteness, Language and Type of Imager ($F(1, 103) = 0.52, p = .47, \eta_p^2 = .01$). However, there was a significant main effect of English Proficiency ($F(1, 103) = 4.50, p = .04, \eta_p^2 = .04$). A linear regression analysis showed that English proficiency influenced the recall of the advertisement attributes ($\beta = .18, t = 2.07, p = .04$). This relationship was positive, meaning that if proficiency went up, so did the recall of the advertisement attributes.

Number of correct statements

Overall, the number of statements answered correctly was average ($M = 16.63, SD = 2.74$) (out of 24 statements).

The analysis for number of correct statements showed no main effect of Concreteness ($F(1, 125) = 0.48, p = .49, \eta_p^2 = .00$) or Language ($F(1, 125) = 0.03, p = .87, \eta_p^2 = .00$). There was also no interaction effect between Concreteness and Language ($F(1, 125) = 0.04, p = .84, \eta_p^2 = .00$), nor was there a main effect for Type of Imager ($F(1, 125) = 0.05, p = .82, \eta_p^2 < .01$). However, there was a interaction effect of Concreteness, Language and Type of Imager ($F(1, 125) = 10.45, p = .002, \eta_p^2 = .08$).

To see where the interaction lies, a repeated measures analysis for the factors Language and Type of Imager was done on Number of correct statements from the concrete advertisements. There was a significant interaction effect between Language and Type of Imager ($F(1, 126) = 9.39, p = .003, \eta_p^2 = .07$). Further analysis in the form of two paired samples T-test compared the concrete advertisements in Dutch to the concrete advertisements in English for the Low imagers. The first paired samples T-test showed that there was a significant difference between the languages on the number of

correct statements ($t(59) = 2.62, p = .01$). The number of correct statements for a Low Imager was higher in the concrete adverts in Dutch ($M = 4.42, SD = 1.12$) than those in English ($M = 3.98, SD = 1.08$), as can be seen in Figure 2. A second paired samples T-test that compared the concrete adverts in Dutch to the concrete adverts in English for the High imagers showed that there was no difference between the languages for High imagers on the number of correct statements for the concrete advertisements ($t(67) = -1.86, p = .07$). Here as well, another paired samples T-test was done to see if there is a difference between Concrete and Abstract for the Dutch advertisements for Low imagers. There appeared to be no difference between number of correct statements between the Concrete and Abstract condition for the Dutch participants ($t(59) = 1.84, p = .07$). The same proved to be true for English ($t(59) = -1.23, p = .22$).

To see if the interaction effect of Concreteness, Language and Type of Imager also exists in the abstract conditions, a repeated measures analysis for the factors Language and Type of Imager was done on Number of correct statements from the abstract advertisements. There appeared to be no significant interaction effect of Language and Type of Imager ($F(1, 126) = 1.68, p = .20, \eta_p^2 = .01$). This means there is no significant difference between number of correct statements in the abstract conditions (either Dutch or English) for neither the Low Imagers nor the High Imagers.

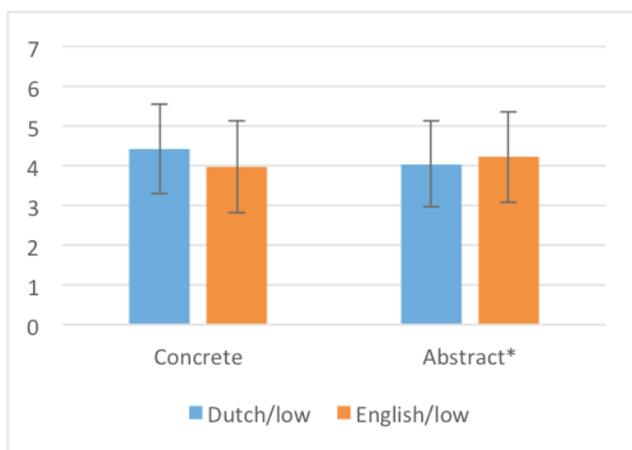


Figure 2 Mean number of statements about the advertisements answered correctly for concreteness and language for low imagers (max. 24) * = non-significant

Conclusion

The present research has focused on the effect of concreteness and language, that is to say L1 versus L2, on the recall of advertisements. To investigate whether or not such an effect exists, three research questions were formulated:

RQ1: To what extent are concrete advertisements remembered better than abstract advertisements?

RQ2: To what extent are advertisements in L1 remembered better than advertisements in L2?

RQ3: To what extent is the concreteness effect affected by language choice and vice versa?

