

## Feelings of ease and attitudes toward healthy foods

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### Abstract

**Background:** The successful impact of health campaigns often depends on the extent to which interventions are effective in changing attitudes. The goal of the present research was to examine to what extent the ease adolescents experience in generating thoughts can influence persuasion in the domain of a health-relevant topic. **Method:** Participants were asked to generate either positive or negative thoughts about the Mediterranean diet. The spontaneous feeling of ease with which participants generated those thoughts was assessed for each participant. The impact of these two independent variables on attitudes toward the Mediterranean diet was examined. **Results:** Participants who reported relatively higher (vs. lower) subjective ease experiences in the thought-listing task showed a greater effect of thought direction on attitudes toward the diet. **Conclusion:** This study demonstrates the importance of considering not only the thoughts people have with regard to health but also the subjective experiences and metacognitive feelings associated with those thoughts.

**Keywords:** Attitude change, meta-cognition, fluency, ease, persuasion, health, diet.

### Resumen

**Experiencia de facilidad y actitudes hacia la alimentación saludable.**

**Antecedentes:** el éxito de las campañas sobre salud depende en parte del grado en que son efectivas cambiando las actitudes de las personas. El objetivo del presente estudio fue examinar en qué medida la facilidad con la que los adolescentes generan sus pensamientos puede influir sobre la persuasión en el dominio de las campañas de promoción de hábitos saludables. **Método:** se pidió a los participantes que generaran argumentos positivos o negativos acerca de la dieta mediterránea. Se midió la facilidad con la que los participantes percibieron generar esos pensamientos. El impacto de estas dos variables independientes fue examinado en relación con sus actitudes hacia la dieta mediterránea. **Resultados:** los participantes que informaron una mayor (vs. menor) facilidad subjetiva a la hora de generar los pensamientos mostraron un mayor efecto de la dirección de los mismos sobre las actitudes hacia la dieta. **Conclusiones:** este estudio muestra la importancia de considerar no solo los pensamientos que las personas generan en relación con la salud, sino también las experiencias meta-cognitivas asociadas a esos pensamientos.

**Palabras clave:** cambio de actitud, meta-cognición, fluidez, facilidad, persuasión, salud, dieta.

Unhealthy eating habits are related to a wide range of serious health problems in modern society (Hubert, Feinleib, McNamara, & Castelli, 1983; Yang et al., 2014). For instance, obesity plays a role in heart disease, cancer, stroke, chronic obstructive pulmonary disease (COPD), accidents and diabetes mellitus (Jemal, Ward, Hao, & Thun, 2005). In fact, according to WHO (2012), every year 2.8 million people in the world die due to being overweight or obese.

Despite these dramatic consequences, there are already more than one billion people globally who suffer from overweight, and at least 500 million of them are obese (FAO, 2013). Obesity is increasing at an alarming rate in Europe, with 21.4% of the population being obese (FAO, 2013). For example, in some countries like Spain, with a tradition of healthy food habits, the prevalence of obesity and overweight among the adult population is already of 53.7% and 27.8% for children and adolescents (INE, 2013).

Furthermore, health care expenditures for obese individuals are at least 25% higher than for non-obese and these expenditures increase rapidly as people become more overweight (OECD, 2010). In European countries (e.g., Spain), obesity-related health costs account for 7% of the total health-care expenditures (Vázquez Sánchez & López Alemany, 2002).

Although there are many ways to deal with the problems related to undesirable eating habits, most health officials seem to advocate prevention and treatment strategies as the best method of addressing this issue over the long-run (Nestle & Jacobson, 2000). For example, prevention efforts have focused on improving positive outcomes associated with several kinds of healthy living habits (i.e., encouraging adolescents to engage in more physical exercise or increasing healthy diets; Annesi & Porter, 2013; Denney-Wilson, Robinson, Laws, & Harris, 2014). Despite the efforts, there is limited evidence of the efficacy of such prevention interventions in promoting healthy attitudes and behavior (Thomas et al., 2014). In fact, research has shown that the impact of these health campaigns varies significantly and, in many cases, is unsatisfactory (Cho & Salmon, 2007).

