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Moods as Spotlights: The Influence of Mood on Accessibility Effects

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Three studies explore the manner in which one's mood may affect the use and impact of accessible information on judgments. Specifically, the authors demonstrated that positive and negative moods differentially influence the direction of accessibility effects (assimilation, contrast) by determining whether abstract traits or concrete actor–trait links are primed. Study 1 investigated the impact of positive versus negative mood on the judgmental impact of trait-implying behaviors and found that positive moods lead to assimilation and negative moods to contrast. In Study 2, this effect was replicated in a subliminal priming paradigm. In Study 3, it was demonstrated that the type of information activated by trait-implying behaviors is indeed mood dependent, such that abstract trait information is activated in a positive mood, whereas specific actor–trait links are activated in a negative mood.

Keywords: mood, assimilation, contrast, priming, perceptual focus

The interplay of affect and cognition has intrigued social psychologists for a long time. They have shown that moods have profound effects on perception, memory, judgment, and behavior. For example, previous research has shown that moods may directly spill over to evaluation and judgment. These are the so-called mood-congruency effects: When you are happy, everybody looks beautiful; when you are sad, the whole world looks gloomy. Moods may also influence the depth of processing of incoming information: When you are happy, you process more superficially; when you are sad, you process more analytically (see Bless & Fiedler, 2006; Bless & Schwarz, 1999; Fiedler, 2001; Forgas, 1995; Martin, 2001; Schwarz & Clore, 1996; Wegener & Petty, 1994).

In the present research, we focus on another aspect of mood effects on information processing, that is on how moods may influence priming effects. In real life, moods are seldom the only things people have on their mind. People are not only and exclusively in a good or bad mood; rather, they live their normal lives (go to work, talk to people, go shopping, have dinner, watch television) while being in a good or bad mood. Thus, it is important and interesting to investigate how mood may indirectly affect judgments, namely via the interaction with normal, everyday experiences that by themselves have effects on judgment. In other words, the question is how mood may influence the direction of accessibility effects. It is interesting that there have been no systematic, empirical studies that have attempted to address this question to date. Thus, whereas previous research has focused mainly on "How do moods affect what is on people's mind?" we focus on "How do moods affect what people do with what is on their mind?" Specifically, we argue that over and above their direct influence on judgment, moods can have a strong indirect influence by affecting whether what is on one's mind leads to assimilation or contrast. The hypothesis is that moods alter people's perceptual focus such that positive moods lead to a more global focus and negative moods lead to a more local focus. In this way, moods may determine what features of accessible information (global vs. specific) come under the spotlight. This, in turn, may affect the impact of this information on subsequent judgments (whether assimilation or contrast occurs). Our approach is inspired, on the one hand, by research on the impact of mood on the globality of one's perceptual focus (e.g., Gasper & Clore, 2002) and, on the other hand, by work on the importance of the globality/distinctness of accessible knowledge for the direction of priming effects (e.g., Stapel, 2007).

Focus Level

The distinction between global and local processing in cognitive psychology can be traced back to the classic study by Navon (1977), in which participants were shown large letters that were made of smaller letters and had to judge whether or not a target letter was presented (see also Kimchi, 1992). Navon's main finding was that responses to global structures were faster—the so-called global advantage—a notion that was later challenged, and boundary conditions were specified (see Kimchi, 1992, for a review). Subsequent research within cognitive, clinical, and social psychology has shown that this distinction between global and local processing is related to a large variety of important psychological phenomena (e.g., Delis, Robertson, & Efron, 1986; Fink et al., 1996; Förster & Higgins, 2005; Gasper & Clore, 2002; Kühnen & Oyserman, 2002; Lamb & Robertson, 1990). An especially intriguing finding has been that the level of perceptual focus (or scope) is related to the level of conceptual focus (see, e.g., Anderson & Neely, 1996; Derryberry & Tucker, 1994; Förster, Friedman, Özelsel, & Denzler, 2006; Friedman, Fishbach, Förster, & Werth, 2003; Stapel & Semin, 2007). As Derryberry and Tucker (1994) proposed, motivational states not only influence the scope of perceptual attention (i.e., the extent to which attention is focused

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upon central as opposed to peripheral environmental cues) but also analogously influence the scope of conceptual attention, one's internal attention to mental representations as opposed to external percepts (see also Anderson & Neely, 1996; Förster et al., 2006). In support of this idea, they found that anxiety causes one to adopt a local attentional focus, whereas joy broadens one's focus, both on a perceptual level (increased responsiveness to peripheral cues) and on a conceptual level (increased activation of relatively inaccessible mental representations).

The link between perceptual and conceptual focus can be also illustrated by several different lines of research. For example, in a study by Friedman et al. (2003), participants who were engaged in a global task (looking at state maps in a global manner) did better in a subsequent creativity task (calling for broader conceptual attention) than participants who were asked to focus on (map) details. In addition, Friedman et al. demonstrated that local versus global processing affects breadth of categorization: Participants who underwent a global, compared with a local, processing manipulation were better at generating unusual exemplars for a number of categories (e.g., birds, colors, fruits). Previous research has suggested that the inclusion of an exemplar into a category (e.g., "Is a camel a vehicle?") requires a broader conceptual scope and more abstract representations (Isen & Daubman, 1984; see also Bless & Fiedler, 2006; Stapel & Semin, 2007).

In sum, a variety of research findings corroborate the notion of a close relationship between perceptual and conceptual focus with regard to the global/local, or abstract/concrete, distinction. Nevertheless, it should be noted that in the existing literature, the term *focus* has been used alternatively to denote scope (narrow/broad), focus (global/local), and processing style (abstract/concrete, global/local), thus pertaining sometimes to attention and perception and sometimes to other, less basic cognitive processes. Although the terms *global* and *local* have their roots in research on visual perception and the terms *abstract* and *concrete* usually refer to higher order, conceptual processes (e.g., language use, categorization, concept clustering in memory), the research reviewed above testifies and also calls for a broader, more flexible approach. Thus, on the one hand, perceptual (global/local) and conceptual (abstract/concrete) processing have been shown to be closely related, and on the other, we would like to argue that for the purposes of the present paper, the distinction between perceptual and conceptual focus is not essential. Hence, to avoid ambiguity, but also superfluity, from this point on, we use the term *focus* to refer to one's current perceptual focus in the broadest sense of the term *perceptual* (i.e., not limited to visual perception but also including social/person perception). That is, we do not discriminate between perceptual and conceptual focus, because by *focus*, we mean *mindset,* or processing style, which may vary along the global/local (or abstract/concrete) dimension and may thus have an impact on both how external (social) information is picked up and attended to and how the mental representation of this information is dealt with, elaborated on, and further used in person perception and judgment.

Focus Level and Mood

Evidence suggests that mood is one of the factors that may influence one's focus, and thus the level of abstractness of mental representations (see Bless & Fiedler, 2006; Derryberry & Tucker, 1994; Förster et al., 2006; Gasper & Clore, 2002). One of the main principles or central assumptions of Schwarz and Clore's affect-as-information approach is the *level of focus principle* (see Clore, Gasper, & Garvin, 2001). This principle suggests that affective feedback should influence the focus of processing, such that positive moods promote attention to the global aspects of stimuli (the forest), whereas negative moods promote attention to the local aspects of stimuli (the trees). In two experimental studies, Gasper and Clore (2002) showed this mood effect on the globality of focus on a rather basic perceptual level. In their first experiment, they found that happy participants more readily assimilated the details of an ambiguous drawing to a global face schema than did sad participants. In their second study, they demonstrated that happy people categorized geometric figures more by their global shapes, whereas sad people categorized these figures more by their local shapes. Moreover, they found no evidence for differences in the depth of processing, which rendered such an account of the observed effects implausible.