As explained in the method section, in addition to memory, attitude towards the brand was also measured, as a way to make sure participants read the advertisements. As it might be possible that concreteness and language (L1 vs. L2) also affected attitude towards the brand, an analysis regarding attitude towards the brand was also done. Concreteness and language appeared to have no influence on the attitude towards the brand, suggesting participants used other cues in the advertisements or previous knowledge of the brand to form an attitude.

Because the recall of the advertisements was measured using multiple items, there is no straightforward answer to the research questions. Recall of brand name and recognition of brand name yielded no significant results, meaning that concreteness and language choice had no influence on how much participants remembered or recognized the brand name. However, for the recall of the attributes of the advertisements, language did have an effect. When the advertisement was presented in Dutch, more attributes were recalled than when it was presented in English. The answer to research question two is therefore: advertisements in L1 appear to be remembered better than in L2. This is also after controlling for proficiency, so a higher level of proficiency in L2 does not lead to a higher recall in L2.

For recall of the advertising attributes, the effect of language depended on how concrete the advertisements were. More specifically, the attributes for the concrete advertisements in Dutch were remembered better than the concrete advertisements in English. There were no differences between the languages for the abstract

advertisements, meaning both Dutch and English advertisements for the abstract versions were remembered approximately equally. The answer to research question three is therefore that the language effect is affected by concreteness, but only for the concrete advertisements.

The last effect found was a three-way interaction for concreteness, language, and type of imager (high versus low imager) on the number of correct statements regarding the advertisements. These statements were statements regarding some information about the advertisements, which could be answered *true* or *false*. For the low imagers, for people who had less ease visualizing images, more statements were answered correctly for the concrete-Dutch condition than for the concrete-English condition. For the high imagers there was no difference between concrete-Dutch and concrete-English, thus meaning that only for low imagers did the language for the concrete versions matter. No effects were found for either low or high imagers for the abstract conditions, meaning there were no differences in how much statements were answered correctly for all abstract conditions.

Because there was no main effect of concreteness on any of the items of recall, the answer to research question one is that solely concrete advertisements are not remembered better or worse than abstract advertisements. Only when language comes into the picture is there a difference.

Discussion

Explanation of results

As explained in the conclusion, concrete advertisements did not appear to be remembered better. This is unexpected, as previous research implies that concrete concepts are remembered better than abstract concepts (Begg, 1972; David, 1998; Dukes & Bastian, 1966; Paivio & Csapo, 1973). The supposed reason why concrete concepts are remembered better than abstract concepts, is because of the way both concepts are stored. Concrete concepts are perceived through seeing, touching or experiencing, and are thus stored as a copy of what was seen, touched or experienced (Barsalou, 1999; Barsalou, Niedenthal, Barbey & Ruppert, 2003; Barsalou, Simmons, Barbey & Wilson, 2003; Borghi, 2007; Liang & Kale, 2010; MacInnis & Price, 1987; Sadoski, 2017). Abstract concepts on the other hand are stored as image lists and schemata, seeing as they cannot be experienced the same way as concrete concepts

(Barsalou, 1999). The mode of storage proved to be of importance for retrieval in past research (Begg, 1972; David, 1998; Dukes & Bastian, 1966; Paivio & Csapo, 1973), and because of that the present research hypothesized these results could be translated to the field of advertising.

However, results of the present research disproved that hypothesis. Even when taking into consideration the participants' individual differences in how well they can visualize images, there appeared to be no link between advertising recall and concreteness. Of course, in the aforementioned research only concrete and abstract *concepts* were researched, so words or word pairings, whereas the present research used a small text that has been manipulated. This could mean that the embodied theories only work for words or word pairings, so small concepts people can easily focus on, or it could be that the words that were manipulated within the text were simply not where the participants focused on, or were overshadowed by the gist of the entire advertisement. Research suggests that people do not read or listen to texts with as goal to record them in their minds in a detailed and accurate way, but only to support the task that they have to do (Ferreira & Patson, 2007). So within the present research that would mean that participants read the adverts to answer the questions about the brands, just as they were told to do. It is therefore likely that the participants only looked at information that would help them form an opinion on the brand, or used already formed opinions on the brand without really paying a lot of attention to the rest of the advertisements. If this were true, it would provide a conundrum for future research. Is it better to tell participants to focus on remembering the advert? This would certainly eliminate the problem of participants not focusing on the details enough without necessarily changing the possible effect of concrete versus abstract words, as participants would likely spend equal effort to remember both types of advertisements (concrete and abstract). However, in real life people do not look at advertisements with the goal to remember them. More likely than not, people just see an advert and do not even process them consciously. Asking them to focus on remembering the advertisements might help with eliminating the effect found by Ferreira and Patson (2007), but at the same time this might lessen ecological validity. The goal of the present research was to test whether concreteness had an effect in real life situations as well, such as in advertising. Having participants focus on remembering the advertisements,

something they would not do in real life, is therefore not recommended as it undermines the goal of the research.

