Attitude change as a function of the number of words in which thoughts are expressed

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ABSTRACT

This research examines whether varying the number of words in which thoughts are expressed can influence subsequent evaluations. Across six studies, keeping the number of thoughts constant, we tested to what extent the length of the thoughts, the personal importance of the topic, and the extent of practice in short versus long thought expression influenced attitude change. In the first two studies, expressing thoughts in one word (vs. many words) led to less thought use when the topic was high in importance (Experiment 1) but to more thought use when topic was low in importance (Experiment 2). In a third study, the number of words used was manipulated along with the perceived importance of the experimental task. As predicted, expressing thoughts was perceived to be easier with one vs. many words when the task was low in importance but the opposite held when it was high in importance. In Experiment 4, attitudes were more influenced by thoughts when one word was used in a task that was framed to low importance task but many words were used on the task framed with high importance. Experiment 5 included a direct manipulation of ease and extended these results from a motivational framework to an ability setting by using a paradigm in which familiarity (based on prior training) interacted with thought length to affect attitudes. A final study replicated the key effect with more real-world materials, and extended the contribution from an experimental approach to testing process to a measurement approach to mediation.

Language affects social influence, with some ways of expressing arguments being more effective than others in convincing people (e.g., Blankenship & Holtgraves, 2005; Holtgraves, 2010; Smith & Shaffer, 1995; see Petty & Briñol, 2015; Petty & Wegener, 1998, for reviews). Importantly, so far there has not been much research examining the potential impact on persuasion of the verbosity of one's thoughts as indexed by the number of words in which they are expressed. Yet, there are various situations in daily life where the number of words that can be used to express oneself are constrained in some way. A salient example for academics concerns journal submissions where there are restrictions that different journals have with respect to the length of abstracts or the word length of titles or articles. Indeed, many journals ask authors to identify their research using just five single key words. Some newspapers have limits on letters to the editor or on opinion pieces. Forms that we fill out on the internet can specify a maximum word or character length. Sometimes ideas need to be tagged or tweeted using a limited number of characters. Does encouraging expression of thoughts in shorter versus longer formats make a difference when it comes to

one's attitudes? Although research has examined the number of arguments presented (e.g., Petty & Cacioppo, 1984) which is often confounded with number of words, in the current research our aim is to vary thought length holding the number of distinct ideas or arguments constant. Furthermore, although most prior research has focused on variations of arguments presented by others, the current research examines thoughts or arguments generated by the self.

Specifically, in the present research we propose that whether a given thought is expressed in one or many words can influence self-persuasion by affecting thought usage. Thus, the main objective of the current line of research is to examine a new language variable in persuasion: the length of a thought or the number of words used to express one's thoughts. We tested the importance of this novel variable examining the impact of these thoughts on attitudes. We examine both thoughts that are generated in response to message and those that are freely generated in the absence of a message.

1. Persuasion as a function of thoughts

Research on persuasion suggests that persuasive messages can influence people's attitudes through both thoughtful and non-thoughtful routes (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986). When persuasion is thoughtful, attitudes depend on the thoughts people generate to messages or message topics. Although most work on persuasion focuses on messages that originate from other people, messages that people generate themselves can also be quite effective in producing attitude change (e.g., Briñol, McCaslin, & Petty, 2012). The persuasive effect of self-generated messages was shown in early research on role-playing. This literature demonstrated that individuals who generate arguments through role-playing (e.g., following instructions to convince a friend to quit smoking) are more persuaded than those who receive the same information passively (e.g., Janis & King, 1954). In this paradigm, active generation of a message was shown to be a successful strategy for producing attitude change in the direction of the self-generated arguments (Cialdini & Petty, 1981; Huesmann, Eron, Klein, Brice, & Fischer, 1983; Watts, 1967). This classic self-persuasion research shows that attitudes can change even without the explicit goal of changing the self. Similarly, the present research deals with the unintended persuasive consequences of generating thoughts on an issue.

The cognitive response approach to persuasion, as originally outlined by Greenwald (1968), holds that messages from others can be successful or not in producing attitude change depending on the thoughts that people generate to the message (for a comprehensive review, see Petty, Ostrom, & Brock, 1981). This view essentially argues that people are persuaded (or resist persuasion) by virtue of their own thoughts rather than by learning the message per se, as had been argued by earlier learning theories (Hovland, Janis, & Kelley, 1953). According to the elaboration likelihood model, the cognitive response approach operates primarily when people are motivated and able to generate thoughts about the persuasive message (Petty & Cacioppo, 1986). In such circumstances, persuasive appeals that elicit thoughts that are primarily favorable toward a particular recommendation produce agreement (e.g., "if that new laundry detergent makes my clothes smell fresh, I'll be more popular"), whereas appeals that elicit thoughts that are primarily unfavorable toward the recommendation produce disagreement regardless of whether the message content is learned. According to this approach, then, virtually all high elaboration attitude change is ultimately self-persuasion in that even external messages are influential primarily because of the idiosyncratic favorable or unfavorable thoughts people have to the messages.

The present research examines thoughts generated in response to a persuasive message as well as thoughts generated when no message is presented. In each case, the question is whether varying the number of words in which people express their thoughts can influence the extent of persuasion. The first question one could ask would be: Which is more effective in producing persuasion – thoughts expressed with many words or using just one word? And, secondarily, why would thought length matter? In an initial investigation of thought length and persuasion, in order to have a reasonably impactful independent variable, we focused on using just one word to express an idea versus as many words as participants could generate. Before getting to the research, however, we outline why using either one or many words might be superior for persuasion.

2. Why multiple words could lead to more persuasive impact than one word

One could argue that it might generally be more effective to express thoughts using multiple words than to express thoughts using a single word. For example, people might put more effort into expressing thoughts when many words are needed. Among other things, this could be because the attention required for the construction of a coherent narrative, consideration of grammatical choices, and linkage of

sentences. If people put more effort into a thought task when it requires many words rather than a single word, this could increase the impact of the thoughts generated (Aronson & Mills, 1959; Briñol et al., 2012; Festinger & Carsmith, 1959). Another reason people might be more influenced by their thoughts when they are expressed in many versus a single word is that people often use length and amount as a signal of value (e.g., numerosity heuristic, Petty & Cacioppo, 1984). Thus, people might reason that the longer the thoughts look, the more valuable they are.

Finally, because people are more familiar or practiced with expressing their thoughts in multiple words rather than a single word, this could make it be easier to do (Alter & Oppenheimer, 2009). As much prior research has shown, numerous variables associated with ease tend to make thoughts more impactful (Schwarz et al., 1991). For example, thoughts are used more when they are written in an easy to read font than a difficult one (Briñol, Petty, & Tormala, 2006) or when written with the dominant rather than the non-dominant hand (Briñol & Petty, 2003). Of course, it is likely that expressing thoughts in multiple words would be especially easy in situations for which people have more practice using many words such as when expressing thoughts on high relative to low importance topics and tasks. If the social norm (based on people's prior experience) was that one word is the best way to express thoughts that matter the most, then it could be more difficult (rather than easier) to come up with many words in these situations.

3. Why one word could lead to more persuasive impact than multiple words

Alternatively, one could argue that using a single word to express a thought could generally render those thoughts more impactful than using many words. One reason for this is that one word might convey a different meaning than many words. For example, expressing thoughts in one word might require more extreme terminology whereas using many words allows for moderation and nuance in expressing ideas (see Craig & Blankenship, 2011, for a review on linguistic extremity and persuasion). Alternatively, people might use more abstract and global terms when using one word than many. When using many words, people have more opportunity to include more concrete terms and specifications. If global language has more breadth, it might be more encompassing and appealing than the narrower and concrete implications of using many words. Furthermore, when people elaborate and invest significant amounts of time in expressing emotional thoughts (e.g., presumably using more words) the subsequent impact of those thoughts on judgments is sometimes attenuated either because the listed thoughts are accompanied by additional insights (Pennebaker, Mehl, & Niederhoffer, 2003; Wilson & Gilbert, 2003) or because they are accompanied by additional unwanted thoughts and ruminations (Lyubomirsky, Sousa, & Dickerhoof, 2006; Tormala, Falces, Briñol, & Petty, 2007).

Extremity, abstraction, and lower chances of unwanted thoughts are not the only possible reasons that using one (vs. many) words could be more persuasive when expressing thoughts. Ease is another reason. That is, as noted above, it is possible that at least in some situations, it may be easier to generate thoughts in one (vs. many) words. Indeed, in the initial line of work on ease of thought generation Schwarz et al. (1991) found that when participants were asked to rate their own assertiveness after generating relatively few (6) or many (12) examples of their own assertive behavior, the former led to greater ratings of assertiveness. In this now classic study, Schwarz and colleagues reasoned that people considered not only the content of thoughts that came to mind but also the ease with which the thoughts could be retrieved from memory, with few always being easier than many (see also Tormala, Petty, & Briñol, 2002; Tormala et al., 2007, for examples relevant to persuasion). Just as it is easier for people to generate fewer arguments, it may also be easier for them to express their thoughts in fewer words and because of this, the impact of thoughts expressed in one versus many words could be

increased. Of course, expressing thoughts in one (vs. multiple) word would likely be especially easy in situations for which people have more practice in using just one word such as when people don't care much about the topic or the task and wish to complete it with minimal effort.

4. Summary and overview

In sum, in the present research we propose a new language variable in evaluation – the length of one's thoughts. Thus, the main objective of the current research is to examine whether a given thought is expressed in one or many words can influence persuasion by affecting thought usage. We tested the importance of this novel variable by varying the number of words in which people were asked to express their thoughts and then looking for the impact of those thoughts on attitudes. The number of distinct thoughts expressed was kept constant and only the number of words in which they were expressed was varied. As noted, there are some reasons to expect that using many words to express thoughts could be more persuasive than using one word but also some reasons to expect that using one word could be more persuasive than using many words. Of course, there are other possibilities, such as the number of words does not really matter for persuasion when it comes to expressing thoughts, or the length of the thought would interact with other variable(s) such as issue or task importance to produce persuasive effects.

5. Experiment 1: pilot test of the persuasive outcome of using one vs. many words

The purpose of our first study was to provide an initial exploration of whether there was any relationship at all between the number of words with which thoughts are expressed and their subsequent impact on evaluation. We conducted a preliminary test in which participants first had to generate thoughts about themselves. Therefore, this study used a personally important (the self) topic. Specifically, participants were asked to describe their most important strengths or weaknesses, a task that has been used in prior studies of thought use (e.g., Briñol & Petty, 2003). The critical manipulation was that participants were asked to express their thoughts about themselves in one or many words. Finally, all participants reported their attitudes toward themselves. Our primary goal was to determinate whether there was an effect of number of words on persuasion and if so, in what direction it occurred.

5.1. Method

5.1.1. Participants and design

Fifty-nine undergraduate psychology students at the Universidad Autónoma de Madrid participated anonymously and voluntarily in this pilot study (12 men and 47 women, age range between 19 and 36 years; $M = 21.84$, $SD = 2.92$). No significant gender differences were found on any of the measures in this study or the rest of the studies in this series. Thus, gender is not discussed further.[1] The participants were randomly assigned to the cells of a 2 (Thought Direction: positive vs. negative) × 2 (Format of the Thoughts: many words vs. one word) between participants factorial design. This relatively small sample size was all that could be collected from the start of data collection to the

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[1] It is worth noting that, due to their exploratory nature of the first two studies, we also collected additional measures. First, we recorded age, and gender. Neither of these variables had a significant effect in moderating the observed effects. In addition, we included some ancillary measures such as average grade at school and current mood. As was the case with the sociodemographic measures, these variables did not have any significant effects in moderating the attitudinal results. Therefore, we did not include these measures in subsequent studies and thus we report all measures, manipulations, and exclusions in those studies.

end of the semester, but the data were analyzed nonetheless since the main purpose of the study was to see if a clear direction of effect emerged of the number of words on self-evaluation.

5.1.2. Procedure

Participants were told that they would take part in a project in which they would be required to list their qualities as job candidates. Half of the participants were told to list only positive traits, and the other half were told to list only negative traits. Importantly, half of the participants had to list their thoughts using just one word whereas the other half were told to use as many words as possible. Finally, participants reported their attitudes toward the self and were then debriefed, thanked and dismissed.

