A R T I C L E S

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THE ROLE OF THE ORIGIN (AUTOMATIC VS. REFLECTIVE) OF AFFECTIVE STATE FOR THE EFFECTIVENESS OF PERSUASION BASED ON STRONG VS. WEAK ARGUMENTS

Previous research has focused on the influence of emotional valence on the effectiveness of persuasion via the central route or the peripheral route. The purpose of this study was to answer the question of whether other dimensions of emotion, such as the origin of emotional charge (automatic vs. reflective) may also influence the effectiveness of persuasion. It was expected that reflective emotions would increase susceptibility to strong arguments, while automatic emotions would result in a lack of sensitivity to the quality of arguments. Emotional words of proven emotional quality were used to elicit affective states. They were chosen in order to contrast the different levels of emotional valence (negative, neutral, and positive) and the origin of emotion (automatic and reflective). It turned out that in the case of reflective conditions, a significantly higher effectiveness of persuasion was observed for strong arguments than for weak ones. In the case of automatic conditions, there was no difference in the effectiveness of persuasion depending on the quality of the arguments. There were also no differences related to emotional valence; however, the manipulation of affective states on emotional valence dimension turned out not to be effective. This suggests that the origin of emotion can be considered a factor influencing processing via the central or peripheral route to persuasion.

Keywords: Elaboration Likelihood Model; persuasion; Emotion Duality Model; reflective emotions; automatic emotions; information processing.

INTRODUCTION

The role of emotions in information processing remained underestimated for a very long time. Currently, however, the real question is not if, but in what way emotions influence cognitive processes (see Imbir, 2016a). This question also refers to persuasion, which is a unique type of cognitive processing, as it leads to attitude change (Tokarz, 2006). The aim of this study was to investigate the way in which emotional valence and emotion origin influence persuasion effectiveness and the cognitive processes underlying persuasion.

THE ELABORATION LIKELIHOOD MODEL
OF PERSUASION (ELM)

The study presented in this article was inspired by the *Elaboration Likelihood Model of persuasion* (ELM), proposed by Petty and Cacioppo (1986). The ELM is a theory that provides a general framework for organizing the basic processes underlying persuasion effectiveness (Petty, Brinol, & Priester, 2008). It distinguishes between two routes to persuasion – central and peripheral. The central route results from an increased level of cognitive effort and involves referring to people's prior knowledge and experience, in order to carefully analyze whether the message contains what they regard as crucial information concerning a given subject. What is also important is that "information" should be understood quite broadly. It refers not only to the content of the message, as under certain circumstances it could also mean, for example, the characteristics of the message source (author), such as credibility.

The peripheral route, by contrast, involves rather low levels of cognitive activity. Therefore, attitudes formed via this route are primarily influenced by simple peripheral cues, related to the persuasion context (Petty & Cacioppo, 1986). According to the ELM, there are multiple factors determining persuasion effectiveness, but in the context of the present study argument quality seems to be the most important one.

The ELM distinguishes between strong and weak arguments, based on their issue-relevance (Petty & Cacioppo, 1986). Argument quality is an important factor in the central route. We can speak of this route in cases when more significant attitude change is caused by strong arguments rather than weak ones. When it comes to peripheral route, argument quality makes no difference, which means persuasion can be effective in both strong and weak argumentation conditions

(Wojciszke, 2004). What does make a difference are peripheral cues related to the persuasion context, such as an attractive model, an expert, message length, the way arguments are presented, or other people's reaction to the message. Conclusions on persuasive communication are therefore based on either positive or negative peripheral cues (Petty & Cacioppo, 1986).

THE ROLE OF EMOTION IN PERSUASION

As a cognitively oriented theory, the ELM has clearly belittled the role of emotion in information processing. According to the ELM, emotions only serve as peripheral cues, which means they only influence the peripheral route, whereas Morris and associates (Morris, Woo, & Singh, 2005) claimed that even cognitive processing had an emotional core. What is more, research proved that it was the central route that involved higher emotional arousal, along with stronger purchase intentions (Morris et al., 2005).

Research on the role of emotion in persuasion was influenced by the development of theories according to which emotions not only constitute an obstacle to logical thinking, as was previously thought, but also serve important informative functions (Schwarz & Bless, 1991). Negative emotions are believed to inform an individual that something in their surroundings is not quite right, which motivates them to change the current situation. This requires a careful assessment of that situation, which induces analytical and logical thinking as well as attention to details. Positive emotions, in contrast, signal that everything is fine, which means there is no need to engage in an effortful cognitive processing. As a result, a person in a positive mood will be more likely to use simple heuristics while processing information (Schwarz & Bless, 1991). According to this theory, negative emotions enhance analytical information processing, whereby central route processing should occur (Schwarz & Bless, 1991), while positive emotions should induce processing via the peripheral route to persuasion (Batra & Stayman, 1990; Petty et al., 2008).

THE DUALITY MODEL OF EMOTION-COGNITION INTERACTIONS: RESEARCH QUESTIONS AND HYPOTHESES

The ELM can also be considered from the perspective of dual-process theories (Gawronski & Creighton, 2013; Sokołowska, 2011). These theories distin-

guish between the mechanisms underlying cognitive processing as those based on simplified and heuristic thinking from those based on effortful and systematic thinking (Kahneman, 2011). The first type of thinking is a basic processing mode, which allows quick decision making with minimal cognitive effort (Sokołowska, 2011). This, however, is at the expense of the quality of the answer, which is usually a certain approximation of the correct result. The second (i.e., systematic) type of thinking is a mode activated in exceptional situations, when the approximation is not enough. It involves spending energy on algorithmic mental operations in limited resource space (Strack & Deutsch, 2004) and is therefore activated much less often than heuristic thinking.

