Affective Intuition and Task-Contingent Affect Regulation

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Mood influences cognitive activity and behavior in systematic ways. Since such affective contingencies are repeatedly and broadly experienced, they should be available for learning and possibly conscious introspection. We examine the role of such intuitive theories in guiding affect regulation in a series of four studies and show that even suboptimal hedonic adjustments (i.e., preferences for the negative pole of the affective spectrum such as negative mood maintenance) were deliberately chosen in an attempt to match cognitive requirements of forthcoming tasks. We contrast affect discrepancy and strength of signal hypotheses to explain how affect regulation goals are activated.

That mood influences cognitive activity and behavior is now well established. To the extent that such affective contingencies are repeatedly and broadly experienced, they should be available for learning and possibly conscious introspection. If so, this has important, and previously unexamined, implications for theories of affect regulation, since such personal intuition could lead to deliberate attempts to adopt either positive or negative moods, depending on the specific contingencies. As examples of possible learned contingencies, positive affect has been shown to improve creative thinking whereas negative affect is known to foster a more careful, systematic, and analytical type of processing of the information available (see Martin and Clore [2001] for a review). Similarly, attempts to control impulse buying seem to be undermined by valenced affective states. Happy and sad subjects are more likely to buy on impulse than subjects in a more neutral affective state (Rook and Gardner 1993).

Our primary goal is, then, to examine the role of such intuitive theories in guiding affect regulation. Across experiments 1, 2, and 4 we assess the extent to which upward and downward affect regulation as well as positive and negative mood maintenance are likely to be deliberately chosen strategies prior to an upcoming task as people attempt to improve performance. Experiment 3 directly addresses people's learning and awareness of contingencies between affective states and performance on cognitive tasks by placing participants in the role of observers of other people's behavior. Also, since the literature has yet to address how such regulatory responses are activated, we develop competing predictions both as a function of the distance between current and optimal affective states and the intensity of people's current moods. Experiments 2 and 4 address these competing/complementary hypotheses. Finally, though research has demonstrated people's efforts to change their affective states (e.g., Erber, Wegner, and Therriault 1996), attempts to track actual change have not been fruitful (e.g., Tice, Bratslavsky, and Baumeister 2001; but see Gohm 2003). Experiment 4 assesses whether the chosen affect regulation strategies are indeed successful in bringing about the intended state, in accord with people's intuitive theories.

AFFECT REGULATION

Comparatively little is known about people's intuitive and deliberate regulation of affect beyond the typical assumption that people prefer to experience positive affect and therefore will maintain such states and upwardly regulate negative affect (Zillmann 1988). Recently, Erber and Erber (2001) hypothesized that, contrary to this hedonic motivation assumption, people appear to be willing to regulate affective states toward neutrality to meet specific contingencies. In their Social Constraint Model of Mood Regulation, two motives are assumed to drive affect regulation attempts: a maintenance motive and a control motive. When no specific constraints (e.g., task demands) are present, people are expected to follow a heuristic processing style and to prefer mood-congruent material that will promote mood maintenance. When situational constraints emerge, however, a deliberate attempt to neutralize (and bring under control) their affective

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states is expected to lead people to prefer mood-incongruent material. Erber and colleagues (1996) provided initial evidence for their model, showing that people looked for mood-incongruent material prior to a social interaction with a stranger, the so-called coolness effect. Based on the assumption that an inappropriate mood can be damaging for uncertain interpersonal interactions, they found that those in a good (vs. bad) mood were more willing to read bad (vs. good) news in an attempt to neutralize the potentially inappropriate affective state. When no task constraints were set, respondents made mood-congruent choices.

We see Erber and Erber's model as a limited, special case version of a more complete affect regulation mechanism. Instead of assuming a cautionary preference for neutrality—leading to mood-incongruent choices—due to situational constraints (as the only exception to a mood maintenance heuristic), our model relies on people's likelihood of learning frequently experienced affective state-performance contingencies, the formation and activation of such intuitive theories, and people's deliberate adoption of such regulatory strategies in response to anticipated task demands.

Intuitive Theories: Behavioral Contingencies

The behavioral consequences of affect are well established in the literature. For instance, happiness may increase risk taking as long as the risks are not too high (Isen and Geva 1987). Sadness may increase helping as long as people perceive helping as a mood-lifting opportunity (Cialdini and Kenrick 1976). Particularly relevant to marketing, consumer researchers have shown that affective states influence the extent to which individuals control their buying impulses (Rook 1987). Stronger emotional states (either positive or negative) are more likely to lead to impulsive buying than do neutral moods (Weinberg and Gottwald 1982), and consumers seem to be aware of this motivational effect (Rook and Gardner 1993). Therefore, based on our conceptualization, those expecting a shopping task that requires impulse buying control should attempt to neutralize their current affective states prior to the task. This hypothesis is tested in experiment 1.

