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# Different Frames to Reduce Red Meat Intake: The Moderating Role of Self-Efficacy

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**ABSTRACT**

Previous research has shown that messages aimed at reducing red meat intake often do not have the expected effect. In the present study, we tested whether prefactual ("If… then") or factual messages focused on health or wellbeing concerns have different persuasive effects depending on the recipient's level of eating self-efficacy. Young adult participants ($N$ = 247) completed a questionnaire measuring their eating self-efficacy and current red meat consumption. They were then presented with a prefactual or factual version of a message describing the possible negative impact of excessive red meat consumption on either health or wellbeing. After reading the message participants reported their involvement with the message and intention to eat red meat in the future. Results showed that prefactual wellbeing messages and factual health messages trigger participants' involvement and, in turn, reduce their intention to eat red meat more than the other message combinations. Eating self-efficacy moderates these effects, with factual health messages persuading people with high self-efficacy and prefactual wellbeing messages persuading also receivers with an average level of self-efficacy. Discussion focuses on which message frames can be more effective in promoting a reduction in red meat consumption in a wider population.

Excessive red meat intake is associated with an increased risk of developing cancer (Eshel & Martin, 2006), heart disease (Bernstein et al., 2010), and other serious ailments. Despite years of public health campaigns aimed at increasing awareness of this risk, many people still consume much more red meat than recommended (Delgado, 2003). It is therefore likely that communication on this issue is not sufficiently effective, or that some individuals are less persuaded by it than others.

Past research suggests that the persuasiveness of communication promoting change in meat consumption depends on how messages on the proposed behavioral change and its consequences are framed (Cesario, Corker, & Jelinek, 2013; Cesario & Higgins, 2008). In particular, the frequent focus on the consequences of meat intake on health might not be the most persuasive way to involve recipients and motivate them to change eating habits (Block et al., 2011; Fleury & Sedikides, 2007). Recent research by Bertolotti, Chirchiglia, and Catellani (2016) has shown that messages focused on the consequences of red meat intake on wellbeing (e.g., weight gain, impaired fitness, mood, and cognitive function) can be equally or more persuasive than messages focusing on health-related consequences (e.g., increased risk of cancer and heart disease), particularly when such consequences are presented in prefactual terms, that is using a "If…then…" format (Bagozzi, Moore, & Leone, 2004).

In the present research, we investigated whether recipients are more easily persuaded by messages with a focus on health or wellbeing, and a prefactual or factual style. Furthermore, we tested whether such messages have different persuasive effects depending on the degree of eating self-efficacy of the recipients, that is, their perception of being able to enact the suggested behavior (Cauberghe, De Pelsmacker, Janssens, & Den, 2009).

## The effects of factual and prefactual messages on health and wellbeing

The persuasiveness of a message may vary depending on the way the message is framed, that is, the specific angle in which content is presented, by choosing appropriate words, images, phrases, or presentation styles (Gamson & Modigliani, 1989).

Communication promoting change in eating habits is often framed in terms of health, as it focuses on how certain habits, such as excessive meat consumption, can lead to negative health consequences, such as increased risk of heart disease and other cardiovascular disorders (Allen & Baines, 2002; Berndsen & van der Pligt, 2004). Research on the motivations of individuals who spontaneously decide to change their eating habits, however, has found that wellbeing concerns, such as the desire to control weight and improve psychophysical fitness, are more common and more pervasive than health concerns (Block et al., 2011; Fleury & Sedikides, 2007). Communication campaigns promoting the reduction of red meat consumption could therefore take advantage of these widespread concerns, presenting the reduction of meat intake as a means to improve one's wellbeing.

So far only a few studies have explored this approach, finding that messages focused on wellbeing can be effective,

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particularly when framed in prefactual terms (Bertolotti et al., 2016). Prefactual wellbeing messages frame the consequences of nutrition on wellbeing not as a direct and inescapable cause-effect link, but rather as the hypothetical future outcome (Petrocelli, Seta, & Seta, 2012) of the adoption, or non-adoption, of a proposed behavior (e.g., "*If you do not reduce your meat intake*, you will have negative effects on your mood and psychological wellbeing").