The peripheral route to persuasion is an example of simplified and superficial processing mechanisms, susceptible to cognitive biases (Imbir, 2016a), while the central route involves systematic information processing. Therefore, emotional effects other than the influence of emotional valence on persuasion should also be expected. It is worth reflecting on the role of emotion origin as well (Jarymowicz & Imbir, 2015). Emotion origin results from two different evaluative systems, responsible for differentiation between the mechanisms by which emotion arise: automatic and reflective. The former relates to emotions elicited spontaneously, as a response to a specific stimulus (Jarymowicz & Imbir, 2015). Reflective emotions, on the other hand, are related to more advanced processes, such as a deliberate cognitive appraisal. As a result of such assessment, secondary emotions develop from the automatic emotions. Reflective emotions may also arise independently of the inflow of stimuli, as a result of cognitive processes only (such as thinking, recalling, or planning). Such emotions make it possible to move beyond the present time perspective, and their source may be abstract concepts and ideas (Jarymowicz & Imbir, 2015). The "origin of emotion" variable has been operationalized as a dimension (Imbir, 2014) reflecting the fact that, in everyday experience, automatic and reflective processes are mixed in the case of many specific objects (words) that we respond to affectively. The scale developed to measure emotion origin allowed us to study associations for a large number of stimuli and thus to objectivize their selection for experimental manipulations. The measurement prepared in this way proved to be accurate and highly repeatable for a defined group of stimuli assessed by differentiated populations (Imbir, 2016b).

Based on the duality of mind and emotion theories, a new model of emotion-cognition interactions has recently been proposed (Imbir, 2016a). It postulates four types of interactions possible between automatic vs. reflective emotions and automatic (heuristic) vs. controlled (systematic) cognitive processes, distin-

guished in the duality of mind approach. According to this model, automatic emotions should induce heuristic processing, while reflective emotions should induce systematic processing (Imbir, 2016a).

In the context of the study discussed in this article, two types of emotion-cognition interactions are crucial: (1) automatic emotions enhancing heuristic cognition and (2) reflective emotions enhancing systematic cognition (Imbir, 2016a). Based on these assumptions, the main aim was to investigate whether emotion origin would influence the elaboration likelihood of persuasive communications. We expected that the elicitation of reflective affective states should increase the elaboration likelihood and processing via the central route, whereas the elicitation of automatic affective states should lead to processing via the peripheral route to persuasion. We therefore expected that reflective affective state elicitation should induce sensitivity to argument quality and, consequently, result in more effective persuasion in case of strong rather than weak arguments, while the elicitation of automatic affective states should induce sensitivity to arguments in general, which means there should be no differences in persuasion effectiveness depending on argument quality.

METHOD

Participants

The study involved 300 people (180 women and 120 men), aged 18-64 ($M = 25.66$, $SD = 7.92$); 196 participants were university students of different majors(social sciences, linguistics, economics, law, IT, biology, medicine, art, etc.), and the others were either university graduates or high school students. There were 12 experimental conditions, each of them involving 25 participants (15 women and 10 men). The study was carried out via the Internet (using Google Forms). The recruitment process for this experiment involved online adverts and giving away cards with a link to the study website.

Design

The study was conducted in a mixed factorial design (2 x 2 x 2 x 3), with a within-subjects factor: attitude measurement order (before and after manipulation), and between-subjects factors: argument quality (strong and weak), origin of affective reaction to word stimuli (automatic and reflective), and valence of affective reaction to word stimuli (negative, neutral, and positive).

Procedure

We conducted the experiment using an online questionnaire, created specifically for the purpose of this study. The link to the procedure was posted on Facebook or directly handed to the volunteers. Participants were assigned to one of twelve experimental conditions in a random fashion. As part of the cover story, the participants were told that the study concerned first associations and the creation of advertising messages.

Firstly, the researchers and the topic of the study were introduced, along with the expected duration of the procedure (about 5-10 minutes). In the beginning, the participants were asked about their gender, age, and major (non-students were supposed to write down "none"). Next, they rated their current affective state (referred to as mood in the instruction) on an 11-point scale. Above the scale, there were images of Self-Assessments Manikins whose facial expressions represented affective states ranging from dissatisfaction, through neutral expressions, to satisfaction. The scale had a key as well, according to which 0 meant *a definitely dissatisfied person* and 10 meant *an extremely happy person.* Next, we carried out the affective state manipulation. In order to do that, we asked the participants to write down their associations (the first word that crossed their mind) in response to 15 words of proven emotional properties (Appendix 1). Then, as part of manipulation check, we asked them once again assess their current affective state.

Next, a sonic toothbrush advertisement (created for the purpose of this study; see Appendix 2) was shown to the participants, who were then asked the following questions: (1) "Please assess your impression to the presented toothbrush"; (2) "To what extent would you like to own such a toothbrush?"; (3) "To what extent would you like to buy such a toothbrush?". Answers to these questions were measured on an 11-point scale, ranging from 0 – *very negative / I wouldn't like to own it at all / I wouldn't like to buy it at all*, to 10 – *very positive / I would very much like to own it / I would very much like to buy it.* The participants were also asked if they owned a sonic toothbrush. At the end of this part of the study, three masking questions were also presented (Appendix 3, Figure 3) as part of the cover story.