Another hypothesis that suggested concrete advertisements should be remembered better is that of MacKenzie (1986). He stated that concrete advertisements are more vivid, and the more vivid an advertisement is, the more people will remember it. A plausible explanation why this theory was not supported in the present research is because no images were used, only text. Because most advertisements do have images, it is possible that the vividness of concrete images have a greater effect than the vividness of the written text.

Although there was no main effect of concreteness found, language did affect the number of attributes from the advertisements that were remembered. As was expected, advertisements in the participant's native language were remembered better than in a second language. This coincides with previous research (Ahn & LaFerle, 2008; Luna & Peraccio, 2001), which also showed advertisements in the participants' L1 and L2, and resulted in participants remembering the advertisements in their native language better than in their second language. This could be an indicator that the hypothesis formed in the introduction could be true, namely that because L1 is learned in a more experiential way, and L2 in a more linguistic way (Vigliocco, Meteyard, Andrews, & Kousta, 2009), that L1 could be more embodied than L2 and thus easier retrieved from memory. If this is true, embodied theories could not only look at the concrete-abstract comparison, but also factor in languages, especially L1 versus L2. A lot of research has of course already been done comparing L1 and L2, but perhaps by looking at it from an embodied perspective, new conclusions and theories can be brought to the scientific field.

Apart from the possibility that these results are caused by embodiment, it is also possible that L1 is simply easier to understand, so more attention was paid to it, or that participants disliked the fact some ads were in English and therefore did not invest as much effort into it. For example, when asked about the content of the advertisements, multiple participants stated that it was in English, some even mentioning 'annoying English'. Most of those participants did fill out some answers for the Dutch advertisements, suggesting that the English language prohibited them from answering the question, whether that is due to a lack of understanding or due to annoyance towards the English language. One way to check for this is to measure participants'

xenophobic tendencies towards foreign languages, just to take that factor into consideration.

There was also an interaction between language and concreteness. For the concrete advertisements, the ones in Dutch elicited more recall of attributes than the ones in English. For the abstract versions there was no difference between the languages. So language only plays a role for the concrete advertisements, not the abstract. This is in line with the predictions made in the introduction. When reading sentences regarding the movement of facial muscles (Foroni, 2015) or arms, legs and the face (Vukovic & Shtyrov, 2014), participants showed more movement of those body areas when reading the sentences in their native language than when they were reading in their second language. This suggests that L1 is more embodied than L2. It would then make sense that concrete advertisements are easier remembered in L1, seeing as concrete concepts are stored and possibly retrieved using an embodied system (perceptual symbol system: Barsalou, 1999), which would be facilitated by the use of L1, but not L2. Abstract concepts are much less linked to embodied information (Barsalou, 1999), meaning the embodied information in L1 has a much smaller (if no) effect on it. As with the effect of language, this result could impact the research on embodiment, seeing that language and the concreteness effect could be entwined. Further research combining these topics could be very useful for the scientific field.

Nonetheless, in the introduction it was also hypothesized that abstract concepts could possibly be remembered better in L2, seeing as L2 is more grounded in abstract information because of a lack of experiential information when learning the language. This effect was not found in the present research. This could be because the English proficiency among the participants, although self-rated, was very high (4.3 out of 5). According to Perani & Abutalebi (2005), when a person's proficiency of L2 is very large, the processing and retrieval of that language happens in a similar way to L1. It could be that because of the large proficiency there is more experiential information linked to the language, making the L2 in this case more embodied. Because the hypothesis from the introduction was based on the premises that L2 is less embodied than L1, this information could explain why the hypothesized result was not found.

The last effect found was a three-way interaction of concreteness, language and type of imager. Only for the low imagers and for the concrete advertisements were there any differences. Here again, concrete-Dutch advertisements were remembered better

than concrete-English. The high imagers remembered the concrete-Dutch and concrete-English advertisements equally. This could be because high imagers are more able to imagine the context for the English advertisements, which would otherwise be harder to imagine due to the fact English is learned less experientially than Dutch. This coincides with the Context Availability Theory by Schwanenflugel, Harnishfeger and Stow (1988) that states that abstract concepts are remembered better when more context of the concept is given. This result could also be explained by the effect reported by Hayakawa and Keysar (2018), that a foreign language reduced the mental imagery of the text, and that people therefore remembered it less. Being able to imagine more, as high imagers can, would help with the process of recall.

