

The positive feeling of familiarity: mood as an
information processing regulation mechanism

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Running Head: Positive affect and familiarity

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People's feelings affect their judgments in multiple ways. Not only do feelings impact judgments directly, but they also influence how information is processed to achieve those judgments (see Forgas, 1994; Mackie & Worth, 1989; Schwarz, 1990). The substantial literature on the impact of mood on information processing provides many confirmations of such influence. Studies in the persuasion field show that individuals in positive moods elaborate persuasive messages less and rely on heuristic processing more (see Mackie, Asuncion, & Rosselli, 1992; Schwarz, Bless, & Bohner, 1991, for reviews). Studies of priming effects (e.g. Fiedler, Asbeck & Nickel, 1991; Bless & Fielder, 1995), of the impact of stereotypes on judgments (e.g. Bodenhausen, 1993; Bodenhausen, Kramer, & Susser 1994; Stroessner & Mackie, 1992), and of the activation of scripts (Bless, Clore, Schwarz, Golisano, Rabe, & Wolk, 1996) all suggest that happy individuals are more influenced by knowledge structures activated in memory than are others. In the decision making and problem solving literature, studies suggest that those who feel good tend to simplify decisions and solve problems quickly (Isen, Daubman & Nowicki, 1987), use more heuristic strategies (Forgas, 1989), and take more time to solve analytical tasks (Melton, 1995; Palfai & Salovey, 1993). Many of these studies also suggest that, in contrast, individuals who are not happy engage in more careful, analytic processing and rely less on the product of mere memory activation processes.ⁱ We will refer to the association of positive mood with non-analytic, top-down processing, and the association of non-positive mood states with analytic, bottom-up processingⁱⁱ As the *mood information processing effect* (MIPE).

Most theoretical accounts of the MIPE conceptualize it as mediated by one or both of cognitive or motivational factors (see Schwarz & Clore, 1996, for a review). Capacity explanations argue that positive mood primes a highly interconnected and diverse context of information which reduces the cognitive resources available for processing (Isen, 1987; Mackie & Worth, 1989; Worth & Mackie, 1987). Motivational accounts for the MIPE argue either that individuals in happy moods avoid deep processing to avoid distraction from their positive state (Isen, 1987; processing that offers hedonic rewards should thus occur, Wegener, Petty, & Smith, 1995) or that positive affect signals a benign environment in which careful analytic processing of information is not necessary (Schwarz, 1990; Schwarz & Clore, 1996).

The mediational roles of capacity and motivational factors claim support from studies that manipulate mood and either capacity or motivation independently (e.g. Schwarz & Clore, 1996, for a review). The finding that happy people with more time to deal with information process as systematically as people in neutral affective states has been claimed as support for the capacity account for the MIPE (Asuncion & Lam 1995; Mackie & Worth, 1989). Studies that show that happy individuals engage in systematic processing when extra incentives are given (Bless, Bohner, Schwarz, & Strack, 1990; Bodenhausen, Kramer, & Susser, 1994) or when such processing is expected to increase rather than detract from positivity (Wegener, Petty, & Smith, 1995) have been marshaled as support for the motivational account. However, studies that focused specifically on the mediational issue (Bless & Fiedler, 1995; Bless, Schwarz, & Wieland, 1996; Bless et al, 1996) have demonstrated that happy individuals show evidence of heuristic processing even while suffering no motivational or cognitive deficits. In Bless and colleagues' (1996) study, for example, happy, neutral, and sad participants listened to a highly script-consistent story about dining out in a restaurant while completing a secondary task. A

later recognition test indicated that compared to others, happy participants relied on a general knowledge structure (that is, an "eating out" script) to organize the information in the story. Yet their superior performance on the secondary task also indicated that this non-analytic response was not caused by a general lack of motivation or capacity. Thus, although motivational and capacity factors may moderate the impact of mood on information processing, mood seems to influence how individuals deal with information without affecting their capacity and motivation to engage in more systematic, analytic processing.

If the MIPE is not mediated by motivation or capacity, then mood must have an intrinsic or inherent effect on the information processing system. "How?" and "why?" thus become the relevant questions. For Bless and his colleagues (1996), the answer to these questions lies in the informative role that affect exerts (see Schwarz & Clore, 1996). In their view, positive mood's direct effect on processing arises from a combination of the fact that positive mood signals the current situation to be benign and the fact that, in the past, reliance on general knowledge structures has proven adaptive in such benign situations. In fact, some evidence does suggest that happy individuals make more positive evaluations than non-happy individuals, at least when their mood state is thought to rise from the hedonic valence of the situation (Schwarz & Clore, 1983, 1988; Johnson & Tversky, 1983).