Next, the same toothbrush advertisement was presented, this time with one of two persuasive messages, based on strong or weak arguments (Appendix 4). In order to check if the persuasion was effective, the participants were once again asked the same set of three questions concerning product assessment, possession desire, and purchase intention. They were also asked a new set of masking ques-

tions (Appendix 3, Figure 4). After completing the questionnaire, they saw the following note: "Thank you for participating in our study!".

MATERIALS AND VARIABLES

The origin and valence
of the emotional charge of words

The study discussed in this article was based on the dimensional approach to emotions, in which emotions are described in terms of general variables such as valence or origin, but without reference to specific emotion categories, such as fear, sadness, happiness, etc. In order to manipulate the origin and valence variables, we presented one of six word lists to the participants (Appendix 1). Each list consisted of 15 emotionally charged nouns, differentiated by the valence (negative, neutral, or positive) and origin (automatic or reflective) of their emotional charge. All of the words within a given list elicited the same type of affective state (automatic negative, automatic neutral, automatic positive, reflective negative, reflective neutral, or reflective positive). We chose the verbal stimuli for experimental manipulation because they allow for expressing a wider range of affective states compared to visual stimuli. This makes it possible to explore not only simple (automatic) affective states but also more complex and cognitive (reflective) ones, since reflective emotions are primarily reflected in language, lacking their specific visual representation, as they are based on cognitive appraisals, evaluative standards, and verbalization (Imbir, 2016b).

The word lists were prepared based on a previous normative study concerning 4,905 Polish words (Imbir, 2016b), in which the words were rated by means of four different Self-Assessment Manikin scales measuring dimensions such as: valence, origin, arousal, and concreteness. The assessments were made on the 9-point scales, where 1 meant *negative emotions*, *automatic emotions*, *low arousal*, and *low concreteness*, respectively, and 9 meant *positive emotions*, *reflective emotions*, *high arousal*, *high concreteness*. In order to create the word lists, stimuli were chosen in such a way that they varied in terms of the valence and origin of their emotional charge but did not differ on the arousal and concreteness dimensions. The words were also controlled for aligned levels of length and the frequency of occurrence in language across the conditions.

In order to check if the word choice was valid, we performed six one-way ANOVA analyses in a 3 (emotional valence groups: negative, neutral, positive)

x 2 (emotion origin groups: automatic, reflective) schema. We expected the effect of valence groups on the valence ratings of words and the effect of origin groups on the origin ratings of words to be significant, and we expected the remaining effects not to be significant.

Valence. As expected, we found a statistically significant main effect of emotional charge valence: $F(2, 84) = 413.31$, $p = .001$, $\eta^2 = .91$. Pair wise comparisons of means with Bonferroni correction for multiple comparisons showed that statistically significant differences concerned all of the compared conditions ($p = .001$). The mean rating was $M = 3.58$ (SEM = .07) for the words with negative valence, $M = 5.16$ (SEM = .07) for words with neutral valence, and $M = 6.60$ (SEM = .07) for words with positive valence. Neither the main effect of the origin of emotional charge, nor the interaction of valence and origin levels were statistically significant.

Origin. The main effect of emotional charge valence was not statistically significant. We found a significant main effect of origin, as expected, $F(1, 84) = 408.73$, $p = .001$, $\eta^2 = .83$. The mean rating was $M = 4.45$ (SEM = .07) for the words with automatic emotion origin and $M = 6.57$ (SEM = .07) for the words with reflective emotion origin. The interaction of valence and origin levels was not statistically significant.

Controlled variables. As regards the analyses of word properties on the arousal, concreteness, frequency of appearance, and word length dimensions, we found no significant effects (main or interactive) of valence and origin group. The results are as expected, which confirms the validity of the choice of emotionally charged words for each experimental condition.

Argument quality

In order to manipulate the argument quality variable, we presented one of two persuasive messages to the participants (Appendix 4). Each message contained six arguments, either strong or weak. In order to create them, we applied a procedure proposed by Petty and Cacioppo (1986), simplified for the purpose of this study. First, an initial list containing twenty arguments was compiled. The arguments related to a variety of different aspects of the advertised product, such as functionality, technical parameters, appearance, benefits (e.g., utilitarian or social), recommendations, and comparison to other products available on the market. Arguments developed for this experiment were inspired by media advertisements and previous studies (Petty, Cacioppo, & Schumann, 1983) and were selected in such a way that they could intuitively be divided into convincing and

specious ones. All of the arguments were then presented to five people, representative of the participants' population, who were asked to think about the arguments and decide which of them seemed persuasive and which did not. Based on this pilot study, arguments were then divided into strong (persuasive) and weak (not persuasive), depending on the participants' agreement. For instance, if a certain argument was labelled as persuasive by at least three out of five people (the majority), it was categorized as a strong one. In order to create persuasive messages, six arguments (both strong and weak) were ultimately chosen, based on the participants' agreement. The arguments selected for this experiment where those with the highest agreement rate (83.5% agreement on strong arguments and 73.5% on weak ones).