We argue that the impact of mood on focus level should hold beyond the domain of visual (purely perceptual) processing. As we mentioned above, Derryberry and Tucker (1994) have already shown that affective states can have a parallel effect on perceptual and conceptual attention. In addition, Gasper and Clore's (2002) results are conceptually consistent with the notion that people who are in a positive mood are more likely to use global stereotypes and broad, abstract categories, whereas those in a negative mood focus more on specific behaviors and lower level categories (e.g., Edwards & Weary, 1993; Isen, 1984; Park & Banaji, 2000; Sinclair, 1988). Notably, positive moods are associated with an increased reliance on general knowledge structures, such as general expectancies, stereotypes, schemas, and scripts (Bless & Schwarz, 1999; Fiedler, 2001). For instance, happy (but not sad) participants have been found to rely on a global, rather than on a specific, representation of persuasive messages (see Bless, Mackie, & Schwarz, 1992; Bless & Schwarz, 1999) and to use more abstract language (e.g., adjectives rather than verbs) when describing social events (Beukeboom & Semin, 2006).

Focus Level and Accessibility Effects

It seems then that mood influences one's focus level: Positive moods induce a global focus, and negative moods induce a local focus (see Bless & Fiedler, 2006; Gasper & Clore, 2002). In the present research, we aimed to use this logic to predict the effects of mood on knowledge accessibility (priming) effects. Specifically, we argue that by inducing different levels of focus, positive and negative moods affect the encoding and use of accessible knowledge and, thus, the direction of accessibility effects. We base this hypothesis concerning the relation between focus level and the direction of accessibility effects on studies by Stapel and his colleagues investigating the Interpretation Comparison Model (ICM; e.g., Stapel, 2007; Stapel & Koomen, 2001; Stapel, Koomen, & van der Pligt, 1996). The ICM, like other assimilation and contrast models, posits that the way accessible information is used is an important determinant of the impact of such information on subsequent judgments. When accessible information is used as an interpretation frame to disambiguate and encode target information, assimilation is likely to occur. However, when accessible information serves as an extreme comparison standard (anchor), contrast effects are more likely (see

also Martin, 1986; Schwarz & Bless, 1992; Trope, 1986; Wyer & Srull, 1989).

One important factor determining whether accessible information is used as an interpretation frame or as a comparison standard is the degree of abstractness of this information. In numerous studies, Stapel and his colleagues have shown that, ceteris paribus, abstract, diffuse trait primes (e.g., hostile vs. friendly, smart vs. stupid) usually lead to assimilation, whereas distinct, specific exemplar primes (e.g., Hitler vs. Gandhi, Einstein vs. clown) usually lead to contrast (see Stapel, 2007, for a review of abstractness/distinctness effects, as well as other factors affecting the direction of knowledge accessibility effects). The distinctness notion refers to the idea that such person exemplars constitute distinct and separate entities with relatively clear object boundaries and are therefore more likely to be used as comparison standards. Abstract trait concepts or attributes lack the distinctness to be used as a comparison standard and are more likely to be used as an interpretation frame, rather than an anchor: As Murphy and Zajonc (1993) put it, diffuse information is more likely than distinct information to spill over and fill in the gaps in vague target information (see also Schwarz & Clore, 1996). The notion that abstract trait priming yields assimilation and distinct exemplar priming yields contrast is well established and has now been shown in various domains (e.g., politics, advertising, health) with a variety of judgments (self-evaluations, other-judgments, preferences, choices) and unobtrusive behavioral measures (reaction times, walking speed, coloring tasks, puzzle tasks, scores on an IQ test; for a review, see Stapel, 2007).

Mood, Focus Level, and Accessibility Effects

Given the effects of mood on focus level on the one hand and research on the impact of information distinctness on knowledge accessibility effects on the other, one could argue the following: If positive moods induce a more global focus, then global, abstract features of a stimulus are more likely to be picked up in a positive mood. Hence, stimuli should be more likely to lead to assimilation when people are happy. Similarly, if negative moods induce a more local focus, then specific, distinct features of a stimulus are more likely to be picked up in a negative mood. Hence, stimuli should be more likely to lead to contrast when people are sad. Thus, we argue, transient mood states may have a profound effect on how people encode and use accessible information during impression formation and whether assimilation or information-incongruent contrast judgments occur.

In the current studies, we test this hypothesis by examining the impact of *trait-implying social information* (like behaviors or faces) on subsequent judgments (see also Stapel et al., 1996). Previous research suggests that categorizing behavioral information or facial information in trait terms is something people do both frequently and spontaneously (see, e.g., Uleman, Newman, & Moskowitz, 1996). It is less clear, however, what type of representations are activated when people categorize behavior in trait terms. Previous research has shown that the goals, motivation, and mindset of the individual perceiver may all affect the likelihood that a sentence such as "John knew he was the best and didn't hesitate to tell people about it" would activate actor–trait links ("John is arrogant") instead of abstract trait concepts ("arrogant"; see Stapel et al., 1996; Uleman et al., 1996).

Our analysis of the relation between focus level, mood, and accessibility effects suggests that mood may also be an important determinant of what features of social information come under the spotlight. More specifically, we posit that when perceivers are in a positive mood, abstract labels are primed (e.g., *hostile*, *attractive*), whereas more specific actor–trait links (i.e., a trait and an exemplar) are primed when perceivers are in a negative mood (e.g., "Peter is aggressive," "Mary is attractive"). Furthermore, because the work of Stapel and colleagues (see Stapel, 2007) suggests that primed trait concepts are likely to lead to assimilation, whereas primed actor–trait links usually lead to contrast (see also Martin, 1986; Schwarz & Bless, 1992; Trope, 1986; Wyer & Srull, 1989), it follows that mood is also likely to be an important determinant of the impact of perceived behavior on subsequent judgments, that is, whether assimilation or contrast ensues.

We test this logic in three experimental studies, employing divergent mood-induction methods (scenarios, music), research paradigms (supraliminal, subliminal priming, lexical decision tasks, judgment tasks), and dependent measures (response latencies, person perception). With these studies, we aim to demonstrate that moods may influence the direction of knowledge-accessibility effects (assimilation vs. contrast) by guiding the referents of trait inferences (traits vs. actor–trait links).

Study 1

In our first study, we investigated the impact of positive versus negative mood on the influence of trait-implying behaviors on subsequent target evaluations. After a mood-induction task (reading a happy or sad story; see Erber, 1991), participants read several trait-implying behavior descriptions and were then asked to read a description of a target person and rate this person on a number of personality dimensions (see Stapel et al., 1996). The prediction was that in a positive mood, participants would assimilate the target judgments toward the trait-implying behaviors, whereas in a negative mood, these judgments would be contrasted away from these behaviors.