Research on persuasion suggests that attitude change depends on the internal responses people generate in response to external messages (Petty, Ostrom, & Brock, 1981; Petty & Cacioppo,

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1986). This view argues that people are persuaded by their own thoughts in response to the message rather than by the message, *per se*. Persuasive appeals that elicit primarily favorable thoughts toward a communication (e.g., “if I eat veggies, I’ll be thinner and more attractive”) produce agreement, whereas messages that elicit unfavorable thoughts (e.g., “if I eat veggies, I’ll not have enough energy later”) do not.

Sometimes, the effectiveness of thought generation process depends on the extent to which the person is involved in the intervention. For instance, Armitage (2004) evaluated the effectiveness of an intervention aimed at reducing dietary fat intake. Participants completed a questionnaire on their motivation to eat a low-fat diet before being randomly assigned to either an implementation intention condition, which required them to write down their thoughts about their plans to eat a low-fat diet during the next month, or a control condition. Results showed that the implementation intention intervention significantly decreased the reported fat intake after a month in comparison with the control group.

As another illustration, Baldwin, Rothman, Vander Weg, and Christensen (2013) showed that generating one’s own arguments for engaging in a specific behavior can be an effective strategy to promote health behavior change. Participants were randomly assigned to generate and evaluate their own arguments (self-generated condition) or to read and evaluate another person’s arguments (other generated condition) advocating regular exercise. Self-generated arguments about exercise were evaluated more positively than other’s arguments, and this biased processing mediated the self-generated argument effect on attitudes toward exercise and indirectly led to greater behavior change intentions. These findings suggest that generated thoughts may be an efficient way to design, implement, and evaluate interventions aimed at changing health attitudes and behaviors.

#### *Psychological processes of change*

In addition to primary thought responses to a message (e.g., “veggies are good for me”), research suggests that people can have secondary thoughts - that is, thoughts about their thoughts or *meta-cognitions* (e.g., “I am sure veggies are good for me”; Briñol & DeMarree, 2012). According to this meta-cognitive view, generating favorable or unfavorable thoughts in response to a persuasive message is an important factor in producing attitude change, but what people think about their thoughts is critically important as well (Petty, Briñol, & Tormala, 2002). Of particular relevance to the current research is the perceived ease with which people’s thoughts come to mind.

One of the earliest demonstrations of the effect of ease of thought generation on judgment came from the classic *ease of retrieval* studies. Schwarz et al. (1991) asked participants to rate their own assertiveness after generating few (6) versus many (12) examples of their own assertive behavior. They found that people viewed themselves as more assertive after retrieving 6 rather than 12 examples. This result was surprising because a straightforward application of accessibility and self-persuasion principles would have suggested that people generating 12 instances of assertiveness would have judged themselves to be more assertive than those generating 6 instances. The fact that the opposite was observed suggested that something beyond the mere number and direction of thoughts generated must have played a role. Schwarz and

colleagues concluded that people also considered the ease with which their thoughts were retrieved or generated.

Since this initial demonstration, the ease of retrieval effect has been observed across domains (see Schwarz, 1998; 2004). In an example particularly relevant to persuasion, Tormala, Petty, and Briñol (2002) asked undergraduates to generate either 2 or 10 arguments in support of a new campus policy. Results indicated that generating 2 favorable thoughts led to more favorable attitudes than did generating 10 favorable thoughts. Thus, thinking of fewer arguments was more persuasive than thinking of many, because of the ease of generating fewer (vs. more) arguments. That is, when it was easier to think of favorable arguments, those arguments carried more weight.

Particularly relevant to health interventions, Rothman and Schwarz (1998) found that when participants were asked to list many as opposed to a few factors leading to a disease, they experienced more difficulty with the retrieval task, decreasing their perceived vulnerability to the disease. By extension, when people were asked to list possible outcomes or symptoms regarding an ailment, the difficulty with which such information comes to mind should affect their judgments of the ailment’s severity. Accordingly, to maximize willingness to seek treatment, Chang (2010) suggested that it is also crucial to increase self-efficacy in the treatment of an ailment. He tested whether the difficulty of retrieving prevention or treatment options influenced perceived self-efficacy. Results showed that manipulating ease of retrieval affected perceived disease severity and self-efficacy regarding prevention and treatment. Similarly, Raghubir and Menon (1998) showed that the ease with which information can be retrieved from memory moderated self-perceptions of the risk of contracting AIDS. Specifically, increasing the accessibility of a cause of AIDS using an advertisement increased perceptions of one’s own risk of contracting AIDS and led to more favorable attitudes and intentions toward practicing precautionary behaviors.