5.1.3. Independent variables

5.1.3.1. Thought direction.
Participants were asked to list either five positive or five negative personal characteristics relating to the domain of future professional performance. All participants were told that this was an important task and were asked to think carefully as they listed their characteristics. As noted, previous research has shown that self-evaluations can vary as a result of thinking about one's strengths or weaknesses (e.g., Tice, 1992; Vohs, Baumeister, & Ciarocco, 2005), and this particular procedure has been used successfully in previous studies of attitude change (e.g., Briñol, Gascó, Petty, & Horcajo, 2013; Briñol & Petty, 2003; Briñol, Petty, & Wagner, 2009).

5.1.3.2. Thought format.
Five boxes were provided for participants to list their characteristics. All participants were asked to write five characteristics in order to keep the number of distinct attributes constant across conditions. Half of the participants were randomly assigned to describe their characteristics using only one word per characteristic, whereas the remaining participants were assigned to describe their characteristics using as many words as they possibly could. In most self-persuasion studies, participants are asked to write the thoughts they have in any way they choose, being free to express their thoughts in the manner they prefer. However, in this research half of the participants were randomly assigned to describe their thoughts using only one word and the other half were assigned to describe their thoughts using as many words as they possibly could. Our goal was to have both sets of instructions deviate from the norm in which participants would just naturally list their thoughts without any instructions regarding length. The reason we "forced" participants to these two formats was to create conditions that were both a deviation from normal, therefore holding this constant across the experimental assignment.

Two independent raters uninformed of participants' experimental conditions coded the self-relevant thoughts in terms of whether participants followed the instructions to use one or many words in their descriptions. All participants followed the instructions correctly. That is, 100% of participants wrote only one word in the one word condition and 100% wrote more than one word per characteristic in the many words condition.

5.1.4. Dependent variables

5.1.4.1. Thought favorability.
Two judges, unaware of experimental conditions, coded the thoughts listed. Thoughts were classified as favorable, unfavorable, or neutral toward the self. Judges agreed on 90% of the thoughts coded, and disagreements were resolved by discussion. Two examples of favorable thoughts that participants listed in the many and one word conditions were: "I like to listen to what people have to say and I usually pay close attention to their comments" and "attentive." Two examples of unfavorable thoughts were "I don't find the motivation or the energy to do what people ask me to in many occasions where I think I should" and "lazy." An index of favorability of message-related thoughts was formed by subtracting the number of unfavorable message-related thoughts from the number of

favorable message-related thoughts and dividing this difference by five.

5.1.4.2. Attitudes. Participants' attitudes toward the self were assessed using three 9-point (1–9) Likert scales (i.e., do not like at all—like very much, no potential at all—a lot of potential, not intelligent at all—very intelligent) on which they rated their attitudes toward themselves. Responses to these items were highly correlated ($\alpha = 0.71$), so we averaged them to form a composite index of attitudes on which higher values represented more favorable opinions about the self.

5.2. Results

5.2.1. Thought favorability

As expected, the 2×2 ANOVA on the thought favorability index revealed only a significant main effect of the independent variable, Thought Direction, $F(1,55) = 362.92$, $p < 0.001$, $\eta_p^2 = 0.87$. This main effect indicated that participants had significantly more favorable thoughts when they wrote about their positive traits ($M = 0.86$, $SD = 0.23$) than when they wrote about their negative traits ($M = -0.64$, $SD = 0.33$).[2] Most importantly, thought favorability was not affected by thought format either as a main effect, $F(1,55) = 0.02$, $p = 0.88$, $\eta_p^2 = 0.00001$, or in interaction with thought direction, $F(1,55) = 0.31$, $p = 0.58$, $\eta_p^2 = 0.006$.

5.2.2. Self-evaluation

First, the 2×2 ANOVA on attitudes did not show main effects of Thought Direction, $F(1,55) = 2.43$, $p = 0.12$, $\eta_p^2 = 0.042$, or Format of the Thoughts, $F(1,55) = 0.03$, $p = 0.85$, $\eta_p^2 = 0.001$. However, a 2-way interaction between these two independent variables emerged, $F(1,55) = 8.40$, $p = 0.005$, $\eta_p^2 = 0.13$. As illustrated in the top panel of Fig. 1, this interaction indicated that participants who wrote their thoughts in many words showed significantly more favorable attitudes toward themselves when they wrote about their positive ($M = 7.02$, $SD = 0.76$) versus negative traits ($M = 6.08$, $SD = 1.41$), $F(1,55) = 4.16$, $p = 0.04$, $\eta_p^2 = 0.12$. Interestingly, participants who wrote their thoughts in one single word showed the opposite pattern of results, with significantly more unfavorable attitudes toward themselves reported when they wrote about their positive ($M = 5.66$, $SD = 1.37$) rather than their negative traits ($M = 6.49$, $SD = 0.98$), $F(1,55) = 4.28$, $p = 0.04$, $\eta_p^2 = 0.17$.[3] Described differently, this interaction showed that participants who had to write about their positive traits showed more favorable attitudes toward themselves when they used many rather than one word, $F(1,55) = 9.67$, $p = 0.003$, $\eta_p^2 = 0.28$. In contrast, participants who had to write about their negative traits did not show a reliable effect of number of words on one's self-evaluation, $F(1,55) = 0.92$, $p = 0.34$.

6. Discussion

The results of the initial experiment showed that the number of

Fig. 1. Top panel: self-evaluation as a function of Thought Direction and Format of the Thoughts in Experiment 1. Higher values indicate more favorable attitudes toward the self. Bottom panel: attitudes as a function of Thought Direction and Format of the Thoughts in Experiment 2. Higher valued indicate more favorable attitudes toward the color green.

words used to express thoughts can influence the impact of those thoughts on subsequent attitudes. Specifically, positive thoughts produced more positive attitudes relative to negative thoughts only when many words were used. When only one word was used, the opposite occurred. Therefore, this initial pilot test suggested a new effect on self-persuasion revealing that the number of words matter when expressing thoughts. In a second experiment, we introduce some changes in order to test to what extent this novel effect would replicate and generalize to other topics.

7. Experiment 2: examining one vs. many words for a low importance topic

After having shown in the pilot study that expressing thoughts about oneself using many words can enhance the use of those thoughts in self-evaluation compared to expressing them in just one word, we created a second experiment to examine the replicability of this pattern with a different topic. There are two features of Experiment 1 that were unique. First, the topic was the self, one of considerable importance to the participants. Second, participants were fully responsible for generating their thoughts rather than the thoughts being in response to an external persuasive message.

Thus, in Experiment 2, to examine the generalizability of the effect observed in Study 1, we made two changes. First, the topic was changed from a highly important one to a topic that was relatively unimportant. Specifically, we conducted an experiment in which the topic concerned a relatively mundane issue at a Spanish University campus—advocating that green should be the institutional color of the participants' university. Second, instead of asking participants to explicitly list positive or negative thoughts about the proposal, they received a message that contained strong or weak arguments that would naturally elicit positive or negative thoughts (see Petty & Cacioppo, 1986). As in the pilot test, the critical manipulation was that participants were asked to express their thoughts about the proposal in one or many words. After

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[2] The mean for positive thoughts could be as high as 1 if everyone wrote 5 positive thoughts and -1 if all participants wrote 5 negative thoughts as rated by the external coders. Most participants followed the instructions listing 5 positive or 5 negative thoughts as requested. However, the fact that the means deviated from 1 and -1 resulted from two sources. First, although a participant may have intended a characteristic to be positive or negative, the judges may not have seen it that way (e.g., scoring it as neutral). Second, a few participants only wrote 4 thoughts rather than then requested 5. Importantly, the data indicated that participants in the positive thoughts condition mostly listed thoughts that were coded as positive and participants in the negative condition mostly listed thoughts that were coded as negative. And, thought favorability was not affected by the number of words in which the thoughts were expressed. This explanation holds for all of the other studies reported in this paper.

[3] It may be surprising that in the single-word condition participants who were asked to think positively about themselves showed less favorable self-attitudes than those who were asked to think negatively about themselves. It is possible that if people experienced difficulty in expressing thoughts about themselves in just one word, then they might discount what they were thinking or even think of the opposite (see Tormala et al., 2007).
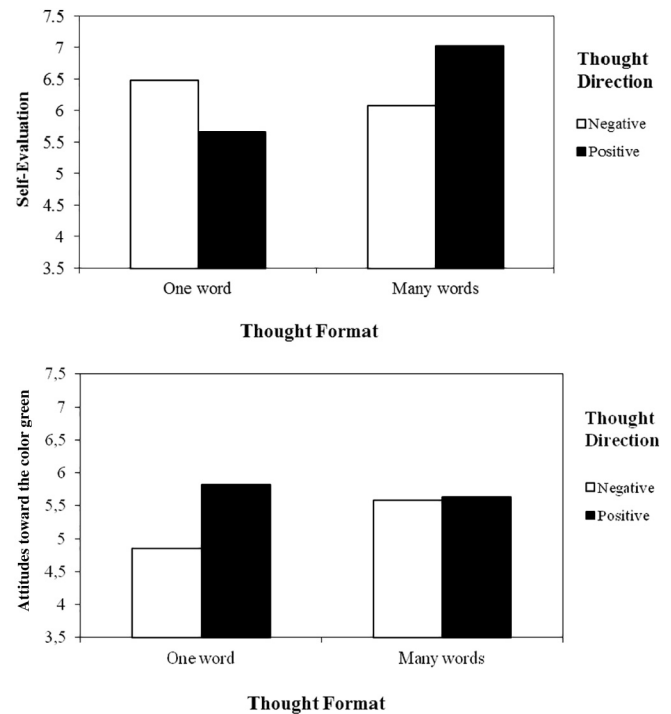
generating their thoughts, all participants reported their attitudes toward the proposal. The goal of this study was to examine whether the same interaction pattern would emerge as in Study 1 (i.e., many words leading to more thought use than a single word) despite the changes in topic and the use of an external message.

7.1. Participants and design

One hundred and forty six undergraduate psychology students at the Universidad Autónoma de Madrid (UAM) participated anonymously and voluntarily in this experiment (21 men and 125 women, age range between 18 and 28 years; $M = 20.83$, $SD = 1.90$). Participants were randomly assigned to the cells of a 2 (Thought Direction: positive vs. negative) × 2 (Format of the Thoughts: many words vs. one word) between participants factorial design. Sample size was determined simply based on the number of participants who were collected from the start of the study until the end of the academic semester with the anticipation that at least 25 participants per cell would be available.[4]

7.2. Procedure

Participants began by reading a cover story that led them to believe they were taking part in an experiment designed to examine potential changes at their university. Specifically, participants were told that they were helping out with research designed to assess attitudes toward possible changes in the color associated with their institution in the future (i.e., using the color green to represent the university a few years from now). Unlike typical U.S. universities, in Spain students do not identify with the colors of their university. In fact, pretesting showed that most students at UAM did not know or did not have prior opinions about their institutional color. All the participants read a message that contained strong or weak arguments in favor of the color green. After reading the message, participants were asked to list their thoughts about the proposal. Half of the participants were told to write their thoughts in many words, whereas the other half were told to write them in just one word. Then, all participants reported their attitudes toward adopting the color green as the official university color. Finally, participants were debriefed, thanked and dismissed.

7.3. Independent variables

7.3.1. Thought direction

Participants were presented with a message which contained either strong or weak arguments in favor of using green as the institutional color for their university. This manipulation was designed to influence the favorability of participants' thoughts if they were thinking about the message (Cacioppo & Petty, 1981). The arguments selected were adopted from previous research and have been shown to produce the appropriate pattern of thoughts (Horcajo, Briñol, & Petty, 2010, 2014; Horcajo, Petty, & Briñol, 2010). That is, when students were instructed to think about them, the strong arguments elicited mostly favorable thoughts and the weak arguments elicited mostly unfavorable thoughts. The gist of the strong arguments was that green enhances student performance and well-being in a variety of important areas such as creativity and concentration. The gist of the weak arguments was that green appeals to parents, matches chalkboard color, and is growing in popularity.

7.3.2. Thought format

After reading the proposal in favor of using green as the institutional

color for the university, participants were asked to list the thoughts that went through their minds as they read the message. Five boxes were provided for participants to list five individual thoughts. All participants were told to write only one thought per box and not to worry about grammar or spelling. Participants were asked to write five thoughts in order to keep the number of distinct thoughts constant across conditions. As in the previous study, in this research half of the participants were randomly assigned to write their thoughts using only one word per thought and the other half were assigned to write their thoughts using as many words per thought as they possibly could. Two independent raters unaware of participants' experimental conditions coded the thoughts listed in terms of whether participants followed the instructions to use one or many words in their thought listings. All participants followed the instructions correctly.