However, no evidence clearly supports the idea that individuals process situations they perceive as benign non-analytically. On the contrary, some data suggests that happy individuals only engage in such superficial processing if the situation is perceived as mood threatening, with benign situations often processed fully. Moreover, sad individuals engage in deeper processing even when they perceive the situation to be positive (Wegener, Petty, & Smith, 1995). It is thus possible that the role of positive mood in triggering non-analytic thinking might not arise from

mood being informative about how safe or unsafe a situation is. In this chapter we propose a new explanation for the MIPE, by suggesting that mood interacts with the mechanism that regulates whether processing is more conceptual or more data driven. By doing so we suggest a way of integrating the MIPE into more general conceptualizations of human information processing. We draw this perspective from previous theorizing in social and cognitive psychology about the role of feelings in the information processing system.

Foundational assumption: The feeling of familiarity as an information processing regulation mechanism

Consistent with both cognitive and social cognitive views of the mind, we understand the human information processing system to be characterized by two distinct computation modes (see Smith & DeCoster, in press, for an overview)ⁱⁱⁱ. In one mode, which we will refer to as *analytic*, individuals attend to the particulars of a situation and analyze them carefully and systematically. This analytic processing mode can be characterized as involving bottom-up activation, deliberate retrieval and use of information, elaboration of relevant information and production of new responses. It is thus a consciously controlled, slow, and effortful process. In contrast, the alternate mode, which we term *non-analytic* processing, is characterized by automatic access to knowledge previously associated with the focal stimuli. It is a reproductive top-down process that is quick, implacable, and not necessary under conscious control^{iv}.

Such dual process assumptions raise questions about how the processor "knows" which of these modes of processing is appropriate in any given situation (Sherman, 1987). Only some dual process models address this question directly. Some of these models assume the existence of a mechanism that regulates switching between modes^v. One such a regulatory mechanism,

developed in the problem solving domain, is described as a "feeling of knowing" (Reder & Ritter 1992; Schunn, Reder, Nhoyvansivong, Richards, & Stroffolino, 1997). Reder (1987, 1988) considers this feeling to be part of a process that helps to regulate whether problems are solved by selecting direct retrieval or more analytic strategies. In her studies, for example, participants made rapid judgments about whether they felt they could retrieve the answer to a problem or whether they had to compute it. This judgment was independent of actually knowing the answer but closely dependent on the familiarity of the situation (Reder & Ritter, 1992; Schunn et al., 1997). Familiar situations gave participants a "feeling" that they "knew" the answer, and thus promoted less effortful top-down retrieval strategies. Unfamiliar situations, in contrast, triggered more effortful bottom-up computational strategies. Thus, the "feeling of knowing," viewed as an initial rapid assessment of familiarity, functions to regulate the processing mode selected to solve problems (Nhoyvansivong & Reder, 1998).

The idea that processing is regulated by implicit awareness of familiarity is common to other approaches as well. One example is *mismatch theory* (Johnston & Hawley, 1994). Although this theory does not discuss a regulation mechanism, it assumes that familiar information activates top-down processing and inhibits bottom-up activity. Detailed processing of well-known, frequently encountered, or familiar situations is assumed to be a waste of limited capacity that should be invested in other, particularly novel, situations. When stimulus situations match memory representations, initial bottom-up processing occurs with an "ease" or "fluency" that results in an (implicit) feeling of "similarity," "recognition," or "familiarity" (Eich, 1982; Fiske, 1982; Gillund & Siffrin, 1984; Higgins, 1996; Hintzman, 1988; Humphreys, Bain, & Pike, 1989; Jacoby & Dallas, 1981; Murdock, 1982). Familiar situations are dealt with more efficiently by non-analytic processing, and are thus associated with reduced bottom-up

processing (although specific goals or tasks may induce more elaborative processing; see also Fiske, 1982, 1988; Fiske & Neuberg, 1990; Fiske & Pavelchak, 1986; Neuberg & Fiske, 1987).

In general these models seem to suggest that what determines or regulates processing mode activation is an implicit feeling of familiarity that varies continuously in intensity (Yonelinas, 1994) depending on the ease or fluency with which the stimulus is processed (Jacoby, 1988; Jacoby & Kelley, 1990). Thus ease of processing, associated with an implicit feeling of familiarity, triggers non-analytic processing of incoming information. Evidence supporting this assumption can be found in different fields of research. For example, both the frequency and recency of memory trace activation increases the likelihood of top-down processing (e.g., Fazio, Powell, & Herr, 1983; Higgins, Bargh, & Lombardi, 1985; Sherman, Mackie, & Driscoll, 1990; Smith & Branscombe, 1987; Srull & Wyer, 1979). Top-down priming effects have also been shown to depend on prime-stimulus similarity (Smith & Branscombe, 1987; Smith, Branscombe, & Bormann, 1988; Smith, Stewart, & Buttram, 1992). In addition, the role of general knowledge structures in processing supports this point of view. Natural scenes, scripts, stereotypes, and other “schemas” in memory are automatically activated by focal stimulus information. The match between the two sets of information seems to be a necessary and sometimes sufficient condition for the schema activated in memory to guide further processing (reducing bottom-up processing). Such schemas facilitate apprehension of the gist of the situation but inhibit memory for its details (see e.g. Grasser, 1981; Schank & Abelson, 1977; von Hippel, Jonides, Hilton, & Sowmya, 1993). Studies in anomaly detection also suggest the inhibition of bottom-up processing in familiar contexts (e.g., Barton & Sanford, 1993; Erickson & Mattson, 1981).

