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When Feelings Speak

How Affective and Proprioceptive Cues Change Language Abstraction

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Cognitive tuning accounts argue that both affective feelings and bodily feelings induce changes in information processing (N. Schwarz & G. L. Clore, 1996). This article examines how these effects of feelings are reflected in language abstraction. On the basis of previous work showing that affective cues change language abstraction, we hypothesized that proprioceptive cues (i.e., bodily feelings) associated with global processing (arm flexion) should induce more abstract language use, compared with bodily feelings associated with analytic processing (arm extension). This prediction received support in a study in which participants performed a written self-description task either while pressing their nondominant hand under the table (arm flexion), or on top of the table (arm extension), or while keeping their arm relaxed (control). Implications for interpersonal communication are discussed.

Keywords: *feelings and proprioceptive cues; motor actions; linguistic category model; language abstraction; cognitive tuning*

Would an author write a different paper when feeling sad than when feeling cheerful? Would an author choose different words when pressing one hand either on top or underneath the table while writing? Research does suggest that our feelings (e.g., mood states and the feelings associated with bodily actions) have an impact on our cognitive processes (Forgas, 2000; Martin & Clore, 2001). Researchers in general agree that these effects are functional, in that our feelings help us adapt our cognitive processes to the requirements of the environment (Damasio, 1994; Frijda, 1988; Schwarz, 1990, 2002; Schwarz & Clore, 1996). Finding the right words when writing a paper or engaging in a conversation entails a very complex cognitive task. If feelings indeed help in tuning cognitive processes underlying message production and language use, then feelings should have substantial effects on the messages that people generate and the language that people use (Burleson & Planalp,

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2000). The relation between feelings and language use, however, remains largely unstudied (Burleson & Planalp, 2000; Forgas, 1999a, 1999b). In the present article, we report a study focusing on whether proprioceptive bodily cues influence language use. Specifically, we hypothesized that when people position their arm in an approach position, compared with an avoidance position, this would increase their language abstraction.

Feelings and Language Use

Three broad classes of feelings can be distinguished that have been found to influence our cognitive processes: *affective feelings*, such as mood states; *bodily feelings* (usually termed *proprioceptive cues*), such as those associated with activation of postural or facial muscles; and *feelings associated with knowing*, such as feelings of familiarity (Schwarz & Clore, 1996). These feelings have each been found to induce changes in cognitive processing and, as a result, can be expected to change language use.

Most existing research on the effects of feelings on language use has focused on affective feelings or, more specifically, on mood states. Research by Joseph Forgas has shown that mood states influence language use in a variety of situations. For instance, in formulating requests, people in a negative mood state tend to formulate more polite requests, whereas people in a positive mood state tend to be less careful and use more direct and impolite requests (Forgas, 1999a, 1999b). In a similar vein, mood exerts an effect in conflictive communication situations, like providing comments on a friend's bad performance or their less than charming clothing. People in a negative mood appear to be more careful and prefer to use more evasive and equivocal comments compared with people in a positive mood, an effect that is enhanced in more difficult communication situations (Forgas & Cromer, 2004). Moreover, people in a negative mood tend to produce more concrete persuasive messages than people in a positive mood (Forgas, 2007). These studies show that slight changes in mood can produce significant differences in the messages people produce.

A recent line of work has focused on the effects of both internal (i.e., mood) and external (i.e., emotional expressions of recipients) affective cues on language abstraction (Beukeboom & Semin, 2005, 2006; Beukeboom, under review). By using the linguistic category model (Semin & Fiedler, 1988), in this work we specifically investigated how affective cues influence language use and the structure of messages. Similar to Forgas' reasoning (Forgas, 2007), it builds on the idea that mood states change the style of cognitive processing, which is reflected in the words that are chosen.