The greater persuasiveness of prefactual messages regarding wellbeing might be explained by a phenomenon known as regulatory fit (Bertolotti & Catellani, 2014; Cesario et al., 2013), according to which message framing influences recipients' perception of whether a proposed behavior is suitable in addressing specific self-regulatory concerns. According to the regulatory fit theory, communication fitting with recipients' self-regulatory concerns makes them "feel right" (Cesario, Grant, & Higgins, 2004; Cesario & Higgins, 2008), resulting in greater involvement in the proposed behavior. Individuals who are highly involved by a message are more likely to process it in detail, and to change their attitudes, intentions, and behavior accordingly (Cornacchione & Smith, 2012; Maheswaran & Meyers-Levy, 1990).

In the present study, we investigated whether messages framed in a way that fits the evoked concern made recipients more involved than the non-fitting combinations, in turn eliciting a greater intention to reduce red meat consumption. When people think about wellbeing, they stand in a growth perspective (Cesario et al., 2013), as wellbeing is seen as a continuous or "maximal goal" dimension (see Berthold, Mummendey, Kessler, Luecke, & Schubert, 2012). In this perspective, messages framing a proposed behavior as a way of achieving a desirable state (or avoiding an undesirable one), as prefactual messages do, should fit well with the recipients' concern. Conversely, when people think about health, they do so in a safety perspective, due to health being considered a "minimal goal" dimension, for example, something that is conserved as long as another undesirable state (i.e., illness) is avoided. In this perspective, messages that simply warn against behaviors that are associated with illness, as factual messages do, should fit well with the recipients' concern.

Therefore, we expected participants reading prefactual wellbeing messages to be more involved than participants reading factual wellbeing messages, and in turn report greater intention to reduce meat consumption in the future. Conversely, we expected participants reading factual health messages to be more involved than participants reading prefactual health messages, and in turn report greater intention to reduce meat consumption in the future.

## The moderating role of eating self-efficacy

A long tradition of communication research has shown that the same message can be more or less persuasive depending on certain individual characteristics of the recipients (Cesario, Higgins, & Scholer, 2008). In the domain of health promotion and nutrition communication, several studies have shown that persuasive messages are in general less convincing for recipients with low self-efficacy (Cauberghe et al., 2009; Riet, Ruiter, Werrij, & De Vries, 2008). People who feel that they have the necessary skills to perform the message recommendations are motivated to accept it and change their behavior accordingly (Riet et al., 2008; Witte, 1992). Conversely, people who feel they are not able to deal with the requests tend to activate defence mechanisms that lead them to simply ignore or reject the threatening message.

Eating self-efficacy has been defined as an individual's belief regarding the personal ability to successfully adopt healthy eating behaviors (Ames, Heckman, Grothe, & Clark, 2012). People with high eating self-efficacy are more likely to translate their intention to eat healthy foods into effective actions (Gutiérrez-Doña, Lippke, Renner, Kwon, & Schwarzer, 2009).

In the present study, we investigated whether participants' level of eating self-efficacy moderated the effects of message concern (health vs. wellbeing) and style (factual vs. prefactual) on recipients' involvement and intention to reduce meat consumption in the future. A simplified theoretical model of our moderated mediation hypothesis is presented in Figure 1. Based on the results of previous research (Cauberghe et al., 2009; Riet et al., 2008), we expected messages focused on health to be more persuasive for participants with high eating self-efficacy than for those with low eating self-efficacy, regardless of their factual or prefactual style. Conversely, we expected messages focused on well-being to be persuasive not only for participants with high eating self-efficacy, but also for those with a lower level of self-efficacy, and particularly so when formulated in a prefactual style. This would be the case because messages with this particular combination of concern and style are less likely to be perceived as threatening, and more likely to involve and motivate also recipients who perceive themselves as having little control over their eating habits.