On the other hand, unfamiliar or unexpected inputs seem to enhance bottom-up processing. Evidence for the detail-oriented processing of unexpected information comes from diverse areas of research in the cognitive (see Johnston & Hawley, 1994 for a review) and social cognitive literatures (e.g., Bargh & Thein, 1985; Fiske & Taylor, 1991; Hastie & Kumar, 1979; Higgins & Bargh, 1987; see Stangor & McMillan, 1992; Rojahn & Pettigrew 1992, for reviews). For example, incongruent information typically enhances deeper, more systematic, bottom-up processing (Srull, 1981). Research on the costs and benefits of expertise also offers some instructive findings. Experts are by definition people very familiar with a specific highly related set of information. In the presence of input related to their expertise, they engage in less effortful processing, relying on essentially top-down processing (e.g., Arkes & Freedman, 1984; Chase & Simon, 1973; Egan & Schwartz, 1979; Schmidt & Boshuizen, 1993). Non-experts, unfamiliar in the same domain, attend more carefully to all information and engage in bottom-up processing.

In sum, we argue that the assumption of information processing as dualistic implies a need for a regulation mechanism. In line with some suggestions in the cognitive literature, we assume that this regulation mechanism is a feeling that varies continuously in intensity and is associated with the ease or fluency with which the stimulus is processed. Specifically, the fluency that results from a match between initial stimulus processing and stored representations is experienced as a feeling of familiarity. Familiarity signals that the situation can be dealt with on the basis of what is already known, and thus that non-analytic processing is appropriate (see Figure 1).

Insert Figure 1 about here

Explaining the MIPE: Mood as familiarity

The feeling of familiarity associated with matching has been characterized as being positive in valence (Jacoby & Kelley, 1990; Jacoby, Kelley, & Dywan, 1989; Pittman, 1992). Thus familiarity seems to be a feeling with a positive affective tone (see Figure 1). Familiar situations feel good whereas unfamiliar situations fail to trigger this subjective experience of positivity.

Given the diffuse nature of feelings, (mis)interpretations are not only possible but likely (Jacoby & Kelley, 1990). Thus it is possible that implicit familiarity, with its positive overtones, would be consciously experienced as other feelings with the same valence. More than 200 studies replicate Zajonc's (1968) "mere-exposure effect" suggesting that familiarity increases the *positivity, liking, interest value, attractiveness, pleasingness, appeal, pleasantness* and *preference* with which a stimulus is rated (see Bornstein, 1989, for a review). Thus it is possible that the implicit positivity of familiarity is experienced very similarly to what we label positive "mood." That is, it is possible that familiarity is consciously experienced as positive mood.

In addition, it is possible that the positive feelings induced by experimental manipulations or event-related activation of good mood may also be confounded with the feeling of familiarity^{vi}. The fact that "mood" is experienced as a continuous, low intensity, and diffuse state that changes in a small range from positive to negative valence (e.g., Morris, 1992; Schwarz & Clore, 1988; Sedikides, 1992) makes its operation compatible with that of a regulation mechanism for two reasons. First, these characteristics match those usually associated with the feeling of familiarity. Second, they allow such feelings to function in the background of

processing without really disrupting it (Bless & Fiedler, 1995). Given that the implicit feeling of familiarity regulates processing mode activation and that this feeling may be experienced very similarly to what we label a positive mood state, it is possible that mood caused by sources other than familiarity may also be associated with processing mode activation. This hypothesis offers a new explanation for the MIPE: that mood influences processing of information, because the information processing system is regulated by a valenced feeling, familiarity.

In summary, the social psychological literature has demonstrated a relation between positive mood and non-analytic processing (the MIPE). The cognitive literature has demonstrated a similar relation between an implicit feeling of familiarity and non-analytic processing (the FIPE). We argue that the positive feeling that accompanies this implicit feeling of familiarity is often consciously experienced as positive mood, and that the diffuse nature of feelings allow mood induced by other sources to be confounded with familiarity. It is this confounding that would explain the MIPE.

In this chapter we report the results of a set of studies that provide initial support for two ideas central to the regulation hypothesis. First, we demonstrate that the implicit feeling of familiarity (as studied in the cognitive literature) is a positive feeling. Second, we provide evidence that familiarity and positive mood have interchangeably identical effects on information processing.