Intuitive Theories: Cognitive Contingencies

The most compelling and broadly based examples of affect contingent outcomes likely to be learnable are found in studies linking positive and negative affect to cognitive performance. There is consistent evidence that people in a sad (vs. happy) mood tend to further scrutinize information and carry out analytical/systematic information processing before making judgments or decisions (Bless et al. 1990; Forgas 2001; Schwarz and Bless 1991). On the other hand, people in a happy (vs. sad) mood are known to perform better on creativity tasks (Isen, Daubman, and Nowicki 1987; Isen et al. 1985; see Schwarz and Clore 1996 for a review). As summarized recently by Schwarz (2001), "Creative problem solving typically requires a playful combination of diverse elements and the exploration of novel solutions. These operations should be impeded by the detail-oriented, bottom-up processing style fostered by negative moods. . . . As a result, one may expect higher creativity under happy than sad moods, consistent with bulk of the evidence" (p. 170). We hypothesize that people have learned such affective-cognitive contingencies and deliberately employ these intuitive theories (none of which predict the pursuit of neutrality, as assumed by Erber and Erber's control motivation principle) to regulate their current affective states when tasks incorporating these cognitive skills are forthcoming. Experiments 2–4 tackle this issue.

Affect Discrepancy versus Strength of Signal

Prior work on affect regulation has tended to finesse the nature of the process that instantiates this activity. A general assumption in many models of motivation based in part on cybernetic or control theory principles is that affective states trigger a motivational/regulatory system that alters subsequent behavior. It follows, then, that the further removed one is from the ideal affective state (defined in action-specific terms), the more pronounced the impact of the nonoptimal affect on affect regulation. In other words, people experiencing positive (vs. neutral) affect, for instance, should be more likely to regulate affect downward when facing an analytical task, since they are further removed from the "ideal" negative affective state. According to this hypothesis, those in neutral moods should regulate their affective states more often—and in the appropriate direction—than those in a proper polarized affective state (e.g., people already in a positive affective state facing a creativity task or people already in a negative affective state facing an analytical task). We refer to this as the affect discrepancy hypothesis since there should be a monotonic effect of the magnitude of the discrepancy between the existing affective state and the ideal state.

However, an alternative hypothesis can be derived from affect's role as information. Affective states signal individuals about the threats and rewards in the environment. Accordingly, polarized moods carry more behaviorally relevant information than neutral moods because the signal is stronger and possibly more reliable (Pham et al. 2001; Wegener and Petty 1994). This is consistent with evidence that people in a positive or negative mood, compared to a neutral mood, are more influenced by affect as information during an evaluative process (Schwarz and Clore 1996). Thus, affect should be more salient not only when a strong mismatch occurs (e.g., when those in a negative mood face an upcoming creativity task) but even when a strong match between polarized affect and task occurs (e.g., when those in a positive mood face an upcoming creativity task). Affect should be least salient when the signal is both weaker and less informative, thus under neutral affect. We will refer to this as a strength of signal hypothesis.

At issue, then, are contrasting predictions: one based on affect discrepancy as a spur to action (so those in a neutral mood would be more likely to regulate their mood) and the other based on the increased strength and salience of po-

larized moods (so those in a neutral mood would be less likely to regulate their mood). Experiments 2 and 4 examine these two competing predictions.

EXPERIMENT 1

Overview

We hypothesize that, when participants experiencing positive and negative affect face a forthcoming task that requires control over impulse buying, their intuitive theories will lead them to attempt to neutralize their polarized affective states prior to the task. Remaining in a positive state may well promote impulsive behavior, either through a less critical assessment of consequences or a misattribution of positive affect to the focal object. Remaining in a negative state is likely to motivate mood-repair responses, such as impulsive purchases. To the extent that people have learned such contingencies (Rook and Gardner 1993), they should choose to engage in mood-altering activities that are incongruent with both of these current affective states. When no prior information about the task is made salient (control condition), these prior-learned contingencies are not likely to be brought to mind, so respondents in positive and negative states may simply respond to their current moods (mood-congruent choice behavior).

Method

Design and Procedure. One hundred and seventeen undergraduate students from a southeastern university participated in the study in exchange for course credit. The study adopted a 2 (task: impulse buying control vs. unknown) by 2 (affect: negative vs. positive) between-subjects design. Participants were randomly assigned to one of the four conditions.

In a computer-based experiment, we employed a two-independent-studies cover story. Study 1 investigated the impact of media transmitted through the Web on memory. Participants were asked to put on headphones, watch a video on the Web, describe a real life experience similar to that watched in the film (affect manipulation), and then rate the video (manipulation check). At this point, half of the respondents were alerted that the second study involved impulse buying and required impulse control and were asked to wait for this study to begin, while the remaining respondents received no information about the second study and were asked to wait for it to begin. During this waiting time between studies they were presented with a choice of listening to a happy ("Laughs and Swings") or sad ("A Rainy Day") piece of instrumental music (dependent measure). After making their choices, respondents were asked about the reasons for their choices and the perceived hedonic tone of the song they selected (additional manipulation check). Two items immediately following the choice task assessed the anticipated hedonic character of the chosen song (i.e., "I think this will be a happy song"; "I think this will be a sad song"), and two other items assessed specific affect regulation goals (i.e., "I chose this piece because I wanted to cheer myself up"; "I chose this piece because I wanted to keep the same state of mind I'm in right now"). The anticipated task was not performed. After listening to the song, they were informed that their experimental session was randomly assigned to the no participation group condition. Two questions inquired into their understanding of the purpose of the studies. Finally, they were debriefed regarding the affect manipulation in order to eliminate any residual effects.