Controlled variables

The affective state variable was measured as participants' assessment of their current mood valence, where 0 meant *a definitely dissatisfied person* and 10 meant *an extremely happy person.* This variable was measured twice during the experiment.

In order to measure other controlled variables, we asked the participants about their gender, age, their status of students or non-students, and their major. They were also asked if they owned a sonic toothbrush.

Dependent variables

For the "persuasion effectiveness for product assessment," "persuasion effectiveness for product possession desire," and "persuasion effectiveness for purchase intention" variables, persuasion effectiveness was defined as the difference between the second and first assessments in the case of the following questions, respectively: (1) "Please assess the presented toothbrush on the scale below."; (2) "To what extent would you like to own such a toothbrush?"; (3) "To what extent would you like to buy such a toothbrush?".

The indicator of persuasion effectiveness were the differences between the second and first measurements in the case of participants' answers to the three questions presented above. Persuasion effectiveness was measured on a scale from -10 to 10, where the minus values meant less favorable assessments in the second measurement compared to the first one (ineffective persuasion) and the plus values meant more favorable assessments in the second measurement (the expected direction of attitude change).

Preparation for data analysis

While collecting the data, we controlled the participants' associations to the emotionally charged words for consistency with the instruction. We controlled the quantity and contents of the associations in order to see whether they represented actually existing words or just a random mix of letters or single characters. Such questionnaires were not taken into account, as manipulation effectiveness could have been compromised in their case. Questionnaires with missing data were also excluded from further analysis.

RESULTS

The effectiveness of affective state manipulation

In order to test the effectiveness of affective state manipulation, we performed a mixed ANOVA with repeated measures in a mixed 2 (affective state measurement order) x 2 (origin of word's emotional charge) x 3 (valence of word's emotional charge) schema. We expected the main effect of emotional valence and of the interaction between measurement order and valence. We also assumed that affective state assessments would decrease in the negative valence condition, that they would increase in the positive valence condition, and that they would not change in the neutral valence condition.

We found a statistically significant main effect of emotional valence: $F(2, 294) = 5.08$, $p = .007$, $\eta^2 = .033$. Pairwise comparisons of means with Bonferroni correction showed that statistically significant differences concerned the negative and positive valence conditions. In particular emotional valence condition the participants assessed their affective state as follows: negative – $M = 5.97$ (SEM = .19), neutral – $M = 6.58$ (SEM = .19), positive – $M = 6.78$ (SEM = .19). We found a difference close to significant ($p = .063$) between neutral and negative emotional valence conditions, whereas the difference between neutral and positive valence levels was not significant ($p = 1.00$). The main effect of measurement order was not statistically significant: $F(1, 294) = 0.31$, $p = .58$, $\eta^2 = .001$, and neither was the main effect of origin: $F(1, 294) = 1.03$, $p = .31$, $\eta^2 = .003$. We found no effect of the interaction between measurement order and emotional valence: $F(2, 294) = 0.58$, $p = .56$, $\eta^2 = .004$.

Influence of affective state manipulation on first product assessments. In order to investigate the influence of affective state manipulation on the first assessments of the product, we performed a between-subjects ANOVA in

a 2 (origin of word's emotional charge) x 3 (valence of word's emotional charge) schema.

Influence of affective state manipulation on general product assessment. The main effect of origin was not statistically significant: $F(1, 294) = 1.91$, $p = .17$, $\eta^2 = .006$. The main effect of emotional valence was not significant, either: $F(2, 294) = 1.24$, $p = .29$, $\eta^2 = .008$. There were no interaction effects.

Influence of affective state manipulation on product possession desire. The main effect of origin was not statistically significant: $F(1, 294) = 1.53$, $p = .22$, $\eta^2 = .005$. The main effect of emotional valence was not significant, either: $F(2, 294) = 0.24$, $p = .79$, $\eta^2 = .002$. We found a significant effect of interaction between origin and valence: $F(2, 294) = 3.56$, $p = .03$, $\eta^2 = .024$.

A pairwise comparisons of means with Bonferroni correction for multiple comparisons showed that statistically significant differences between the assessments of product possession desire in the case of automatic and reflective affective state elicitation were only found in the negative valence condition ($p = .004$). The mean assessments were $M = 4.38$ ($SEM = .35$) for the automatic negative affective state and $M = 2.96$ ($SEM = .35$) for the reflective negative affective state.

Influence of an affective state manipulation on product purchase intention. The main effect of origin was not statistically significant: $F(1, 294) = .001$, $p = .98$, $\eta^2 = .001$. The main effect of emotional valence was not significant, either: $F(2, 294) = 1.04$, $p = .36$, $\eta^2 = .007$. We found a significant interaction between origin and valence: $F(2, 294) = 3.06$, $p = .048$, $\eta^2 = .02$.

A pairwise comparisons of means with Bonferroni correction showed approaching significance between the assessments of product purchase intention in the case of automatic and reflective affective state elicitation in the negative valence condition ($p = .055$). The mean assessments were $M = 3.14$ (SEM = .33) for the automatic negative affective state and $M = 2.24$ (SEM = .33) for the reflective negative state.

