



Repositorio Institucional de la Universidad Autónoma de Madrid

<https://repositorio.uam.es>

Esta es la **versión de autor** del artículo publicado en:

This is an **author produced version** of a paper published in:

Social Psychology 44. 5 (2013): 349–353

DOI: <http://dx.doi.org/10.1027/1864-9335/a000131>

Copyright: © 2012 Hogrefe Publishing

El acceso a la versión del editor puede requerir la suscripción del recurso

Access to the published version may require subscription

Smile After Thinking

Smiling Increases Reliance on Thoughts

Borja Paredes¹, Maria Stavrak², Pablo Briñol¹, and Richard E. Petty³

¹Universidad Autónoma de Madrid, Spain, ²Universidad A Distancia de Madrid, Spain,
³Ohio State University, [Location?], OH, USA

Abstract. The present research examines the impact of smiling on attitude change. Participants were first exposed to a story that elicited mostly positive thoughts (about an employee's good day at work) or negative thoughts (about an employee's bad day at work). After writing down their thoughts, participants were asked to hold a pen with their teeth (smile) or with their lips (control). Finally, all participants reported the extent to which they liked the story. In line with the self-validation hypothesis, we predicted and found that the effect of the initial thought direction induction on story evaluations was greater for smiling than control participants. These results conceptually replicate those obtained in previous research on embodiment (i.e., more favorable evaluations of stories when smiling; Strack, Martin, & Stepper, 1988) when participants had positive thoughts, but showed the opposite pattern of results (less favorable evaluations for smiling) for negative thoughts.

Keywords: [missing]

Smiling is a positive behavior that often leads to positive evaluations. In a classic study, Strack, Martin, and Stepper (1988) asked participants either to hold a pen between their teeth (facilitating a facial pose similar to smiling) or to hold a pen between their lips (inhibiting the facial muscles involved in smiling) while watching cartoons. Although participants did not recognize the meaning of their facial pose, they judged cartoons to be funnier when smiling than in the inhibition condition.

The finding that people might like something more when they are smiling has been interpreted as a case in which people use simple heuristics (e.g., *if I am smiling, I must like it*; Bem, 1972; Laird & Bresler, 1992), or generate (positive) thoughts that are compatible with smiling (Förster & Strack, 1996; Neumann, Förster, & Strack, 2003). Indeed, there are several different processes by which bodily responses such as a smile can influence attitudes (Briñol & Petty, 2008). In the current research, we argue that smiling can also influence validation processes.

Recently, it was proposed that overt behavior cannot only influence the content of thoughts, but can also impact what people think about their thoughts (Briñol & Petty, 2003). This is important because both the content of thoughts and an assessment of those thoughts contribute to the judgments formed (Petty, Briñol, & Tormala, 2002). This idea, called *embodied validation* (Briñol, Petty, & Wagner, 2012), suggests that the appraisals that emerge from one's body can determine the impact of anything that is currently available in people's minds. The notion that

smiling can affect reliance on thoughts stems from the finding that emotional states (potentially induced by smiling) can relate to two different appraisals.

First, happiness leads people to feel more confident than a sad or neutral state (Smith & Ellsworth, 1985; Tiedens & Linton, 2001). If this confidence is applied to one's thoughts, it would lead to greater use of those thoughts (cognitive validation). Thus, if smiling makes people happy, they should be more reliant on their thoughts if thinking is followed by a smile than a neutral expression. Second, a happy face can lead people to feel more pleasant than a sad or neutral state. If this feeling of pleasantness is applied to one's thoughts (e.g., I like my thoughts), it would also lead to greater use of those thoughts (affective validation). Taken together, these two appraisals of happiness (i.e., confidence and pleasantness) suggest that smiling can lead to greater reliance on thoughts because, when smiling, people think that their thoughts are more valid and/or because they like them more.