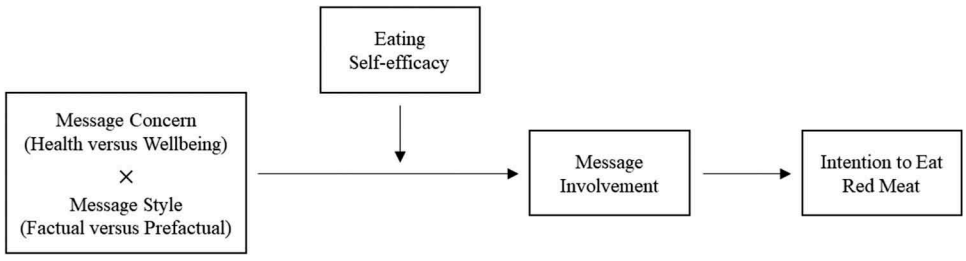


**Figure 1.** Theoretical model of the effects of message framing and recipient eating self-efficacy on message involvement and intention to eat red meat in the future.

## Method

### Participants and procedure

An online questionnaire was sent to a convenience sample of Italian students of the Catholic University of Milan, in exchange for course credits. The inclusion criterion was not to follow any specific dietary regime. The students who agreed to participate ($N$ = 247) received an email with the online study. Among these, 191 students fully completed the study (67 males, 114 females; age $M$ = 24.32, $SD$ = 2.54, age range 18–32 years; 80.1% single marital status).

At the beginning of the study, we measured participants' meat-eating habits and eating self-efficacy, as control variables. Then, participants were randomly assigned to one of four different conditions, in which they read a different version of a short (approximately 125 words) text on the negative impact of excessive meat consumption. The text reported the results of studies conducted by the World Health Organisation (WHO) on the effects of red meat intake. Depending on the experimental condition, the content of the article was focused on either health or wellbeing, while the style was either prefactual ("If you follow a diet with plenty of animal protein and fats, this will have a negative impact on your health/wellbeing") or factual ("Following a diet with plenty of animal protein and fats has a negative impact on your health/wellbeing") (see Bertolotti et al., 2016 for full text). After reading the manipulated message, participants answered a series of self-report measures of message involvement and future intention to eat red meat. Participants were randomly distributed among the four conditions as follows: 44 in the factual health message condition, 45 in the factual wellbeing condition, 58 in the prefactual health condition, and 44 in the prefactual wellbeing condition.

### Measures

#### Red meat consumption

Baseline levels of red meat consumption were assessed using two items, measuring red meat (beef, veal, lamb etc.) and processed red meat (bacon, ham, sausages etc.) consumption on a 7-point Likert scale ranging from (1) "never" to (7) "more than once a day". Correlation among the items was $r$ (171) = .47, $p$ < .001.

#### Eating self-efficacy

To measure participants' eating self-efficacy we employed three items adapted from previous measures of self-efficacy in the food and lifestyle domains (Ames et al., 2012): "How much do you feel being able to eat healthy?", "How much do you feel of being able to eat healthy at home?", and "How much do you feel of being able to eat healthy when you eat out?". Answers were given on a 7-point Likert scale ranging from (1) "totally unable" to (7) "totally able". Cronbach's α was .70.

#### Message involvement

We asked participants to indicate how interested, involved, and motivated they were after reading the message (e.g., "As you read the article, how much did you feel motivated?"; see Karmarkar & Tormala, 2010). Answers were given on a 7-point Likert scale ranging from (1) "not at all" to (7) "very much". Cronbach's $\alpha$ was .83.

#### Future intention to eat red meat

Participants were asked to indicate their intention to eat red meat and red processed meat over the next month. Answers were given on a 7-point Likert scale ranging from (1) "never" to (7) "more than once a day" and item correlation was $r$ (171) = .51, $p$ < .001.