7.4. Dependent variables

7.4.1. Thought favorability

As explained above, following the message advocating a new color for the university, participants were instructed to list the thoughts they had as they read the message in five boxes that were provided (see Cacioppo & Petty, 1981 for additional details on thought listing procedures). Two judges, unaware of experimental conditions, coded the thoughts. Thoughts were classified as favorable, unfavorable, or neutral toward the color green. Judges agreed on 91% of the thoughts coded, and disagreements were resolved by discussion. Two examples of favorable thoughts that participants listed in the many and one thought conditions are: "I think the color green helps people to concentrate because it is really neutral and relaxing in a way that channels my energy away from what otherwise would be distracting" and "relaxing." Two examples of unfavorable thoughts are: "green is not a shiny color and is in fact quite invisible because it is the color used in the background of tv shows to make fake edits afterwards" and "boring."

An index of favorability of message-related thoughts was formed by subtracting the number of unfavorable message-related thoughts from the number of favorable message-related thoughts and dividing this difference by five, the total number of message-related thoughts (e.g., Briñol, Petty, & Barden, 2007; Chaiken & Maheswaran, 1994; Maio, Bell, & Esses, 1996; Petty, Briñol, & Tormala, 2002). The resulting index provided a relative favorability score, with higher numbers reflecting a greater proportion of favorable thoughts.

7.4.2. Attitudes

Participants' attitudes toward the advocacy were assessed using three 9-point (1–9) semantic differential scales (i.e., *like-dislike, appealing-not appealing, recommended-not recommended*) on which they rated their attitudes toward the color policy. Responses to these items were correlated ($\alpha = 0.65$), so we averaged them to form a composite index of attitudes on which higher values represented more favorable opinions about adopting green as the university color.

7.5. Results

7.5.1. Thought favorability

The 2 × 2 ANOVA conducted on the thought favorability index revealed only a significant main effect of the Thought Direction independent variable, $F(1139) = 16.88$, $p < 0.001$, $\eta_p^2 = 0.11$. As expected, this main effect indicated that participants generated significantly more favorable thoughts in the strong arguments condition ($M = 0.25$, $SD = 0.69$) than they did in the weak arguments condition ($M = -0.22$, $SD = 0.70$). Of most importance, thought favorability was not affected by thought format either as a main effect, $F(1139) = 1.51$, $p = 0.22$, $\eta_p^2 = 0.01$, or in interaction with argument quality, $F(1139) = 1.20$, $p = 0.28$, $\eta_p^2 = 0.009$.

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[4] That is, the sample size for this and the remaining studies were determined by aiming to obtain an N per cell that met or exceeded the prevailing norms for this type of research rather than a formal power analysis. However, a post-hoc power analysis indicated that the sample obtained had a power of 0.99 to obtain the interaction effect size observed in the pilot study.

7.5.2. Attitudes

The 2 × 2 ANOVA on attitudes also showed a similar main effect of the Thought Direction variable, $F(1142) = 7.18$, $p = 0.008$, $\eta_p^2 = 0.05$. This main effect revealed that participants who received the message composed of strong arguments reported more favorable attitudes toward green as their institution's color ($M = 5.72$; $SD = 1.14$) than did those who had received the message composed of weak arguments ($M = 5.24$, $SD = 1.20$). More relevant for the present concerns, this main effect was qualified by a two-way Thought Direction × Thought Format interaction, $F(1142) = 7.62$, $p = 0.017$, $\eta_p^2 = 0.04$. As shown in the bottom panel of Fig. 1, this interaction revealed that the difference between the persuasive effect of the strong message ($M = 5.82$, $SD = 1.22$) and the weak message ($M = 4.85$, $SD = 1.21$) was statistically significant only in the one-word condition, $F(1142) = 12.56$, $p = 0.001$, $\eta_p^2 = 0.08$. In contrast, there was no difference in persuasion between the strong ($M = 5.63$, $SD = 1.05$) and weak ($M = 5.58$, $SD = 1.10$) arguments in the many-words condition, $F(1142) = 0.38$, $p = 0.85$, $\eta_p^2 = 0.001$. Thus, thoughts had a greater impact on attitudes when they were expressed in one rather than many words. Described differently, this interaction revealed that for participants who received weak arguments, those who used many words showed more favorable attitudes toward the green color than did those who used a single word, $F(1142) = 7.62$, $p = 0.017$, $\eta_p^2 = 0.04$. In contrast, for participants who received strong arguments, the attitudes of those who used many words did not differ significantly from the attitudes of those who used a single word, $F(1142) = 0.49$, $p = 0.49$, $\eta_p^2 = 0.003$.

7.6. Discussion

The results of this experiment showed that expressing thoughts in one (vs. many) words can increase the impact of these thoughts on related attitudes. Notably, this is exactly the opposite pattern of results as observed in the first study suggesting that any conceptual framework that invariably predicts that thoughts will have a larger impact on attitudes when expressed in one versus many words (or vice-versa) is unlikely to be correct. For example, a theory suggesting that single words invariably capture more extreme or more abstract attributes than the use of more words cannot explain the data across the first two studies. However, as detailed next, an explanation based on ease of thought generation might account for the data.

Although Study 2 used a paradigm in which the valence of participants' thoughts varied as a function of exposure to strong or weak arguments and in Study 1 the valence of participants' thoughts varied as a function of instruction, we suspect that the most importance difference between the two experiments that might account for the different results obtained is the personal importance of the topic on which thoughts were generated. This is because prior research has shown similar effects on persuasion regardless of whether the profile of thoughts was varied due to instruction or argument quality (e.g., Briñol & Petty, 2003; Briñol, Petty, Valle, Rucker, & Becerra, 2007), but past research has shown that variations in topic importance can moderate and even reverse the effects of other variables (e.g., Cancela, Briñol, & Petty, 2016; Petty, Cacioppo, & Schumann, 1983). Clearly, the topic of Study 1 (the self) is a much more consequential and complex topic for participants than the topic of Study 2 (the institutional color of their university). Thus, it presumably would be much more important and motivating for participants to do a good job at the thought listing task in Study 1 than 2.

Given this difference, it could be hypothesized that when the topic is relatively unimportant and rather simple (as in Study 2), the use of a single word can be easier than using many words and therefore facilitate the expression of thoughts. If people don't care much about the topic or it is not complex, they might be quite satisfied with using only one word. In contrast, when the topic is more important and complex (as in Study 1) the use of a single word might be quite difficult and can

therefore hinder (rather than facilitate) the expression of thoughts.[5] Obviously, the first and second experiment differ in other aspects in addition to the importance of the topic and the induction of thought valence, such as the particular sample used, the moment in which the experiment was conducted, the measure of attitudes, and so forth. As such, it is important to test these speculations about perceived ease of thought generation in another experiment in which we randomly assign participants to think about issues in a context that was framed to be more or less important to them holding other features constant.

8. Experiment 3: measuring subjective ease

After having shown that attitudes can vary as a function of the number of words with which participants express their thoughts, and arguing that the divergent pattern of results across the first two studies plausibly was due to the differences in topic importance, we tested our speculation about perceived ease of thought generation as a function of topic importance and number of words in the next study. As noted, our logic is that using one single word versus using as many as possible is easier when the task is low in importance, but the use of one word is relatively more difficult than using more words when importance is high. Study 3 was designed to provide initial evidence regarding the subjective experience of ease that accompanies participants' generation of thoughts using one or many words for tasks that are relatively high versus low in importance.

In this experiment, we manipulated number of words and personal importance of the task holding the attitude issue constant across conditions. Then, we directly asked participants a number of questions about their subjective experiences. We hypothesized that participants would be more likely to report relative ease when the expression of thoughts in an important context required as many words as they could possibly use versus just one word but greater ease when the expression of thoughts in an unimportant context required one word versus many. When the task is of high importance, people would be highly motivated to do a good job and thus using as many words as possible would be compatible with their goal. Thus, using many words should seem easier than using a single word. However, as the task became lower in importance, doing well would not be a priority and being efficient would. Thus, in the low task importance conditions using a single word would be more goal compatible and therefore seem easier than using as many words as possible.[6]

8.1. Method

8.1.1. Participants and design

One hundred and sixty eight students from the Psychology Department of the Universidad Autónoma de Madrid (UAM) participated anonymously and voluntarily in this experiment (31 men and 137 women, age range between 17 and 42 years; $M = 19.59$, $SD = 2.43$). Participants were randomly assigned to the cells of a 2 (Task

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[5] Although it may seem obvious that the color green is less important to people than the topic of oneself, we conducted a small study in which 102 undergraduates (at the Autónoma University of Madrid) were asked to write five thoughts about the color green and five thoughts about themselves. Half of the participants wrote their thoughts in one word while the other half wrote their thoughts in many words. In this experiment we measured importance with the following 9-point scale item: "how relevant is this issue for you?" The 2 × 2 ANOVA revealed only a main effect of the Topic variable (green versus the self) on importance, $F(1100) = 84.18$, $p < 0.001$, $\eta_p^2 = 0.18$. No other effects were significant, ($p > 0.2$). That is, the pilot study confirmed that the color topic was less important ($M = 5.73$, $SD = 0.76$) than the self topic ($M = 7.03$, $SD = 0.67$).

[6] Because it was methodologically desirable to use a single attitude topic, we chose to examine task importance rather than issue importance or complexity. Just as using one word would be more compatible with an important and simple issue, we argue that using one word would be more compatible with an important than an unimportant task even if the importance and complexity of the issue itself were held constant. That is, the key variable is the motivation to perform well which could be induced via either issue or task importance.

Importance: high vs. low) × 2 (Thought Format: many words vs. a single word) between-subject factorial design. As in the previous study, sample size was determined by the number of participants that were collected by the end of the academic semester with a goal of attaining a minimum of 25 participants per condition.

8.1.2. Procedure

Participants were told that they were taking part in an experiment in which their university was interested in validating some scales for research in psychology. All the participants were told that they could participate in a raffle. Half of the participants were told that they could be selected to receive an "iPad" from the raffle (high personal importance of the task); whereas the other half were told that they could be selected to receive free lunch tickets for the cafeteria from the raffle (low task importance). After following the instructions, participants were informed of the proposal in favor of changing the colors of the university. This message contained a mix of strong and weak arguments to simplify the design. As in the previous studies, participants were required to write down their thoughts about the proposal with just one word or with as many as they could. Finally, participants completed the assessment of subjective feelings, and were debriefed, thanked, and dismissed.

8.1.3. Independent variable

8.1.3.1. Task importance.
Half of the participants were told that their university offered them the opportunity to participate in a lottery for an iPad. In this condition of high importance, the message described the qualities of the iPad (e.g., iPad 2 new generation, two cameras, etc.). In order to further emphasize the importance of the task, participants were informed that this raffle was only offered to students who participated in this research experiment. In contrast, in the low importance condition, the participants were told that the university was carrying out a lottery for free lunch tickets for the cafeteria. They were told that there were many students participating in this study and that the results of the experiment might or might not be used to validate some scales for their possible use in the future. The logic behind this manipulation was that participants would be more motivated to do a good job on the task used in the experiment in the high importance frame condition and thus would want to generate many words but that they would rather prefer being efficient and use one word when not caring about the experiment. Thus, participants would want to exert minimal effort in the low importance frame condition and exert high effort in the high importance frame condition. Prior research has shown that, in the presence of a relatively high incentive, people are more motivated to think carefully and perform well on the task than in the presence of a relatively low incentive (Petty et al., 1983; Petty & Cacioppo, 1979).

8.1.3.2. Thought format.
All participants were requested to generate thoughts about the proposal of the color green. As in the previous experiments, the number of words required to express those thoughts was manipulated. Half of the participants were asked to write down their thoughts using as many words as they possibly could whereas the other half were asked to use only a single word.