Consistent with the idea that happiness can increase reliance on thoughts, Briñol, Petty, and Barden (2007) found that, when individuals wrote happy memories following message processing, attitudes were more influenced by the recipients' thoughts about the arguments than when they wrote about sad memories following the message (see also Clore & Huntsinger, 2007; Huntsinger & Clore, 2012). Although this research was carried out to examine the impact of persuasive messages in the domain of attitude change, it provides converging evidence that the impact of inductions

of emotional states on judgments can operate by validation processes.

What remains to be examined is whether the embodied-validation logic can be applied to the impact of smiling (rather than verbal inductions). In order to test this possibility, the present study exposed participants to a story that described an employee's good or bad day at work, designed to produce mostly positive or negative thoughts, respectively. After writing down their thoughts about the story, participants were asked to hold a pen with their teeth (smile) or with their lips (control). It was expected that smiling would be associated with greater reliance on thoughts than nonsmiling informing evaluations about the story.

Method

Participants and Design

Sixty-two undergraduates at the Universidad Autónoma de Madrid, Spain, were randomly assigned to a 2 (Employee Story: good day vs. bad day) \times 2 (Facial Pose: smile vs. control) between-subjects factorial design.

Procedure

Participants were induced to believe that they were going to be involved in two different research projects. The first study was described as related to organizational behavior and the second one was presented as related to psychomotor coordination. For the first project, participants were asked to read a prototypical situation of an employee. They read a description about a good or bad day of that employee at work. After reading the story, participants were asked to write down the thoughts they had with respect to the story they had just read. Next, in an ostensibly unrelated study on psychomotor coordination, the overt behavior manipulation was induced. Specifically, participants in the smile condition were asked hold a pen with their teeth, whereas those in the control condition were instructed to hold a pen with their lips. Finally, all participants evaluated the story, completed some ancillary measures, and were debriefed, thanked, and dismissed.

Independent Variables

Employee Story

Participants read a story about a person's good or bad day at work. In the positive version of the story, the employee was described as successfully leading an important meeting and being congratulated by his peers and boss. At the

end of this day, the person received a fair promotion for his merits. In contrast, in the negative employee story, participants read about an employee being late for an important meeting, not knowing what to do during that meeting, and crying as a coping mechanism. At the end of the story the employee was fairly fired for his incompetence. The stories were designed and pretested to induce mostly positive thoughts and feelings (in response to the good day at work) and negative thoughts and feelings (in response to the bad day at work).

Facial Pose

Participants' facial poses were manipulated following the classic induction by Strack et al. (1988). Specifically, half of the participants were instructed to hold a pen with their lips (control), and half of them were instructed to hold it with their teeth (smile). As part of the cover story for this induction, students were led to believe that they were participating in a psychomotor coordination pilot test designed to assess people's ability to perform various tasks with their bodies. Before holding the pen, participants were told to disinfect it with the alcohol swab provided. Importantly, the words "smile," "happy," "laugh," or "frown" were never mentioned in the instructions, thus reducing the possibility of semantic priming. Although subtle, this procedure has been shown to be an effective and reliable way to induce smiles in the laboratory (Effron, Niedenthal, Gil, & Droit-Volet, 2006; Niedenthal, 2007; Soussignan, 2002).

Dependent Measures

Thought Listing

Participants were instructed to list the thoughts and feelings that they had as they read the story. Ten boxes were provided. They were told to write one thought per box and not to worry about grammar or spelling (see Cacioppo & Petty, 1981, for additional details on the thought listing procedure). At the end of the experiment, participants were again presented with the thoughts they had written and asked to rate them as positive, neutral, or negative toward the story. An index of the valence of story-related thoughts was created for each participant by subtracting the number of unfavorable thoughts from the number of favorable thoughts that he or she had listed. This difference score was then divided by the total number of message-related thoughts.

Attitudes

Participants were asked to evaluate the story using a series of three 9-point (1–9) semantic differential scales

(like–don't like, not at all interesting–very interesting, positive–negative). 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 liking of the story.

Ancillary Measures

After evaluating the story, participants were asked to complete a number of 9-point scales, asking for perceived amount of thinking, attention paid to the story, personal relevance of the study, level of accuracy with which the questionnaire was completed, and difficulty associated while holding the pen. Finally, two independent judges scored the number of ideas per thought written by the students in the thought listing task.