Manipulations. We used a combined technique (film plus self description of a real life experience) in order to set people's prior affective state (Westermann et al. 1995). Respondents in the negative (vs. positive) affect conditions watched 5 min. of a sad (vs. happy) sequence of the drama *Life as a House* (vs. comedy: *Happy Gilmore*) and were then instructed to describe a real life experience that had produced similar feelings to the ones triggered by the movie. Finally, respondents were asked to express their opinion about the video. Ten items were individually randomized and presented in a nine-point semantic differential scale format. Scrambled among the 10 items were three affect/pleasantness–related items (It's depressing–It's upbeat; I felt sad–I felt happy; Created a negative mood–Created a positive mood) used to form the affect index.

The task (impulse buying control vs. unknown) was manipulated by presenting respondents with the following information about the impulse buying task: "In the upcoming task we want to assess your ability to deal with your impulses while making buying decisions. To make the right choices, you will have to control your impulses." Those in the unknown task condition then chose between the two pieces of music without having any information about the upcoming task.

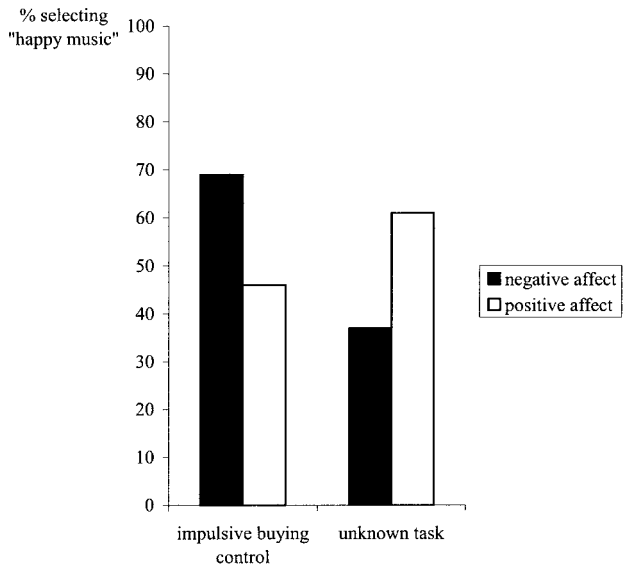
Results

Manipulation Checks. Two students provided a rudimentary guess about the experiment's purpose and were deleted. The three affect-related items were collapsed and used as an affect index ($\alpha = .95$) to assess respondents' feelings. As predicted, the affect manipulation produced a significant impact on people's affective states. Respondents in the negative affect condition ($M = 3.4$) reported strong negative feelings, whereas respondents in the positive affect condition reported strong positive feelings ($M = 8.2$; $F(1, 113) = 643.99$, $p < .001$). Respondents' assessments of the music they were about to listen to were as predicted: those who chose the happy song ($M = 6.8$) perceived it as a happier piece of music compared to those who selected the sad song ($M = 4.9$; $F(1, 113) = 39.75$, $p < .001$).

Affect Regulation. The task and affect manipulations produced the expected interaction on music choices ($F(1, 111) = 6.45$, $p = .01$; fig. 1). When respondents faced a task that required impulse buying control, respondents experiencing negative affect moved toward neutrality by choos-

FIGURE 1

EXPERIMENT 1: IMPULSE BUYING AND AFFECT REGULATION



ing to listen to the happy song (69%) more often than those experiencing positive affect (46%; $Z = 1.80$, $p < .05$, one-tailed test).[1] However, when no information about the upcoming task was provided, the pattern reversed and mood-congruent choice was observed. Respondents experiencing positive affect chose to listen to the happy song (61%) more often than respondents in a negative affective state (37%; $Z = 1.88$, $p < .05$).

Our guiding premise is that such choices result from insightful attempts to regulate affective states (e.g., here neutralize current affective states to improve the likelihood of performing well in the forthcoming impulse buying task). Thus, respondents in a bad mood who selected the happy song should display the highest level of agreement that they chose the happy song because of the upward affect regulation properties of the stimulus. Respondents in a good mood who selected the sad song should display the lowest level of agreement that they chose the song to keep the existing state of mind. As predicted, respondents experiencing negative affect who chose the happy song scored higher on the "cheer up" item ($M = 5.0$) than all other respondents ($M = 3.9$; $F(1, 113) = 6.49$, $p = .01$). Similarly, respondents experiencing positive affect who selected the sad song scored lower on the "keep the same state of mind" item ($M = 4.1$) than all other respondents ($M = 5.5$; $F(1, 113) = 8.77$, $p < .005$).