8.1.4. Dependent variable: ease

To assess participants' subjective feeling of ease in generating their thoughts, three 9-point (1–9) Likert scale items were administered to assess their perceptions of the thought generation task. Participants responded to scales anchored at "*very easy*"-"*not at all easy*"; "*very fast*"-"*not at all fast*"; and "*very fluid*" - "*not at all fluid.*" These scales had a high internal consistency ($\alpha = 0.74$), so an index was created of the sum of the three items. Scores were transformed so that higher scores on this index indicate more perceived difficulty (less ease) in the expression of the thoughts.
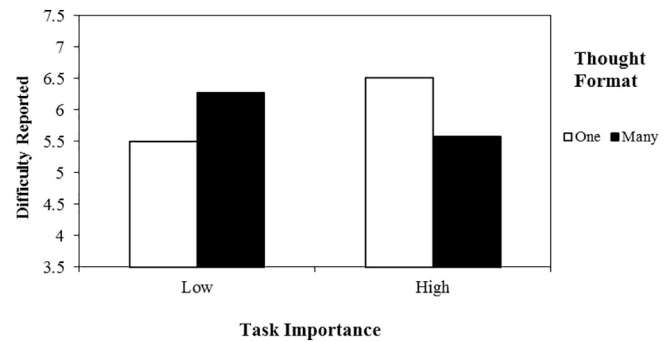

Fig. 2. Results for Experiment 3. Perceived ease of thought generation as a function of Task Importance and Thought Expression Format. Higher values indicate greater perceived difficulty (less ease) in expressing the thoughts.

8.2. Results

The measure of subjective ease was submitted to a 2 (Task Importance: high vs. low) × 2 (Thought Format: one word vs. many words) analysis of variance (ANOVA). As predicted, the 2-way interaction between the independent variables was significant $F(1164) = 9.98$, $p = 0.002$, $\eta_p^2 = 0.06$. As shown in Fig. 2, this interaction revealed that when the task was low in importance, expressing the thoughts in a single word was claimed to be significantly less difficult ($M = 5.50$, $SD = 1.66$) than expressing thoughts using many words, ($M = 6.27$, $SD = 1.80$), $F(1164) = 4.01$, $p = 0.04$, $\eta_p^2 = 0.02$. In contrast, when the task was more personally important, we found a significant effect in the opposite direction: expressing thoughts was experienced as more difficult when using one word ($M = 6.51$, $SD = 1.71$) than using many words ($M = 5.58$, $SD = 1.81$), $F(1164) = 6.10$, $p = 0.01$, $\eta_p^2 = 0.04$.

8.3. Discussion

We predicted that the number of words can affect the ease experienced while expressing thoughts depending of the importance of the task. In our first study, where the importance of the task was presumably high, using many words facilitated the use of thoughts compared to one word. In Experiment 3, we obtained evidence that participants reported more subjective ease when using many rather than one word in those kinds of conditions (i.e., when the task was framed to be relatively high in importance). In contrast, in our second study, many words decreased the use of thoughts when the thought listing task was lower in importance. In Experiment 3, we obtained evidence that participants also reported more subjective ease when using one versus many words in conditions conceptually equivalent to those (i.e., when the task was framed to be unimportant). After showing that individuals' perceptions of ease map onto using one or many thoughts in exactly the way hypothesized, the next study was designed to examine these implications directly for attitude change.

9. Experiment 4: moderation of effects by manipulating importance

From the prior Experiments, it appears that using one (vs. many) words to express one's thoughts can facilitate the impact of those thoughts on evaluative judgments depending on the circumstances. As noted, one of the factors that we consider to be responsible for the opposite effects obtained Studies 1 and 2 has to do with the importance of the thought task. Experiment 3 confirmed that participants were more likely to report that thought expression was easier when the thought generation task was personally important and required many rather than a single word or was personally unimportant and required one rather than many words.

In order to examine the implications of this logic for attitude change, Experiment 4 varied task importance within the same experimental design and measured attitudes rather than subjective ease. Thus, the goal of the present experiment was to determine whether the use of one vs. many words could both increase and decrease the relative impact of thoughts on attitudes depending on the importance of the task. In this study, we once again kept the topic constant while varying the importance associated with the task.

Specifically, in this study, participants were first informed that they were going to participate in a study regarding an "economic aid scholarship" (high importance task frame) or in a study "to validate a set of scales" that are currently being tested for future use (low importance task frame). Following this task frame induction, participants were exposed to a persuasive proposal about the color green. This is the same topic used in Experiment 3 demonstrating ease effects as well as in Experiment 2. In this study, we expected task importance to moderate the attitude outcome observed. As suggested by Experiment 3, we expected participants to experience relative difficulty when expressing thoughts using one (vs. many) words when the study was framed as important. We expected that participants would be more motivated to do a good job on the task in the high importance frame (scholarship) condition and thus would want to generate many words in order to show how smart they are (and deserving of winning a scholarship). Performing well would be more difficult using only one word.

In contrast, when the task was unimportant, we expected participants to want to be efficient and thus find it more compatible (easier) to generate one word rather than many. Most importantly, the pattern of thought use was expected to follow the ease of thought generation. That is, when thought generation was relatively easy (one word for low task importance and many words for high task importance), thoughts would be used more in guiding attitudes than when thought generation was more difficult (many words for low task importance and one word for high task importance). To examine these hypotheses, in Experiment 4 we manipulated task importance, valence of thoughts, and the number of words required to express one's thoughts.

9.1. Method

9.1.1. Participants and design

One hundred eighty seven students from the Psychology Department of the Universidad Autónoma de Madrid (UAM) participated anonymously and voluntarily in this experiment (20 men and 167 women, age range between 17 and 66 years; $M = 19.99$, $SD = 4.68$). Participants were randomly assigned to the cells of a 2 (Task importance: high vs. low) × 2 (Thought Direction: positive or negative) × 2 (Thought Format: many words vs. a single word) between-subjects factorial design. As in the prior studies, sample size was determined simply based on the number of participants who were collected from the start of the study until the end of the academic semester with the anticipation that about 25 participants per cell would be available.[7]

9.1.2. Procedure

Participants read a cover story in which they were informed that they were going to engage in an experiment about possible changes at their university. As in the second experiment, they were told they would participate in research about the assessment of the benefits of the color green to represent the university in a few years from now. First,

half of the participants were told that as participants in the research, they could be selected to enjoy an "economic aid scholarship" offered by the UAM, which is a relatively high importance frame for students. The other half of the participants was informed that the goal of the experiment was to validate a set of scales that were currently being tested. This framing was designed to make the task one of relatively low importance for the student participants.

In sum, all the participants read a message that contained arguments in favor of the color green. Half of them read a message including strong arguments, whereas the other half read a message that contained weak arguments. After reading the message, all participants wrote down their thoughts about the proposal. Participants were randomly assigned to either write their thoughts in *one word* or using *as many words* as they could. After listing their thoughts, all participants reported their attitudes toward adopting the color green for the university and were debriefed, thanked and dismissed.

9.1.3. Independent variables

9.1.3.1. Task importance. Half of the participants were told that their university offered a series of "economic aid scholarships" that included the coverage of the cost of registration, transportation, housing, materials, and other expenses for that academic year. In order to emphasize the importance of the task in this condition, participants were further informed that these scholarships were only to be offered to the students who participated in the study. Thus, participating in the study, taking it seriously, and doing a good job would presumably enhance their chances to receive a scholarship. Of most importance, our assumption was that students would find it difficult to do an impressive job on the thought listing task when they were restricted to one word compared to many words.

In contrast, in the low importance condition, participants were told that their university was carrying out a large series of studies on aptitudes and personality traits, and the goal of these studies was to validate a set of scales. Thus, participating in the study would have virtually no personal consequences for the students and as in Study 2, their goal would likely be to perform the task with a minimum of effort. Thus, in this condition, writing one word would be relatively easy and compatible with the cognitive miser goal.

9.1.3.2. Thought direction. In order to vary the direction of the thoughts generated by the participants, the quality of the arguments of the persuasive proposal was manipulated. As in the second experiment, all participants in this study received a message in favor of the color green as the official color of their University. The message contained either strong arguments or weak arguments. As noted, when a message is composed of strong arguments people tend to generate mostly positive thoughts toward the proposal, whereas when the message is composed of weak arguments people tend to generate mostly unfavorable thoughts toward the proposal. The messages were the same as those used in Study 2.

9.1.3.3. Thought Format. This induction was identical to the manipulation used in Experiments 1, 2 and 3. Participants were requested to generate five thoughts about the proposal to adopt the color green. In one condition, participants were told to express their thoughts about the proposal using as many words as they could whereas in the other condition they were told to write down their thoughts using just one word.

9.1.4. Dependent variables

9.1.4.1. Thought Favorability. Similar to Experiments 1 and 2, the thoughts generated by participants were analyzed by two judges – unaware of experimental conditions who coded the thoughts as favorable, unfavorable or neutral toward the color green. Judges agreed on 89% of the thoughts coded, and disagreements were resolved by discussion. The thoughts listed were similar to those

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[7] Only about 23 participants per cell were obtained by the end of the semester, but the data were nonetheless analyzed rather than continuing into the next semester. If one assumes the effect size for the two-way Thought Direction × Thought format interaction from the first (pilot) study then the current study has a power of 0.96 to detect a two way interaction under high task importance. If one assumes the effect size for the two-way Thought Direction × Thought format interaction from the second study then the current study has a power of 0.50 to detect a two way interaction under low task importance.

reported for Experiment 2. As in previous experiments, an index of favorability of message-related thoughts was formed by subtracting the number of unfavorable message-related thoughts from the number of favorable message-related thoughts and dividing this difference by the total number of message-related thoughts.

9.1.4.2. Attitudes toward the green color.

To assess participants' attitudes toward the proposal of the color green as the official color of the university, three 9-point (1–9) semantic differential scale items were used (e.g., *like-dislike, appealing-not appealing, recommended-not recommended*), the same items as used in Study 2, which also used green as a topic ($\alpha = 0.45$). An index was created of the sum of all of the items. Higher scores on this index indicate more favorable attitudes toward the color green.

9.2. Results

9.2.1. Thought Favorability

As expected, the $2 \times 2 \times 2$ ANOVA on the thought favorability index only revealed a significant a main effect of the independent variable, Thought Direction, $F(1179) = 140.30$, $p < 0.001$, $\eta_p^2 = 0.44$. Participants had significantly more favorable thoughts in the positive thoughts (strong arguments) condition ($M = 0.51$, $SD = 0.59$) than in the negative thoughts (weak arguments) condition ($M = -0.52$, $SD = 0.58$). Once again, thought favorability was not affected by thought format either as a main effect, $F(1179) = 0.07$, $p = 0.80$, $\eta_p^2 = 0.0001$, or in interaction with thought direction, $F(1179) = 0.01$, $p = 0.91$, $\eta_p^2 = 0.000001$. Similarly, there was no main effect of task importance, $F(1179) = 1.64$, $p = 0.20$, $\eta_p^2 = 0.009$ or any interaction of task importance with thought direction, $F(1179) = 1.00$, $p = 0.32$, $\eta_p^2 = 0.006$. Also, the three way interaction was not significant, $F(1179) = 0.35$, $p = 0.56$, $\eta_p^2 = 0.002$.

9.2.2. Attitudes toward the color green

Attitudes were analyzed with a 2 (Task Importance: high vs. low) $\times$ 2 (Thought Direction: positive vs. negative) $\times$ 2 (Thought Format: one word vs. many words) analysis of variance (ANOVA). A main effect of the independent variable Thought Direction, $F(1, 179) = 11.95$, $p < 0.001$, $\eta_p^2 = 0.06$, was observed such that participants who had received the message composed of strong arguments reported more favorable attitudes toward the color green ($M = 5.49$, $SD = 1.32$) than did those who had received the message composed of weak arguments ($M = 4.95$; $SD = 1.44$). Although not predicted, there was also a main effect of Task Importance, $F(1, 179) = 27.16$, $p < 0.001$, $\eta_p^2 = 0.13$, such as participants in the high importance condition reported more favorable attitudes toward the color green ($M = 5.69$, $SD = 1.38$) than did those in the low importance condition ($M = 4.78$; $SD = 1.30$).

More relevant to the present concerns, the 3-way interaction between Task Importance, Thought Direction, and Thought Format was significant $F(1179) = 7.357$, $p < 0.01$ $\eta_p^2 = 0.040$.[8] To examine this 3-way interaction, we analyzed the results as a function of task importance. As shown in the top panel of Fig. 3, for the low importance group, the 2×2 ANOVA on attitudes revealed a main effect for the variable Thought Direction, $F(1, 93) = 09.00$, $p = 0.003$, $\eta_p^2 = 0.09$, according to which participants reported significantly more favorable attitudes in response to the strong arguments ($M = 5.09$, $SD = 1.29$) than in response to the weak ones ($M = 4.41$, $SD = 1.22$).

Fig. 3. Results of Experiment 4. Attitudes reported by participants in the Low Importance Condition (top panel). Attitudes reported by participants in the High Importance condition (bottom panel).