## Results

### Preliminary analysis

Means, standard deviations and correlations among study variables for the total sample are reported in Table 1, whereas means and standard deviations for participants in each experimental condition are reported in Table 2. The item scores generally showed sensible variation and were not unduly skewed. The mean self-efficacy score was above the midpoint of the scale, while the means of involvement, past consumption, and intention were around the midpoint of the scale. On average, participants reported eating red meat at least twice a week.

Preliminary analyses (ANOVAs) showed no significant differences in eating self-efficacy, red meat consumption and age among the four conditions, $F$(1,172) < .74, $p$ > .10, $\eta^2$ < .03. Chi-square tests also did not show any significant differences across conditions in gender ($p$ = .19) and marital status ($p$ = .65).

**Table 1.** Means, standard deviations, and correlations among the main variables.

| | 1. | 2. | 3. | 4. | *M* | *SD* |
|---|---|---|---|---|---|---|
| 1. Past red meat consumption | 1 | | | | 3.13 | .88 |
| 2. Self-efficacy | −.07 | 1 | | | 4.50 | 1.08 |
| 3. Involvement | −.07 | .22** | 1 | | 4.23 | 1.55 |
| 4. Future intention to eat red meat | .21** | −.22** | −.49** | 1 | 3.16 | 1.08 |

Note: **$p$ < .001; *$p$ < .05.

**Table 2.** Mean and standard deviation of the main variables for each condition.

| | Prefactual message on health | | Prefactual message on wellbeing | | Factual message on health | | Factual message on wellbeing | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| 1. Past red meat consumption | 3.13 | .98 | 3.26 | .79 | 3.08 | .85 | 3.04 | .88 |
| 2. Self-efficacy | 4.18 | 1.15 | 4.42 | 1.05 | 4.70 | 1.06 | 4.78 | .93 |
| 3. Involvement | 3.77 | 1.29 | 4.68 | 1.40 | 4.47 | 1.52 | 3.98 | 1.41 |
| 4. Future intention to eat red meat | 3.56 | 1.10 | 2.81 | .82 | 3.10 | 1.31 | 3.18 | .96 |

Note: **$p$ < .001; *$p$ < .05

### Effects of message content and style on participants' involvement with the message

A 2 (message concern: wellbeing vs. health) × 2 (message style: factual vs. prefactual) ANOVA on participants' message involvement was performed to test the effect of the concern and style manipulations. The results did not show a significant main effect of either concern or style, *Fs* (1,172) < .97, *ps* > .33, $\eta^2$s < .01. The predicted significant interaction effect between concern and style did emerge, $F(1,172) = 10.57$, $p < .001$, $\eta^2 = .06$, showing that in the health condition participants reading the factual message were significantly more involved ($M = 4.47$, $SD = .21$) than participants reading the prefactual message ($M = 3.77$, $SD = .22$), $p < .01$, whereas in the wellbeing condition participants reading the prefactual message were significantly more involved ($M = 4.68$, $SD = .21$) than participants reading the factual message ($M = 3.98$, $SD = .21$), $p < .01$.

### Effects of message concern and style on participants' intention to eat red meat

We then performed a 2 (message concern: wellbeing vs. health) × 2 (message style: factual vs. prefactual) ANCOVA on participants' intention to eat red meat in the future, controlling for their current eating habit. Besides a strong effect of current red meat consumption, $F(1,172) = 14.13$, $p < .001$, $\eta^2 = .08$, the results revealed a main effect of message concern, $F(1,172) = 5.55$, $p < .05$, $\eta^2 = .03$, with participants reporting a lower intention to eat red meat after reading messages about wellbeing ($M = 2.90$, $SD = .12$) than after reading messages about health ($M = 3.45$, $SD = .13$). No significant main effect of message style emerged, $F(1,172) = .01$, $p = .92$, $\eta^2 = .01$, but a significant interaction effect between message concern and style did emerge, $F(1,172) = 8.35$, $p < .01$, $\eta^2 = .03$. Post-hoc Bonferroni-corrected pairwise comparisons showed that participants in the health condition reported intending to eat significantly less red meat after reading a factual message ($M = 3.11$, $SD = .16$) than after reading a prefactual message ($M = 3.58$, $SD = .16$), $p < .01$. Conversely, participants in the wellbeing condition reported intending to eat significantly less red meat after reading a prefactual message ($M = 2.76$, $SD = .16$) than after reading a factual message ($M = 3.20$, $SD = .15$), $p < .01$.