Differences in persuasion effectiveness

The aim of this study was to investigate the differences in persuasion effectiveness – that is, the differences in attitude change, depending on the experimental conditions (argument quality, origin and valence of word's emotional charge). Since a classic ANOVA analysis with repeated measures does not make it possible to test such hypotheses and is difficult to interpret due to a large number of variables and experimental conditions, we created the already presented va-

riables: persuasion effectiveness for product assessment, possession desire, and purchase intention. Next, we performed an ANOVA in a 2 (arguments quality) x 2 (origin of word's emotional charge) x 3 (valence of word's emotional charge) schema. We expected statistically significant interaction between argument quality and origin of emotional charge. We also expected that in the case of reflective affective state elicitation persuasion effectiveness would be significantly higher in the strong arguments condition than in the weak arguments condition and that in the case of automatic affective state elicitation there would be no differences in persuasion effectiveness depending on argument quality.

Persuasion effectiveness for product assessment. We found a statistically significant main effect of argument quality: $F(1, 288) = 12.41$, $p = .001$, $\eta^2 = .041$. The mean persuasion effectiveness value was $M = .61$ (SEM = .14) in the strong arguments condition and $M = -0.06$ (SEM = .14) in the weak arguments condition. The main effect of origin was not statistically significant: $F(1, 288) = .21$, $p = .65$, $\eta^2 = .001$. The main effect of emotional valence was not significant, either: $F(2, 288) = .09$, $p = .92$, $\eta^2 = .001$. We found no statistically significant interactions.

Persuasion effectiveness for product possession desire. We found a tendency in statistical significance for main effect of arguments quality: $F(1, 288) = 3.82$, $p = .052$, $\eta^2 = .013$. The mean persuasion effectiveness value was $M = .77$ (*SEM* = .15) in the strong arguments condition and $M = .37$ (*SEM* = .15) in the weak arguments condition. The main effect of origin was not statistically significant: $F(1, 288) = .83$, $p = .36$, $\eta^2 = .003$. The main effect of emotional valence was not significant, either: $F(2, 288) = .74$, $p = .48$, $\eta^2 = .005$.

A tendency in statistical significance was found for interaction effect between arguments quality and origin: $F(1, 288) = 3.82$, $p = .052$, $\eta^2 = .013$. Pairwise comparisons of means with Bonferroni correction showed statistically significant differences in persuasion effectiveness in reflective conditions ($p = .006$) depending on argument quality: $M = 1.07$ (SEM = .21) for strong arguments and $M = .27$ (SEM = .21) for weak arguments. In the case of automatic conditions, there were no statistically significant differences in persuasion effectiveness depending on argument quality ($p = 1.00$). Statistically significant differences were found in strong arguments condition ($p = .044$) between persuasion effectiveness for automatic origin ($M = 0.48$, SEM = .21) and reflective origin ($M = 1.07$, SEM = .21). In the weak arguments condition such differences were not significant ($p = .46$). The pattern of results is shown in Panel A in Figure 1.
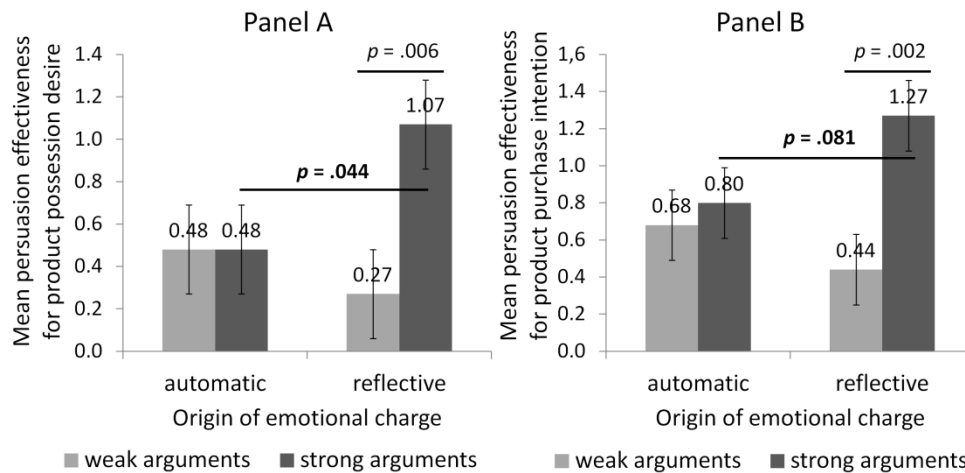
Figure 1. Mean rates of persuasion effectiveness (attitude change) for product possession desire (Panel A) and purchase intention (Panel B) measured in conditions involving the elicitation of automatic or reflective affective states and the presentation of weak or strong arguments.

Persuasion effectiveness for product purchase intention. We found a statistically significant main effect of argument quality: $F(1, 288) = 6.30$, $p = .013$, $\eta^2 = .021$. The mean persuasion effectiveness value was $M = 1.03$ (SEM = .13) in the strong arguments condition and $M = 0.56$ (SEM = .13) in the weak arguments condition. The main effect of origin was not statistically significant: $F(1, 288) = .36$, $p = .55$, $\eta^2 = .001$. The main effect of emotional valence was not significant, either: $F(2, 288) = .80$, $p = .45$, $\eta^2 = .005$.