More importantly, a significant interaction between the two independent variables also emerged, $F(1, 93) = 4.49$, $p = 0.037$, $\eta_p^2 = 0.05$. This interaction revealed that the difference between the persuasive effect of the strong message ($M = 5.29$, $SD = 1.17$) and the weak message ($M = 3.98$, $SD = 1.11$) was statistically significant only in the one-word condition, $F(1, 93) = 11.35$, $p < 0.001$, $\eta_p^2 = 0.109$. In contrast, there was no difference on persuasion between the strong ($M = 4.96$, $SD = 1.04$) and weak ($M = 4.73$, $SD = 1.21$) arguments in the many-words condition, $F(1, 93) = 0.46$, $p = 0.50$, $\eta_p^2 = 0.005$. This pattern suggests that when the task was low in importance, people relied on their thoughts more when they were written with one word rather than many words. This replicates the pattern initially obtained in Study 2.

For individuals in the high importance condition, depicted in the bottom panel of Fig. 3, the 2×2 ANOVA on attitudes showed a marginal main effect for the variable Thought Direction, $F(1,86) = 3.78$, $p = 0.06$, $\eta_p^2 = 0.04$ such that attitudes toward the proposal were more favorable in the positive ($M = 6.00$, $SD = 1.21$) than in the negative ($M = 5.44$, $SD = 1.47$) thoughts condition. More importantly, a marginally significant interaction between the two independent variables also emerged, $F(1, 86) = 3.01$, $p = 0.086$, $\eta_p^2 = 0.034$. This interaction revealed that the difference between the persuasive effect of the strong message ($M = 6.37$, $SD = 1.15$) and the weak message ($M = 5.31$, $SD = 1.36$) was significant only in the many-words condition, $F(1, 86) = 6.95$, $p = 0.01$, $\eta_p^2 = 0.007$. In contrast, there was no difference on persuasion between the strong ($M = 5.66$, $SD = 1.18$) and weak ($M = 5.61$, $SD = 1.37$) arguments in the one-word condition, $F(1, 86) = 0.22$, $p = 0.88$, $\eta_p^2 = 0.001$. This pattern suggests that when the task was high in importance, people relied on their thoughts more when they were written with many words rather than one word. This replicates the pattern initially obtained in Study 1.

9.3. Discussion

The results of this study suggest that when the task is framed to be relatively low in importance, thoughts are used to a greater extent in

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[8] Given that the alpha for the dependent measure was not as high in this study ($\alpha = 0.45$) as in the other studies, we also analyzed each item individually. When analyzed separately, the 3 way interaction was significant for the item (recommended-not recommended), $F(1, 179) = 4.87$, $p = 0.03$, $\eta_p^2 = 0.03$, and for the item (appealing-not appealing), $F(1, 179) = 4.17$, $p = 0.04$, $\eta_p^2 = 0.02$, but not for the item (like-dislike), $F(1, 179) = 1.27$, $p = 0.26$, $\eta_p^2 = 0.007$, though the pattern was in the hypothesized direction.
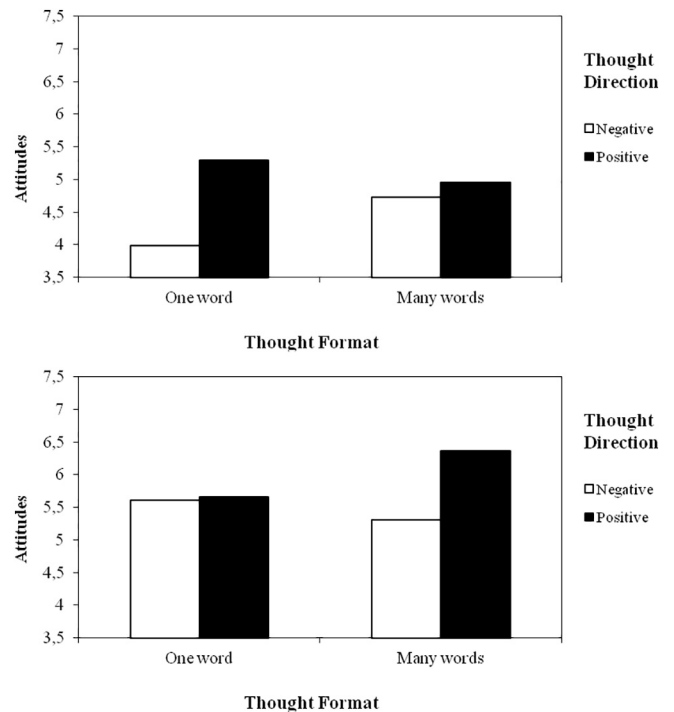
conditions where people expressed themselves using one (vs. many) words. This pattern of results replicates the findings obtained in Experiment 2 where the issue of instituting the color green was of low importance and nothing was done to enhance task importance. In contrast, when using the same topic but framing the task as important, we found a pattern in the opposite direction. That is, for high importance conditions, using many (vs. one) words to express one's thoughts increased the impact of those thoughts on attitudes, conceptually replicating Experiment 1 which used a more important topic – the self. Although this interaction was only marginally significant, it was clearly in the expected direction. One potential explanation is that although we gave participants an incentive to think in the high importance condition, the topic was still relatively trivial compared to one's prospects as a job candidate, so that we only increased relevance from low to moderate levels. Nonetheless, the three-way interaction was reliable and this study was useful in identifying task importance as a moderator of the impact of thought length on attitudes. After having explored the possibility of reconciling the apparently contradictory results of the first two studies as a function of task importance, the next study moves from a motivational paradigm to examine another potential moderator for the obtained results more focused on ability, though still linking to perceived ease of thought generation.

10. Experiment 5: moderation of effects by manipulating practice

The goal of Experiment 5 was to provide some evidence relevant to our postulated ease process by including a relatively direct manipulation of ease. In this experiment, participants were trained to express their thoughts either in a single word or in many words before generating positive or negative self-relevant thoughts with one or many words. This manipulation varied task ease directly since doing something for which people have practice should be easier than doing something for which people had no practice.

Thus, instead of varying a motivational variable (i.e., the perceived importance of the task), Experiment 5 was designed to examine the impact of another potential moderating variable that would plausibly affect the ease of thought generation – one's previous experience in expressing thoughts in many words versus one word. As noted, there are a number of potential moderators of what makes expressing thoughts more or less difficult. In the first set of studies, we focused on motivation to think as induced by a variation in the importance of the task. In this study we focus on practice and previous experience. That is, a task (such as expressing one's thoughts) can be easy or difficult to do because it matches the motivation of a person (high versus low desire to think as induced by task importance) or because it matches the ability of a person (based on prior experience).

In this experiment, we tested the possibility that the same thought format (using a single word or multiple words to express thoughts) can either facilitate or impair the impact of the thoughts depending on the ability that people have to use each of those formats of expression. Participants in this experiment were first trained to express their thoughts either in a single word or in many words before carrying out the experimental tasks. Getting practice in one or the other formats should make that format easier to use. We returned to the topic used in Experiment 1 – self-evaluation. We chose this topic specifically to show that just as moderation by ease can occur for the low importance topic used in Experiment 2, so too can moderation by ease occur for the high importance topic used in Experiment 1. Thus, after the initial training, participants were asked to write down their strengths (or weaknesses) as job applicants and to do so using either one or many words. Finally, participants reported their self-evaluations, which was the main dependent variable of this experiment.

We expected that the independent variable – Training – would moderate the effects of expressing thoughts with one vs. many words. For participants who were previously trained to express their thoughts in many words, we expected that the expression of thoughts in a single word would reduce the impact of these thoughts on their self-evaluations compared to the many words condition because expression in a single word would be more difficult than using many words. In contrast, for participants who were trained in expressing thoughts in one word, we expected that the direction of the thoughts would affect their self-evaluations to a greater extent in the condition in which thoughts were expressed in one vs. many words because the former would be easier to do. In sum, we expected a three way interaction between the three inductions in predicting attitudes that would conceptually replicate the moderation pattern observed in Experiment 4.

10.1. Method

10.1.1. Participants and design

Two hundred twenty five students from the Psychology Department of the Universidad Autónoma de Madrid (UAM) participated anonymously and voluntarily in this experiment (59 men and 166 women, age range between 19 and 35 years; $M = 21.92$, $SD = 2.12$). Participants were randomly assigned to the cells of a 2 (Training in Thought Format: many words vs. one word) × 2 (Thought Direction: favorable vs. unfavorable) × 2 (Thought Format: many words vs. a single word) between-subjects factorial design. The impact of these three experimental inductions was assessed on self-evaluations in the professional sphere. As in previous studies, we collected participants until the end of the academic semester assuming that this would yield a total of at least 25 participants per condition.

10.1.2. Procedure

As in Experiment 1, participants were told that they were helping out with research designed to validate self-perception scales in the professional domain. First, participants were presented with the training task. Half of the participants were *trained to use many words*, expressing concepts using as many words as possible whereas the other half were *trained to use a single word*, synthesizing various concepts using just one word. Next, participants wrote down their own most relevant characteristics as job candidates in the professional sphere. Half of the participants were asked to write down their *positive* characteristics whereas the other half was asked to write down their *negative* characteristics as job candidates. In addition, half of the participants had to list their thoughts with just one word, whereas the other half were asked to use as many words as possible. Thus, for some participants the task matched their prior training making the task relatively easy and for other participants the task mismatched their training making the task relatively difficult. Finally, participants reported their attitudes toward themselves as job candidates, and were debriefed, thanked and dismissed.

10.1.3. Independent variables

10.1.3.1. Training in thought format. Participants were randomly assigned to one of two experimental training conditions. One consisted of *training to use many words*, which involved expanding from one word to a phrase that required many words. Thus, half of the participants received 9 individual words and were asked to describe each of those words in a box using as *many words as possible*. The other condition consisted of *training to use a single word*, which involved going from a phrase composed of many words to reducing the meaning to just one word. Thus, this half of the participants received 9 phrases and were asked to describe the meaning of each of those sentences using *a single word*. For example, in the first case, participants had to describe what the words "ignorance" and "health" meant to them using as many words as possible. In contrast, in the other condition, participants had to describe in one word the meaning of the following sentence "Who does not read, never will know a topic thoroughly" or "Exercise and eating a balanced diet is essential." Thus, this induction gave participants practice either in a task similar to the one that they would be doing later, making it relatively easy, or not.

10.1.3.2. Thought direction. All the participants were randomly assigned to write about either their positive or their negative characteristics as potential job candidates. This induction was identical to the one used in Experiment 1.

10.1.3.3. Thought format. Participants had to write down their own characteristics in as *many words* as possible or in just a *single word*. This manipulation was identical to the ones used in the previous studies. It was verified that all participants followed the instructions, not using more than one word (in the one-word condition) and using more than one word (in the many-words condition).

10.1.4. Dependent variables

10.1.4.1. Thought favorability. Similar to previous studies, the thoughts generated by participants were analyzed by two judges – unaware of experimental conditions - who coded these self-thoughts as favorable, unfavorable or neutral toward the self. Judges agreed on 88% of the thoughts coded, and disagreements were resolved by discussion. The thoughts were similar to those described for Study 1. Consistent with previous studies, the same index of favorability of message-related thoughts was formed.

10.1.4.2. Self-evaluations. We assessed self-attitudes as job candidates using the same three 9-point (1–9) Likert scales used in Experiment 1 (*no potential at all - a lot of potential, not intelligent-very intelligent, do not like at all-like very much*). These scales showed a moderate internal consistency index ($\alpha = 0.69$). Higher scores in this attitude index reveal more favorable self-attitudes.

10.2. Results

10.2.1. Thought favorability

As expected, the 2 × 2 × 2 ANOVA on the thought favorability index revealed only a significant a main effect of the independent variable, Thought Direction, $F(1111) = 249.13$, $p < 0.001$, $\eta_p^2 = 0.79$, according to which participants had significantly more favorable thoughts in the positive condition, where they wrote down their strengths ($M = 1.00$, $SD = 0.59$) than in the negative condition, where they wrote down their weaknesses ($M = -0.68$, $SD = 0.51$). As in the prior studies, thought favorability was not affected by thought format either as a main effect, $F(1111) = 0.13$, $p = 0.72$, $\eta_p^2 = 0.001$, or in interaction with thought direction, $F(1111) = 0.08$, $p = 0.78$, $\eta_p^2 = 0.001$. Similarly, there was no main effect of practice, $F(1111) = 0.11$, $p = 0.74$, $\eta_p^2 = 0.001$ or any interaction of practice with thought direction, $F(1111) = 2.47$, $p = 0.12$, $\eta_p^2 = 0.022$. Finally, the three way interaction was also not significant, $F(1111) = 0.01$, $p = 0.94$, $\eta_p^2 = 0.000001$.