Discussion

First, these results extend Erber and Erber's Social Constraint Model of Mood Regulation beyond interpersonal behavior into contexts potentially important in consumer behavior. More fundamentally, responses to our goal assessment items are consistent with prior learning of at least one affect-task performance contingency and its strategic employment. Clearly, stronger evidence is needed, and so we turn to well-documented affect-cognitive task contingencies to see if the hypothesized intuition will, in fact, guide affect regulation, and not just toward more neutral affective states. Arguably, the strongest evidence would result from strategic negative mood maintenance prior to a forthcoming task since this pattern of behavior has not been observed in the affect regulation literature and would not be predicted by Erber and Erber's model, which suggests that deliberate affect regulation strategies (i.e., driven toward neutrality by the control motive mediator) are, therefore, limited to pursuit of mood-incongruent stimuli. Second, as the experiment 1 comparison was only between positive and negative affective states, this constrains any inference regarding the impact of affective intensity on affect regulation (i.e., neutral vs. polarized affect). Experiment 2 tackles these issues.

EXPERIMENT 2

Overview

Given the widespread evidence that people in a negative affective state tend to scrutinize information and are relatively more analytical/systematic before making judgments and decisions whereas people in a positive mood perform better on tasks involving creativity, we believe that this contingency may be learned. If so, an upcoming analytical (vs. creativity) task should lead sad respondents to prefer to keep (vs. regulate upward) a negative mood.

But what about those in the neutral affect condition? A second goal of experiment 2 was to pit the two competing hypotheses (affect discrepancy and strength of signal) against each other. Recall that, according to the affect discrepancy hypothesis, respondents in neutral moods should regulate their affective states more often—and in the appropriate direction—than those in a negative (i.e., polarized) affective state when facing an analytical task since they are further removed from the appropriate affective state. Based on the strength of signal hypothesis, however, neutral affective states are less intense compared to polarized affective states, thereby providing weaker and less informative signals. Thus, respondents in a neutral (vs. negative) mood should experience less salient affective information, making the activation of affect-based contingent responses less likely when approaching a forthcoming task. Finally, since affect involves both pleasantness and arousal, with the latter thought to have homeostatic properties that may influence affect regulation (Zillmann 1988), we varied levels of arousal for respondents, holding polarity (i.e., negative affect) constant to be sure that arousal did not alter the findings.

[1]As our hypotheses are directional, Z one-tailed tests will be used to compare two proportions.

Method

Design and Procedure. One hundred and twenty-nine students from a southeastern university participated in this second experiment in exchange for course credit. The study used a 2 (task: analytical vs. creativity) by 2 (affect/arousal: neutral, negative affect/high arousal, negative affect/low arousal) between-subjects design. Students were randomly assigned to one of the six experimental conditions. The procedural steps were similar to the ones used in experiment 1, with changes in the videos during the affect manipulation and in the type of task manipulation. Two different scenes of *Top Gun* were included to vary arousal while attempting to hold negative affect constant. In the negative affect/high arousal condition, scenes show an aircraft accident where Maverick's best friend dies. For negative affect/low arousal, the scene shows Maverick meeting Goose's wife after his friend's death. In the neutral affect condition, respondents watched a documentary about Italy. Two dimensions of arousal, energy ("It's energetic/It's drowsy; I felt active/I felt sleepy") and tension ("I felt tense/I felt calm; It's fearful/It's fearless") were used to capture potential variance across the two videos (Thayer 1989). Respondents differed in reported levels of tension (T) and energy (E) between negative affect–high arousal ($M_T = 3.6$, $M_E = 4.1$) and negative affect–low arousal conditions ($M_T = 5.2$, $M_E = 6.0$; $F_T(1, 68) = 15.53$, $p < .001$ and $F_E(1, 68) = 24.13$, $p < .001$), demonstrating a successful manipulation of arousal (lower means stand for higher levels of arousal).

Task (analytical vs. creativity) was manipulated by varying the title and general purpose of study 2. In the analytical task condition, respondents were informed that they were about to perform a challenging cognitive task that required carefulness, precision, and analytical and logical thinking. In the creativity task condition, they were instructed that the upcoming challenging cognitive task required intuition, creativity, outside-of-the-box thinking, and imagination.[2] Respondents performed mock tasks simply to complete the cover story.