Method

Participants and Design

One hundred thirty-five university students took part in the study in exchange for partial academic credit. They were randomly distributed across the conditions of a 3 (Mood: positive, negative, neutral) × 3 (Prime Type: positive, negative, irrelevant) factorial between-subjects design.

Procedure

Upon arrival in the laboratory, participants were welcomed by the experimenter, who explained that they would participate in an experiment consisting of several paper-and-pencil tasks. The first task was presented as a study on print media content (this was actually the mood-induction procedure). Participants were asked to read one of the three stories, depending on mood condition, and answer the media question. After the mood-induction procedure, and following Stapel et al.'s (1996) procedure, participants were asked to read the five trait-implying sentences (two of which differed across prime-type conditions). One group of participants

read two experimental sentences that implied the traits *confident* and *persistent*, along with three filler sentences. One group of participants read two sentences that implied the traits *conceited* and *stubborn*, along with the three filler sentences. One group of participants had two sentences that did not imply traits on these dimensions, along with the three filler sentences. The experimental sentences always appeared in the second and the fourth positions. After participants read the trait-implying sentences, they were instructed to read the paragraph and try to form an impression about the person described. Next, respondents had to indicate their impressions of the target on trait rating scales. Participants were then asked to answer a mood question as a manipulation check. Finally, on completion of these tasks and questions, participants were carefully debriefed about the goal and purpose of the experiment, following the funneled debriefing procedure for priming experiments, as advocated by Bargh and Chartrand (2000). None of the participants spontaneously indicated suspicion of the actual goal of the study. After the debriefing, participants were thanked and dismissed.

Materials

Mood induction. Mood was induced, following the procedure that was designed by Erber (1991). In this procedure, participants received, depending on condition, one of three stories describing events that happened to a young female artist (the text of the stories we used was similar in content, but not identical, to the ones used by Erber, 1991). The story for participants in the positive mood condition described a number of fortunate events culminating in her receiving a scholarship to study art. The story designed to induce a negative mood described how the same person was overcome by a rare, disabling illness (rheumatoid arthritis) at the end of her freshman year in college. The neutral mood story simply described how the person decided which college to attend. All three stories were approximately the same length.

We tested the effectiveness of this mood-induction procedure in a pilot study. Participants ($N = 45$) read one of three stories (happy, sad, or neutral) as part of a so-called media-classification study ("In which newspaper or magazine do you think this story might have been published?") and then answered the following item: "Indicate how positive or negative you feel." Participants indicated their ratings on a 9-point scale with endpoints 1 (*negative*) and 9 (*positive*). Results showed that the stories effectively influenced pilot participants' mood, $F(2, 42) = 9.94$, $p < .01$, $\eta_p^2 = .32$, with the positive mood story resulting in more positive mood self-ratings ($M = 6.93$, $SD = 1.10$) than the negative mood story ($M = 5.33$, $SD = 0.82$), and the neutral story lying halfway between these two extremes ($M = 6.02$, $SD = 1.01$; all single comparisons, ps $< .05$).

In the main study, the mood-induction story was (as in the pilot study) presented as part of a media-classification study. Respondents were asked in what magazine/newspaper they thought the story they read might have been published. This was done to ensure that participants perceived the different tasks (mood induction, trait-implying sentences, and paragraph) as unrelated.

Trait-implying sentences. Each participant was shown five trait-implying sentences, and all participants read the same three neutral filler sentences. On the basis of experimental sentence type, three groups were created. One third of the participants read two experimental sentences that implied relevant positive traits. One third of the participants read two experimental sentences that implied relevant negative traits. One third of the participants read sentences that implied irrelevant traits. These sentences were pretested (see Stapel et al., 1996) to be both strong in their ability to imply (and thus prime) traits and relevant to two trait dimensions that characterized the target stimuli to be judged later on (persistent–stubborn and confident–conceited; see below). The positive sentences were as follows: "Peter paddled even harder as he fell further behind in the race" (*persistent*); "John knew he could handle most problems that would come up" (*confident*). The negative sentences read as follows: "Peter refused to listen to them even though all the evidence was in their favor" (*stubborn*); "John knew he was the best and didn't hesitate to tell people about it" (*conceited*). The irrelevant sentences were as follows: "Peter decorated the office with antiques from the Far East" (*cultured*); "John invited them to call if they needed any help getting settled" (*helpful*). Order of sentence presentation was counterbalanced across conditions.

Paragraph. Participants read a paragraph that described the activities of a character named Ralph. This paragraph consisted of a series of behavioral descriptions that had been pretested and determined to be ambiguous along the following trait dimensions: adventurous–reckless, confident–conceited, and persistent–stubborn. Although participants read no trait-implying sentences that implied either adventurousness or recklessness, we retained the behavioral description of this dimension in the paragraph to maintain coherence.

Rating scales. After reading the paragraph, participants were asked to rate the target along four (two applicable and two inapplicable) bipolar trait dimensions. Participants indicated their impressions of the target by circling a number on 7-point scales that measured along the applicable confident–conceited and persistent–stubborn dimensions and the inapplicable friendly–irritating and intelligent–stupid dimensions. A rating of 1 indicated a positive evaluation (*confident*, *persistent*), and a rating of 7 indicated a negative evaluation (*conceited*, *stubborn*).

Mood manipulation check. Participants were asked to indicate how they felt on a 9-point scale with the endpoints *negative* and *positive*. This last item served as a manipulation check for the mood-induction procedure.

Results and Discussion

Mood Manipulation Check

An analysis of variance (ANOVA) on the mood measure showed the predicted main effect of mood induction, $F(2, 132) = 34.09$, $p < .01$, $\eta_p^2 = .34$ (other Fs < 1). Participants who had read the positive mood story reported being in a more positive mood ($M = 6.91$, $SD = 0.85$) than did participants who had read the neutral mood story ($M = 5.93$, $SD = 1.10$), and those who read the negative mood story reported being in a more negative mood ($M = 5.38$, $SD = 0.69$) compared with both other groups (all ps $< .05$).

Main Analysis

We tested our predictions in 3 (Mood) × 3 (Prime Type) ANOVAs. As predicted, the ANOVAs did not reveal any main or

interaction effects for the inapplicable rating scales (Fs < 1). To keep the presentation of results simple, we only report ANOVAs on the composite scores of the applicable scales (persistent-stubborn and confident-conceited; $r(133) = .50$, $p < .01$).[1] For this measure, an ANOVA revealed the expected two-way interaction between mood and prime type, $F(4, 126) = 16.14$, $p < .01$, $\eta_p^2 = .34$ (other Fs < 1).

Comparison of the relevant means (see Table 1) showed that among positive mood participants, those who were shown positive trait-implying sentences (traits with a positive connotation) rated the target more positively (i.e., more toward the confident/persistent scale anchor; $M = 3.17$, $SD = 0.77$) than did those who were shown negative trait-implying sentences ($M = 4.73$, $SD = 0.82$), $t(28) = -5.39$, $p < .01$, $d = 1.96$. In contrast, among negative mood participants, those who were shown positive trait-implying sentences rated the ambiguous target more negatively (i.e., more toward the conceited/stubborn scale anchor; $M = 4.8$, $SD = 0.65$) than did those who were shown negative sentences ($M = 3.03$, $SD = 0.58$), $t(28) = 7.85$, $p < .01$, $d = 2.78$. This pattern indicates assimilation effects in the positive mood conditions and contrast effects in the negative mood conditions. As can be seen in Table 1, neutral mood participants' ratings fell halfway between the ratings of respondents in the two experimental conditions.