Again, these results could be interesting for embodiment research, as it suggests that there are individual differences in how well people visualize images. It would make sense that high imagers are better able to store abstract concepts, and thus retrieve those concepts.

Limitations

The present study has a couple of limitations. Firstly, not the entire advertisements were manipulated to be concrete or abstract, just three key words of each advertisements. The reason to do this was to make sure the more important details of the advertisements were matched. It was expected that if the important details were matched on concreteness, the entire advertisement would be seen as either concrete or abstract. However, as Ferreira & Patson (2007) suggest, people do not focus on the details but process a text by looking at the general gist. Future research could try to manipulate the entire advertisement to be either concrete or abstract, which could allow for a different result for the concreteness effect. Another way to go around the 'good-enough' effect, as Ferreira and Patson call it, is to actually tell participants they will be asked to recall the information later. This would make them focus on the details that are manipulated, instead of on information that helps them form an attitude towards the brand. This way there could still be an effect of concreteness found without changing both versions of an advertisement too much. This might be a better option than manipulating all words, because when manipulating the words to be either concrete or abstract, the overall meaning of the advertisement might change. This could happen because there might not be a similar abstract word to replace a concrete word with,

meaning the overall meaning of the advertisement between the conditions could be very different. This could pose a problem when for example the gist of one condition is more interesting or memorable than the gist of the other condition, meaning participants would either direct more attention to the one and not the other, or do not pay attention at all because one advertisement seems more familiar so they think they already know the gist of it. However, although asking participants to focus on remembering the advertisements might help go around the 'good-enough effect', as discussed earlier this would decrease ecological validity of the research because people in real life would not view advertisements to remember them. If the objective of the research were to be as ecologically valid as possible, it would be better to manipulate the entire advertisement. If that goal is not imperative to the research, it could be good to ask participants to remember the advertisements.

Secondly, the advertisements that were used were all real advertisements that were possibly seen by participants prior to participation in the experiment. This could influence results by itself, but also attitudes towards the organization behind the brand that were formed earlier could have an effect on how much attention participants gave to each advertisement, and thus how much they remembered later on. Future researchers might do well to use non-brands and fictive advertisements to avoid these possible problems, or control for prior attitude.

Besides ways in which the stimuli could be changed in the future, it might also be wise to look at other variables that might be affected by concreteness and language. In this research, attitude towards the brand was measured, but no result was found. This could possibly be because people do not use the information within the advertisement to form the attitude towards the brand. However, seeing as the information within the advertisement does have to do with the product, attitude towards the product might be a better measurement, especially seeing as the description of the product is what is being manipulated into concrete or abstract. Recognition of the advertisement might also be worthwhile to analyse. In this research, recall was the objective. However, when walking in a store people often *recognize* the product from advertisements because they get visual cues that remind them of the advertisement. Because of this, analysing recognition in addition to recall might also possibly render more effect.

Managerial implications

The results from this research could be very important for people working in marketing or other functions where advertisements are created. These days, a lot of advertisements are written in a foreign language (Bhatia, 1992; Krishna & Ahluwalia, 2008). However, as the present research seems to indicate, an advertisement in a second language could be harder to remember than the same advertisement in the native language. Marketers (and others) would therefore do well to use the target group's native language, as this could possibly increase the success of the advertisement. This becomes even more prominent when using concrete advertisements, as the concrete ads were remembered better in L1 than in L2. For abstract advertisements there was no difference between L1 and L2, meaning that if an organization would develop an abstract advertisement, it likely would matter less whether that ad was in L1 or L2.

Last but not least, whether people are high or low imagers could be of importance, because it seems that the effects mentioned above disappear for high imagers. This means that high imagers remember all advertisements approximately equally. So if the target group consists of high imagers, it might matter less whether the ads are in Dutch or English or whether they are concrete or abstract. However, for low imagers it is wiser to use concrete-Dutch (so L1) than concrete-English (L2). Seeing as it is nearly impossible for marketers to know whether their target group consists mainly of high or low imagers, it is advisable to use the concrete versions in the target groups' L1, as low imagers do better with this, and it does not matter as much for high imagers.

To conclude, when not taking language into account, concrete advertisements did not differ from abstract advertisements on how well they were remembered. This was likely because in this experiment entire advertisements were manipulated as opposed to single words in previous experiments. Writing advertisements to be concrete or abstract will therefore likely have little effect for marketers to notice.