Results

Thought Listing

A 2 (Employee Story: good day vs. bad day) \times 2 (Facial Pose: smile vs. control) ANOVA conducted on participants' thoughts revealed a main effect of Employee Story, $F(1, 58) = 22.55, p < .001$. As predicted, participants rated their thoughts to be more positive after reading the good day story ($M = 0.15, SD = 0.51$) than after reading the bad day story ($M = -0.43, SD = 0.48$). No other main effect or interaction emerged, $ps > .15$.

Attitudes

The 2 \times 2 ANOVA revealed a main effect for Employee Story such that participants liked the story about a good day more ($M = 6.90, SD = 1.32$) than the story about a bad day ($M = 3.70, SD = 1.32$) at work, $F(1, 58) = 99.95, p < .001$. More critical to our primary concerns, the predicted two-way interaction between Employee Story and Facial Pose was significant, $F(1, 58) = 9.76, p = .003$.¹ As illustrated in Figure 1, for smiling participants, those who received the good-day story reported significantly more favorable attitudes ($M = 7.42, SD = 1.22$) than did those who received the bad-day story ($M = 3.23, SD = 1.16$), $F(1, 58) = 76.24, p < .001$. For control participants, those reading the good-day story also reported liking it more ($M = 6.37, SD = 1.24$)

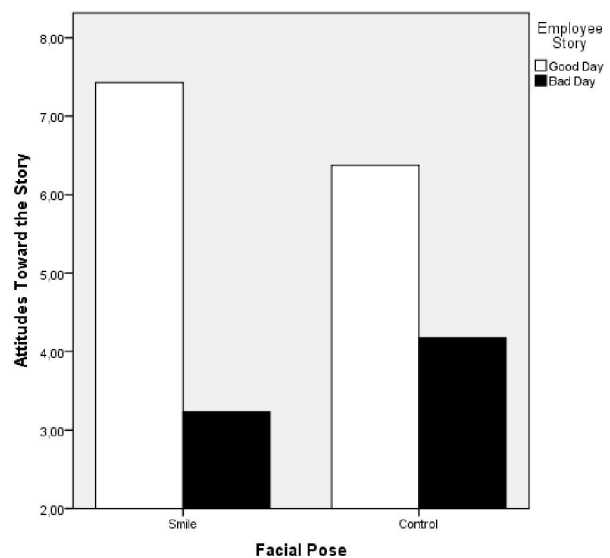


Figure 1. Attitudes as a function of employee story and facial pose.

than those reading about the bad-day story ($M = 4.17, SD = 1.33$), $F(1, 58) = 27.12, p < .001$, although this difference was smaller compared to the smiling participants.

To put it differently, in the story describing a good day at work, participants in the smile condition reported significantly more favorable attitudes toward the story ($M = 7.43, SD = 1.22$) than did those in the control condition, ($M = 6.38, SD = 1.25$) $F(1, 58) = 5.61, p = .021$. In contrast, for the bad-day story, participants in the smiling condition liked the story less ($M = 3.23, SD = 1.16$) than did those in the frowning condition ($M = 4.17, SD = 1.33$), $F(1, 58) = 4.23, p = .044$.²

Ancillary Measures

No main or interaction effects emerged for any of the other items (i.e., attention, concentration, personal relevance, accuracy, amount of thinking, and difficulty), $ps > .16$. As an additional control measure, the number of different ideas embedded in the thoughts listed by participants were coded by two judges (kappa index = .612). No differences across conditions were found for this index suggesting that all participants listed a similar number of ideas per thought, $F(1, 58) = .29, p > .6$.

¹ To check whether emotions induced by the story were also validated as well as cognitions, participants were asked to report how good/bad the story made them feel on a nine-point scale (1 = bad, 9 = good). This item was highly correlated with the attitude index ($r = .82, p < .001$), and the 2 \times 2 ANOVA revealed a similar significant 2-way interaction when analyzed, $F(1, 58) = 6.48, p = .014$.