In sum, experiences of ease in thought generation are important determinants of attitudinal and behavioral outcomes. Most of the research conducted so far has manipulated the ease with which thoughts come to mind by a number of procedures such as varying the number of thoughts requested (Tormala et al., 2002), the hand with which those thoughts are written (Briñol & Petty, 2003), the perceptual contrast of the writing task (Briñol, Petty, & Tormala, 2006), or other properties of the situation (see Alter & Oppenheimer, 2009; Briñol, Tormala, & Petty, 2013; for a review, see, Unkelbach & Greifeneder, 2013). However, the ease with which thoughts come to mind can be easily assessed without experimentally varying the conditions in which it occurs.

Therefore, the general goal of the present research was to examine the extent to which the spontaneous, natural experience of ease felt by participants can influence the use of thoughts in determining health-relevant attitudes. Furthermore, the present research aims to examine the role of ease in the domain of attitudes toward a domain previously unexplored: the Mediterranean diet, which represents a healthy eating plan (Estruch et al., 2013). In doing so, we aim to shed light on understanding when (and when not) health campaigns might be more likely to work in producing the desired evaluative changes. Although previous work has examined attitudes toward the Mediterranean diet, to our knowledge, the potential role of ease of retrieval remains unstudied with regard to this particular topic. Our specific goal is to examine the extent to which individuals who experienced higher (vs. lower) ease in

the thought-listing task are likely to show a greater effect of the induced direction of thoughts in determining their attitudes toward the Mediterranean diet.

## Method

### Participants

One hundred and thirty one students (76 women, 53 men and two participants who did not report their gender;  $M_{age} = 15.85$ ;  $SD = 1.03$ ) at a public high school in Albacete, Spain, voluntarily participated in a 2 (Thought Direction: Positive vs. Negative)  $\times$  Ease of Thought Generation (continuous variable) design as part of a course on preventing eating disorders. Participants were randomly assigned to one of the two conditions of the manipulated variable (Thought Direction) and reported the ease of thought generation in the measured variable.

### Procedure

The experiment was presented as part of a general study on eating habits. Specifically, participants were told that we were interested in socio-demographic habits and preferences in eating behavior. Participants were told that their responses were completely anonymous and were asked to provide the experimenters with their consent to continue with the experiment. After obtaining their informed consent, all participants received written instructions asking them to complete several tasks. As part of the first task, each participant was randomly assigned to list either positive or negative thoughts about Mediterranean diet for 3 minutes. Before listing their thoughts, all participants were reminded that a Mediterranean diet involves high consumption of vegetables, legumes, fish and olive oil. After listing their thoughts about the diet, all participants reported their attitudes toward Mediterranean diet and their experiences of ease with respect to the thought generation task. Finally, they were debriefed, thanked, and dismissed. After completing the study, all participants were also offered the possibility of participating in a prevention workshop in the domain of eating disorders.

### Instruments

**Thought Direction:** Participants were provided with eight boxes to write either positive or negative thoughts related to Mediterranean diet for 3 minutes. They were told to write one thought per box and not to worry about grammar or spelling. This manipulation has been proved successful previously in producing one group with favorable thoughts and another with unfavorable thoughts toward Mediterranean diet (Briñol, Gascó, Petty, & Horcajo, 2013) and a variety of other topics (Briñol, Horcajo, Becerra, Falces, & Sierra, 2003; Briñol, McCaslin, & Petty, 2012). Examples of positive thoughts toward the diet include “Mediterranean diet is known worldwide for its good taste and quality” or “it has a lot of nutrients”. Examples of negative thoughts include “it is not as easy to get as other foods” “Mediterranean diet often include lots of time for cooking and cleaning”.

**Ease of Thought Generation:** To measure the perceived ease of thought generation, participants were next asked “To what extent did your thoughts about Mediterranean diet came quickly to mind?”. Participants responded to this measure on a 9-point scale

anchored at *not at all-very much*. The average and the distribution of the scores on this item were  $M = 6.52$ ,  $SD = 2.08$ . Scores on the ease item were not affected by the thought direction manipulation,  $F(1, 129) = .88$ ;  $p = .35$ , leading to equivalent responses for positive ( $M = 6.70$ ,  $SD = 1.96$ ) and negative ( $M = 6.35$ ,  $SD = 2.20$ ) conditions. Similar measures have been used previously in the ease-of-retrieval paradigm (Tormala et al., 2002).