However, it seems that people remember advertisements better in their first language, and that this effect is even bigger for concrete advertisements. This is likely due to the fact that L1 is learned in a more experiential way than L2, and concrete concepts are stored by making a copy of the experience with the concept. Concrete concepts could therefore be more facilitated in L1 than in L2. Organizations would do

wise to write advertisements in the target group's native language, especially if the advertisements are concrete.

Lastly, the advice for future research is to manipulate the entire advertisement instead of just key words, to not use real advertisements that people could have viewed before the experiment and to analyse whether concreteness and language affect attitude towards the product instead of the brand, because the advertisements are more likely to be about the product instead of the brand.

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Appendix

Appendix 1. Recall questionnaire

Q1—Earlier you saw 12 different advertisements. For which you can remember, please enter the names of the brands advertised.

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Q2—For the following brands or services, please check all those that you saw during the experiment:

- Project Insides
- Omdenken
- Wij(c)k
- Town & Country Arnhem
- Zalando
- Droompark Hooge Veluwe
- McDonalds
- Mediamarkt
- Bruna
- Universiteit Twente
- Ian Somerhalder Foundation
- Social Deal

Q3—For each of the following brands or services, list as many attributes as you can remember from the advertisements presented earlier.

- Project Insides
- Omdenken
- Wij(c)k
- Town & Country Arnhem
- Zalando
- Droompark Hooge Veluwe
- McDonalds
- Mediamarkt
- Bruna
- Universiteit Twente
- Ian Somerhalder Foundation
- Social Deal

Q4—Think back to the advertisements presented earlier. Please answer whether the following statements about the advertisements are true or false.

- Christian Löffler inspireerde zijn muziek op geluiden uit de natuur (T)
- Christian Löffler heeft een blokhut aan de Middellandse Zee (F)
- Er zijn geen plekken meer vrij voor de Omdenken show (F)
- De omdenken show is een mix van theater, lezingen en cabaret (T)
- In de advertentie van Wij(c)k ben je met je vrienden, partner of alleen in jouw buurt (T)
- De slogan van Wij(c)k is 'Dit is jullie buurt!' (F)

- Town & Country Arnhem bestaat al sinds 1960 (F)
- Town & Country Arnhem is een heren kledingzaak (T)
- Het beste reisprogramma van Simi is naar Italië (F)
- Wanneer je een reisprogramma van Simi boekt krijg je daar gidsen bij (T)
- Bij McDonalds kan je ook ontbijten (T)
- Het ontbijt van McDonald's bestaat uit een croissantje met jus d'orange (F)
- Mediamarkt heeft nu producten voor de zomerschoonmaak (F)
- Mediamarkt laat 10 oplossingen zien om makkelijk schoon te maken (T)
- Je krijgt het boekenweekgeschenk bij Bruna als je 1 ander boek koopt (T)
- Het boekenweekgeschenk van Bruna gaat over Omdenken (F)
- De Universiteit Twente heeft open dagen voor de bacheloropleidingen (F)
- Het Master's programma van de Universiteit Twente was de beste in 2017 (T)
- De Ian Somerhalder Foundation helpt zowel tamme als wilde dieren die medische hulp nodig hebben (T)
- Om de Ian Somerhalder Foundation te steunen hoef je alleen een agenda te kopen (F)
- Voor €5 kan je door middel van Social Deal trampoline springen (F)
- Het trampolinepark uit de aanbieding van Social Deal is in Arnhem (T)
- Bij DroomPark Hooge Veluwe kan je in een mooi meer zwemmen (F)
- Bij DroomPark Hooge Veluwe ga je camperen of overnachten in een bungalow (T)

Appendix 2. Visual Vividness Imagery Questionnaire

Lees alstublieft de instructies zorgvuldig door:

De volgende vragen gaan over hoe helder en levendig u visuele beelden kunt inbeelden. De scènes in deze test zullen mogelijk bepaalde beelden bij u oproepen. U wordt gevraagd om de helderheid van elk beeld te beoordelen op een 5-punts schaal. U wordt eerst gevraagd om de beelden met uw ogen open op te roepen, en daarna nog een keer met uw ogen dicht. Nadat u de vragenlijst heeft ingevuld met uw ogen open zullen alle vragen voor een tweede keer op het scherm komen, waarbij u gevraagd wordt de levendigheid van de beelden met uw ogen dicht te beoordelen.

Beantwoordt de vragen door uw keuze te maken uit de volgende opties voor elk van de onderstaande situaties:

1. Helemaal geen beeld, ik weet alleen dat ik aan een object 'denk'
2. Vaag en zwak
3. Redelijk realistisch en een redelijk levendig
4. Realistisch en levendig
5. Net zo realistisch en net zo levendig als in het echt

Dit doet u voor elk van de verschillende scenario's.