The results of Study 1 provide strong support for our hypothesis that people's mood affects the way primed information is used in subsequent judgments. Positive moods elicit assimilation, and negative moods elicit contrast effects.

There is one particular issue, however, that needs to be addressed here in greater detail. Whereas we argue that the reported contrast effects result from comparisons away from a reference point (see also Ruys, Spears, Gordijn, & de Vries, 2006), a number of authors have suggested that in some contexts, contrast effects may result from prime awareness and the ensuing desire to correct for the prime's potential contaminating influence (e.g., Martin, 1986; Uleman et al., 1996; Wilson & Brekke, 1994; for a review see Stapel, 2007). Thus, one may argue that negative moods lead to contrast effects because, when in a negative mood, people are much more likely to process information systematically and, thus, to correct for unwanted biasing influences more readily (see Forgas, 1995; Schwarz & Clore, 1996). This would then mean that the result is correction contrast and not comparison contrast (as we have argued). There are several arguments against such an account. First, most studies that have instructed people to think accurately and carefully do not find contrast effects but rather find no priming effects at all (see Stapel, Koomen, & Zeelenberg, 1998). Second, there is no evidence in the present studies that our participants were more aware or suspicious in the negative mood conditions or that they tried to correct for unwanted contamination of their judgments. In fact, our funneled debriefing procedure provided evidence for just the opposite, thus rejecting the prime-awareness explanation of contrast effects, which postulates active and effortful correction processes operating in an attempt to subtract contextual contamination from target judgments. In addition, there is no reason to believe that contrast can only occur when people are aware of the primes, because both contrast and assimilation effects have been found after both subliminal and supraliminal priming (see, e.g., Stapel, Koomen, & Ruys, 2002) and as a result of no-correction or correction strategies (see, e.g., Petty & Wegener, 1993). Last, if people corrected for bias in their inferences, one would expect pervasive contrast effects on all measures, whereas in the present studies, contrast was found only on relevant, target-related measures and not on target-unrelated measures.

Thus, it seems unlikely that correction is the underlying mechanism for the observed contrast effects in target judgment. We instead interpret the contrast effects found in the present study as a result of "unaware" comparison processes between the person information implied by the trait-implying sentences and the target person. To fully rule out a correction account for the obtained contrast effects, however, we conducted another study, in which we tested the impact of mood on accessibity effects in a subliminal priming paradigm.

Table 1
Study 1: Mean Trait Ratings as a Function of Mood and Prime Type

	Mood					
	Positive		Negative		Neutral	
Prime type	*M*	*SD*	*M*	*SD*	*M*	*SD*
Positive	3.17	0.77	4.80	0.65	3.77	0.88
Negative	4.73	0.82	3.03	0.58	3.93	0.86
Irrelevant	3.93	0.59	3.97	0.77	3.97	1.17

Note. Means reported here are composite scores that were computed over the applicable rating scales (persistent–stubborn, confident–conceited). Lower ratings indicate more positive ratings.

Study 2

In Study 2, we had two major goals. First, we intended to show that correction processes are unlikely to drive the contrast effects we found under negative mood in our first study. Second, we aimed to demonstrate that the effects of mood on the direction of accessibility effects not only hold for verbal stimuli (i.e., behavior descriptions) but can also be just as strong for exposure to visual target information (e.g., human faces).

Our rationale here is that human faces—just like verbal behavioral descriptions or actual behavior—can imply a variety of traits (e.g., attractiveness, friendliness, intelligence, competence) that people often can infer quickly and spontaneously from as little as a glance at a person's face (Ambady, Bernieri, & Richeson, 2000; Todorov, Mandisodza, Goren, & Hall, 2005; Zebrowitz, 2006; Zebrowitz, Hall, Murphy, & Rhodes, 2002). Support for this view also comes from emotion research that has demonstrated that people (correctly) pick up others' emotional states and that these can affect subsequent evaluation and judgment, even when emotional face primes are presented subliminally (Dimberg, Thunberg, & Elmehed, 2000; Ruys & Stapel, in press; Stapel et al., 2002). For example, recent studies by Stapel, Ruys, and colleagues (Ruys & Stapel, in press; Stapel et al., 2002) showed that super quick subliminal exposures to a smiling female face results in global, valence-based reactions (i.e., *happy*), whereas quick subliminal

[1] Separate analyses for each of the items showed the same pattern of results as did analyses for the composite measure.

exposures result in specific, descriptive reactions (i.e., *happy woman*). If it is possible to decouple the trait from the actor in paradigms using supraliminal exposure to trait-implying sentences and in paradigms using subliminal exposure to emotional faces (evidenced by the differential effects of the prime on subsequent target evaluations), it seems logical that the trait and the actor can also be activated separately (or together) by exposure to nonemotional faces that vary on an evaluative dimension. Thus, we reasoned, although people are exposed to the same face prime (just as they are exposed to the same trait-implying sentence), their moods may lead them to focus on different features of this face.

A real-world example might be useful here. Imagine that you are cycling to work and you quickly pass by a billboard depicting a beautiful girl advertising facial cosmetics. For your own (and others') safety, you are not taking too long to look at the girl's shining clear skin and seductive smiling eyes, but you are, rather, cycling on. What are the chances that the abstract trait *attractive* or *beautiful* will be activated by glancing at the billboard (even if you are unaware of your wandering eyes), and what are the chances that you would make more specific inferences about this very girl? Well, we would argue, it depends on your mood: If you are happy this morning on your way to work, you might have a more global focus and the vague feeling or thought of *something attractive* may occupy the back of your mind. Conversely, if you just cycled through a dirty puddle on the rainy road, you might become more vigilant, so glancing at the billboard might make you infer *beautiful girl* or *attractive model*. Our idea is that your mood this morning would then determine whether your new colleague, whom you meet when you get off your bike in front of your office, would strike you as attractive.

To test our hypothesis, in the present study we subliminally primed attractive versus unattractive faces and then asked respondents to judge the attractiveness of a neutral (supraliminally presented) target face. Following our analysis of the relations between mood, focus, and accessibility, and encouraged by the findings of our first study, we predicted that positive and negative moods should impact how respondents use subliminally primed visual information. Thus, the logic here is the same as in our previous study: Exposure to a human face can prime a more or less abstract concept, namely the trait label *attractive*, *attractiveness*, or the specific actor–trait link *attractive person*, *unattractive woman*. Moreover, we argue that this very difference in what is activated is mood dependent and that it should have a differential impact on the use of this information in subsequent judgments. Thus, we derived the following predictions: Positive mood participants should be more likely to assimilate their judgments of the neutral target face to the prime, if the latter, as we argue, activates broad, diffuse information (e.g., *attractiveness*). Negative mood participants, on the other hand, should contrast their judgments away from the prime, as a result of the activation of more distinct exemplar information (e.g., *attractive woman*). Thus, negative mood participants should be more likely to rate a neutral target face as more attractive when they are primed with an unattractive face and as more unattractive after being exposed to an attractive face.

In this study, we induced positive and negative mood using the continuous-music technique (Eich & Metcalfe, 1989), which has proven successful in previous studies. Employing this mood-induction procedure allowed us to fortify and generalize our results from the first study.