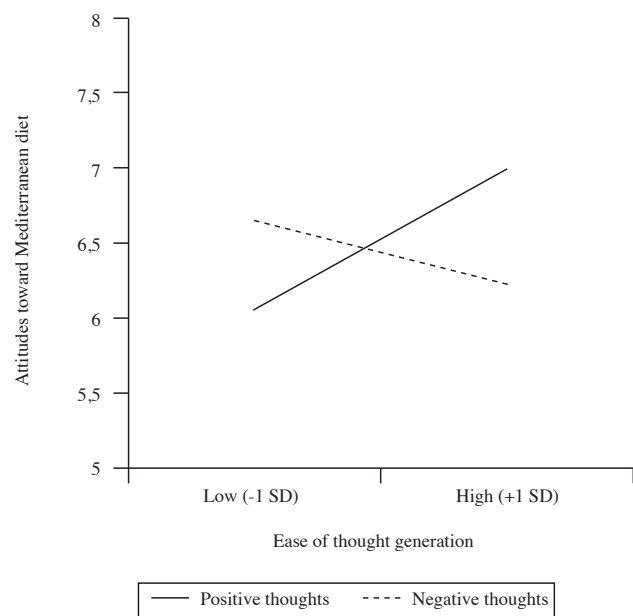
**Attitudes toward Mediterranean Diet:** Participants were asked to evaluate the Mediterranean diet using a series of four 9-point semantic differential scales (bad—good, dislike—like, unappetizing—appetizing, not at all—very flavorful). Ratings on these items were highly intercorrelated ( $\alpha = .85$ ), so they were averaged to form one overall attitude index. Higher values on this index indicated more favorable evaluations toward the Mediterranean diet.

### Data analysis

The dependent measure was submitted to a multiple regression analysis as recommended by Aiken and West (1991), with Thought Direction (positive vs. negative; dummy coded) and the Ease of Thought Generation (continuous variable) as the independent variables. We tested the two-way interaction using a multiple regression approach by utilizing the PROCESS macro for SPSS (model 1; Hayes, 2013).

## Results

**Attitudes toward Mediterranean Diet.** When the composite index of attitudes was submitted to regression analysis, we did not find main effects for thought direction,  $B = 0.10$ ,  $t(128) = 0.37$ ,  $p = .71$ , or for ease of thought generation condition,  $B = 0.05$ ,  $t(128) = 0.77$ ,  $p = .44$ . Most importantly, the predicted two-way interaction was significant,  $B = 0.23$ ,  $t(127) = 2.46$ ,  $p = .015$  (Figure 1). Specifically,



**Figure 1.** Attitudes toward Mediterranean diet as a function of thought direction and reported ease of thought generation (graphed at +1 and -1 SD)

among participants at higher levels of ease in thought generation (analyzed at 1 SD above the mean), those listing positive thoughts toward Mediterranean diet reported significantly more favorable attitudes toward that food than did those listing negative thoughts,  $B = 0.78$ ,  $t(127) = 2.00$ ,  $p = .046$ . In contrast, for participants at lower levels of ease of thought generation (analyzed at 1 SD below the mean), those who listed positive thoughts showed a tendency to report less favorable attitudes than did those who listed negative thoughts, although this difference was not statistically significant,  $B = -0.58$ ,  $t(127) = -1.48$ ,  $p = .14$ .

Viewed differently, this interaction showed that, among those listing positive thoughts, self-reported ease of thought generation was positively associated with more favorable attitudes toward the diet,  $B = 0.23$ ,  $t(127) = 2.33$ ,  $p = .021$ . For those in the negative thoughts condition, however, there was a non-significant relationship between self-reported ease and attitudes,  $B = -0.10$ ,  $t(127) = -1.11$ ,  $p = .27$ .

### Discussion

This study suggested that an examination of subjective experiences of ease can help to understand the effects of health communications. Specifically, we found that relatively high (vs. low) ease of thought generation appeared to polarize attitudes toward the Mediterranean diet. Therefore, by considering the role of ease in thought generation can contribute to understanding when an intervention produces more or less positive outcomes.