Voor de eerste 4 vragen denkt u aan een bekende of een vriend die u regelmatig ziet (maar die niet bij u is op dit moment), en beschouw de voorstelling van wat u zich inbeeld zorgvuldig.

	Helemaal geen beeld, ik weet alleen dat ik aan een object denk (1)	Vaag en zwak (2)	Gemiddeld realistisch en gemiddeld levendig (3)	Realistisch en levendig (4)	Net zo realistisch en net zo levendig als in het echt (5)
Het precieze contour van het gezicht, hoofd, schouders en lichaam (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De typische gezichtsuitdrukkingen, de houding van het lichaam etc. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De houding tijdens het lopen, de lengte van de stappen etc. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De verschillende kleuren in sommige bekende kleding (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Visualiseer de zon. Beschouw de voorstelling die u zich inbeeld.

	Helemaal geen beeld, ik weet alleen dat ik aan een object denk (1)	Vaag en zwak (2)	Gemiddeld realistisch en gemiddeld levendig (3)	Realistisch en levendig (4)	Net zo realistisch en net zo levendig als in het echt (5)
De zon stijgt boven de horizon in een mistige hemel (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De lucht klaart en omringt de zon met blauw (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wolken. Er komt een storm aan, met flitsen van bliksem (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Een regenboog verschijnt (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Denk aan de voorgevel van een winkel waar u regelmatig komt. Beschouw de voorstelling die u zich inbeeld.

	Helemaal geen beeld, ik weet alleen dat ik aan een object denk (1)	Vaag en zwak (2)	Gemiddeld realistisch en gemiddeld levendig (3)	Realistisch en levendig (4)	Net zo realistisch en net zo levendig als in het echt (5)
De algemene indruk van de winkel vanaf de andere kant van de straat (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De etalage, inclusief de kleuren, vormen en details van alle items die er te koop zijn (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
U bent bij de ingang – de kleur, vorm en details van de deur (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
U gaat de winkel binnen en gaat naar de kassa. De cassier(e) helpt u. Geld wisselt van hand. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ten slotte, denkt u aan een landelijk tafereel met bomen, bergen en een meer. Beschouw de voorstelling die in uw inbeeldingsvermogen verschijnt.

	Helemaal geen beeld, ik weet alleen dat ik aan een object denk (1)	Vaag en zwak (2)	Gemiddeld realistisch en gemiddeld levendig (3)	Realistisch en levendig (4)	Net zo realistisch en net zo levendig als in het echt (5)
De contouren van het landschap (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De kleur en vorm van de bomen (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De kleur en vorm van het meer (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Een sterke
wind blaast
over de bomen
en het meer, en
veroorzaakt
golven (4)



Page Break

Beantwoord nu alstublieft alle vragen opnieuw, maar beeldt u de verschillende scènes ditmaal in **met uw ogen gesloten**. Probeer u de 'ogen gesloten' beoordelingen onafhankelijk te geven van de 'ogen open' beoordelingen. De twee beoordelingen voor een bepaalde vraag hoeven niet hetzelfde te zijn.

Beantwoordt de vragen door uw keuze te maken uit de volgende opties voor elk van de onderstaande situaties:

1. Helemaal geen beeld, ik weet alleen dat ik aan een object 'denk'
2. Vaag en zwak
3. Redelijk realistisch en een redelijk levendig
4. Realistisch en levendig
5. Net zo realistisch en net zo levendig als in het echt

Appendix 3. Non-significant graphs for each dependent variable

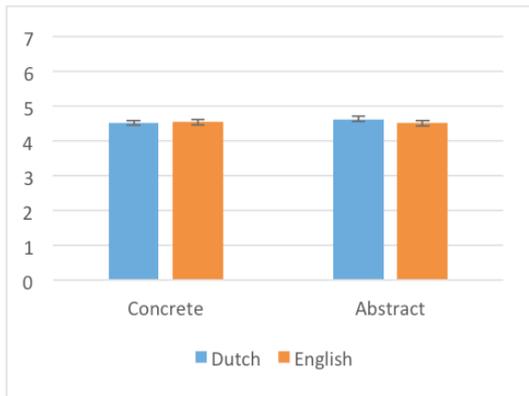


Figure 3 Mean attitude towards the brand for concreteness and language on a 7-point Likert scale