Results

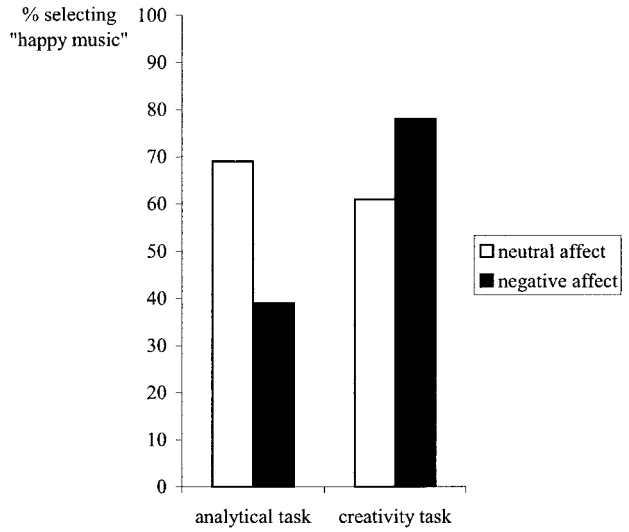
Manipulation Checks. In the main study, seven students provided a rudimentary guess about the study's purpose and were dropped. The three affect-related items were collapsed and used as an affect index ($\alpha = .93$). As expected, the affect manipulation produced a significant impact on people's affective states independent of arousal. Both the negative affect high-arousal condition ($M = 3.0$) and the negative affect low-arousal condition ($M = 2.8$) produced stronger negative feelings compared to the neutral affect condition ($M = 6.9$; $F(1,88) = 268.03$, $p < .001$ and $F(1,82) = 298.45$, $p < .001$, respectively). Moreover, negative affect was the same across the two levels of arousal ($F < 1$). Also as predicted, type of task did not interact with level of arousal for respondents experiencing negative affect ($F < 1$), resulting in only a main effect of type of task ($F(1, 66) = 12.99$, $p = .001$). Both negative affect conditions were then collapsed, and all subsequent analyses were based on a 2 (affect: negative vs. neutral) by 2 (task: creativity vs. analytical) between-subjects design.

Affect Regulation. The two-way, affect × type of task interaction was significant ($F(1, 118) = 7.4$, $p < .01$), demonstrating that people deliberately take the nature of an upcoming task into account when choosing whether and how to regulate (vs. keep) their current affective state (fig. 2).

A series of pairwise comparisons allowed more detailed analysis of the data. Affect regulation patterns were stronger in negative (i.e., polarized) affect conditions compared to neutral conditions, supporting the strength of signal hypothesis and contradicting an affect discrepancy model. Whereas creativity and analytical tasks produced significant differences in the percentage of respondents who chose a happy over a sad piece of music within the negative affect conditions (creativity task = 78% vs. analytical task = 39%, $Z = 3.58$, $p < .001$), the effect of type of task on choice dissipated for respondents who experienced a neutral affective state (creativity task = 61% vs. analytical task = 69%, $Z = .61$, $p = .48$). Breaking the analysis down by type of task, when an upcoming analytical task was presented, respondents experiencing negative affect were less likely to choose a happy song (39%) compared to respondents in the neutral affect condition (69%), in an apparent attempt to keep their current negative affective state ($Z = 2.41$, $p < .01$). When a forthcoming creativity task was introduced, those experiencing negative affect displayed a tendency to regulate upward their affective state by listening

FIGURE 2

EXPERIMENT 2: COGNITIVE TASKS AND AFFECT REGULATION



[2]The type of task (analytical vs. creativity) manipulation was assessed in a pretest.

more often to happy music (78%) than those in the neutral affect condition (61%, $Z = 1.45$, $p = .07$).

Discussion

Results from experiment 2 make several contributions. First, as in experiment 1, this finding lends support to contingency-based learning linking affective states to the performance of cognitive tasks and the deliberate and insightful use of affect regulation strategies to improve task performance. Also, there were stronger affect regulation attempts for respondents experiencing negative affect compared to neutral affect. Respondents experiencing negative affective states consistently preferred the piece of music that should, objectively, improve their chances on the upcoming task, while neutral affect respondents displayed a largely task-irrelevant preference. Our results emphasize the key role of affect as a signal: polarized feelings, compared to neutral states, provide people with stronger informational cues that allow them to assess their readiness to perform a subsequent task. Although the magnitude of affect discrepancy should be a spur to action, that cannot happen unless the feedback mechanism is either automatic or information regarding the discrepancy becomes salient.

Finally, when respondents have good reasons to remain in a negative affective state (e.g., an approaching analytical task), they appear to be deliberately willing to expose themselves to negative mood-congruent stimuli. The results reversed when they faced a creativity task. This contradicts Erber and Erber's hypothesis that the presence of task constraints will produce an affect-neutralizing response (hence, exposure to positive, incongruent stimuli), and only the absence of constraints will produce mood-congruent responses.

EXPERIMENT 3

Overview

The interpretation of our results in experiment 2 is based on the assumption that people have learned that they can perform categories of cognitive tasks better in particular affective states. This experiment assesses the extent to which people do in fact have some intuitive understanding of the impact of positive and negative affective states on cognitive tasks that require creative versus analytical thinking.