The close relation between mood and familiarity

Our hypothesis regarding the MIPE relies on the assumption that positive affect is integral to the implicit feeling of familiarity and thus that familiarity can be subjectively experienced as positive mood. In order to test this assumption we first manipulated familiarity

and then measured participants' feelings within a paradigm introduced to investigate the effects of feelings of familiarity on ratings of validity (Bacon, 1979; Begg & Armour, 1991; Begg, Armour, & Kerr, 1985). The feeling of familiarity is produced in this paradigm by varying the number of presentations or repetition of a stimulus. Statements that are either completely novel (unfamiliar) or to which participants have already (subtly) been exposed (familiar) are usually presented in random order and rated as to their perceived truth. The impact of familiarity on perceived validity is inferred from the fact that familiar statements are repeatedly judged to be truer than novel ones (Bacon, 1979; Begg & Armour, 1991; Begg et al., 1985; Begg, Anas, & Farinacci, 1992). To the usual list of randomly presented familiar and novel items, we added a final block of 10 either novel or familiar items which were also rated on perceived validity on a 7-point scale. As expected, participants' estimations of the truth were higher for the repeated statements than for the novel statements, both for the within subjects comparison of responses to the first part of the list, $\underline{M}= 5.51 > \underline{M}= 4.26$, $\underline{F}(1,154) = 267.75$, $p < .0001$, $\underline{MSe} = .482$, and for the between subjects comparison of responses to the last 10 items, $\underline{M}=5.41 > \underline{M}= 4.12$, $\underline{F}(1,155) = 99.10$, $p < .0001$, $\underline{MSe} = .672$. These findings indicated that repeated sentences had indeed induced an implicit feeling of familiarity that then translated into higher validity ratings (on a parallel with Begg et al., 1985, 1992) and that we had thus successfully induced the "feeling of familiarity." Immediately after making these ratings participants' mood was assessed using 3 items each rated on an 11-point scale. Importantly for our hypothesis, participants reported their mood as significantly more positive ($\underline{M}=7.10$) after evaluating familiar statements than after evaluating unfamiliar statements ($\underline{M}=6.32$), $\underline{F}(1,151)=3.89$, $p < .05$, $\underline{MSe} = 6.18$. The results were thus consistent with our hypothesis that manipulations of the feeling of familiarity would

produce parallel variations in self-reported mood, consistent with the idea that positive affect is integral to the feeling of familiarity.

Our explanation of the MIPE also implies that positive mood induced by sources other than familiarity can be misinterpreted as familiarity. If this is so, mood manipulations must be able to produce the same type of effects that feelings of familiarity do. We sought support for this in a study testing the hypothesis that induction of positive moods would affect truth ratings in the same way that manipulations of familiarity do.

Because feelings of familiarity might vary with, and thus affect the judgment of, any actual stimulus sentence (Begg & Armour, 1991), and because such feelings of familiarity might disrupt a manipulation of mood, we created a situation in which participants could use only their affective state in making their judgments. We accomplished this by inducing non-positive (neutral) or positive mood and then leading participants to believe (falsely) that they had been subliminally exposed to stimulus sentences whose validity they were then forced to judge.

Non-positive (neutral) or positive mood states were induced by having participants evaluate a manufactured newspaper article adapted from Kuykendall and Keating (1990). The stories had been used successfully as mood inductions in this population before (Queller, Mackie, & Stroessner, 1996; Wegener & Petty, 1994, Exp. 2; Wegener, Petty, & Smith, 1995, Exp.2). To check the effectiveness of the manipulation, a "post-experimental questionnaire" including two items associated with a 9-point (1=*sad* and 9=*happy*) scale was used to assess participants' current mood state. Responses to these items indicated that those participants in the positive mood condition were happier ($M = 6.52$) than those in the neutral condition ($M = 5.70$), $t(58) = 2.10$, $p < .02$, one tailed, $MSE = 1.49$, indicating the success of the manipulation.

Immediately after this "first" newspaper evaluation study, participants were introduced to what they thought was a separate experiment. In this "study of unconscious processes"

participants were led to believe that flashes on the computer screen signaled the very brief presentation of two short sentences. Participants were lead to believe that their unconscious processing of these sentences would influence their subsequent performance on a task asking them to guess some of the sentences' features.

After seeing the flashes participants were asked to press either the T (true) key or the F (false) key, using the first answer that popped into their heads, to complete the following sentence: "*My feeling is that the two sentences were...*". More than 65.6% of the happy participants judged the sentences to be true, whereas more than 63% of the subjects in the neutral mood condition judged them to be false ($\chi^2(1, N = 60) = 4.79, p < 0.03$). The proportions of true responses in each mood condition were also compared to those expected if participants were simply guessing using the "one-sample test for the parameter of a binomially distributed variable". The proportion of true responses made by participants in positive moods was significantly higher than 50%, $Z = 1.71, p < .05$ (one-way), and the proportion of true responses made by non-positive mood participants was marginally lower than 50%, $Z = -1.41, p < .08$. Given that analytic processing was impossible because no stimuli were actually presented, it appears that participants used their subjectively positive feelings as a cue to decide that the statements were true, just as a feeling of familiarity would typically have been used. Thus the hypothesis that familiarity and positive mood are similarly experienced received further support. These data are made even more compelling by the fact that positive mood had this impact, even though positive mood was induced prior to presentation of all sentences.