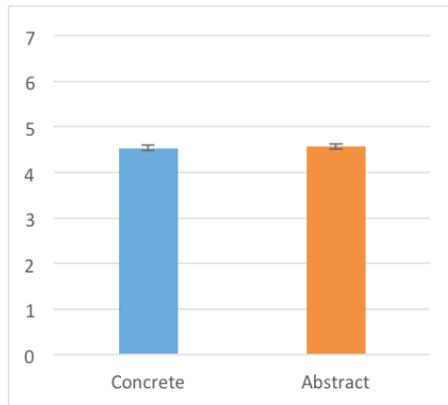


Figure 4 Mean attitude towards the brand for concreteness on a 7-point Likert scale

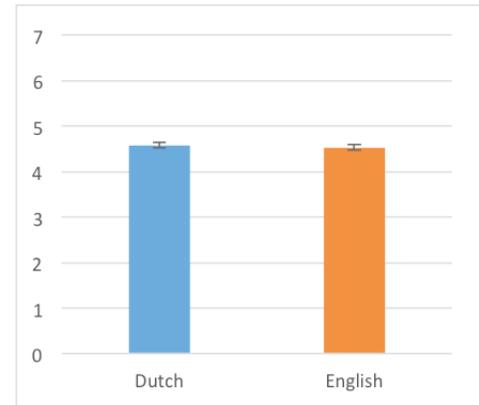


Figure 5 Mean attitude towards the brand for language on a 7-point Likert scale

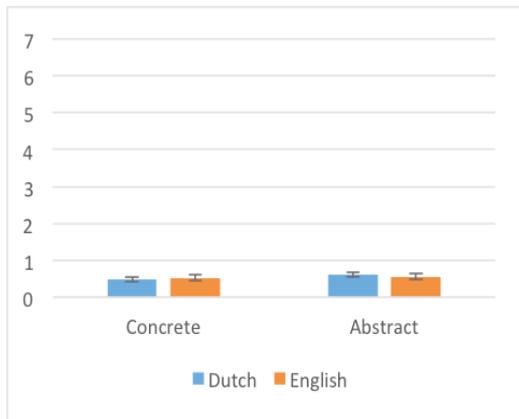


Figure 6 Mean recall of brand names for concreteness and language (max. 12)

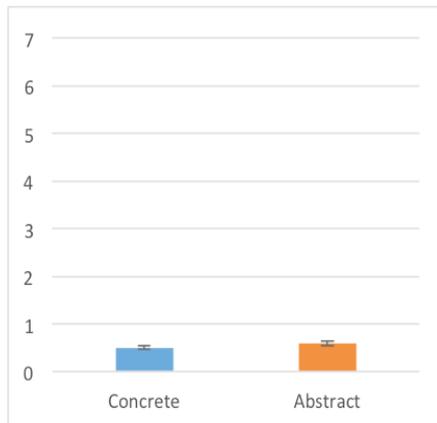


Figure 7 Mean recall of brand names for concreteness (max. 12)

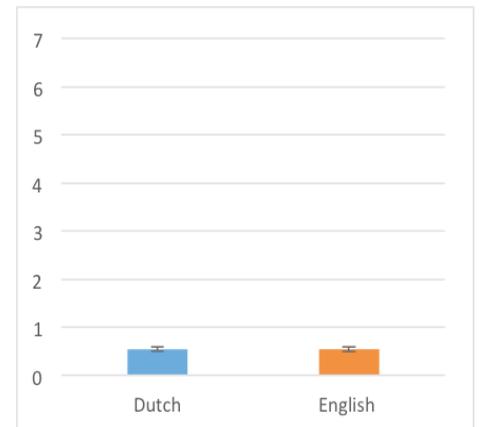


Figure 8 Mean recall of brand names for language (max. 12)

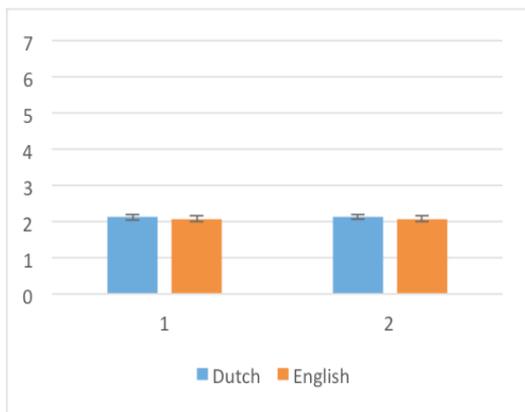


Figure 9 Mean recognition of brand names for concreteness and language (max. 12)