Ease can influence persuasion through multiple mechanisms. First, ease can act as a simple cue to persuasion. That is, ease of retrieving or generating arguments can influence attitudes by operating as a cue implying that the arguments are frequent (Schwarz et al., 1991). This effect is driven by an availability heuristic (Tversky & Kahneman, 1974), whereby the easier it is to generate positive or negative thoughts about the Mediterranean diet, the more supportive thoughts adolescents assume there must be. Conversely, having difficulty induces the perception that there is little support available. Thus, when it was difficult to generate a list of positive or negative thoughts about Mediterranean diet, participants presumably inferred that there must not be many positive or negative arguments, respectively, about it. In addition to these cognitive inferences related to availability, perceived ease can also operate by affecting positive affect (Moons, Mackie, & García-Marqués, 2009; Pronin, 2013; Winkielman & Cacioppo, 2001), and affect can influence persuasion through multiple ways (Briñol & Petty, 2015).

A third explanation for the ease effect suggests that the more difficult it is to generate a given set of thoughts or arguments, the more likely it is that unrequested, or unwanted, thoughts also come to mind. These unrequested thoughts have been found to be partly responsible for the ease of retrieval effect (Tormala, Falces, Briñol, & Petty, 2007). When it is difficult to generate positive thoughts about the Mediterranean diet, for instance, more negative thoughts are likely to come to mind and those thoughts push attitudes in a negative direction. When it is difficult to generate negative thoughts about the diet, then positive thoughts are likely to come to mind as difficulty increases, making final attitudes relatively more positive.

Finally, in addition to working as a heuristic or affecting the proportion of thoughts, ease stems from self-validation processes.

For instance, Tormala et al. (2002) found that when it was easy (vs. difficult) to generate thoughts about a policy (e.g., because two rather than ten were requested), participants believed that the thoughts generated were more likely to be valid. As a result, thought confidence mediated the effect of ease on attitudes following a persuasive message. Applying this meta-cognitive logic to the present paradigm, it might be the case that those participants who reported high (vs. low) ease also thought that they generated better thoughts about the Mediterranean diet.

Specifying the process by which ease operates is important for persuasion because different mechanisms have implications for the durability and impactfulness of attitudes derived from subjective ease. Specifically, attitudes changed by high thought processes tend to be more persistent over time, resistant to change, and predictive of behavior than attitudes changed by low thought processes (Cárdaba, Briñol, Horcajo, & Petty, 2013; Gascó, Briñol, & Horcajo, 2010; Petty, Haugtvedt, & Smith, 1995).

There are both situational and individual variables that could further modify the effects uncovered in this study. For example, the effects of ease are often moderated by the meaning people associate with ease. In an illustration relevant to persuasion, Briñol et al. (2006) asked participants to generate either 2 or 10 arguments in favor of a counter-attitudinal proposal. Additionally, half of participants were told that ease of retrieval in generating thoughts reflected thoughts that were low in complexity and that, in fact, intelligent people often experience more difficulty in generating thoughts than do unintelligent people, given that intelligent people have more neuronal connections. The remaining participants received the opposite information, which reflected the perhaps-default association of ease with confidence and validity. Consistent with expectations, Briñol et al. (2006) found the traditional ease-of-retrieval effect among participants who received the “ease is good” instruction. Among participants who were instructed that “ease is bad”, an opposite effect emerged. Thus, people’s interpretation of the *meaning* of ease is critical in determining downstream attitude change. Furthermore, ease needs to fit personal characteristics such as goals and motivations to produce the desired effects (Labroo & Kim, 2009; Lee & Aaker, 2004; Park & Bae, 2014; Pochptsova, Labroo, & Dhar, 2010). Future research should also replicate the present findings using different populations (e.g., individuals vulnerable to eating disorders) and also including other materials and measures (e.g., bipolar scales, more complete measures of ease, automatic evaluations; for an additional example of thought-validation, see, Briñol, DeMarree, & Petty, in press).

In sum, the current research extends the existing literature on the effectiveness of health campaigns by focusing on the perceived ease with which adolescents’ thoughts come to mind to explain when an intervention would be effective, ineffective or even counterproductive. In this line, our recommendation is to take into consideration not only the thoughts that people generate about a specific attitude target, but also the ease with which thoughts come to mind in order to understand and predict attitude change.

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