Method

Participants and Design

Ninety-three university students took part in the study in exchange for partial academic credit. They were randomly assigned to the conditions of a 2 (Mood: positive, negative) × 2 (Prime Type: positive, negative) between-subjects design or to a control condition in which participants received no mood manipulation and were primed with neutral stimuli (pictures of trees).

Materials

Mood induction. To induce positive or negative mood, we had participants listen to happy classical music (e.g., allegros from Mozart's *Eine kleine Nachtmusik*) or sad classical music (e.g., Barber's *Adagio for Strings)* over headphones during the priming episode of the experiment. Music was stopped before the judgment phase (for a similar method, see Innes-Ker & Niedenthal, 2002).

Priming stimuli. The priming stimuli were a (black and white) photograph of an unattractive female face (pretested on a 7-point unattractive–attractive rating dimension, $M = 2.23$) and a photograph of an attractive female face (pretested, $M = 5.72$). Both faces had a neutral expression.

Dependent measure. Participants were asked to rate a moderately attractive face with a neutral expression (pretested on a 7-point unattractive–attractive rating dimension, $M = 4.12$).

Mood manipulation check. After participants provided their target face ratings, they received a 7-point rating scale on which they had to indicate how they felt (anchored by *negative* and *positive*).

Procedure

On arrival, participants were shown into one of eight cubicles in the experimental room and were seated in front of a computer equipped with stereo headphones for the music induction. They were told that they would participate in a series of unrelated studies. First, participants performed a parafoveal vigilance task (modeled after Stapel et al., 2002) in which the priming stimuli were presented outside of awareness. Participants were told that very short flashes would appear on the screen at unpredictable places and at unpredictable times and that their task was to decide as quickly and accurately as possible whether the flash appeared on the left or right side of the screen. After completing the vigilance task, participants completed the target rating task.

Priming task. The priming task was modeled after Stapel et al.'s (2002) parafoveal priming task. Once participants were seated in front of their computer, the experimenter explained the vigilance task, first verbally and then with instructions on the computer screen. Participants were seated so that the distance between their eyes and the computer screen was 100 cm when they sat erect on the chair, as they were instructed to do. This ensured that the priming stimuli were presented outside of participants' perceptual field (for details, see Stapel et al., 2002). The experimenter instructed participants to place their index fingers on the two labeled keys of the keyboard and to press the left key, labeled

"L," if a flash appeared on the left side of the screen and the right key, labeled "R," if a flash appeared on the right side of the screen. A fixation point consisting of one X was presented continually in the center of the screen. The experimenter emphasized that, because of the unpredictable timing and location of the flashes, the best way to detect all of them quickly would be to keep one's eyes on the fixation point at all times.

Participants were given 10 (neutral priming) practice trials to become familiar with the procedure and to ensure that they understood it. After answering any questions, the experimenter began the 60 experimental trials of the vigilance task, which took participants approximately 5 min to complete. All pictures presented on the computer screen were 20 mm in size. The pictures that were flashed in the 10 practice trials and in 40 of the experimental trials were pictures of trees. In the remaining 20 experimental trials, an attractive face, an unattractive face, or a picture of a tree was flashed. The order in which pictures were flashed was random. All pictures were flashed for 110 ms. In all conditions, these pictures were immediately followed by a 120-ms mask (for details, see Stapel et al., 2002).

Awareness and suspicion. Previous suboptimal priming studies have shown that the paradigm used here provides sufficient safeguards to prevent participants from becoming aware of the priming stimuli (see Stapel et al., 2002; Stapel & Blanton, 2004). However, to ensure that participants were not aware of the priming stimuli, we used an extensive funneled debriefing procedure in which participants were asked increasingly specific questions about the study (see Stapel et al., 2002). This procedure revealed that all participants reported that they had seen flashes. Although some reported to have seen "pictures," no participant could report on the general or specific contents of the primes. Furthermore, participants' guesses of which of the two pictures they had seen did not exceed chance, nor did they differ between conditions (see Stapel et al., 2002). Finally, there were no participants who thought the vigilance and judgment tasks were related. Thus, we could safely conclude that we were successful in presenting our priming stimuli outside of awareness and in not alerting participants to the actual relation between the vigilance and rating tasks.

Results and Discussion

Mood Manipulation Check

An ANOVA on the mood measure showed the predicted main effect of mood induction, $F(2, 90) = 19.66$, $p < .01$, $\eta_p^2 = .30$ (other Fs < 1). Participants who had listened to happy music reported being in a more positive mood ($M = 6.81$, $SD = 0.88$) than did participants who had listened to no music ($M = 6.06$, $SD = 0.90$), and those who had listened to sad music reported being in a more negative mood ($M = 5.36$, $SD = 1.16$) compared with both other groups (all ps $< .05$).

Main Analyses

As predicted, a 2 (Mood) × 2 (Prime Type) ANOVA on the attractiveness ratings revealed the expected two-way interaction between mood and prime type, $F(1, 72) = 31.65$, $p < .01$, $\eta_p^2 = .31$ (other Fs < 1). Comparison of the relevant means (see Table 2) showed that positive mood participants who were primed with an attractive face rated the target face more positively ($M = 4.67$, $SD = 0.84$) than did those who were shown an unattractive face ($M = 3.47$, $SD = 1.02$), $F(1, 74) = 10.24$, $p < .01$, $\eta_p^2 = .12$. In contrast, negative mood participants who were primed with an attractive face rated the target face more negatively ($M = 3.26$, $SD = 1.33$) than did those who were shown an unattractive face ($M = 4.70$, $SD = 0.80$), $F(1, 74) = 16.90$, $p < .01$, $\eta_p^2 = .19$. This pattern indicates assimilation effects in the positive mood conditions and contrast effects in the negative mood conditions. As can be seen in Table 2, the ratings of neutral mood participants, who were only primed with pictures of trees, fell halfway between the ratings of respondents in the two experimental conditions ($M = 4.00$, $SD = 0.79$).

Table 2
Study 2: Mean (SD) Attractiveness Ratings as a Function of Mood and Face Prime

	Mood			
	Positive		Negative	
Face prime	*M*	*SD*	*M*	*SD*
Attractive	4.67	0.84	3.26	1.33
Unattractive	3.47	1.02	4.70	0.80

Note. The ratings of neutral mood participants, who were primed only with pictures of trees, fell halfway between the ratings of respondents in the two experimental conditions ($M = 4.00$, $SD = 0.79$).

The results from this study extend our findings from Study 1 by demonstrating that the impact of mood on the direction of accessibility effects generalizes over different mood-induction procedures, different priming stimuli, and different target judgments. Furthermore, these results show that the predicted impact of mood on priming effects can also be quite strong when information is presented outside of awareness and/or when mood is primed unobtrusively. The effects of subliminal face priming we found in this study parallel the effects of supraliminal behavior priming we found in Study 1: Positive moods lead to assimilation, whereas negative moods lead to contrast.