A tendency in statistical significance was found for interaction effect between argument quality and origin: $F(1, 288) = 3.51$, $p = .062$, $\eta^2 = .012$. Pairwise comparisons of means with a Bonferroni correction showed statistically significant differences in persuasion effectiveness in reflective conditions ($p = .002$) depending on argument quality: $M = 1.27$ (SEM = .19) for strong arguments and $M = 0.44$ (SEM = .19) for weak arguments. In case of automatic conditions, there were no not statistically significant differences in persuasion effectiveness depending on argument quality ($p = .65$). A week tendency in statistical significance ($p = .081$) with expected pattern was found in the strong arguments condition, between persuasion effectiveness for automatic origin ($M = .80$, SEM = .19) and reflective origin ($M = 1.27$, SEM = .19). In the weak

arguments condition such differences were not significant ($p = .37$). The pattern of results is shown in Panel B in Figure 1.

DISCUSSION

The aim of this study was to investigate the role of origin and valence of affective states for persuasion based on strong vs. weak arguments. At the beginning of the study we carried out an affective state manipulation, but its results are not quite clear. Although there was no direct effect indicating affective states changes in response to manipulation, it turned out that the mean affective state assessments were significantly lower in the case of negative affective state elicitation than in the positive condition. As regards the neutral condition, the mean assessments were between the negative and positive ones. It is worth considering what could have caused the lack of such an effect. First of all, the participants may not have been aware of the subtle changes caused by the association task. Secondly, it is also possible that the scale used in the study enabled the easy memorization of the first answer given. It is worth noting that the words used to elicit the affective states were chosen based on empirically established affective norms (Imbir, 2016b) and that the word choice was verified as valid. Therefore, considering the statistically significant effect of emotional valence and results in the further part of the study that were consistent with the hypotheses, it could probably be assumed, that the manipulation may, in fact, have been effective although its influence was not explicitly reported by the participants. Another possibility is that during the affective state manipulation only the origin may have been effective, but not the valence. The participants' task, however, was to assess their affective state only on the valence dimension, as it is definitely easier to determine and understood intuitively, whereas the origin of emotion is a more complex dimension. Based on the affective norms for words, we expected an interaction of valence and measurement order; therefore, we treated the emotional valence as an indicator of manipulation effectiveness. However, only one dimension manipulation (i.e., origin) may have been effective as well. It is worth to bear that in mind, as it could possibly explain the lack of emotional valence effect on persuasion effectiveness. This is certainly an issue that needs further research.

During the analyses, we also checked if the affective state manipulation influenced the first assessments of the product. In the case of the general assessment of the product, such an effect was not found. However, in the cases of

product possession desire and purchase intention the assessments in the reflective negative conditions were lower than the ones made in the automatic reflective conditions. It is worth noting that what we found here is the interaction of the two variables. According to the existing theories, both reflective and negative emotions are connected with more thoughtful and analytic information processing (Imbir, 2016a; Schwarz & Bless, 1991). What is particularly interesting about this result, especially from the consumer behavior research perspective, is the fact that the affective states elicited influenced only responses to the questions about possession desire and purchase intention and did not general product assessment. It is, in fact, possible, that the affective state manipulation in the conditions mentioned above caused an increase in the rationality of decision making, based on thinking along the following lines: "I like this product but I don't need it, so I won't buy it." It is, however, just an example, since such far-reaching conclusions would not be legitimate based on the current data. Nevertheless, it seems to illustrate, to some extent at least, the hypothetical nature of the observed relationships.

The next step concerned the differences in persuasion effectiveness depending on argument quality, origin of emotion, and emotional valence for: (1) product assessment, (2) product possession desire, and (3) product purchase intention. It was expected that reflective affective states would induce systematic processing and, consequently, sensitivity to argument quality, whereas the activation of heuristic processing by means of automatic affective states would result in susceptibility to any arguments, in which case the argument quality would not matter. With regard to questions about product possession desire and purchase intention, persuasion in reflective conditions was much more effective in case of strong arguments than in the case of weak ones, whereas in automatic conditions there were no differences in persuasion effectiveness depending on argument quality. According to the ELM, the differences between strong and weak arguments are an indicator of persuasion route (Petty & Cacioppo, 1986). The results illustrate the classic distinction between central and peripheral route to persuasion, influenced by the origin of the elicited affective state. As expected, the reflective origin induced processing via the central route, whereas automatic origin induced peripheral route processing.

Additionally, strong arguments were more persuasive to the participants in case of reflective (rather than automatic) affective state elicitation. According to the ELM, this might have been caused by the fact that people processing information via the central route actively search the message for information relevant to them, and since strong arguments deliver such information, they lead to the

more effective persuasion than in the case of people who do not search for this kind of information (Petty et al., 2008). In some cases, strong arguments may also require higher levels of cognitive effort related to processing and understanding information, while the people processing information via the peripheral route are not interested in the careful analysis of the message. Due to this fact, sometimes complicated messages containing, for example, technical details or scientific findings could be neither interesting nor convincing to them (hence the lack of differences in persuasion effectiveness depending on argument quality). Therefore, automatic affective states could reduce susceptibility to strong and sensible arguments. This relationship can also be found in the duality model of emotion–cognition interactions, according to which automatic emotions disrupt higher order cognitive processes (Imbir, 2016a).