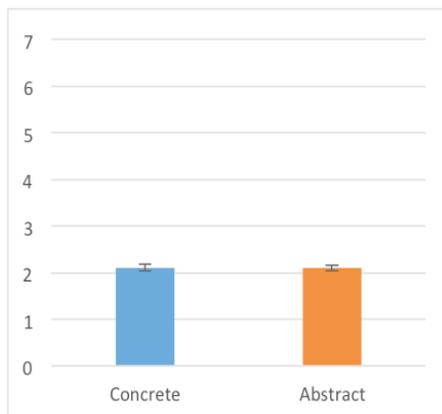


Figure 10 Mean recognition of brand names for concreteness (max. 12)

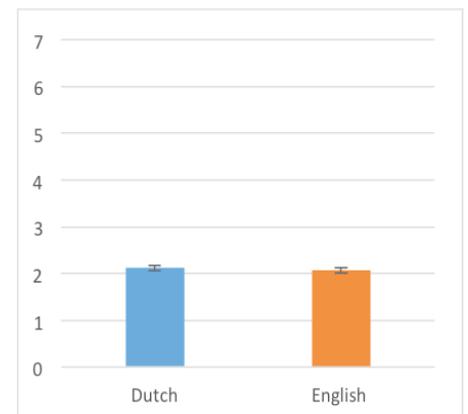


Figure 11 Mean recognition of brand names for language (max. 12)

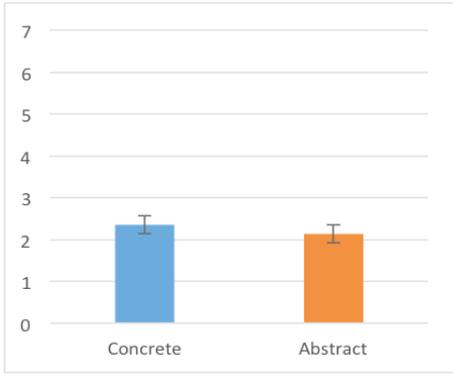


Figure 12 Mean recall of advertisement attributes for concreteness (no maximum)

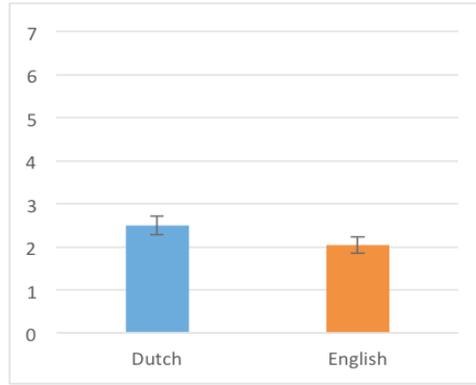


Figure 14 Mean recall of advertisement attributes for language (no maximum)

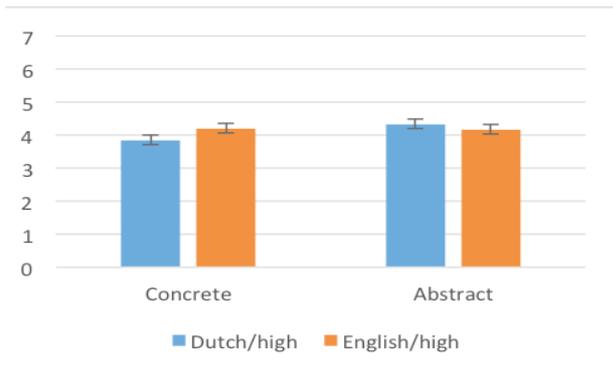


Figure 14 Mean number of statements about the advertisement answered correctly for concreteness and language for high imagers (max. 24)

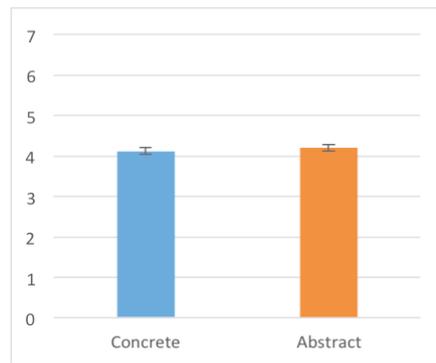


Figure 15 Mean number of statements about the advertisements answered correctly for concreteness (max. 24)

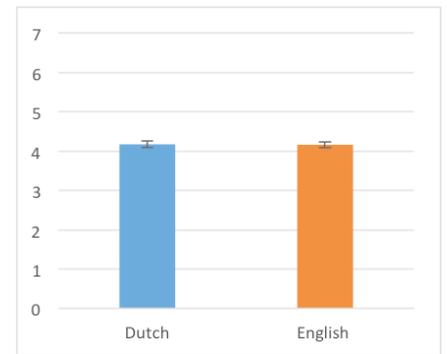


Figure 16 Mean number of statements about the advertisements answered correctly for language (max. 24)