Previous research has demonstrated that internal affective cues induce changes in the adopted cognitive processing style. Individuals in a positive mood compared to individuals in a negative mood tend to think about information in a global, inclusive

and abstract way, whereas individuals in a negative mood tune to processing information at a more specific, analytic and concrete level (Bless, 2000; Gasper & Clore, 2002; Isbell, Burns, & Haar, 2005; Isen & Daubman, 1984). External, affectively laden cues in the environment (e.g., emotional expressions of people around us) induce similar changes in the adopted processing style. For instance, a speaker talking to a smiling audience tends to process the communicated information in an abstract global manner, whereas talking to a frowning audience induces concrete analytic processing (Soldat & Sinclair, 2001). Moreover, emotional expressions of speakers induce changes in the processing style of message recipients (Ottati, Terkildsen, & Hubbard, 1997).

According to the affect-as-information approach and cognitive-tuning accounts (Bless & Fiedler, 1995; Schwarz, 1990, 2002; Schwarz & Clore, 1996), these effects are due to the fact that affective cues (both internal and external) are experienced as informational signals about situations and the conduct of tasks. Positive affective cues signal that the present situation is benign and that a global and superficial processing style is sufficient to deal with the situation and the task at hand. As a result, people perceiving positive affect rely more on general abstract knowledge and a global processing style. Negative affective cues, in contrast, signal that the present situation is problematic and therefore requires attention to detail. Consequently, negative affective cues induce a focus on specifics and a careful and analytic processing style. This way, affective cues ensure that our cognitive processes are responsive and "tuned" to the present situational requirements.

The previously mentioned work of Beukeboom and Semin (2005, 2006) argues that if affective cues tune the level of abstraction in which people cognitively deal with information, then this should be reflected in the language that people use, specifically in language abstraction. Several experiments provided empirical evidence for this idea. In one study, people in a positive mood were found to redescribe simple acts of behavior (e.g., locking a door) in abstract "why terms" (e.g., being careful), whereas people in a negative mood were prone to redescribe behaviors in concrete "how terms" (e.g., turning the key; Beukeboom & Semin, 2005). Moreover, mood was found to affect language abstraction when describing an autobiographical social event and a neutral event observed in a film clip (Beukeboom & Semin, 2006). Again, participants in a positive mood used relatively more abstract language, compared with participants in a negative mood.

A recent study in our lab extended these findings by showing that external affective cues can have the same effects on language use as internal mood states (Beukeboom, under review). Participants were asked to orally communicate an event presented in a film clip to two other participants. These other participants were actually confederates who either adopted a nonverbal positive or negative emotional expression during the story of the participant. Results showed that participants talking to smiling listeners used more abstract language, whereas participants talking to frowning listeners used more concrete, descriptive language. Together, these studies

provide convergent evidence that both internal and external affective cues induce systematic changes in language abstraction.

Proprioceptive Cues and Language Use

To extend our knowledge about the antecedents of language abstraction, it is useful to investigate the effects of another class of feelings on language use, namely feelings associated with specific motor actions or bodily postures. An intriguing area of research has demonstrated that particular bodily feelings, or proprioceptive cues, have significant effects on cognitive processes which are independent of affective feelings. First, proprioceptive cues have been found to induce differences in evaluative and nonevaluative judgments. For instance, people engaged in vertical head movements (i.e., nodding) are more likely to agree with persuasive messages than people engaged in horizontal head movements (i.e., shaking; Wells & Petty, 1980); people adopting an upright bodily posture report more experienced pride than people adopting a slumped posture (Stepper & Strack, 1993); people flexing their arm muscles are more positive in evaluations of neutral Chinese ideographs than people extending their arm (Cacioppo, Priester, & Berntson, 1993), and when people's facial muscles are unobtrusively positioned into a smile, they rate cartoons as relatively more funny (Strack, Martin, & Stepper, 1988).

Second, proprioceptive cues have been found to induce systematic differences in the style of information processing. This line of work provides a direct extension of the cognitive tuning logic to proprioceptive cues, as it is argued that these bodily cues may, just like internal and external affective cues, signal benign or problematic situations and thus help to tune cognitive processing (Friedman & Förster, 2000; Schwarz, 2002). Bodily actions that are typically associated with approach situations (e.g., arm flexion, pulling toward the body) elicit the global, abstract processing style that is spontaneously preferred in benign situations. In contrast, bodily actions associated with avoidance situations (e.g., arm extension, pushing away) elicit an analytic, concrete processing style that is preferred in problematic situations.