### Mediation effect of message involvement

We ran a mediation model to test our hypothesis that the joint effect of message concern and style on participants' future intention to eat red meat was mediated by their message involvement. We used a bias-corrected bootstrapped mediated moderation approach (Model 8 of the PROCESS macro for SPSS; Hayes, 2013). The probed effects were considered as significant when bootstrap 95% CIs did not include zero, thus indicating a consistent direction within the chosen confidence interval.

The mediation model included two multiple OLS regressions. In the first regression, the proposed mediator (involvement) was regressed on the manipulated message concern (contrast coded: health = −1; wellbeing = 1) and style (factual = −1; prefactual = 1), and their interaction. Neither style, $B = .02$; CI = [−.19; .23] nor concern, $B = .36$; 95% CI = [.14; .57] had a significant effect on involvement, whereas their interaction did, $B = .36$; 95% CI = [.14; .57], as hypothesized. Participants in the factual health message and the prefactual wellbeing message conditions reported higher involvement than participants in the other conditions.

In the second regression, participants' intention to eat red meat was regressed on the main predictors, their interaction term, and the proposed mediator. A significant and negative effect of involvement on intention was found, $B = -.33$; 95% CI = [−.43; −.23], as well as a significant effect of message concern, $B = -.14$; CI = [−.28; −.01]. Neither style, $B = .01$; 95% CI = [−.13; .14] nor the concern by style interaction, $B = -.10$; 95% CI = [−.25, .03] had a significant effect on intentions. Past red meat consumption, included in both regressions as a covariate, had no significant effect on involvement, $B = -.17$; 95% CI = [−.43; .08], whereas it positively predicted participants' intention to eat red meat in the future, $B = .25$; 95% CI = [.09; .42]. The negative indirect effect of the concern by style interaction, $B = -.24$, 95% CI: [−.39; −.09] showed that the effect of the message manipulation on the intention to eat red meat was mediated by message involvement, as we had hypothesized.

These results fully confirmed our hypothesis that participants reading a factual health message and participants reading a prefactual wellbeing message were more involved by the message and, in turn, showed less intention to eat red meat in the future, as compared to participants reading a prefactual health message and a factual wellbeing message, respectively.

### Moderating effect of eating self-efficacy

Finally, we investigated how eating self-efficacy influenced the persuasiveness of the different messages. To reduce the design complexity, we carried out two separate analyses, one with participants in the health message conditions and one with participants in the wellbeing message conditions. For each group, we ran a bias-corrected bootstrapped mediated moderation analysis, using eating self-efficacy as a moderator of the effect of message style on involvement and future intention. Conditional mediation effects were tested at three levels of the moderator, namely, at the average level of self-efficacy ($M = 4.41$, $SD = 1.38$ in the health message group; $M = 4.60$, $SD = 1.00$ in the wellbeing message group), and at one standard deviation above and below the average.