Many researchers have adopted the assumption that, when individuals observe others' actions, they readily draw conclusions about people's motivations and attributions by relying on their own reactions and responses (Bem 1965; see Albarracin, Cohen, and Kumkale [2003] for a review and illustration of this type of study). Following the same approach, this third experiment presented respondents with the actual procedure of experiment 2, but with two sets of results (i.e., actual vs. inconsistent results). If respondents thought the actual (vs. inconsistent) choices made more sense to them as they related to improved task performance, this would provide additional evidence for the affective intuition underlying our hypothesized strategic affect regulation process.

Method

Design and Procedure. One hundred and thirty-nine students from a southeastern university participated in this experiment in exchange for course credit. The study used a single factor (results: actual vs. inconsistent) between-subjects design. The cover story informed participants that a recent study in the psychology department had found some interesting results and that the researchers would like to gather opinions from students in other departments. After describing the procedure used in experiment 2 in general terms, one of two sets of results was provided. In the actual (inconsistent) results conditions, respondents were informed that most of the sad students facing an analytical, systematic, and careful processing of information task preferred to listen to the sad (happy) song, while most of the sad students who were to perform a task that required creativity, imagination, and outside of the box thinking preferred to listen to the happy (sad) song. As this study addressed only the awareness issue, we chose not to complicate respondents' tasks by providing equivalent information for both the negative and neutral affect conditions. Then respondents were asked to indicate, using a nine-point scale (9 = agree), the extent to which they would have made the same choices and the extent to which they believed the results made sense. Finally, an open-ended question asked them to provide an explanation for respondents' choices.

Results

The results confirmed our predictions. Respondents presented with the actual (*A*) results were more likely to make the same choices than those presented with the inconsistent (*I*) results ($M_A = 6.5$ vs. $M_I = 5.5$; $F(1, 137) = 14.5$, $p < .001$). Similarly, they believed that the actual results made more sense to them ($M_A = 6.9$ vs. $M_I = 5.5$; $F(1, 138) = 22.73$, $p < .001$). Two judges, having no knowledge of the purpose of the study, categorized the answers to the open-ended question within the actual results condition. Three response categories emerged from the coding: better performance, affect matching, and other. As expected, most people (67%) conveyed a better performance rationale. They indicated that sad respondents selected the sad song to adopt moods that would help them perform better in the forthcoming analytical task: analytical tasks require students to be more focused—this is easier if you aren't in a giddy mood; with a sad mood you can focus better; sad songs encourage deep thinking and [they are] reaching deeper into the mind, so they they are more useful for an analytical or careful task. Displaying similar insight, respondents indicated that sad respondents selected the happy song to cheer themselves up, which would help them to improve performance in a creativity task: they want to alter their moods in a positive way—creative thinking usually requires open-minded thinking; creative and imaginative thinking is easier when you are in a happier mood; happy jazz can stimulate the mind to go outside the box, something not needed for an analytical/careful task.

A second pattern of results (affect matching) also emerged, although for many fewer respondents. Seventeen percent suggested that perhaps the analytical task is boring whereas the creativity task is fun. Therefore respondents are simply trying to match the hedonic tone of the song with the hedonic tone of the forthcoming task; happy is usually associated with creativity, whereas something that requires careful planning is generally considered a dull event. Finally, 16% of the respondents were included in the "other" category, either for providing some alternative explanation, an incoherent answer, or no answer.

Discussion

Experiment 3 shows that, when asked to provide an explanation for affect regulation as a function of type of task, most people seem to have at least a naive theory that is consistent with contingency-based learning of these relationships. They display insight regarding the application of these affect regulation strategies and seem to understand why people might seek out specific/correct hedonic experiences to change their actual affective state.

EXPERIMENT 4

Overview

The previous experiment shows that people seem to be aware of the relationship between positive (negative) affect and creativity (analytical) tasks. To further validate this hypothesis, respondents in experiment 4 were explicitly told to make their choices based on any insights they have regarding the link between their affective states and task performance. There was some suggestion in experiment 3 that respondents simply might have selected the song that best fit the positive (negative) feelings to be elicited by the enjoyable creativity (unenjoyable analytical) task. Therefore, we measured respondents' perception of the hedonic tone of the upcoming (analytical vs. creativity) tasks. In this final experiment, we also go beyond the affect regulation choices, per se, to see if selected affect regulation strategies actually achieve the intended regulatory outcomes. Finally, to assess the extent to which all types of affect regulation are likely (e.g., positive mood maintenance), we employ a neutral versus positive affect comparison.

Method

Design and Procedure. One hundred and twenty-six undergraduate students from a southeastern university participated in the study in exchange for course credit. The study employed a 2 (affect: neutral vs. positive) by 2 (task: analytical vs. creativity) between-subjects design. Respondents were randomly assigned to one of the four conditions. The procedure was identical to that in experiment 2, except for the following changes. First, different affect manipulation videos were used to increase generality (i.e., neutral affect —documentary about John Nash; positive affect—*American Pie 2*). The most important difference was the between-studies instructions. After completing the initial study, respondents were explicitly told to select the song that would put them in the ideal state of mind to best perform in the forthcoming (analytical vs. creativity) task. To address the affect matching explanation, a four-item scale was inserted just after respondents made their choices to assess individual preferences for creativity versus analytical tasks. Two items assessed preferences toward creativity tasks (e.g., I enjoy tasks that are based more on intuition and imagination). Two items assessed preferences toward analytical tasks (e.g., I enjoy tasks that make me think carefully and analytically). Finally, after respondents listened to the song, a seven-item semantic differential scale assessed their opinion about it. Three items (identical to those used in the first affect manipulation check) were embedded in order to track affective changes.