To test this logic, Friedman and Förster (2000) asked participants either to press their hand under the table (arm flexion) or to press their hand on top of the table (arm extension) while completing different creative problem-solving tasks. Results demonstrated that arm flexion, compared with arm extension, facilitated performance on tasks that required more global and creative processing, whereas the opposite pattern was observed on a task that required analytic processing. These effects were independent of mood, showing that bodily feedback about approach and avoidance states induces effects on the style of information processing in a manner parallel to feedback about affective states.

On the basis of the aforementioned findings, we predicted that the participants' experience of bodily feedback (i.e., perceive proprioceptive cues) during a language

production task should influence their language abstraction. This follows from the argument that bodily feelings are, just like affective cues, used as information in cognitive tuning (Schwarz, 2002; Schwarz & Clore, 1996). Approach movements (arm flexion) induce a global, inclusive processing style with a reliance on general, abstract knowledge structures. This style of information processing is likely to result in more abstract language use. Avoidance movements (arm extension), in contrast, induce analytic processing with a focus on specific and concrete information. This is likely to be reflected in the use of more concrete, descriptive language.

To test this prediction, we asked participants to either take on an approach position by pressing their hand under the table (arm flexion), an avoidance position by pressing their hand on top of the table (arm extension), or to relax their arm (control) while using their dominant hand to answer questions in a written self description task. The mean language abstraction of their answers constituted the main dependent variable. We expected participants in the arm flexion condition to produce more abstract descriptions, compared with participants in the control and arm extension conditions. Participants in the arm extension condition should produce the most concrete descriptions. In addition, we measured participants' mood to be able to test whether proprioceptive bodily cues influence language abstraction independently of mood.

Method

Participants and Design

Seventy undergraduates at the Vrije Universiteit Amsterdam (32 women, 38 men; mean age = 21.6 years) participated in this study that, including a subsequent unrelated study, took approximately 30 minutes to complete. They were paid €3.50 for their participation.

Participants were randomly assigned to one of three conditions (arm position: arm extension, arm flexion, control). The main dependent variable was language abstraction as defined by the linguistic category model (LCM; Semin & Fiedler, 1988).

Materials and Procedure

On entrance to the lab, participants were seated in separate cubicles, each with a computer. Further instructions were given on the screen. Participants read that the experiment was about the experience of physical effort in various ergonomic positions. They were told that they would be asked to take on a specific arm position and simultaneously do a writing task. In the arm flexion condition (approach bodily action), participants were instructed to press the palm of their nondominant hand (i.e., the hand they do not use for writing) upward against the bottom of the table. In

the arm extension condition (avoidance bodily action), participants were instructed to press the palm of their nondominant hand downward against the top of the table. Participants in the control condition were instructed to keep their nondominant hand relaxed in their lap. In each condition, they were shown two photos on the screen demonstrating the correct position. Next, participants were asked to complete the paper questionnaire using a pen with their dominant hand (i.e., the hand they use for writing). It was stressed that it was very important to keep their arm in the indicated position while completing the questionnaire. The questionnaire (partly based on Semin, Higgins, Gil de Montes, Estourget, & Valencia, 2005) required them to describe their own behavior in various social situations. Participants were asked to characterize their behavior (1) "at a party," (2) "in a discussion with fellow students," (3) "when you study for an exam," (4) "in contact with family," and (5) "when you are having a row," and they were asked to describe (6) "What are your strategies to maintain friendships?" The questions were deliberately formulated in an open-ended way to leave the opportunity to provide both concrete and abstract answers. The time taken to complete the questionnaire was measured, as was the number of words used.

After completing the questionnaire, participants continued on the computer and completed a mood measure by indicating the extent to which they experienced "positive feelings" and "negative feelings" and the extent to which they were "cheerful" and "sad" at this very moment. They answered on four 10-point scales ranging from 0 = *not at all* to 9 = *very much* (Cronbach's $\alpha = .86$).