In the first analysis we tested whether, among participants reading messages focused on health, the effect of message style on involvement was moderated by the level of self-efficacy, and whether involvement in turn predicted participants' eating intention. No main effect of message style on involvement was found, $B = -.20$; 95% CI = [−.49; .08], while self-efficacy was found to have a positive effect, $B = .50$; 95% CI = [.23; .76]. A significant effect of the interaction between message style and self-efficacy on involvement was also found, $B = -.20$; 95% CI = [−.54; −.02]. As shown in Figure 2, participants with high self-efficacy were more involved by

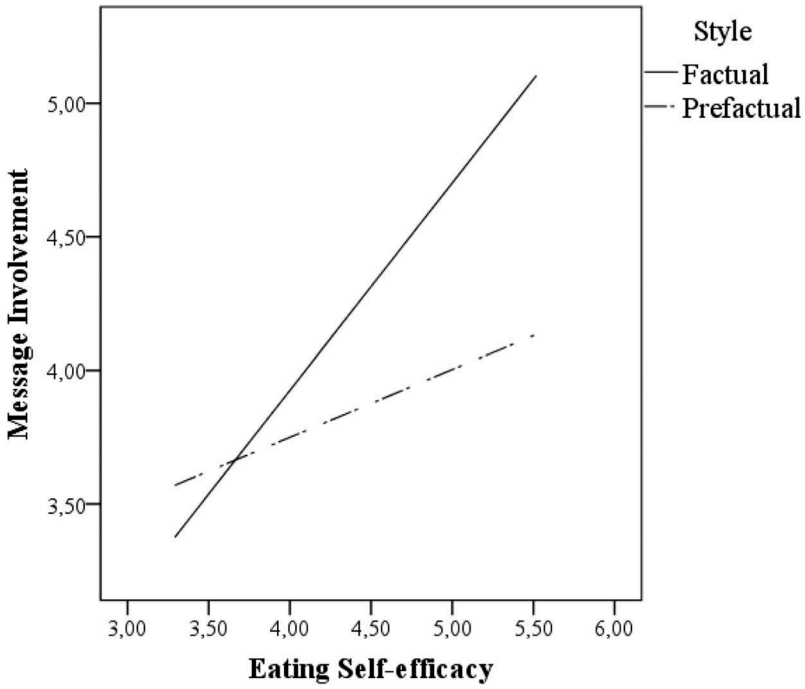


**Figure 2.** Interaction effect between message style and participant eating self-efficacy on message involvement in the health concern condition.

the factual than by the prefactual message focused on health, while no difference emerged for participants with average or low levels of self-efficacy. We then regressed participants' intention to eat red meat in the future on the same variables. A strong negative effect of involvement was found, $B = -.38$; 95% CI = [−.56; −.21], as well as an effect of the interaction between message style and self-efficacy, $B = .21$; 95% CI = [.01; .42]. Neither message style, $B = .07$; 95% CI = [−.16; .29], nor self-efficacy, $B = -.11$; 95% CI = [−.33; .10], had significant effects. The indirect effect of the message style by self-efficacy interaction through involvement was significant, $B = .11$; 95% CI = [.03; .23]. Conditional indirect effects probed at different levels of eating self-efficacy further showed that the factual health message was more effective than the prefactual health message only for participants with higher (+1 *SD*) self-efficacy, $B = .20$; 95% CI: [.06; .39], whereas factual and prefactual health messages had similar effects on participants with average or low levels of self-efficacy. Past red meat consumption was included in the model as a covariate, but no significant effects were found on either involvement, $B = -.27$; 95% CI = [−.61; .07] or intention, $B = .25$; 95% CI = [−.02; .51].

In sum, participants with high eating self-efficacy were more inclined to get involved with a factual health message than with a prefactual health message, and this in turn reduced their intention to eat red meat. Participants with average or low levels of self-efficacy, conversely, were not inclined to get involved by health messages, independent of their factual or prefactual formulation.