The two studies presented corroborate the idea that mood is closely related to familiarity. Not only do they show that familiarity can be consciously experienced as positive mood, but they also indicate that mood may be confounded with familiarity, producing similar effects. Together these two effects make viable the possibility that the MIPE is explained by the confusing of positive mood with implicit familiarity.

Further support for this explanation of the MIPE was obtained in two studies that showed familiarity to be functionally equivalent to mood. From the mood-as-familiarity perspective, and based on the results of the two studies just described, we expected that manipulations of feelings of familiarity would produce the same pattern of results as would manipulations of positive mood. Thus, in replicating a study that clearly demonstrated the MIPE with the key difference that a familiarity manipulation replaced the mood manipulation, we expected to replicate exactly the same pattern of results.

Most investigations of the impact of positive compared to non-positive moods on information processing have as their theoretical framework dual processing models of persuasion such as the Heuristic-Systematic Model (Chaiken, 1980; 1987) and the Elaboration Likelihood Model (Petty & Cacioppo, 1981, 1986). In these studies mood is independently manipulated before participants are presented with a message comprising either weak and specious or strong and compelling arguments. The manipulation of argument quality provides a means of assessing participants' message processing mode (Petty & Cacioppo, 1986; Petty, Wells, & Brock, 1976). A differential impact of weak and strong arguments on attitude change (that is, strong arguments produce attitude change and weak arguments do not) is taken to indicate that the persuasive message benefited from extensive elaboration^{vii}. Assuming that the feeling of familiarity promotes the same information processing effects as positive mood, we expected that participants familiar with a persuasive message would show evidence of superficial processing just like participants in a positive mood.

To test this hypothesis in a first study we induced different levels of familiarity by aurally presenting participants with a counter-attitudinal message zero, one, two, or four times as they made unrelated judgments about superficial message features. Several actions were taken to

prevent participants from thoroughly processing message content on these initial exposures: Several actions were taken with this goal. First, the message addressed an issue that was of relatively low interest and involvement for participants. Second, message repetition was interspersed with required judgments and the presentation of a new non-semantic processing goal rather than being presented in close succession. Third, participants read the message with the explicit goal of forming an opinion towards the issue in a task separate from the one(s) of evaluating its physical qualities^{viii}. In contrast, every effort was made to allow participants full capacity when they later read the very same message and provided their attitudinal judgments on the issue. Our basic expectation was that the non-repetition condition would differ from those in which the message was repeated. That is, we expected those in the non-repetition or unfamiliar condition to systematically process the message and thus to differentiate between strong and weak versions of it in their attitudes, whereas we expected those reacting to familiar messages to process more heuristically. However, the choice of four levels of repetition was merely exploratory: we had no *a priori* expectations regarding how many repetitions would be necessary to induce a feeling of familiarity about the message (especially given that this cut point might vary with context, Yonelinas, 1994).

The results were strongly consistent with our expectations. The feeling that the message was familiar, like a manipulation of a positive mood state, reduced elaboration (see Figure 2). Participants for whom the message had been repeated failed to show attitude responses that differentiated strong and weak arguments, whereas participants in the no repetition condition were more persuaded by the strong arguments than by the weak arguments. Our results suggest that in this situation even a single repetition was sufficient to make the stimulus seem "familiar enough" (that is, the familiarity threshold was very low), since those who received a single

repetition of the message showed no differentiation between strong and weak arguments. Of course, a stronger activation of the feeling of familiarity (a higher threshold) might be required to trigger top-down processing in more highly involving or demanding situations.

Insert Figure 2 about here

The results of this study were replicated in another experiment in which the familiarity manipulation was carried out in a different way. We wanted to be sure that the way we manipulated familiarity did not in and of itself prime non-analytic processing. That is, instead of manipulating only the level of familiarity, the procedure we used in the study just described might have induced differences in the tendency to process information non-analytically. By asking participants to make superficial judgments as a guise for repeating the message, we may have primed, or made more likely, such superficial processing. Use of a new procedure avoided this problem. Once again, strong and weak versions of the target message were presented aurally during the first, repetition, phase, and in written form when participants later make their attitudinal judgments. During the repetition phase, participants were instructed to listen to the tape recorded strong or weak versions of the target message "as background noise in the environment" while concentrating on forming an opinion about strong or weak versions of a completely different message presented simultaneously on the computer screen. Given the careful distinction made between the main (form an opinion) task and the secondary (just listen) task, we expected participants to differentiate between strong and weak versions of the written message in this phase (Eagly & Chaiken, 1993). In the test phase, all participants read at their