Thus, we provided further support against a correction account of our contrast effects: It is highly unlikely that participants tried to correct for the influence of a prime of which they were not aware. In addition, it should be noted that, similar to our first study, and as predicted, we found both assimilation and contrast effects. If it were the case that human faces always activate actor–trait links, contrast effects should have dominated the results. Instead, we showed that positive moods can override this intuitive "bond" between the actor and the trait in face perception: Participants who were in a positive mood only picked up the abstract trait, namely attractiveness, but they did not store this trait along with the specific person whose face implied it. In sum, these results confirm our conjecture that accessibility effects in person perception can be elicited by verbal, as well as by visual stimuli, and that these are mood dependent.

As we argued above, we made our predictions, and thus also explain these results, using the framework of the referent hypothesis, namely that the different levels of focus that positive and negative moods elicit lead to corresponding differences in what

features of the primed information come under the spotlight. Positive moods prime more abstract representations (*attractive*), whereas negative moods prime more specific, entity-linked representations (*attractive woman*). In the next study, we test this hypothesis more directly.

Study 3

In our view, the differential effects of positive and negative mood on participants' processing of the trait-implying behavior primes (Study 1) and of the subliminally presented trait-implying face primes (Study 2) can be accounted for by the different levels of focus that moods evoke. Specifically, we posit that when people are in a positive mood, trait-implying social information (be it faces or behaviors) is more likely to activate global trait information (e.g., *persistent* or *attractive*), whereas a negative mood is more likely to activate specific actor–trait links (e.g., *persistent Peter* or *attractive woman*). Whereas the results of our first two studies provide evidence for the idea that mood may influence the direction of knowledge accessibility effects (positive moods–assimilation, negative moods–contrast), in our third study, we set out to provide more direct empirical support for our spotlight hypothesis, namely that moods indeed determine whether trait-implying information primes global traits or distinct actor–trait links. To this end, we gave participants a lexical decision task after our mood-induction procedure that was designed to measure the relative accessibility of the trait versus actor–trait links activated by the primes (see, e.g., Stapel & Suls, 2004, for a similar method).

To test the hypothesis that trait-implying behavior increases the accessibility of abstract traits when people are in a positive mood versus distinct actor–trait links in a negative mood, we used a lexical decision task that was developed by Dijksterhuis et al. (1998; see also Stapel & Suls, 2004). We put people in a positive or negative mood with the music technique we used before and then simply asked participants to quickly read a short paragraph about "Paul" that either implied specific positive traits (confident, persistent) or negative traits (conceited, stubborn; see Study 1). Participants then received a lexical decision task that included words associated with the positive traits (e.g., *certain, determined*), words associated with the negative traits (e.g., *arrogant, inflexible*), and irrelevant words and nonwords. These words were always preceded by a subliminal presentation of either the actor's name (*Paul*) or irrelevant words (*pear*), so that lexical decision trials that were preceded by the *Paul* prime should increase the accessibility of knowledge about the actor (see Dijksterhuis et al., 1998).

If positive moods solely increase the accessibility of abstract traits, whereas negative moods also increase the accessibility of specific actor–trait links ("Paul is. . ."), then our lexical decision task should reveal such a pattern. Both positive and negative mood participants who are exposed to positive information should be faster in responding to positive words than to negative words. The opposite should be true for positive and negative mood participants exposed to negative information: faster responses to negative words than to positive words. More important, because we predict that for negative mood participants (and not for positive mood participants) these trait words will be linked to the actor (*Paul*), these accessibility effects should primarily occur (i.e., word recognition should be facilitated) for lexical decision trials that are preceded by *Paul*.

Method

Participants and Design

Sixty-one students participated in the study in exchange for partial course credit. They were randomly assigned to the conditions of a 2 (Mood: positive, negative) × 2 (Prime Valence: positive, negative) between-subjects design.

Procedure and Materials

On arrival in the laboratory, participants were placed in individual cubicles and were told that they would be serving in several unrelated pilot studies and that they would receive all instructions by means of a computer program. The experimenter started the computer program and left. As in Study 2, participants listened to happy or sad music throughout the experimental session. First, participants were asked to quickly read a paragraph about a person named Paul. In the positive priming condition, this description included sentences implying persistence and confidence. In the negative priming conditions, these were replaced by sentences implying stubbornness and conceitedness (see Study 1).

After reading the paragraph, participants worked on the lexical decision task. Participants were told that the task concerned a word-recognition experiment, the goal of which was to find out how quickly people could discriminate between words and nonwords. Participants were asked to focus on the screen every time a string of X's appeared. They were told that this string would be followed by a word or a nonword and were asked to decide as quickly as possible whether a letter string was an existing word or not. A total of 46 trials were presented. The first 10 trials were practice trials, whereas Trials 11–46 were the critical ones. Of the critical trials, in 18 cases, the target was an existing word, whereas in the remaining 18 cases, the words were random letter strings. Of the 18 words, 6 were persistent- or confident-related (e.g., *persevering*, *secure*), 6 were stubborn- or conceited-related (e.g., *obstinate*, *arrogant*), and 6 were neutral words that were unrelated to the primed dimensions. For each group of six target words, there was an accompanying subliminal prime, such that three of the targets were presented with the word *Paul*, whereas the remaining three were primed with the word *pear*. Following Stapel and Suls (2004), there were two versions of this task, so that three specific words that were primed with *Paul* in one version were primed with *pear* in the other and vice versa. The 36 trials were presented in random order.

The trials involved the following sequence of events. First, we presented a fixation stimulus (XXXX) at the center of the screen for 1,000 ms. Then the prime was presented at the same location for 15 ms and was immediately masked by the fixation stimulus again for 500 ms. The target word was then presented, overwriting the masking stimulus, and it remained on the screen until participants had made the lexical decision. After 2 s, the same sequence was repeated with the next trial.

Upon completion of the lexical decision task, participants answered a final questionnaire that tested for awareness (see Stapel & Suls, 2004). This awareness check showed that none of the

participants realized that prime words had been presented prior to the target words, and none of the participants were able to list any of the prime words. This demonstrates, as was expected, that the priming occurred outside of conscious awareness (see Stapel & Suls, 2004). After they had completed the questionnaire, participants were thanked and debriefed.

Manipulation check. The manipulation check question was the same as the one used in Study 2. Participants had to indicate how they felt, from 1 (*negative*) to 7 (*positive*).

Results and Discussion

Mood Manipulation Check

An ANOVA on the mood measure showed the predicted main effect of mood induction, $F(1, 59) = 22.05$, $p < .01$, $\eta_p^2 = .27$ (other Fs < 1). Participants who had listened to happy music reported that they felt significantly more positively ($M = 5.83$, $SD = 0.87$) than did participants who had listened to sad music ($M = 4.84$, $SD = 0.78$).

Main Analysis

We conducted logarithmic transformations on the response latencies to reduce the skewness of the response distribution. Our analyses were computed on these transformed values. For ease of interpretation, however, we report the nontransformed means (see Dijksterhuis et al., 1998; Stapel & Suls, 2004).

Because we did not find any effects of our manipulations on neutral words (Fs < 1), and following Stapel & Suls (2004), in our main analysis, we compared response latencies for prime-congruent target words (i.e., positive words for positive primes and negative words for negative primes) and prime-incongruent target words (i.e., negative words for positive primes and positive words for negative primes).