10.2.2. Self-attitudes

This self-evaluation dependent variable was also analyzed with a 2 × 2 × 2 ANOVA. As expected, the triple interaction of training, direction and format was significant, $F(1216) = 12.99$, $p < 0.001$, $\eta_p^2 = 0.05$. No other main effects or interactions were reliable (*p's* > 0.10). To examine these results, the interaction was decomposed as a function of the critical independent variable of this experiment: type of training received by the participants. For the group that received the many-word thought training, the 2 × 2 ANOVA on attitudes revealed a significant 2-way interaction, $F(1,99) = 6.59$, $p = 0.012$, $\eta_p^2 = 0.06$. The top panel of Fig. 4 shows that participants who had to write down their positive characteristics displayed significantly better self-attitudes ($M = 6.88$, $SD = 0.88$) than participants who wrote down their negative characteristics ($M = 6.40$, $SD = 1.03$) in the many-word format condition, $F(1,99) = 4.01$, $p = 0.048$, $\eta_p^2 = 0.04$. However, there was no difference on self-attitudes between participants who wrote down their positive characteristics ($M = 6.56$, $SD = 0.60$) and participants who wrote their negative characteristics ($M = 6.86$, $SD = 1.00$) in the
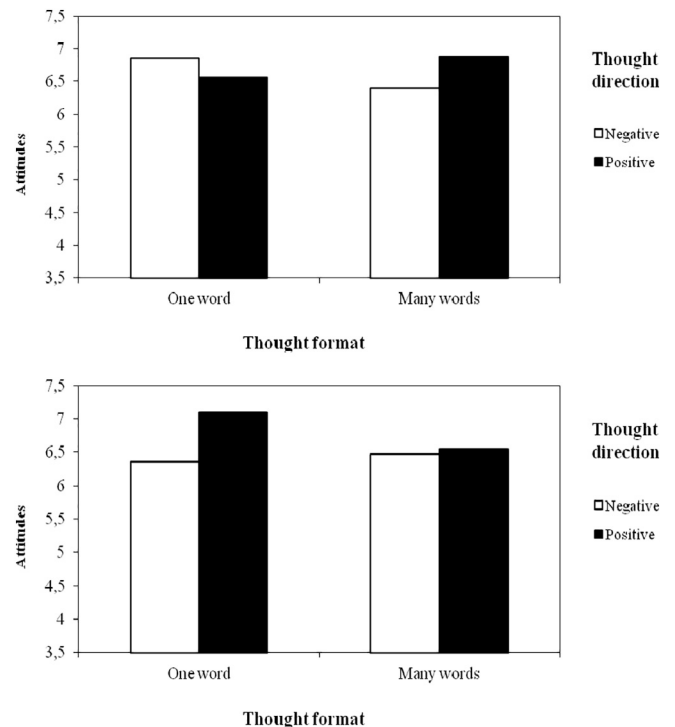

Fig. 4. Results of Experiment 5. Attitudes as a job candidate reported by participants who received training in many words (top panel). Attitudes reported by participants who received single-word training (bottom panel).

single-word format condition, $F(1, 99) = 2.66$, $p = 0.11$, $\eta_p^2 = 0.026$. Put simply, when participants had practiced writing their thoughts in many words initially, writing their traits as a job candidate in many words led to greater reliance on their thoughts than when they wrote them in a single word.

For the group that received one-word training (aimed at facilitating the use of this thought format), the 2 × 2 ANOVA on self-attitudes also revealed a significant 2-way interaction, $F(1117) = 6.44$, $p = 0.012$, $\eta_p^2 = 0.05$. The bottom panel of Fig. 4 shows that participants who had to write down their positive characteristics displayed significantly better self-attitudes ($M = 7.10$, $SD = 0.88$) than participants who wrote down their negative characteristics ($M = 6.36$, $SD = 1.03$) only in the one-word format condition, $F(1, 117) = 12.76$, $p = 0.001$, $\eta_p^2 = 0.10$. In contrast, there was no difference on self-attitudes between participants who wrote down their positive characteristics ($M = 6.55$, $SD = 0.98$) and participants who wrote their negative characteristics ($M = 6.47$, $SD = 1.02$) in the many-words format condition, $F(1, 117) = 0.01$, $p = 0.92$, $\eta_p^2 = 0.001$. Thus, when participants had practiced writing their thoughts in a single word initially, writing their traits as a job candidate in a single word led to greater reliance on their thoughts than when they wrote them in multiple words.

10.3. Discussion

The results of this study revealed that prior training and familiarity with the thought expression procedure moderated the impact of type of word expression on use of thoughts in judgment. The results suggest that either thought length (e.g., using a single vs. multiple words to express thoughts) can be relatively difficult and therefore reduce the subsequent use of thoughts when this format is unfamiliar or not well practiced. However, familiarizing participants beforehand with either thought format causes the trained length of words to be easier to implement and thus to greater thought use. Most importantly, this study provides convergent evidence to that obtained in Study 4 that the

length of words used to express one's thoughts can have an impact on thought use and the key variable determining whether the thoughts are used or not is whether the thought expression in the required format seems relatively easy or difficult The results of this study can be interpreted as proving experimental evidence for ease as the proposed process responsible for the observed findings (Spencer, Zanna, & Fong, 2005).

11. Experiment 6: mediation by ease and applicability

In addition to the experimental approach to testing process used in the previous study, we relied on a measurement approach to testing process in the final study. Participants in this new study watched a real commercial by Audi, and were randomly assigned to either write a positive thought in *one word* (hashtag) or using *as many words* (long tweet) as they could. After listing their positive thought, all participants reported the ease with which their thought came to mind (proposed mediator), and provided attitude ratings of Audi as well as its importance to them.

Although the number of thoughts was kept constant across conditions in this experiment (and in all previous experiments), this time we included a measure of subjective elaboration about the issue in order to examine whether thought format had any effect on perceived elaboration. It could be that more thought goes into expressing an idea in just one word or in many words and thus it is extent of elaboration rather than ease of thought generation that is responsible for the observed effects.

We predicted an interaction between Thought Format and Importance on both the measures of ease and attitude toward Audi. Specifically, among participants who report high importance, those in the many words (long tweet) condition are expected to report greater ease of thought generation and to show more favorable attitudes toward Audi than those in the one-word (hashtag) condition. In contrast, among participants reporting low importance, those in the one-word (hashtag) condition are expected to report greater ease of thought generation and more favorable attitudes toward Audi than those in the many words (long tweet) condition. Importantly, we expect perceived ease of thought generation to mediate attitude change.

11.1. Participants and design

Ninety undergraduate students from the Psychology Department at the Universidad Francisco de Vitoria (Madrid, Spain) participated anonymously and voluntarily in this experiment (26 men and 64 women, age range between 18 and 26 years; $M = 20.34$, $SD = 2.21$). Participants were randomly assigned to one of two-cells (one-word hashtag vs. long tweet), and importance of the attitude object was evaluated as a continuous measured variable. Finally, the dependent variables were assessed. Sample size was determined based on the number of participants who could be collected from the start of the study until the end of the academic semester with the anticipation that at least 25 participants per cell would be available. Although this procedure produced 45 participants in each of the experimental conditions, if the measured importance variable is considered as a dichotomous variable, there are about 22 participants per condition. The data were analyzed nonetheless since the main purpose of the study was to see if the same effects obtained in our previous studies would be obtained with more natural independent variables.

11.2. Procedure

Participants were informed that they were going to engage in a consumer study about a new car. All participants watched a real commercial by Audi. After watching the ad, all participants were required to generate a positive thought about Audi. Participants were randomly assigned to either write their thought in *one word* (hashtag) or using *as*

many words as they could (long tweet). After listing their thoughts, all participants reported the ease with which their thoughts came to mind, provided ratings of Audi (importance and attitude), reported their perceived elaboration about the message, and then were debriefed, thanked and dismissed.

11.3. Independent variable

11.3.1. Thought format

All participants were asked to generate one positive thought about the Audi commercial. In one condition, participants were told to express their thought about the ad using as many words as they could. Specially, participants were asked to write a tweet. They were told that unlike regular tweets which are 140 characters and about 20 words, their tweets should use as many words as they could. Participants were told that they had a minimum of 50 words. In the other experimental condition, participants were told to write down their thought using just one word. Specifically, participants in this condition were asked to come up with a one-word hashtag that only could have one word to express their thought. Two independent raters coded thoughts in terms of whether participants followed the instructions about thought length. Most participants followed the instructions. Specifically, 100% of participants wrote only one word in the hashtag condition, but in the long tweet condition most participants wrote fewer than the minimum of 50 words requested ($M = 34.21$, $SD = 14.12$). Nonetheless, 100% of participants in this condition wrote > 16 words.

11.3.2. Importance

To assess participants' perceived importance of the target attitude object, a 9-point (1–9) Likert scale ("not important" - "very important") was administered. Higher scores on this item indicate that participants considered Audi as more important. Importance scores were not affected by the manipulation of Thought Format, $F(1,88) = 0.24$, $p = 0.62$. That is, participants reported equivalent importance in the long tweet ($M = 5.79$, $SD = 1.71$) and the one-word hashtag ($M = 5.87$, $SD = 1.66$) conditions.[9]

11.4. Dependent variable

11.4.1. Thoughts

The single thought generated by participants was analyzed by two judges who coded it as favorable, unfavorable or neutral toward Audi. Judges agreed on 99% of the thoughts coded. The thought generated by one of the participants was coded by one of the judges as neutral. Thus, other than this one exception, both judges confirmed that the participants followed instructions and listed a positive thought. In addition to valence, these two independent judges also coded participants' thoughts with regard to quality (e.g., how persuasive the thought was). The analysis of thought quality revealed that the main effects of thought format, $B = -0.11$, $t(86) = -1.21$, $p = 0.23$, 95% CI: $-0.3.68, 0.89$, importance, $B = 0.09$, $t(86) = 0.95$, $p = 0.35$, 95% CI: $-0.1.24, 3.51$, and the interaction, $B = 0.08$, $t(86) = -0.92$, $p = 0.36$, 95% CI: $-0.3.47, 1.27$, were not significant.

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[9] There was also an attempt to manipulate importance in this study. Half of the participants were told that the new car was going to be available in their own city, which we thought would make the Audi a more important brand for the students. The other half of participants were informed that the announced car would only be available in a remote location (Singapore). Although this manipulation was designed to vary the personal importance and relevance of the Audi brand for the students, it failed to do so. This is likely because the students in the low relevance group did not come to believe that the car would not be available in their city. Unfortunately, the ad used in this study started to appear in TV commercials shortly before the study began. In fact, all but three students who participated in this study reported having seen the commercial before. As a result, this induction failed to affect the importance manipulation check, $F(1,88) = 1.28$, $p = 0.26$, and thus, the rated importance measure was used as a continuous independent variable in the study.

11.4.2. Attitudes toward Audi

To assess participants' attitudes toward the brand, three 9-point (1–9) semantic differential scale items were used (i.e., like-dislike, appealing-not appealing, recommended-not recommended). These items were the same ones used in Studies 2 and 4. Responses to these items were correlated (α = 0.78), so we averaged them to form a composite index of attitudes on which higher values represented more favorable opinions of Audi.

11.4.3. Ease

To assess participants' subjective feeling of ease in generating their thought, a 9-point (1–9) Likert scale ("not at all easy" - "very easy") was administered. Higher scores on this item indicate greater perceived ease (less difficulty) in the expression of the thought.

11.4.4. Perceived elaboration

Participants reported the extent to which they thought they elaborated about the message on a 9-point item ranging from "not at all" (1) to "very much" (9). Higher scores on this item indicated more perceived elaboration.

11.5. Results

11.5.1. Attitudes toward Audi

Attitudes were subjected to a hierarchical regression analysis. We introduced thought format (dummy coded) and importance (centered score) as predictor variables at the first step, and added a computed interaction term at the second step. The results of this analysis revealed that the main effects of thought format, B = 0.09, $t(86)$ = 0.83, p = 0.41, 95% CI: $-$0.20, 0.44, and importance, B = 0.08, $t(86)$ = 0.74, p = 0.46, 95% CI: $-$0.21, 0.48, were not significant. Most relevant for the purpose of the present research, there was a significant thought Format × Importance interaction, B = 0.68, $t(86)$ = 3.83, p = 0.0002, 95% CI: 0.33, 1.04.[10] As depicted in the top panel of Fig. 5, this interaction revealed that in the long tweet condition, participants expressed more positive attitudes toward Audi as reported importance increased, B = 0.47, $t(44)$ = 3.58, p = 0.001, 95% CI: 0.41, 1.49. In contrast, for the one-word hashtag condition, participants expressed less positive attitudes toward Audi as reported importance increased, B = $-$0.27, $t(42)$ = $-$1.76, p = 0.07, 95% CI: $-$0.86, 0.04.