In the second moderated mediation analysis, we tested the same model on participants reading messages focused on well-being (Figure 3). A significant main effect of message style on involvement emerged in this case, $B = .36$; 95% CI = [.06; .60], while neither self-efficacy, $B = .21$; 95% CI = [−.28; .32], nor the message style by self-efficacy interaction, $B = .25$; 95% CI = [−.05; .55], had significant effects on involvement. We then regressed participants' intention to eat red meat on the other variables, finding the predicted significant effect of involvement, $B = -.20$; 95% CI = [−.33; −.07], but no effects of style, $B = -.16$; 95% CI = [−.33; .03], self-efficacy, $B = -.07$; 95% CI = [−.24; .11], or their interaction, $B = -.06$; 95% CI = [−.24; .11]. A significant indirect effect of the style by self-efficacy interaction, $B = -.05$; 95% CI: [−.14; −.01], indicated that involvement mediated the effect of message style on future intention among participants with average, $B = -.07$; 95% CI: = [−.17.; −.01] and high self-efficacy, $B = -.12$; 95% CI: = [−.29; −.03], but not among participants with low self-efficacy.

In sum, prefactual wellbeing messages resulted in higher involvement than factual wellbeing messages among all participants, leading to reduced intention to eat red meat among participants both with a high or average level of self-efficacy.

All in all, these findings supported our hypothesis that the persuasive effect of message framing would be moderated by eating self-efficacy. Factual health messages were effective in changing intentions only of participants with high self-efficacy, that is, participants who had a strong perception of being able to control their eating behavior. Prefactual wellbeing messages were instead effective in changing the intentions of participants with a high but also with an average level of self-efficacy.

## Discussion

Our results contribute to a better knowledge of how communication promoting the reduction of red meat consumption can be framed to increase its persuasiveness, particularly

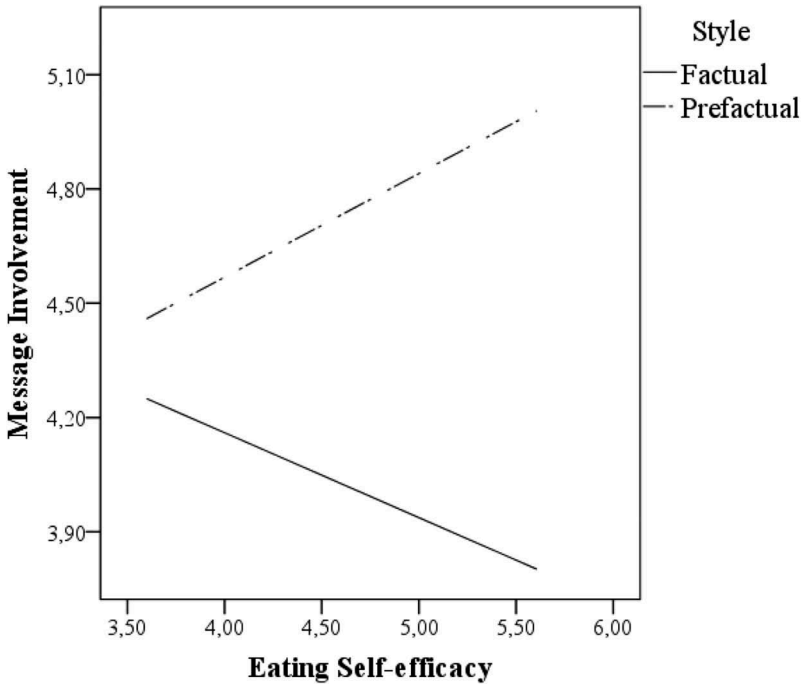


**Figure 3.** Interaction effect between message style and participant eating self-efficacy on message involvement in the wellbeing concern condition.

among recipients who are usually hard to convince. We found that young adults (as do older adults; see Bertolotti et al., 2016) are more inclined to reduce their meat consumption after reading prefactual wellbeing messages and factual health messages. These two types of messages trigger receivers' involvement and, in turn, reduce their intention to eat red meat. Eating self-efficacy moderates these effects, with factual health messages persuading only people with high self-efficacy and prefactual wellbeing messages persuading also receivers with an average level of self-efficacy. Therefore, our results suggest that prefactual wellbeing messages can potentially convince a wider audience than factual health messages, and could be usefully employed when devising in communication campaigns.