Table 3 shows that when the target words were preceded by a neutral prime, prime-congruent words were recognized faster ($M = 511.37$ ms, $SD = 128.97$ ms) than prime-incongruent words ($M = 563.48$ ms, $SD = 133.30$ ms), $F(1, 59) = 5.83$, $p < .05$, $\eta_p^2 = .09$, independent of mood. This effect indicates that for both positive and negative mood participants, reading the article about Paul activated abstract trait information, which facilitated the recognition of this type of information in the lexical decision task.

More important, however, as Table 3 also shows, is that mood had a significant effect on how participants responded to words that were preceded by *Paul*. Specifically, negative, but not positive, mood participants recognized prime-congruent words faster when target words were preceded by the name prime ($M = 448.23$ ms, $SD = 112.97$ ms) than when they were preceded by the control prime ($M = 512.10$ ms, $SD = 113.61$ ms), $F(1, 59) = 6.68$, $p < .05$, $\eta_p^2 = .18$. Positive mood participants did not exhibit such an effect of *Paul* priming ($F < 1$). On prime-incongruent trials (i.e., when the target word was a trait that was incongruent with the trait implied by the paragraph participants had read), this effect was reversed: Negative mood participants were slower at recognizing prime-incongruent words that were preceded by *Paul* ($M = 673.07$ ms, $SD = 87.35$ ms) than words that were preceded by *pear* ($M = 566.90$ ms, $SD = 117.49$ ms), $F(1, 59) = 22.08$, $p < .01$, $\eta_p^2 = .42$. Again, no such differences were found for positive mood participants ($F < 1$). This pattern shows that those in a negative mood (compared with those in a positive mood) activated a more specific referent of the implied traits (i.e., Paul). These activated actor–trait links then inhibited these participants' recognition of trait-inconsistent words.

A 2 (Mood: positive, negative) $\times$ 2 (Target Word: congruent, incongruent) $\times$ 2 (Subliminal Prime: Paul, pear) mixed ANOVA, with repeated measures on the last two factors, yielded the predicted three-way interaction, $F(1, 59) = 11.43$, $p < .01$, $\eta_p^2 = .09$; a Subliminal Prime $\times$ Target Word interaction, $F(1, 59) = 11.24$, $p < .01$, $\eta_p^2 = .09$; a Mood $\times$ Target Word interaction, $F(1, 59) = 8.37$, $p < .01$, $\eta_p^2 = .07$; and a main effect of target word, $F(1, 59) = 36.10$, $p < .01$, $\eta_p^2 = .23$ (other effects Fs < 1).

These findings clearly support our referent-based explanation for the impact of mood on accessibility effects. For negative mood participants, exposure to trait-implying behavior evoked a strong actor–trait link, whereas positive mood participants seem to have mainly activated actor-free, abstract behavioral information. Thus, as predicted, the findings of this study show that negative moods elicit a more local, and positive moods a more global, focus, which then determines what features of the primed behavioral information will be picked up. Whereas our positive mood participants only activated abstract trait information, those in a negative mood were more likely to activate specific actor–trait links.

Table 3
Study 3: Response Latencies (in Milliseconds) as a Function of Target Word (Congruent vs. Incongruent), Mood (Positive vs. Negative), and Subliminal Prime (Paul vs. Pear)

	Target word	
Prime	Trait congruent	Trait incongruent
	Positive mood	
Paul		
M	513.53	562.13
SD	63.57	67.16
Pear		
M	510.63	559.93
SD	145.12	149.86
	Negative mood	
Paul		
M	448.23	673.07
SD	112.97	87.35
Pear		
M	512.10	566.90
SD	113.61	117.49

General Discussion

The studies reported in this paper present strong evidence that mood may affect the direction of priming effects by influencing what features of primed information come under the spotlight. We showed that when people are in a positive mood, behavior information is more likely to activate abstract traits, whereas when people are in a negative mood, behavior is more likely to activate distinct actor–trait links. We also showed that when people are in a positive mood, accessible knowledge is more likely to lead to

assimilation, whereas when they are in a negative mood, accessible knowledge is more likely to lead to contrast. Together then, these studies support the hypothesis that assimilation is more likely to occur in positive moods because these states induce a global focus and, thus, activate more abstract representations of primed information (*attractive*, *persistent*), whereas contrast is more likely to occur in negative moods because the latter induce a local focus and, thus, activate more distinct representations of primed information ("Kate is attractive," "Peter is persistent").

We tested this mood-to-focus-to-impact logic using a variety of mood-induction and priming techniques and dependent measures. We used scenarios and music to induce positive and negative moods, we used supraliminal and subliminal priming methodologies to activate trait-implying information, we tested the impact of exposure to such information by presenting participants with verbal behavioral descriptions as well as with pictures of faces, and we tapped the impact of these mood and priming manipulations by using judgmental as well as lexical decision measures. Thus, the present studies suggest that the proposed logic is quite robust and quite general. Furthermore, we think the present findings can be integrated in a general conceptual framework that specifies the mechanisms underlying the influence of mood on priming effects in terms of its impact on perceptual focus. More specifically, we contend that Gasper and Clore's (2002) level-of-focus hypothesis can be extended to mood effects on person perception, judgment, and social interactions, such that exposure to social information in positive moods elicits more global processing (and thus, assimilation), whereas negative moods elicit more local processing (and thus, contrast). In testing these ideas, we employed a well-known (but rather specific) person-perception paradigm and demonstrated the impact of moods on accessibility effects by showing that moods determine the referents of what is activated: Positive moods activate abstract behavior labels, and negative moods activate specific actor–trait links. This should not be taken to mean, however, that we think the proposed logic only applies to this paradigm. Mood-induced focus level should similarly influence other kinds of (person) perception processes and behaviors. For example, mood can affect whether you see a number of different individuals or a group of people; a series of discrete behaviors or one overarching person characteristic; tomatoes, peppers, and cabbage or a crate of vegetables. An avenue for future research may be to test this more explicitly in other contexts, using other methodological paradigms.

It is interesting that one may argue that a competing explanation of our results may be provided by models employing a depth-of-processing approach to mood effects (e.g., Fiedler, 2001; Forgas, 1995; Mackie & Worth, 1989; see Bless & Schwarz, 1999, for an extensive review). These models typically posit that positive moods lead to more heuristic, peripheral, effortless processing, whereas negative moods elicit more systematic, effortful, resource-dependent processing. Although these classic dual-process models usually explain the disparate effects of mood with information-processing differences in terms of depth of processing and strategy (processing style) employed, the current levels-of-focus approach attributes the observed effects of mood on the direction of accessibility effects to the differences in perceptual focus that moods elicit (and not necessarily to differences in quality or depth of processing). These two perspectives may seem more or less divergent in their predictions, depending on how the processes in question are conceptualized. If the heuristic versus systematic distinction is conceptualized such that "systematic" pertains to more detailed, differentiated, and specific processing, then it converges with our own view. It would then just be a terminological, rather than a conceptual controversy, because it is exactly the detail-oriented, specific processing style to which we refer when we discuss local (as opposed to global) focus.