² We also examined whether there was a stronger relationship between thoughts and attitudes for smiling than control conditions. Regressing attitudes onto the relevant variables, a significant interaction emerged between the thought-favorability index and the facial expression condition, $B = 1.702, t(61) = 2.180, p = .033$. Consistent with the self-validation logic, this interaction revealed that participants' thoughts exerted a stronger effect on attitudes when smiling ($B = 2.547, t(26) = 4.293, p < .001$) than when in a control pose ($B = 0.845, t(34) = 1.630, p > .11$).

Discussion

This experiment revealed that the effect of the direction of participants' thoughts on attitudes was greater when participants were made to smile following thought generation than when they were made to hold a control pose. Thus, participants with a smiling expression relied more on their thoughts in forming their attitudes than did control participants. These results conceptually replicate those obtained in previous research (more favorable evaluations of stories when smiling than frowning, Strack et al., 1988) – but only when participants had positive thoughts. An opposite pattern of results (more favorable evaluations for frowning than smiling) was found for negative thoughts.

Although speculative, the present study suggests that facial pose can validate what people think. One possible alternative interpretation is that smiling affected the amount of thinking by increasing elaboration of the story. For example, according to the *hedonic contingency* view (Wegener, Petty, & Smith, 1995), if participants thought that the story was going to make them happy, smiling might have led participants to pay more attention relative to control. Also, smiling might induce more thinking because smiling might indicate that thinking continues to be enjoyable (Martin, Ward, Achée, & Wyer, 1993), or because smiling might have led people to make more connections among and between their thoughts (Fredrickson & Branigan, 2005). We argue that a change in the amount of thinking is not likely to explain the obtained results for a number of reasons. First, in the present study, we created a context of high likelihood of elaboration in order to elicit enough motivation for people to think. Second, the induction of facial poses followed (rather than preceded) the processing of the story, making it unlikely that the thoughts generated in response to the stories were affected by something that did not take place until later. In fact, participants listed the same number and direction of thoughts and reported similar scores of subjective effort across conditions. Furthermore, external judges did not find more ideas listed in one condition than another. Finally, although smiling might be capable of increasing thinking over control facial poses under certain conditions (not present in the current study), most of the previous research has shown that, if anything, the opposite pattern of results are more likely to emerge (Bless, Böhner, Schwarz, & Strack, 1990; Mackie & Worth, 1989; Schwarz, Bless, & Bohner, 1991; Schwarz & Clore, 1983; Tiedens & Linton, 2001).

In closing, it is important to note the potential real-life situations in which smiling occur following thinking. For example, we might validate or invalidate the thoughts of others by smiling following their comments. Consistent with this reasoning, Stepper and Strack (1993) found that, when people recalled behaviors of self-assurance when smiling rather than frowning, they felt more self-assured, but when they recalled behaviors of low self-assurance, they felt less self-assured when smiling than when frown-

ing. The self-validation framework provides an explanation for those findings according to which smiling enhanced reliance in the current mind content.

Of course, for smiling to enhance reliance on the contents of a person's mind, it requires the smile to be perceived as a positive and authentic behavioral cue. If smiling is associated with feelings of embarrassment (Keltner & Anderson, 2000), faking (non-Duchenne; Ekman, Davidson, & Friesen, 1990), or with "trivialization" (Martinie & Fointiat, 2006; Simon, Greenberg & Brehm, 1995), then it might reduce the impact of thoughts relative to control. People and contexts can also vary in other relevant variables, such as the extent to which people attend to and use their behavior in defining their attitudes (Dunn et al., 2010).