There are several conclusions to be drawn from this research. First, our results indicate that communication aimed at reducing excessive meat consumption can be effective not only when focused on health, but also when focused on wellbeing. The same consideration might be extended to communication promoting other eating habits, such as fruit and vegetable intake or low-fat meals. Appeals based on widespread wellbeing concerns such as weight control and fitness are likely more involving and therefore more persuasive than appeals based on the less pressing and less accessible health concerns, particularly in the case of young adults (see Carfora, Caso, & Conner, 2016). The present research also offers suggestions on how to formulate such wellbeing-focused messages, that is using a prefactual style that fits with the conditionality and intentionality associated with a growth concern, and the desire to actively improve one's wellbeing (Bagozzi et al., 2004; Stadler, Oettingen, & Gollwitzer, 2010).

Second, our results confirm that the persuasiveness of communication is strongly linked to receivers' involvement in the message (Chaiken, 1980). Such involvement can be triggered with appropriate framing, as we did in our study, but other alternative strategies might be explored by future research, such as stressing personal relevance (Van't Riet, Ruiter, & De Vries, 2012), appealing to personal identity (Carfora, Caso, & Conner, 2017b), or emotions associated with eating choices (Carfora, Caso, & Conner, 2017a; Carfora, Caso, Palumbo, & Conner, 2018).

Third, our results show that messages focused on wellbeing, particularly when framed with a prefactual formulation, can persuade not only individuals with high eating self-efficacy (Balls-Berry et al., 2016), but also those with lower self-efficacy. These individuals are generally the least likely to adopt correct eating habits, and more likely to engage in maladaptive responses, processing information in a defensive manner (Riet, Ruiter, Smerecnik, & de Vries., 2010). In our opinion, messages focusing on wellbeing rather than health, and formulated in prefactual rather than factual terms can get around this defensive mechanism, and get a wider audience involved.

The present results could be applied to different contexts in which communication is used to promote healthy practices. In the case of the face to face contact (e.g., dietary prescriptions, counselling support), practitioners may prefer a prefactual formulation and a focus on wellbeing over the more traditional factual and health-focused recommendations. In the case of online communication—which has become the main source of information regarding nutrition, lifestyle, and health in general (Rutsaert et al., 2015)—prefactual wellbeing messages may be used to deliver recommendations (e.g., via social network and smart-phone applications) to a wider range of potential receivers, including users lower in involvement and eating self-efficacy.

Beside the above-mentioned contributions, the present research has some limitations that should be noted and

possibly addressed by future research. First, we framed our messages only in negative terms, highlighting that eating too much red meat can have adverse consequences on health or wellbeing. The decision to use a negative frame was based on previous research showing that loss-framed messages can either motivate people to perform a recommended behavior, or be perceived as threatening, depending on the recipients' level of self-efficacy (Riet et al., 2008). Future studies might further examine the effectiveness also of positively-framed messages in changing eating habits.

Second, we only investigated the persuasiveness of messages promoting the reduction of red meat consumption, and not its compensation with an increase in vegetable consumption (Vainio, Irz, & Harikainen, 2018). A focus on the reduction of meat consumption is consistent with the adoption of what has been defined as a *vigilant avoidance strategy* in pursuing a given goal (Cesario et al., 2013). But future research could also test the effectiveness of communication promoting an increase in vegetable consumption, which would be consistent with the adoption of an *eager approach strategy*.

Third, the measures used in our questionnaire had some limitations, such as the lack of manipulation checks, and the lack of measures of the impact of messages actual behaviors, rather than on intentions only. This is an important limitation given the evidence of a frequent intention-behavior gap in relation to food consumption (Armitage & Conner, 2001). However, as change in intentions is a necessary condition for behavioral change, our results can propose valuable insights for future research on actual eating behaviors.

To conclude, our findings contribute to a better understanding of the conditions under which communication in the food choice domain can be persuasive. They suggest that a focus on wellbeing and the recourse to a prefactual formulation can be a fruitful strategy to involve also people who do not perceive full control on their diet, successfully encouraging them to change their eating behaviors.

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