Next, participants answered some questions designed to check their experience of the arm position ("How difficult was it to keep your arm in the given position?" "To what extent did you manage to keep your arm muscle tensed?" "How unpleasant was it to keep your arm in the given position?"). Then, they answered two questions about the difficulty of the questionnaire ("How difficult was it to describe your behavior?" "How easy did the answers come up?" combined in a scale with last item recoded, Cronbach's $\alpha = 0.72$) and the effort they put into it ("How much effort did you put into describing your behavior?"). These questions were answered on 7-point scales ranging from 1 = *not at all* to 7 = *very much*. After completing a subsequent unrelated study, participants were debriefed, thanked, and paid.

Dependent Variable

The answers of participants to the six questions of the questionnaire were coded by a judge blind to experimental condition according to the LCM (Semin & Fiedler, 1989; see Coenen, Hedebouw, & Semin, 2006, for coding guidelines). Each verb and adjective used by participants to describe their own behavior and personality was coded and scored in the following way: descriptive action verbs = 1, interpretive action verbs/state action verbs = 2, state verbs = 3, adjectives = 4. On the basis of these scores, we computed the mean level of abstraction for each question by adding the different scores and dividing them by their number. The dependent variable was

the mean abstraction of all six questions. It could range between 1 (*very concrete, only descriptive action verbs*) and 4 (*very abstract, only adjectives*; Semin & Fiedler, 1989). To check the reliability of the coding, a second judge coded a random selection of the data (50%). Intercoder agreement between the two judges was high, $r(31) = .91$.

Results

To test the main hypothesis that arm flexion (approach bodily action) and extension (avoidance bodily action) would induce differences in language abstraction, we conducted a one-way analysis of variance (ANOVA) comparing mean level of abstraction between the three arm position conditions (arm extension, arm flexion, control).[1] This analysis yielded the predicted effect, $F(2, 63) = 3.33$, $p = .04$, $r = .31$. A post hoc test (least significant difference) revealed that participants in the arm flexion (approach) condition used significantly more abstract language ($M = 2.88$, $SD = 0.42$), compared with participants in the arm extension (avoidance) condition ($M = 2.62$, $SD = 0.49$), $p = .04$, and participants in the control condition ($M = 2.58$, $SD = 0.35$), $p = .02$, which confirms our hypothesis. Participants in the arm extension (avoidance) condition were predicted to use more concrete language relative to the control condition. However, these conditions showed no significant difference ($p = .83$).

One could argue that the observed differences in language abstraction may be caused by possible differences in difficulty performing the given bodily actions, which might influence performance on the writing task. However, a number of one-way ANOVAs showed no differences between arm position conditions on the reported difficulty of the arm position ($F < 1$, *ns*), the difficulty of the questionnaire ($F < 1.2$, *ns*), or the effort they put into describing their behavior ($F < 1$, *ns*); nor did participants in the arm extension and arm flexion conditions differ in the extent to which they managed to keep their muscle tensed ($t < 1$, *ns*). Moreover, we did not observe any differences in reported mood between the three arm position conditions ($F < 1$, *ns*), which confirms that proprioceptive cues influence language abstraction independently of mood (cf. Friedman & Förster, 2000).

The comparisons with the control condition suggest that participants in the arm flexion condition increased their level of abstraction, whereas participants in the arm extension condition did not tune to a more concrete level of abstraction relative to control participants. It should be noted, however, that participants in the control condition, compared with those in the two experimental conditions, appeared to have experienced and dealt with the writing task somewhat differently. First, we observed a difference in how unpleasant participants found the arm position, $F(2, 63) = 7.55$, $p = .001$. Participants in the control condition found it less unpleasant to maintain the arm position ($M = 3.91$, $SD = 1.74$), compared with both the arm flexion condition ($M = 5.33$, $SD = 1.49$, $p = .002$) and arm extension condition ($M = 5.45$, $SD = 1.00$, $p = .001$). Possibly related to this is the observation that participants in the control