Results

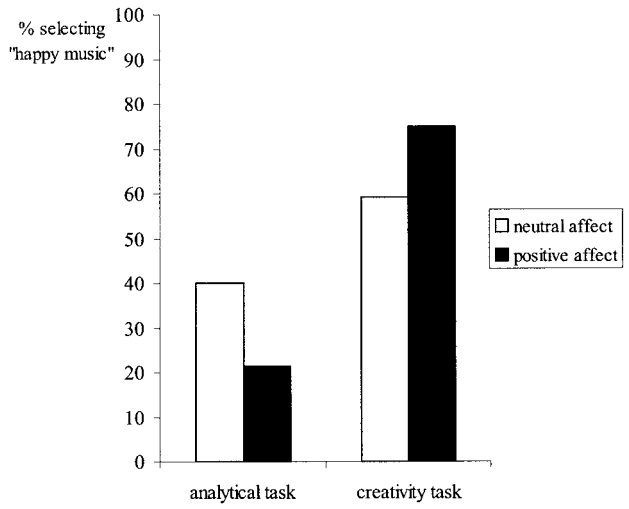
Manipulation Checks. Nine students provided a rudimentary guess about the study's purpose and were deleted from the sample. Similar to experiment 2, the three affect-related items were collapsed to form the affect index ($\alpha = .86$). As predicted, respondents felt happier in the positive affect condition ($M = 7.8$) compared to the neutral affect condition ($M = 5.7$; $F(1, 115) = 136.43$, $p < .001$), demonstrating a successful affect manipulation.

Affect Regulation. The affect × type of task two-way interaction was once again significant ($F(1, 113) = 3.96$, $p < .05$), demonstrating that people deliberately take the nature of an upcoming task and information about their current affective state into account when choosing whether or not to regulate their current affective state (fig. 3).

Pairwise comparisons showed that, compared to the neu-

FIGURE 3

EXPERIMENT 4: COGNITIVE TASKS AND AFFECT REGULATION



tral affect condition, happy respondents facing an analytical task were less willing to choose a happy song, presumably in an attempt to regulate downward their current affective state (neutral affect = 40% vs. positive affect = 21%, $Z = 1.61$, $p = .05$). Happy respondents facing a creativity task, on the other hand, tended to choose the happy music more frequently (75%) compared to the neutral condition (59%; $Z = 1.31$, $p = .09$), although a number of respondents in both conditions, consistent with prior research, opted for a feel good (affect enhancement) experience. The overall pattern of results provides further support for the strength of signal hypothesis. Polarized affective states should provide stronger and more informative signals about one's readiness to perform tasks or make decisions linked to affect (through prior learning).

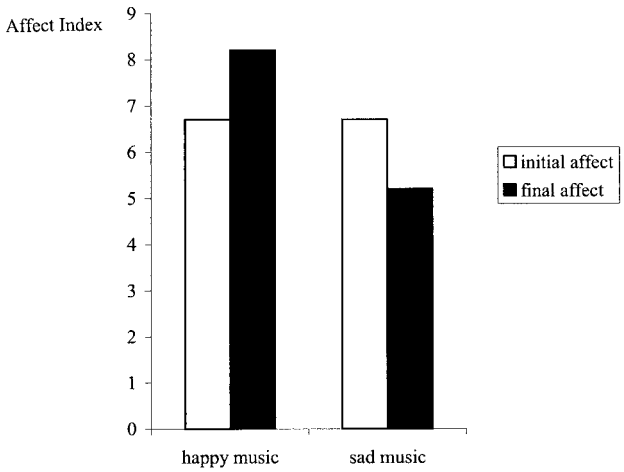
In this fourth experiment, respondents were instructed to explicitly select the piece of music that would help them perform best in the forthcoming task. By forcing them to consider any such learned contingency, we specifically examined their guiding theories regarding the impact of affect on creativity versus analytical tasks. The results confirm our predictions. Within the positive affect condition, respondents facing an analytical task were much less likely to select a happy song (21%) than respondents facing a creativity task (75%; $Z = 4.97$, $p < .001$). It is interesting that, though the strength of signal seems predictably weaker in the neutral affect condition, a similar, marginally significant, pattern emerged. Respondents expecting a creativity task preferred the happy song more often (59%) than those facing an analytical task condition (40%; $Z = 1.46$, $p = .07$). Our results provide strong confirmatory evidence that respondents have a reasonable understanding of the impact of affect on forthcoming tasks that require analytical, thoughtful, and careful analysis versus tasks that required creativity, intuition, and imagination.