References

- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York, NY: Academic Press.
- Bless, H., Böhner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, 16, 331–345.
- 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. (2008). Embodied persuasion: Fundamental processes by which bodily responses can impact attitudes. In G. R. Semin, & E. R. Smith (Eds.), *Embodiment grounding: Social, cognitive, affective, and neuroscientific approaches* (pp. 184–208). Cambridge, UK: Cambridge University Press.
- 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., & Wagner, B. C. (2012). Embodied validation: Our body can change and also validate our thoughts. In P. Briñol & K. G. DeMarree (Eds.), *Social metacognition [pages?]*. New York, NY: 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, NY: Guilford.
- Clore, G. L., & Huntsinger, J. R. (2007). How emotions inform judgment and regulate thought. *Trends in Cognitive Sciences*, 11, 393–399.
- Dunn, B. D., Galton, H. C., Morgan, R., Evans, D., Oiver, C., Meyer, M., . . . Dalgleish, T. (2010). Listening to your heart: How interception shapes emotion experience and intuitive decision making. *Psychological Science*, 21, 1835–1844.
- Effron, D. A., Niedenthal, P. M., Gil, S., & Droit-Volet, S. (2006). Embodied temporal perception of emotion. *Emotion*, 6, 1–9.
- Ekman, P., Davidson, R. J., & Friesen, W. V. (1990). The Duchenne smile: Emotional expression and brain physiology II. *Journal of Personality and Social Psychology*, 58, 342–353.
- Förster, J., & Strack, F. (1996). The influence of overt head movements on memory for valenced words: A case of conceptual-

- motor compatibility. *Journal of Personality and Social Psychology*, 71, 421–430.
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, 19, 313–332.
- Huntsinger, J. R., & Clore, G. L. (2012). Emotion and meta-cognition. In P. Briñol & K. DeMarree (Eds.), *Social meta-cognition* (pp. 199–218). New York, NY: Psychology Press.
- Keltner, D., & Anderson, [initials?] (2000). Saving face for Darwin: The functions and uses of embarrassment. *Current Directions in Psychological Science*, 9(6), 187–192.
- Laird, J. D., & Bresler, C. (1992). The process of emotional experience: A self-perception theory. In M. S. Clard (Ed.), *Review of personality and social psychology* (pp. 213–234). Newbury Park, CA: Sage.
- Mackie, D. M., & Worth, L. T. (1989). Cognitive deficits and the mediation of positive affect in persuasion. *Journal of Personality and Social Psychology*, 57, 27–40.
- Martin, L. L., Ward, D. W., Achee, J. W., & Wyer, R. S. (1993). Mood as input: People have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology*, 64, 317–326.
- Martinie, M. A., & Fointiat, V. (2006). Self-esteem, trivialization, and attitude change. *Swiss Journal of Psychology*, 65, 221–225.
- Neumann, R., Förster, J., & Strack, F. (2003). Motor compatibility: The bi-directional link between behavior and evaluation. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 371–391). Mahwah, NJ: Erlbaum.
- Niedenthal, P. M. (2007). Embodying emotion. *Science*, 316, 1002–1005.
- 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.
- Schwarz, N., Bless, H., & Bohner, G. (1991). Mood and persuasion: Affective status influence the processing of persuasive communications. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 161–197). San Diego, CA: Academic Press.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513–523.
- Simon, L., Greenberg, J., & Brehm, J. (1995). Trivialization: The forgotten mode of dissonance reduction. *Journal of Personality and Social Psychology*, 68, 247–260.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48, 813–838.
- Soussignan, R. (2002). Duchenne smile, emotional experience, and autonomic reactivity: A test of the facial feedback hypothesis. *Emotion*, 2, 52–74.
- Stepper, S., & Strack, F. (1993). Proprioceptive determinants of emotional and nonemotional feelings. *Journal of Personality and Social Psychology*, 64, 211–220.
- Strack, F., Martin, L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54, 768–777.
- Tiedens, L. Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, 81, 973–988.
- Wegener, D. T., Petty, R. E., & Smith, S. M. (1995). Positive mood can increase or decrease message scrutiny: The hedonic contingency view of mood and message processing. *Journal of Personality and Social Psychology*, 69, 5–15.

Received May 15, 2012

Final revision received September 12, 2012

Accepted September 13, 2012

Pablo Briñol

Department of Psychology
 Universidad Autónoma de Madrid
 Campus de Cantoblanco (Crta. Colmenar, Km. 15)
 28049 Madrid
 Spain
 E-mail pablo.brinnol@uam.es