own pace either the strong or the weak version of the target message. We had two hypotheses. First, we expected a familiarity-information-processing-effect, or FIPE, on a parallel with the typically studied MIPE. That is, familiarity with the message would be associated with non-analytical processing. Participants' attitude were adjusted for initial attitude by introducing this variable as a covariant in the analysis. As expected, familiarity interacted with the quality of message arguments, $F(1,180)=3.87$, $p<.05$. Participants reading a familiar message showed no attitudinal differentiation between strong and weak versions of the persuasive message ($\underline{M}_S=3.49$, $\underline{M}_W = 3.38$; $t(180) <1$), whereas participants unfamiliar with the message were more persuaded by strong argument message ($\underline{M}_S =3.53$) than by the weak argument message ($\underline{M}_W =2.57$; $t(180)= 3.24$, $p<0.001$). Thus, the results suggest that familiarity, like positive mood, is associated with a more superficial, non-analytic mode of processing. Given that we assume that repetition produces a warm feeling of familiarity, our second expectation was that participants reading a message they had heard before would report more positive moods than those for whom the message was novel. In fact, when mood was measured immediately after the target message was read, those in the familiarity condition reported feeling happier ($M=5.51$) than those in the non-familiar condition ($\underline{M} = 4.51$), $t(183)= 3.54$, $p<.0001$.

Together the results of this set of studies support the ideas that familiarity is a feeling with a positive tone which induces positive mood ratings, that affect caused by a source other than familiarity can be confounded with familiarity and induce the same type of effects, and that familiarity and mood exert parallel effects on how information is processed. The results are, thus, clearly consistent with our contention that positive affect may signal familiarity, and that this is why positive mood often triggers non-analytic processing. The kinds of manipulations that have resulted in what has been termed "positive mood" (a term that has been used loosely and with

some lack of specificity) in the literature are the kind that induce mild, diffuse, generally positive feelings. Those feelings are just those kinds of feelings that may easily be misinterpreted as the positive feeling that accompanies familiarity. If they are, they are then able to trigger non-analytic processing (see figure 3).

Insert Figure 3 about here

Of course induced or naturally arising affect will not always be misinterpreted as the affect associated with familiarity. Several circumstances can make such misinterpretations less likely. First, actual familiarity or unfamiliarity of the situation, especially if it is intense, might counteract a mood manipulation, preventing misinterpretations. Second, to the extent that affective states have an external and clearly identifiable cause, they are unlikely to be confounded with or misinterpreted as the positive feeling of familiarity. Emotions, for example, which are often distinguished from mood on the basis of their intensity and clarity of source, may not be amenable to misattribution (although association with causes can decay over time, so that an emotion can degenerate into “mood,” Morris, 1992). Thus we would not expect positive and non-positive emotions (rather than moods) to influence processing via this mechanism (this is not to say that they may not be influencing processing via other routes). Similarly, we would not expect abnormal variations of “mood states” to influence processing via this mechanism. More studies with depressive or manic populations that also manipulate mood, emotions, and actual familiarity are needed to clarify these issues.

The status of the regulation explanation of the MIPE

The general assumptions of the regulation explanation are consistent with the predictions made by the majority of previous attempts to explain the MIPE. However, this explanation also has some relatively distinct characteristics that allow it to be contrasted with them. In fact, consistent with all previously suggested explanations, this approach attributes to motivation and capacity a highly important role in processing. However, instead of deeming that role to be mediational, the regulation approach sees the role of motivation and capacity as one of moderation, consistent with Bless et al.'s (1996) results. In addition, the regulatory framework suggests two possible ways in which motivation and capacity might interfere with regulation. First, motivation and capacity factors might promote changes in the definition of the focal stimuli, and thus would influence the degree of felt familiarity. This in turn would activate more or less analytic processing. In this case motivational and capacity factors, instead of being influenced by how individuals feel (their mood), influence how they feel. Second, motivation might have a direct impact on the level (decision threshold or cut-point) of familiarity necessary to induce an analytic processing mode. In fact, since familiarity is a continuous variable and processing mode is a dichotomous variable, it is necessary to assume some level of familiarity that defines the threshold at which information will be processed non-analytically. Compared to relatively unmotivated individuals, highly motivated individuals may need a higher level of familiarity before they rely on non-analytic processing.

In contrast to Bless et al.'s (1996) approach, the regulation hypothesis does not consider feelings as informative about the safety of the current situation. If any informational role is to be attributed to mood, it is that positive mood informs the system about how "known" a situation is, whether the situation is one that has been dealt with in the past, and thus whether the system knows how to deal with it now, regardless of whether it is "good" or "bad." From our point of view, even if a situation is negative, we would expect individuals to react to it quickly and without careful thought as long as it is identified as a known, familiar situation. The regulation

explanation may thus be distinguished from such an informational approach by dissociating mood from the hedonic characteristics of the situation.