condition used more time, $F(2, 63) = 5.63$, $p = .006$; and wrote more words, $F(2, 63) = 4.05$, $p = .02$; to answer the questions ($M = 650$ seconds, $SD = 319$; $M = 179$ words, $SD = 100$ in control condition), compared with both the arm flexion ($M = 423$ seconds, $SD = 191$, $p = .002$; $M = 122$ words, $SD = 73$, $p = .02$) and arm extension condition ($M = 474$ seconds, $SD = 174$, $p = .02$; $M = 117$ words, $SD = 59$, $p = .02$). The extra time that participants used in the control condition may have resulted in relatively more concrete answers—correlation between time used and abstraction, $r(66) = -.22$, $p = .08$—which makes it a less-than-perfect control condition. We should therefore be careful in drawing firm conclusions about the directionality of the observed effect. It is important to note, however, that the arm flexion and arm extension conditions did not show any differences on these measures (ps > .47), which supports our finding that these proprioceptive cues induce differences in language abstraction.

Discussion

The present results confirm the hypothesis that proprioceptive cues (i.e., bodily feelings) that have previously been associated with global processing (arm flexion) result in more abstract language use compared with proprioceptive cues associated with analytic processing (arm extension). Participants who were asked to press their hand upward against the bottom of the table (i.e., arm flexion, an approach bodily action) were more likely to use abstract predicates in self-description (e.g., "I am outgoing"), whereas participants pressing their hand downward against the top of the table (i.e., arm extension, an avoidance bodily action) used relatively more concrete predicates (e.g., "I talk and dance"). These findings extend previous work on the effects of approach and avoidance motor actions (Cacioppo et al., 1993; Friedman & Förster, 2000) by revealing their effects on language use. Moreover, they extend work showing that internal affective cues (i.e., mood states; Beukeboom & Semin, 2005, 2006) and external affective cues (i.e., perceived emotional expressions; Beukeboom, under review) change language abstraction, by revealing that internal proprioceptive cues induce a comparable effect. The effects were unrelated to participants' affective state, which fits with Friedman and Förster's (2000) suggestion that proprioceptive cues change information processing in a manner parallel to mood.

One likely mechanism underlying these findings is provided by the affect-as-information approach (Schwarz, 1990, 2002; Schwarz & Clore, 1996) and related cognitive-tuning models (Bless & Fiedler, 1995; Clore et al., 2001). These approaches argue that people use proprioceptive cues, just as they rely on mood and external affective cues, as information about the requirements of situations and the conduct of tasks. Proprioceptive cues that are typically associated with approaching positive outcomes signal that the present situation is benign and that a global, abstract processing style is sufficient to deal with the situation and the task at hand. In contrast,

proprioceptive cues that are typically associated with avoiding negative outcomes signal that the present situation is problematic and therefore requires attention to detail. Consequently, approach cues induce global processing, and avoidance cues induce a focus on specifics and an analytic, concrete processing style (Friedman & Förster, 2000). The present results suggest that the processing styles induced by proprioceptive cues are reflected in language abstraction. Apparently, people rely on both affective (Beukeboom & Semin, 2005, 2006) and proprioceptive cues to tune the level of abstraction in which they cognitively deal with information, which is reflected in the words they choose to communicate this information.

A challenge for future research would be to investigate whether the effects of affective and bodily feelings on language use fulfill a function in interpersonal communication. Recent research has highlighted the importance of looking at both intra- and interpersonal factors as determining causes of language abstraction. For instance, work on the linguistic intergroup/expectancy bias has shown that intrapersonal cognitive expectancies and explicit interpersonal communication goals (e.g., to aggrandize or derogate a target) independently determine language abstraction (Douglas & Sutton, 2003; Fiedler, Bleumke, Friese, & Hofmann, 2003; Wenneker, Wigboldus, & Spears, 2005). Other work also shows that a communicator's language use is largely determined by the interpersonal context, in that communicators adjust the evaluative tone and concreteness of their words to the needs and attitude of recipients (Higgins, 1992) and take into account their communication partner's understanding and acceptance to maintain common ground (Clark & Brennan, 1991; Clark & Krych, 2004; Clark & Wilkes-Gibbs, 1986; Krauss & Fussell, 1991). Thus, people not only change their language abstraction as a consequence of intrapersonal processes but may also independently adapt their language abstraction on the basis of what they intend or need to achieve interpersonally, regarding a recipient.