Alternatively, if the heuristic versus systematic distinction is conceptualized in terms of processing effort, awareness, and cognitive resources, we would actually argue that both people with a more global and people with a more local focus should be able to process information in a more systematic or a more heuristic manner. That is, we would prefer to look at these dimensions separately, and we believe they may vary orthogonally (see Kimchi, 1992, for a similar argument). There is no reason to believe that global processing is by itself less effortful or shallower, a more simplistic, partial, or inadequate form of processing (Kimchi, 1992; Reyna & Brainerd, 1995). Neither is there any reason to believe that local processing is by default more taxing, more conscious, or more effortful. Even in the domain of basic visual processing, the global precedence hypothesis (Navon, 1977) has been later modified, and boundary conditions have been specified (see Kimchi, 1992). Thus, it seems that although global features sometimes have a processing advantage over local features, it is sometimes the other way around, and global features of the stimuli are not always processed first or faster; rather, both global and local features are processed in parallel, but contextual or affective factors can play a role in the relative ease with which each type of feature is encoded and retrieved. This is exactly the point we wish to make: We argue that what aspects of primed social information come into the spotlight may be dependent on mood, such that positive moods make it more likely for one to see "the forest" and negative moods make one more likely to see "the trees" (see Gasper & Clore, 2002). We do not claim, however, that seeing the forest means not seeing the trees; we just think the trees are more hazy when one is in a positive mood and more in focus when one is in a negative mood.

Another reason for our preference of the focus logic over the depth-of-processing one is that the latter seems to describe a less reliable relationship between mood and processing. For example, research guided by the affect-as-information approach (see Schwarz & Clore, 1996) has provided evidence that instead of limiting cognitive resources, positive mood may actually act as a signal (feedback) that more detailed or analytic processing is not necessary (see also Clore et al., 2001; Fiedler, 2001). Thus, it has been shown that, when motivated or when the task requires it, people in positive moods can process as systematically as can those in negative moods. Furthermore, evidence from a myriad of studies supports the contention that moods can exert their effects on processing and judgment for reasons and in ways other than capacity and depth of processing. For example, current goals, task instructions, mood-repair motivations, and the nature of the task at hand have all been shown to moderate or override mood effects on depth of processing (see Bless & Fiedler, 2006; Martin & Davies, 1998; Schwarz & Clore, 1996).

One specific alternative account of our results that deserves further attention may be derived from the idea that people in a negative mood may exert more effort than those in a positive

mood. In line with this account, sad participants may have allocated this extra effort to drawing dispositional inferences on the basis of the priming stimuli, thus generating exemplars, which, in turn, lead to contrast effects in target evaluation. There are several reasons why such an explanation fits our findings less elegantly. First, there is no reason to believe that people in a negative mood exert more effort as a rule (as already discussed above). Then, reading simple trait-implying sentences is not a particularly taxing task (and perceiving faces subliminally obviously does not rely on effort). Further, dispositional inferences do not necessarily require more effort either: Evidence from research on correspondent inferences shows that drawing dispositional (or situational) inferences can be just as effortless as the first stage of behavior categorization (Krull & Dill, 1996).

Moreover, the idea that negative mood (compared with positive mood) participants exerted more effort and thus were able to draw a dispositional inference, which would then drive the comparison process and result in a contrast effect, is not easily reconciled with some previous findings in the field (see Forgas, 1998). Forgas demonstrated that people in a negative mood exert more effort, and thus process information more carefully, so they can correct for their (premature) dispositional inferences and take into account situational constraints. In other words, an effort account may also predict that people in a negative mood should take the extra step and correct for their dispositional inferences. Thus, effort does not necessarily predict contrast effects for negative moods, and yet, contrast effects are what we found.

Most important, it is now well established that the spontaneous activation of an actor–trait link is enough to elicit contrast and that this does not require any more effort than assimilation. So, although this is a popular idea, it is empirically unsubstantiated. Experimental evidence supporting the ICM is abundant, and there are a large number of subliminal priming studies employing unobtrusive, implicit measures that attest to the idea that both assimilation and contrast can occur without effort and rather automatically (see Stapel, 2007). The present research provided further support for this notion by showing that both assimilation and contrast may be observed when participants are exposed to face primes subliminally (see Study 2). Thus, the contrast effects we observed for participants in a negative mood are difficult to explain drawing on the increased effort logic: Because our participants were unaware of the primes, it is highly unlikely that they exerted more effort in encoding the information, and it is even less likely that they allocated this effort to drawing dispositional inferences. A correction-based explanation was also refuted on these grounds: It is difficult to correct for things of which one is not aware (see Glaser, 2007). In light of all the arguments above, we are confident that a depth-of-processing or effort account cannot offer a compelling and parsimonious explanation of all our findings.

Thus, although the present studies were not designed to explicitly test a depth-of-processing explanation against a levels-of-focus explanation, we interpret the current results in terms of the latter perspective. First, we find the local/global distinction a more appropriate, elegant, and, notably, more parsimonious account of moods' impact on priming effects. In addition, our findings are conceptually in line with Gasper and Clore's (2002; see also Gasper, 2004) results on the effects of mood on perceptual processing. These researchers provided clear evidence that depth of processing cannot account for their findings. Similarly, Beukeboom and Semin (2006) recently extended Gasper and Clore's level-of-focus hypothesis (and related affect-as-information approaches) to the effects of mood on language use. In several studies, they demonstrated that linguistic expression varies as a function of the focus elicited by one's current mood. Happy participants consistently described social events in more global and abstract terms (e.g., using more adjectives and fewer verbs) than did sad participants. It is important to note that these effects, like Gasper and Clore's, could not be accounted for by differences in depth of processing. Beukeboom and Semin included a word count and a writing-time measure, which would have tapped processing differences, but such differences were not found between positive and negative mood conditions. This fact provides additional support for a level-of-focus explanation of these findings, as well as for our contention that global/local processing differences need not necessarily correspond to heuristic/systematic processing differences.

Future research may try to put these two explanations to a more direct test and find out how focus level and depth of processing are interrelated in guiding the impact of mood on priming and other effects. In the meantime, what the present results do show is that mood affects (a) the information that is primed when people are exposed to target information (which may be in verbal or nonverbal form, supraliminally or subliminally presented), (b) the way such information influences subsequent person judgments (we found both assimilation and contrast and showed that these effects are indeed mood dependent), and (c) the referents activated by the implied traits (we showed that negative mood is more likely to lead to actor–trait link activation, whereas positive mood is more likely to lead to abstract trait label activation). The present studies clearly demonstrate that the impact of mood on knowledge-accessibility effects is quite dramatic and can be consequential (i.e., it determines the extent to which you tend to positively or negatively evaluate a person). Moreover, they show that the effects of moods on judgments need not always be mood congruent. When moods interact with accessible knowledge (as is likely to happen quite often in daily life, where people typically have more on their mind than a positive or negative mood), positive, as well as negative, moods may have positive, as well as negative, effects. Moods then seem to determine how accessible knowledge is represented (global or distinct) and used (to categorize and assimilate or to compare and contrast).

In sum, the studies reported here imply that current moods directly influence and guide accessibility effects. It was demonstrated that this influence can be striking, in that moods tend to change the way one perceives and evaluates other people, their behavior as well as their personalities. Bearing in mind that over the course of a day, we all interpret and evaluate the behavior of others spontaneously and effortlessly, we could safely acknowledge that moods affect all aspects of our lives readily and even imperceptibly. One of the most emblematic pop phenomena of our time, Sean "Diddy" Combs (a.k.a. Puff Daddy), summed this up quite well: "I just want to put positive energy out there. I'm not saying a curse word is putting out negative energy, but it depends what mood you're in."

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