We hope in the near future to provide empirical evidence demonstrating *that the view of mood as an information processing regulation mechanism is not only a viable and fruitful account of the MIPE, but also a more inclusive explanation of mood and information processing effects.*

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Figure 1: Information processing regulation mechanism

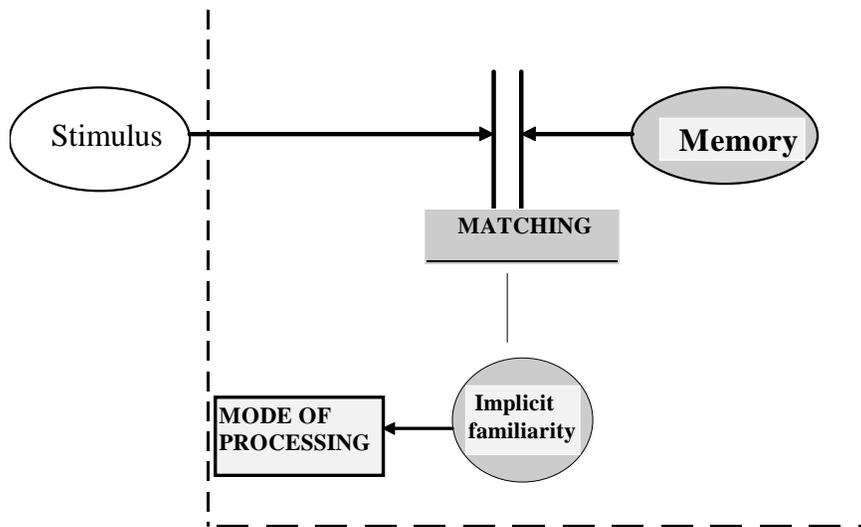


Figure 2: Attitudes as a function of message repetition and argument quality

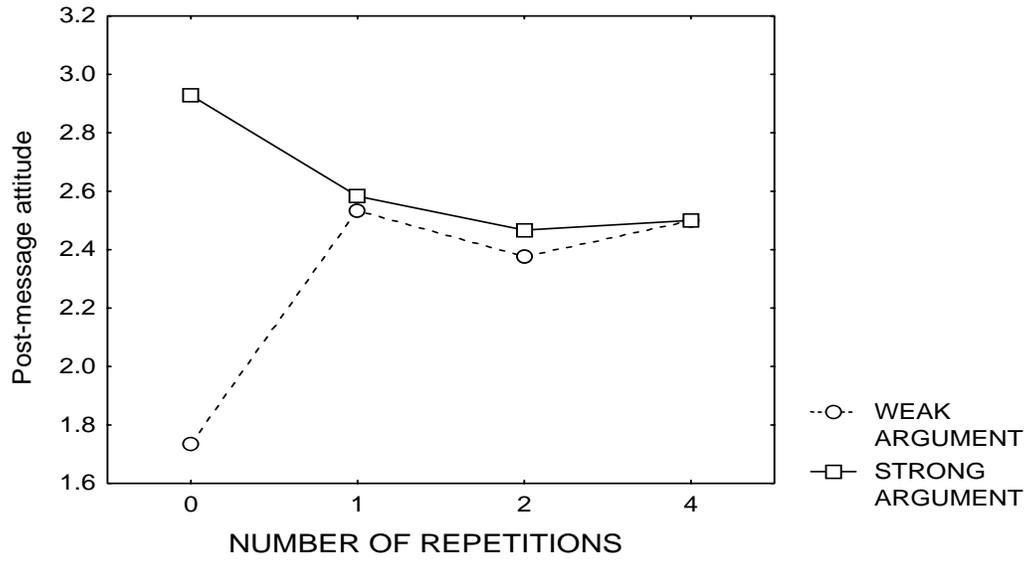
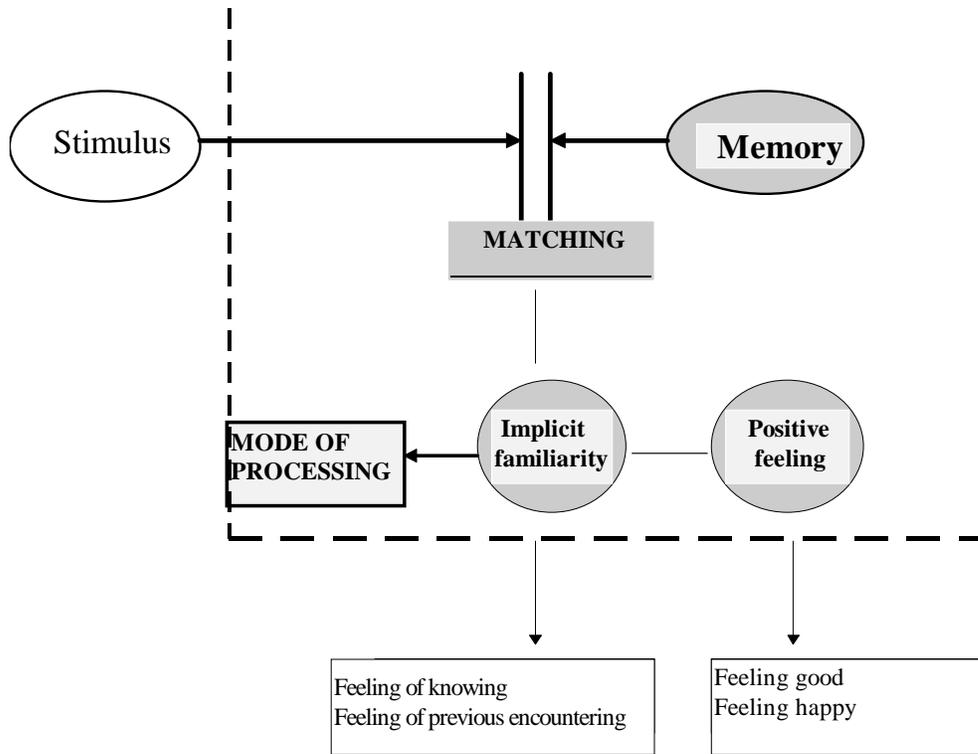