One interesting avenue of research may focus on whether the effects of feelings on language abstraction—which we have mainly explained from an intrapersonal perspective—functionally serve interpersonal goals. A possible answer to this question is inherent in the cognitive-tuning logic (Schwarz, 2002; Zajonc, 1960), because this suggests that people rely on their feelings to adapt their intrapersonal cognitive processes flexibly in service of the requirements of the interpersonal (communicative) situation. Feelings are most likely responsive to a communication partner's reactions and to his or her level of understanding and agreement. As such, they may provide valuable interpersonal information about the needs of a recipient (Schwarz & Clore, 1996). Given that such information (e.g., about mutual agreement and understanding) is often not communicated explicitly, people can implicitly rely upon the subtle information provided by their feelings. Communicators can simply *feel* how the exchanged information needs to be presented to a recipient and their feelings help to tune intrapersonal processes to achieve that interpersonal goal. How does this relate to the present findings?

Presumably, positive cues (e.g., positive mood, smiling recipients, approaching bodily postures) are generally experienced in benign and pleasant conversational situations that are characterized by interpersonal understanding and rapport. In these situations, it may generally be appropriate to use abstract statements. Abstract language can render communication short and economical, helping a communicator to get rid of unneccesary detail when there is mutual agreement and understanding (i.e., common ground; Clark & Brennan, 1991; Fiedler et al, 2003). By doing so, people also adhere to Grice's maxim of quantity (Grice, 1975); they avoid being redundant and are as informative as required. Moreover, when talking about oneself (as in the present study), it is more personally revealing to use abstract descriptions (e.g., "In a discussion I am aggressive, I want to be right, and I get easily annoyed"). Speakers may feel that such statements are appropriate and will be accepted and understood when they experience the situation as pleasant.

In contrast, negative cues (e.g., negative mood, frowning recipients, avoiding bodily postures) are more likely experienced in "problematic" conversations that are presumably characterized by low rapport, rejection, critique, or misunderstanding. In such unpleasant situations, speakers may feel that a careful, descriptive style of formulating information is called for and therefore tune to providing concrete descriptions (e.g., "I listen, I interrupt people, I speak before my turn"). Concrete descriptions provide "objective" situational information and are more verifiable and less disputable than abstract language (Semin & Fiedler, 1989). By tuning to a more concrete level, people thus adhere to Grice's maxim of quantity by providing the descriptive detail that is apparently required. Simultaneously, they are more conservative in adherence to the maxim of quality: the rule to avoid saying things for which you lack evidence (Grice, 1975).

Previous work on language abstraction complements this reasoning (Fiedler, Semin, & Bolten, 1989). This work shows that when information is taken for granted and processed in an uncritical manner, a tendency toward interpretation and abstraction is encouraged. However, when the validity of information is challenged—for instance, by questions such as "Why did you say that?" or "What do you mean?"—the likely nature of defense is to provide concrete evidence and refer to a description of an event. Affective and proprioceptive cues may accompany these tendencies and implicitly inform people about which type of information they are required to provide.

In our view, these ideas open a number of possible avenues of research that may provide more insight into the effects of feelings on language use and into their functional role in determining language use during the course of a conversation. Not only a speaker's own feelings can be expected to induce changes in language use. Conversation partners exchange a constant stream of subtle affective signals and nonverbal cues that most likely have a large impact on the messages the speaker produces (Jones & LeBaron, 2002). Perceived emotional expressions and bodily actions in a listener, such as leaning forward or backward or shaking or nodding one's head (cf. Wells & Petty, 1980), are likely to change a speaker's language use. Speakers

talking to a nodding listener can be expected to gradually increase the level of abstraction of their story, whereas people talking to someone shaking his or her head should tune to using more concrete language. Future research should shed more light on how these cues determine our language use and help us recognize that our feelings speak a thousand words.

Note

1. Four participants were excluded from the analysis because they did not follow instruction or their Dutch was insufficient, leaving 66 cases.

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