According to the ELM, there are a number of factors influencing persuasion communication processing (Petty & Cacioppo, 1986; Petty et al., 2008). Based on the observed results, in addition to factors such as personal involvement (Petty, Cacioppo, & Goldmann, 1981), emotion origin could also be considered a factor influencing the route to persuasion. This is an important finding due to the fact that the ELM, as a cognitive-based theory, limited the role of emotions to peripheral cues. It was not until the development of research on emotions and information processing interactions (Schwarz & Bless, 1991) that emotions were taken into account as a factor influencing persuasive communication processing. Studies to date, however, have focused on emotional valence and indicated that negative emotions lead to central route processing, whereas positive emotions induce processing via the peripheral route (Batra & Stayman, 1990; Morris et al., 2005; Schwarz & Bless, 1991). In the light of previous research, the lack of emotional valence effect in this experiment seems to be quite surprising. However, given the specificity of the emotion origin dimension, these results do not necessarily have to be considered inconsistent with the earlier studies. According to the emotion duality model, origin is a broader and more primary dimension than valence (Jarymowicz & Imbir, 2015). This could potentially explain the lack of emotional valence effects after including the origin dimension in the study, especially if the previous experiments used manipulations based on more automatic positive and more reflective negative emotions. Many studies based, for instance, on the elicitation of positive emotions in fact use mainly funny videos or small gifts such as candies, which undoubtedly elicit emotions representative of only a small fraction of the wide variety of positive affective states (Griskevicius, Shiota, & Neufeld, 2010).

The results of this study, however, seem to be consistent with studies indicating that certain emotions of the same emotional valence can lead to more systematic vs. heuristic processing. With regard to persuasion, a study concerning different positive emotions showed that emotions such as anticipatory enthusiasm, amusement, and – to a lesser degree – attachment love led to a more heuristic processing, while awe and nurturant love were connected with systematic processing (Griskevicius et al., 2010). This shows that, in some cases, dimensions other than emotional valence could also be significant.

Obviously, such an interpretation should be approached with caution. The main weakness of the study discussed in this article could be the fact that affective state manipulation was not effective (at least when it comes to explicit declarations), which could, in fact, have caused the lack of emotional valence effects. Ensuring the effectiveness of affective state manipulation in further research could certainly help answer this question.

Differences found for the questions about product assessment, possession desire, and purchase intention are not quite clear. As regards the first one, the hypotheses were not confirmed, which shows that it is somehow different from the other questions. Possibly, the nature of the questions may have been responsible for that. It is worth referring to the definition of attitude, according to which attitudes consist of three components: affective, cognitive, and behavioral (Aronson, Wilson, & Akert, 1997). Purchase intention is a behavioral intention, whereas general assessment and possession desire are rather connected with affect and cognition. It is possible that the manipulation used in the study influenced only one or two components, which was why differences between the questions occurred. This issue, however, definitely requires further research, and in the future a more unequivocal persuasion effectiveness measure should be used.

It is also worth mentioning certain aspects of the arguments used in the persuasive message. The strong arguments were mostly related to the utilitarian aspects of the advertised product, whereas the weak arguments were connected with the social image created as a result of using the product. It is worth mentioning the theory describing the functions of attitudes towards the products (Böhner & Wänke, 2004). The theory distinguishes between the utilitarian function, connected with the choice of products based on their usage aspects, and the social identity function, according to which the choice of products' is related to the social image it helps to create. The persuasive message is therefore effective if it relates to the fundamental functions of an attitude.

Such a differentiation could be an opportunity for alternative interpretations, according to which eliciting reflective affective states could lead people to assess

the product based on its utilitarian rather than social aspect, whereas eliciting automatic affective states could lead to neither category being dominant.

One should, however, approach this kind of interpretation with caution, given that the differentiation between strong and weak arguments was in fact coincidental and was entirely a result of a pilot study. The original set of arguments was related to other aspects of the product as well. What is also important is that, according to Petty and Cacioppo, what people consider the most important for the issue presented in persuasive communication depends both on individual differences and on the nature of the situation. For instance, with regard to death penalty, for some people the persuasive arguments would be the ones related to religion, whereas for others it would be those related to legal matters. In both cases, though, people could be processing information via the central route. Therefore, depending on the situation, strong and weak arguments could be related to different aspects of a particular issue (Petty et al., 2008). This is why the researchers proposed conducting pilot studies during the construction of persuasive messages, which could help to determine which aspects of a given issue are crucial to the people from the participants' population (Petty & Cacioppo, 1986). Depending on individual differences, for example, some people might be more focused on the social image created by the use of the product, while for others this dimension might not be important (Petty et al., 2008). The meaning and importance of the utilitarian or social identity functions of attitudes towards the product also depend on product category. For example, attitudes towards household goods seem to serve utilitarian functions, whereas jewellery or perfumes are quite obviously linked with the social image. There are also some product categories, in whose case attitudes could serve both functions (Böhner & Wänke, 2004). It seems, however, that a toothbrush (even a sonic one), as an item used to maintain personal hygiene and kept in the bathroom on a daily basis, will probably serve mostly utilitarian functions. It can be assumed, obviously, that the use of this toothbrush will give you a beautiful smile or will make your life more luxurious, but the question remains to what extent this assumption will actually be true (while products such as expensive jewellery really can give you a feeling of luxury).

It is also important to emphasize the fact that the persuasive messages were based on a pilot study, carried out among people from the study's target group. This fact makes it even more justified to conclude that in case of attitudes towards a product such as a sonic toothbrush the key aspects of assessment are utilitarian arguments, whereas arguments associated with social image turned out to be rather weak.

The discussed study is not free from limitations, and its replication will definitely require some modifications, such as ensuring the effectiveness of affective state manipulation or using more objective measures of its assessment. Despite that, the results seem to be an interesting starting point for the further research, which could help us understand the role of emotions in both persuasion and information processing in general.