Figure 3: Processes assumed to underlie the MIPE



Footnotes

ⁱ Processing effects associated with negative mood states appear quite variable, with some studies demonstrating increases in analytic processing and others reporting decrements (compare Bless et al., 1990, and Sinclair, 1988, with Ellis & Ashbrook, 1988). Resolution of these apparent inconsistencies awaits specification of the optimal processing requirements of the diverse tasks used in these studies and a systematic concern for variations in intensity and specificity of negative affective states. We are concerned only with the relative state of not feeling positive, and thus chose a neutral control condition.

ⁱⁱ Not all models of mood posit an association between a particular mood and particular ways of processing information. Some fail to do so because they do not adhere to a dual process view of mind (Isen's positive priming model, 1987, 1993; Ellis & Ashbrook's resource allocation model, 1988). Other models assert the relation between mood and processing mode as completely context dependent (e.g., Wegner & Petty, 1994, 1996).

ⁱⁱⁱ As Smith and DeCoster (1998) point out, dual process models have been developed in such diverse areas of social cognition research as attitude accessibility (Fazio, 1986), persuasion (Chaiken, Liberman & Eagly, 1989; Petty & Cacioppo, 1981, 1986), person perception (Brewer, 1988; Fiske & Neuberg, 1990; Neuberg & Fiske, 1987), stereotype activation (Devine, 1989), and attribution (Gilbert & Krull, 1988; Gilbert, Krull, & Pelham, 1988). The same proliferation of dualistic models can be found in cognitive research areas such as automatic processing (Logan, 1988, 1989, 1991), memory (Mandler, 1979, 1991, 1997; Jacoby & Brooks, 1984; Jacoby & Kelly, 1987, 1990; Kelly & Jacoby, 1996), and problem solving and reasoning (Sloman, 1996). Epstein's (1973, 1990, 1994) work is an example of a dual process theory in the personality domain.

^{iv} Although similar in some ways to the distinction between central and peripheral processing made by Petty and Cacioppo (1986), the two qualitatively distinct modes of processing defined here are not identical to them. Analytic and non-analytic processing are not distinguished by reference to any particular content of processed information (as are central and peripheral processing) but are instead defined by distinct procedural characteristics.

^v By assuming independent activation of processing modes, some dual processing models have no need to posit a regulation mechanism (e.g., Sloman, 1996; Kelly & Jacoby, 1996; Logan, 1991; Mandler, 1979, 1997). In these models, individual and/or situational variables determine which process predominates. Brewer's (1988) model differs from all others by assuming that regulation takes the form of a voluntary, intentional decision to engage in one process or the other.

^{vi} The fact both feelings have been induced in the laboratory by exactly the same manipulation (contraction of muscles) can be seen as corroborating this hypothesis. Stepper and Strack (1993) manipulated the subjective recall experiences of their participants by asking them to contract either the corrugator muscle or the zygomaticus muscle during the recall task. Contraction of the corrugator muscle (producing a furrowed brow) was assumed to be associated with the

experience of effort, and thus to induce a feeling of lack of fluency, a feeling of difficulty in recall. Contraction of the zygomaticus muscle, in contrast, by producing a smile, was understood to be associated with a feeling of ease or fluency in recall. Exactly the same manipulation has been used to manipulate mood: whereas the contraction of the zygomaticus induces positive feelings, contraction of the corrugator muscle induces more negative feelings (Adelmann & Zajonc, 1989; Bodenhausen, Kramer, & Susser, 1994; Laird, 1984; Strack, Martin, & Stepper, 1988).

^{vii} Bless and Schwarz (1999) call our attention to a logical fallacy (*affirming the consequence*) associated with the inference of a processing mode on the basis of the differential impact of different quality arguments. They emphasize the importance of distinguishing sufficient and necessary conditions for analytic and non-analytic processing. We agree that this inference is conjectural in nature, but so in fact is all scientific knowledge. We always accept *transiently* a hypothesis that is inductively inferred from verified results that were predicted by it (which is deductively invalid reasoning). In this context the key word is *transiently*. That is, we should always be ready to abandon this kind of conjectural inference, if empirical evidence (rather than pure logic) suggests that is invalid.

^{viii} All these characteristics of the study differentiate it from studies of repetition conducted by Cacioppo and Petty (e.g. 1989) and no doubt explain differences in obtained results.