Described differently, this interaction showed that among participants who reported high importance (+ 1 SD), those in the long tweet condition showed more favorable attitudes toward Audi than those in the one-word hashtag condition, B = 0.47, $t(43)$ = 3.33, p = 0.001, 95% CI: 0.33, 1.30. In contrast, among participants reporting low importance ($-$ 1 SD), those in the one-word hashtag condition reported more favorable attitudes toward Audi than those in the long tweet condition, B = $-$0.32, $t(43)$ = $-$2.17, p = 0.03, 95% CI: $-$0.61, $-$0.03.

11.5.2. Ease

Results of the same hierarchical regression analysis conducted for attitudes showed a significant main effect of thought format on ease, such that people in the long tweet condition reported more ease (M = 6.15, SD = 1.75) than people in the one-word hashtag condition (M = 4.10, SD = 1.86), B = 0.52, $t(86)$ = 5.52, p = 0.0001, 95% CI: 0.74, 1.44. The main effect of measured task importance on ease was not significant, B = $-$0.15, $t(86)$ = $-$1.59, p = 0.12, 95% CI: $-$0.20, 0.44, B = 0.08, $t(86)$ = 0.74, p = 0.46, 95% CI: $-$0.43, 0.08. Most relevant for the purpose of the present research, there was also a significant thought format × importance interaction, B = 0.52, $t(86)$
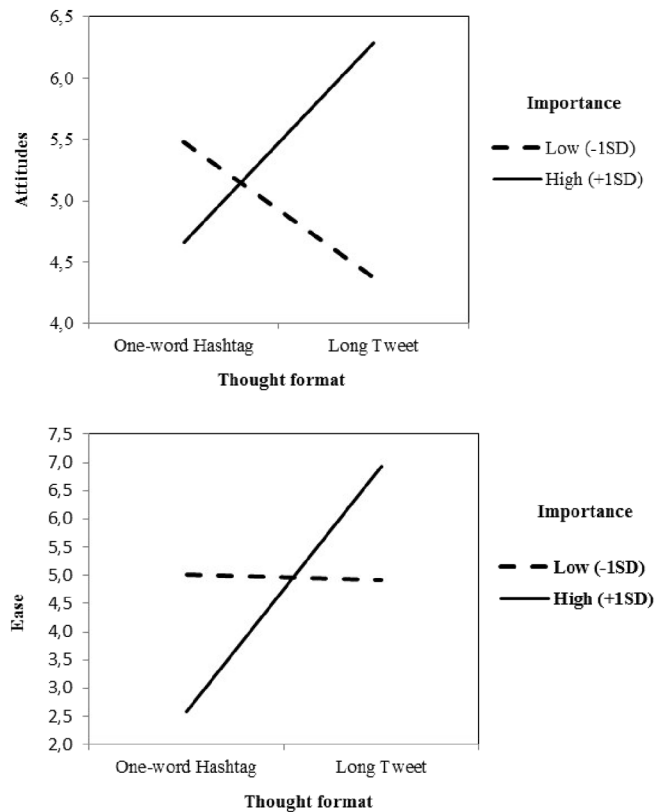

Fig. 5. Top panel: attitudes as a function of Format of the Thought and Importance in Experiment 6. Higher values indicate more favorable attitudes toward the brand. Bottom panel: Reported ease as a function of Format of the Thought and Importance in Experiment 6. Higher values indicate more ease experienced in listing the thought.

= 6.62, p = 0.0001, 95% CI: 0.37, 0.68.[11] As depicted in the bottom panel of Fig. 5, this interaction revealed that in the long tweet condition, participants expressed more reported ease as importance increased, B = 0.47, $t(44)$ = 3.88, p = 0.0002, 95% CI: 0.23, 0.72. In contrast, for the one-word hashtag condition, participants expressed less ease as reported importance increased, B = $-$0.57, $t(42)$ = $-$1.76, p = 0.07, 95% CI: $-$0.86, 0.04.

Described differently, this interaction showed that among participants high in importance (+ 1 SD), those in the long tweet condition felt that the task was easier than those in the one-word hashtag condition, B = 0.90, $t(43)$ = 9.45, p = 0.0001, 95% CI: 0.81, 1.24. There were no differences in ease among those participants who reported low importance ($-$ 1 SD), B = $-$0.02, $t(43)$ = $-$0.18, p = 0.85.

11.5.3. Perceived elaboration

The results of the hierarchical regression analysis showed that there were no main effects of thought format, B = $-$0.04, $t(86)$ = $-$0.35, p = 0.73, 95% CI: $-$0.26, 0.18, or importance, B = 0.08, $t(86)$ = 0.73, p = 0.47, 95% CI: $-$0.14, 0.31. Furthermore, the thought Format × Importance interaction was also not significant, B = $-$0.05, $t(86)$ = $-$0.43, p = 0.67, 95% CI: $-$0.27, 17.

11.5.4. Mediation analyses

In order to examine whether the perceived ease of thought generation mediated the effect of the key theorized interaction on attitudes toward Audi, we conducted a mediated moderation test using

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[10] This critical 2-way interaction between Thought Format and Reported Importance remained significant (B = 0.66, $t(86)$ = 3.76, p = 0.0003) when the attempted manipulation of relevance (see footnote 1) was also included as a factor in the model.

[11] Once again, this 2-way interaction between Thought Format and Reported Importance remained significant (B = 0.51, $t(86)$ = 6.58, p = 0.0001, 95% CI: 0.36, 0.67) when the attempted manipulation of relevance (see footnote 1) was also included as a factor in the model.

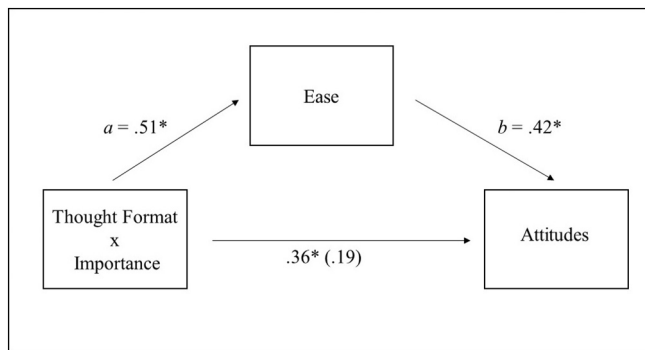**Fig. 6.** Mediation model for Experiment 6. Figure in the parenthesis (i.e., 0.19) is the direct effect of Thought Format × Importance on the Attitudes while accounting for the effect through the indirect path (* indicates $p < 0.05$).

bootstrapping methods (Muller, Charles, & Yzerbyt, 2005). In this procedure, thought format (i.e., one-word hashtag $= -1$, long tweet $= 1$) was contrast coded, and, importance and ease were mean-centered. In order to test the hypothesized mediation by ease, we conducted a biased corrected bootstrapping procedure with 10,000 bootstrap resamples using Hayes process macro (model 4) (Preacher & Hayes, 2008; Shrout & Bolger, 2002). In this analysis, thought format × importance was an independent variable, attitudes toward Audi was a dependent variable, and ease was a mediating variable (see Fig. 6). This approach includes procedures that compute a 95% confidence interval (CI) around the indirect effect and mediation is indicated if this CI does not include zero. As predicted, the result of this bootstrapping procedure revealed that the 95% confidence interval of the indirect effect (i.e., the path through the mediator) did not include zero (Indirect Effect $a \times b = 0.17$, CI95% = from 0.07 to 0.31). Therefore, the mediation by ease is supported (Shrout & Bolger, 2002).

11.6. Discussion

The results of this final study replicate the key interaction on attitudes and ease obtained in earlier studies with more real-world materials, and extend the contribution from an experimental approach to testing process to a measurement approach to mediation. The obtained interactions of thought format and importance on both measures of ease and attitudes revealed that among participants who expressed thoughts in one word, they reported less ease and less favorable attitudes as the importance of Audi increased. In contrast, participants who expressed their thought in many words reported more ease and more favorable attitudes as the importance of Audi increased. Importantly, we found mediational evidence for ease accounting for the attitudes expressed and ruled out perceived elaboration and thought quality as alternative explanations given that these measures did not show the same pattern as ease and attitudes.

12. General discussion

Across six studies, we examined the relationship between the length of thought expression and the subsequent impact of expressed thoughts on evaluative judgments for issues and/or tasks that varied in their importance. In Experiment 1, participants generated either positive or negative thoughts about an important topic (the self) and expressed those self-relevant thoughts in one or many words. We found that using many words facilitated the impact of those thoughts in the subsequent self-evaluation compared to using just one word. In Experiment 2, participants were asked to use one or many words to express positive or negative thoughts about a less important topic: the color for the students' university. In this experiment we found that expressing thoughts in many words reduced (rather than increased) the impact of the thoughts on attitudes toward the proposal compared to using one word.

We speculated that taken together, these two studies were compatible with the idea that using many vs. one word to express thoughts reduced the impact of those thoughts on attitudes for a topic of low personal importance but facilitated the use of thoughts for a personally important topic. That is, the first two studies showed that the length of thoughts can have opposite effects on attitudes depending on the circumstances. We suggested that topic importance provided motivation for students to perform well on the task and this motivation interacted with thought length to affect the ease of the task and subsequently use of one's thoughts.

In a third study, we randomly assigned participants to write thoughts in a single word or many words for a task that was framed to be more or less personally important. We found that participants reported more ease when expressing thoughts in a low importance task when using a single word rather than many words. When task importance was high, however, they reported more difficulty when expressing their thoughts in many words vs. one word. In this third study we moved from using important topics (study 1) vs. unimportant topics (study 2) to using unimportant versus important tasks (holding the topic constant), and found that this paradigm varied perceived ease of thought generation.

Having shown an interaction between thought format and task importance on ease, in Experiment 4 we examined if the attitude results also were capable of holding up in those circumstances. Specifically, in the fourth study, we found an interaction such that when participants cared little about the task, using many (vs. one) word to express thoughts reduced the impact of those thoughts on attitudes. In contrast, when participants cared more about the study, we observed a marginal interaction effect in the opposite direction, with many (vs. one) word to express thoughts increasing the subsequent impact of thoughts on attitudes.

In the fifth experiment, we moved to a more direct manipulation of ease. Specifically, participants were trained to express their thoughts either in a single word or in many words before generating positive or negative self-relevant thoughts with one or many words. This manipulation varied task ease directly since doing something for which people have practice is easier than doing something for which people did not practice. As expected, the results of this study showed that for participants who were trained to express their thoughts in many words, the expression of thoughts in a single vs. many words reduced the impact of their thoughts on attitudes. In contrast, for participants who were trained in expressing thoughts in one word, the valence of the thoughts affected their attitudes to a greater extent in the one-word condition than in the condition in which thoughts were expressed in many words.

The final study addressed the issue of mediation by taking a measurement approach to testing process. The proposed mediator (ease) was measured along with the dependent variable (attitudes). This study replicated the key interaction with more real-world materials, and extended the contribution from an experimental approach to testing process to a measurement approach to mediation, and also ruled out potential alternative accounts.

To our knowledge, this is the first research that examines the impact of the length with which thoughts are expressed on attitude change. Across five studies, using a variety of manipulations for thought valence and ease, we provided convergent evidence for the impact of this novel variable on attitudes. Although a priori it was reasonable to believe that either few or many words could have a persuasive advantage, we found that which was better depended on the circumstances. In line with previous research on ease of thought retrieval (Schwarz et al., 1991) and generation (Tormala et al., 2002), the present research revealed that when positive or negative thoughts were easy to express (i.e., when using many words for important topics and tasks or when previously practiced) they were more impactful on subsequent evaluations than when they were relatively more difficult to express (i.e., when using one single word for important topics and tasks or when not previously

practiced).