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APPENDIX 1

Table 1

Lists of Emotionally Charged Words According to Affective State Valence and Origin

Automatic negative emotions	Automatic neutral emotions	Automatic positive emotions	Reflective negative emotions	Reflective neutral emotions	Reflective positive emotions
czkawka (*hiccup*)	procesja (*proccesion*)	zakochanie (*infatuation*)	egzaminy (*exams*)	szlachta (*nobility*)	miliard (*billion*)
zmęczenie (*fatigue*)	kościół (*church*)	passa (*streak*)	ignorancja (*ignorance*)	etykieta (*label*)	tolerancja (*tolerance*)
łzy (*tears*)	kuksaniec (*nudge*)	toast (*toast*)	krata (*grating*)	sułtan (*sultan*)	mistrz (*master*)
uszczypnięcie (*pinch*)	tarot (*tarot*)	powitanie (*welcome*)	minus (*minus*)	zadatki (*makings*)	patent (*patent*)
pijak (*drunk*)	loteria (*lottery*)	zapach (*fragrance*)	szpieg (*spy*)	prawo (*right*)	dobytek (*property*)
naiwniak (*sucker*)	westchnienie (*sigh*)	słodycz (*sweetness*)	koszty (*costs*)	prasa (*press*)	absolwent (*graduate*)
słabeusz (*weakling*)	jałmużna (*alms*)	pomoc (*help*)	podwładny (*subordinate*)	stawka (*bid*)	uczony (*scholar*)
szloch (*sob*)	błazen (*clown*)	niemowlak (*infant*)	podatek (*tax*)	raport (*report*)	stypendium (*scholarship*)
hałas (*noise*)	mrowienie (*tingling*)	flirt (*flirt*)	alimenty (*alimony*)	wojsko (*army*)	szczyt (*peak*)
plotka (*rumor*)	pragnienie (*desire*)	potomstwo (*offspring*)	odsetki (*interest*)	interes (*business*)	równowaga (*balance*)
grymas (*grimace*)	obrzęd (*rite*)	pozdrowienie (*greeting*)	rząd (*government*)	dyscyplina (*discipline*)	oszczędności (*savings*)
gafa (*blunder*)	wróżka (*fairy*)	skarb (*treasure*)	przemyt (*smuggling*)	wynik (*result*)	płaca (*wages*)
usidlenie (*ensnaring*)	młodzież (*youth*)	walentynka (*valentine*)	recesja (*recession*)	weto (*veto*)	satyra (*satire*)
smarkacz (*stripling*)	łasuch (*gourmand*)	podarunek (*gift*)	bezrobocie (*unemployment*)	hodowla (*breeding*)	lider (*leader*)
zaślepienie (*infatuation*)	burza (*storm*)	ferie (*holidays*)	heretyk (*heretic*)	kurs (*course*)	zysk (*profit*)

APPENDIX 2

Figure 2. The sonic toothbrush advertisement presented to the participants. "Complex Care sonic toothbrush. Complex care every day!"

APPENDIX 3

Figure 3. The first set of masking questions.

(1) Please rate the advertisement's composition on the scale below (very negative / very positive).

(2) Please rate the font style used in the advertisement on the scale below (very negative / very positive).

(3) What is your opinion about the font size used in the product's name?

– the font size is too small

– the font size is large enough

– the font size is too large

Jak oceniasz liczbę argumentów zawartych w reklamie? *

○ było ich za mało

○ było ich wystarczająco dużo

○ było ich za dużo

Jak oceniasz długość komunikatu reklamowego? *

○ komunikat był za krótki

○ komunikat był wystarczająco długi

○ komunikat był za długi

Jak oceniasz trafność argumentów zawartych w reklamie? *

○ agumenty były trafne

○ tylko niektóre argumenty były trafne

○ argumenty były nietrafne

Figure 4. The second set of masking questions.

(1) What is your opinion about the number of arguments in the advertisement?

– there were too few of them
– there were enough of them
– there were too many of them

(2) What is your opinion about the length of the advertising message?

– the message was too short
– the message was long enough
– the message was too long

(3) What is your opinion about the validity of the arguments used in the advertisement?

– the arguments were valid
– only some of the arguments were valid
– the arguments were invalid

APPENDIX 4

Appendix 4.1. Persuasive message based on strong arguments.

– high-tech solutions cause the elimination of 100% of all dirt, additionally destroying germs of cavities and bacteria

– comes with five different settings: cleaning, whitening, delicate washing of sensitive areas, massage, and polishing

– the sweeping and pulsing motions of the toothbrush prevent enamel damage and gum recession

– the innovative type of a bi-level bristle allows reaching even the most problematic areas in the mouth

– the specially angled shape of the toothbrush helps to reach the back teeth

– recommended by the Polish Dental Association

Appendix 4.2. Persuasive message based on weak arguments.

– the modern and elegant design makes it suit every bathroom
– comes in various sizes and colors
– innovative technology along with the elegant design will make you feel luxurious and will make it a perfect gift for your loved ones
– 9 out of 10 users recommend the Complex Care toothbrush
– by choosing a Complex Care toothbrush you will now be able to enjoy a captivatingly beautiful smile
– removes twice as much dirt as other sonic toothbrushes available on the market