We conducted an additional test in order to provide further empirical evidence in support of the notion that the impact of thoughts on attitudes varies as a function of ease. As noted, an index of the overall valence of thoughts was created for each participant in each study. We used this index of thought favorability to predict attitudes in ease vs. difficult conditions. That is, across Experiments 1, 2, 4, and 5, we examined whether there was a stronger relationship between valenced thoughts and attitudes in the relatively easy conditions (one word for low importance or previously practiced topics/tasks; many thoughts for high importance or previously practiced topics/tasks) vs. the difficult conditions (one word for high importance or unpracticed topics/tasks; many words for low importance or unpracticed topics/tasks).[12] Collapsing across studies for maximum power, and regressing attitudes onto the relevant variables, a significant interaction emerged between the thought-favorability index and the ease vs. difficult conditions, $B = 0.20$, $t(1483) = 3.26$, $p = 0.002$. Consistent with our logic, this interaction revealed that participants' valenced thoughts exerted a stronger effect on attitudes when they were expressed in the easy conditions, $B = 0.36$, $t(1223) = 5.79$, $p < 0.001$, than when they were expressed in the relatively more difficult conditions, $B = 0.11$, $t(1258) = 1.69$, $p = 0.09$.

The present research is the first to show that the ease with which thoughts come to mind can vary as a function of the length of the thoughts rather than the mere number of the thoughts. Furthermore, this research demonstrated that the importance of the topic and task can play a critical role in an interaction with thought length to influence persuasion. In these studies we focused on the metacognitive role of ease in a paradigm in which people were specifically asked to generate their own thoughts about a topic (e.g., themselves as a job candidate) or in response to a persuasive message (e.g., on using the color green at their university). An important question to consider for future research is to what extent the present results would generalize to more traditional paradigms of persuasion in which people have to process messages that vary in length and importance and the recipients are not specifically asked to write thoughts of varying lengths. One possibility is that people would generate short thoughts if the message expressed ideas using very short sentences but would generate longer thoughts if the message was wordy. It would be interesting to test this notion with messages that varied in sentence length that also varied in topic or task importance.

It is also important to note that people generally construe ease in retrieving and expressing thoughts as good by default. That is, all else equal, ease seems to have positive psychological value. Extensive research has shown that ease often translates into favorable judgments and feelings, including judgments of availability, familiarity, truth, positive affect, beauty, liking, and confidence (e.g., Alter & Oppenheimer, 2009; Winkielman & Cacioppo, 2001; for a review in the domain of attitude change, see Briñol, Tormala, & Petty, 2013). However, people need not always perceive ease in such favorable terms. If people's naïve theories regarding the meaning of ease vary, then different thought-use patterns would be expected following the experience of ease. In one relevant study, Briñol et al. (2006) varied the perceived meaning of ease versus difficulty in an ease of retrieval and persuasion paradigm. Half of the participants were told that intelligent people, because of their more complex thoughts, typically experienced more difficulty generating thoughts than unintelligent people. The remaining participants received the opposite information implying that ease was an indicator of intelligence. Consistent with expectations, results indicated that the traditional ease-of-retrieval effect emerged only among participants who received the "ease is good" induction. Among participants receiving the "ease is bad" induction,

the opposite effect emerged. The same pattern was observed when processing ease was manipulated in other ways as well. Thus, people's interpretation of the *meaning* of experienced ease is critical in determining ease's downstream consequences (see also, Labroo & Kim, 2009; Unkelbach, 2006; Wan, Rucker, Tormala, & Clarkson, 2010). Thus, if people were led to believe that struggling to write one's thoughts conveyed deep conviction whereas ease of expression reflected vacuousness, the results we observed here would be expected to reverse.

In sum, our studies have revealed that expressing thoughts in many vs. one word is consequential for evaluative judgments. At least in part, the effects of thought length depend on the importance of the topic and task and the familiarity with the format of expression. One can image a number of potential individual and situational differences that can further moderate the obtained results. For example, there are thoughts and issues that might be just too deep and complex that even with many words people might struggle to express them. In those situations, using a single word might help to simplify that difficulty. This possibility resonates with other related phenomenon, such as when an image or a simple look (instead of single word) can serve to express more than a thousand words. Additionally, some unique contexts such as poetry and other forms of art might favor the use of a relatively low number of words to facilitate the expression of highly sophisticated and important thoughts. Of course, expressing thoughts with many words can be facilitated with easier grammatical structures (e.g., as in rhymes, McGlone & Tofighbakhsh, 2000) while using a single word to express thoughts in a simple situations could be difficult if one choses a word that is very unfamiliar or complicated to express (Alter & Oppenheimer, 2009). There might also be individual differences in people's ability (e.g., cell phone experts tweeting complex thoughts using few words) and motivation (e.g., need for closure; Kruglanski, 1989) that can also serve as potential moderators to explore in future research. What ties these potential moderators together is that they all would hold that whenever using few words allows for easier expression than using more words – due to motivational or ability variables – situational or dispositional factors – those thoughts should have a greater impact on judgment than when using few words is difficult as long as ease retains its positive meaning.

References

Alter, A. L., & Oppenheimer, D. M. (2009). Uniting the tribes of fluency to form a metacognitive nation. *Personality and Social Psychology Review, 13,* 219–235.

Aronson, E., & Mills, J. (1959). The effect of severity of initiation on liking for a group. *Journal of Abnormal and Social Psychology, 59,* 177–181.

Blankenship, K., & Holtgraves, T. (2005). The role of different markets of linguistic powerlessness in persuasion. *Journal of Language and Social Psychology, 24,* 3–24.

Briñol, P., Gascó, M., Petty, R. E., & Horcajo, J. (2013). Treating thoughts as material objects can increase or decrease their impact on evaluation. *Psychological Science, 24,* 41–47.

Briñol, P., McCaslin, M. J., & Petty, R. E. (2012). Self-generated persuasion: Effects of the target and direction of arguments. *Journal of Personality and Social Psychology, 102,* 925–940.

Briñol, P., & Petty, R. E. (2003). Overt head movements and persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 84,* 1123–1139.

Briñol, P., Petty, R. E., & Barden, J. (2007). Happiness versus sadness as determinants of thought confidence in persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93,* 711–727.

Briñol, P., Petty, R. E., & Tormala, Z. L. (2006). The malleable meaning of subjective ease. *Psychological Science, 17,* 200–206.

Briñol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93,* 1040–1053.

Briñol, P., Petty, R. E., & Wagner, B. (2009). Body postures effects on self-evaluation: A self-validation approach. *European Journal of Social Psychology, 39,* 1053–1064.

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[12] We did not include Experiment 6 in this analysis because participants listed only one thought in this study.

Briñol, P., Tormala, Z. L., & Petty, R. E. (2013). Ease and persuasion: Multiple processes, meanings, and effects. In C. Unkelbach, & R. Greifeneder (Eds.). *The experience of thinking: How the fluency of mental processes influences cognition and behaviour* (pp. 101–118). London: Psychology Press.

Cacioppo, J. T., & Petty, R. E. (1981). Social psychological procedures for cognitive response assessment: The thought listing technique. In T. Merluzzi, C. Glass, & M. Genest (Eds.). *Cognitive assessment* (pp. 309–342). New York: Guilford.

Cancela, A., Briñol, P., & Petty, R. E. (2016). *Hedonic vs. epistemic mindsets in processing persuasive communications: Matching mindset and personal involvement. Manuscript under review.*

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology, 66*, 460–473.

Chaiken, S. L., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In E. J. S. Uleman, & J. A. Bargh (Eds.). *Unintended thought* (pp. 212–252). New York: Guilford.

Cialdini, R. B., & Petty, R. E. (1981). Anticipatory opinion effects. In R. Petty, T. Ostrom, & T. Brock (Eds.). *Cognitive responses in persuasion* (pp. 217–235). Hillsdale, NJ: Erlbaum.

Craig, T., & Blankenship, K. (2011). Language and persuasion: Linguistic extremity influence message processing and behavioral intentions. *Journal of Language and Social Psychology, 30*, 290–310.

Festinger, L., & Carsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58*, 203–210.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In A. Greenwald, T. Brock, & T. Ostrom (Eds.). *Psychological foundations of attitudes* (pp. 148–170). New York: Academic Press.

Holtgraves, T. (2010). Social psychology and language: Word utterances and conversations. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Vol. Ed.), *Handbook of social psychology*(5th ed.). *Vol. 1. Handbook of social psychology* (pp. 1386–1422). New York: McGraw-Hill.

Horcajo, J., Briñol, P., & Petty, R. E. (2010). Consumer persuasion: Indirect change and implicit balance. *Psychology and Marketing, 27*, 938–963.

Horcajo, J., Briñol, P., & Petty, R. E. (2014). Multiple roles for majority versus minority source status on persuasion when source status follows the message. *Social Influence, 9*, 37–51.

Horcajo, J., Petty, R. E., & Briñol, P. (2010). The effects of majority versus minority source status on persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 99*, 498–512.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change.* New Haven, CT: Yale University Press.

Huesmann, L. R., Eron, L. D., Klein, R., Brice, P., & Fischer, P. (1983). Mitigating the imitation of aggressive behaviors by changing children's attitudes about media violence. *Journal of Personality and Social Psychology, 44*, 899–910.

Janis, I. L., & King, B. T. (1954). The influence of role-playing on opinion change. *Journal of Abnormal and Social Psychology, 49*, 211–218.

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivacional bases.* New York, NY: Springer.

Labroo, A. A., & Kim, S. (2009). The instrumentality Heuristic: Why metacognitive difficulty is desirable during goal pursuit. *Psychological Science, 20*, 127–134.

Lyubomirsky, S., Sousa, L., & Dickerhoof, R. (2006). The costs and benefits of writing, talking, and thinking about life's triumphs and defeats. *Journal of Personality and Social Psychology, 90*, 692–708.

Maio, G. R., Bell, D. E., & Esses, V. M. (1996). Ambivalence and persuasion: The processing of messages about immigrant groups. *Journal of Experimental Social Psychology, 32*, 513–536.

McGlone, M. S., & Tofighbakhsh, J. (2000). Birds of a feather flock conjointly (?): Rhyme as reason in aphorisms. *Psychological Science, 11*, 424–428.

Muller, D., Charles, M. J., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology, 89*, 852–863.

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*, 547–577.

Petty, R. E., & Briñol, P. (2015). Processes of social influence through attitude change. In E. Borgida, & J. Bargh (Eds.). *APA handbook of personality and social psychology (vol. 1): Attitudes and social cognition* (pp. 509–545). Washington, D. C: APA Books.

Petty, R. E., Briñol, P., & Tormala, Z. L. (2002). Thought confidence as a determinant of persuasion: The self-validation hypothesis. *Journal of Personality and Social Psychology, 82*, 722–741.

Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37*, 1915–1926.

Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology, 46*, 69–81.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Vol. Ed.), *Advances in experimental social psychology. Vol. 19. Advances in experimental social psychology* (pp. 123–205). New York: Academic Press.

Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research, 10*, 135–146.

Petty, R. E., Ostrom, T. M., & Brock, T. C. (1981). *Cognitive responses in persuasion.* Hillsdale, NJ: Erlbaum.

Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske, & G. Lindzey (Vol. Eds.), *The handbook of social psychology*(4th ed.). *Vol. 1. The handbook of social psychology* (pp. 323–390). New York: McGraw-Hill.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology, 61*, 195–202.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and non-experimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.

Smith, S. M., & Shaffer, D. R. (1995). Speed of speech and persuasion: Evidence for multiple effects. *Personality and Social Psychology Bulletin, 21*(10), 1051–1060.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89*, 845–851.

Tice, D. M. (1992). Self-concept change and self-presentation: The looking glass self is also a magnifying glass. *Journal of Personality and Social Psychology, 63*, 435–451.

Tormala, Z. L., Falces, C., Briñol, P., & Petty, R. E. (2007). Ease of retrieval effects in social judgment: The role of unrequested cognitions. *Journal of Personality and Social Psychology, 93*, 143–157.

Tormala, Z. L., Petty, R. E., & Briñol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin, 28*, 1700–1712.

Unkelbach, C. (2006). The learned interpretation of cognitive fluency. *Psychological Science, 17*, 339–345.

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology, 88*, 632–657.

Wan, E. W., Rucker, D. D., Tormala, Z. L., & Clarkson, J. J. (2010). The effect of regulatory depletion on attitude certainty. *Journal of Marketing Research, 47*, 531–541.

Watts, W. A. (1967). Relative persistence of opinion change induced by active compared to passive participation. *Journal of Personality and Social Psychology, 5*, 4–15.

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. P. Zanna (Vol. Ed.), *Advances in experimental social psychology. Vol. 35. Advances in experimental social psychology* (pp. 345–411). San Diego, CA: Academic Press.

Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology, 81*, 989–1000.