Affective Change. Just after respondents listened to the music, but prior to the task, respondents' affective states were once again assessed. After collapsing the three affect-related items into an affect index ($\alpha = .95$; nine-point scale, 9 = positive affect), an analysis was conducted in a 2 (affective states: initial [*IA*] vs. final [*FA*], within-subjects) by 2 (selected song: happy vs. sad, between-subjects) mixed design. The predicted interaction emerged ($F(1, 115) = 72.53$, $p < .001$; fig. 4).

After listening to the happy piece of music, the respondents' final affective states were, on average (neutral and positive affect condition collapsed), more positive ($M = 8.2$) than their respective initial affective states ($M = 6.7$; $F(1, 57) = 41.98$, $p < .001$). On the contrary, after listening to the sad piece of music, respondents' final affective states were on average more negative ($M = 5.2$) than their respective initial affective states ($M = 6.7$; $F(1, 58) = 32.65$, $p < .001$). We split respondents by initial affect condition (neutral vs. positive) to provide a better understanding of the specific affective changes. Respondents in a positive mood who selected a sad song felt worse ($M_{IA} = 7.7$ vs. $M_{FA} = 5.0$; $F(1, 29) = 65.84$, $p < .001$), confirming the effectiveness of respondents' downward affect regulation prior to an analytical task. Those who already experienced positive affect, and presumably chose the happy song to maintain a positive mood, actually managed to improve their moods to a small extent, possibly bounded by a ceiling effect ($M_{IA} = 7.9$ vs. $M_{FA} = 8.3$; $F(1, 29) = 2.91$, $p = .10$). Respondents in a neutral mood who selected a happy song felt better ($M_{IA} = 5.5$ vs. $M_{FA} = 8.0$; $F(1, 27) = 99.31$, $p < .001$). Respondents in the neutral affect condition did not feel significantly worse after listening to the sad song ($M_{IA} = 5.7$ vs. $M_{FA} = 5.3$; $F(1, 28) = 1.63$, $p = .21$). Since we did observe a strong effect across all respondents choosing the sad song, this probably reflects a calibration issue.

FIGURE 4

EXPERIMENT 4: AFFECTIVE CHANGE AFTER THE MUSIC



Affect Matching Effect. Experiment 3 suggests that people may expect the analytical (creativity) task to be boring (fun) and select a hedonically congruent song (i.e., the song that would produce the feelings likely to be generated by the task itself). Since in experiment 4 type of task also influenced respondents' preference for a happy versus sad song when they were in a neutral affective state, this alternative explanation is potentially viable. As already described, four items, two related to analytical thinking (*AN* items) and two related to creative thinking (*C* items) were presented in a nine-point scale format. Two indexes were created ($\alpha_{AN\,\text{items}} = .79$, $\alpha_{C\,\text{items}} = .87$), and the means were contrasted. Results show that the respondents in our experiment enjoy analytical tasks as much as they enjoy a creativity task ($M_{AN} = 6.4$ vs. $M_C = 6.7$; $t(113) = 1.09$, $p = .28$). Therefore, the assumption that respondents usually link creativity to fun and rational/analytical thinking to boredom, necessary to support this alternative explanation, does not hold, at least for the respondents participating in this experiment.

However, consistent with the literature (e.g., Epstein, Pacini, and Denes-Raj 1996), our data show that there are

individual differences in preferences for more intuitive versus more analytical tasks. Thus, two categories were created based on a mean split of respondents' opinions regarding the hedonic tone of the task. Within each type of task, we tested a potential interaction between affective state (neutral vs. positive) and perception of the task (boring vs. fun). If respondents' differential perception of the task played a major role in their decisions to select a happy versus a sad song, either an interaction or at least a main effect should emerge. Respondents who perceived an analytical task as more boring should prefer the sad song more often than respondents who perceived an analytical task as more fun. Similarly, respondents who perceived the creativity task to be fun should prefer the happy song more often than those who perceived it to be a boring task. However, no interactions or main effects appeared within each type of task ($F < 1$ for both interactions). Moreover, attempts to use the items as covariates also produced null effects. In short, individual differences regarding the perceived hedonic tone of the task did not influence respondents' preferences for happy versus sad song.

Discussion

This last experiment provides confirmatory evidence of respondents' awareness of the impact of affect on cognitive tasks and their correct use of this information to regulate affect. Individuals seem to be aware of the negative (positive) consequences of positive affect on analytical (creativity) tasks and are not only willing to regulate affect to improve performance but, in fact, make choices that do in fact modify their current affective states in the direction that best fits the requirement of the forthcoming cognitive task. Moreover, experiment 4 replicates experiment 2 by showing the stronger impact of polarized versus neutral affective states on affect regulation. Respondents in positive affect conditions facing a creativity (analytical) task were more (less) likely to choose the happy consumption experience than those in the respective neutral affect conditions. This pattern of results also demonstrates successful attempts toward positive mood maintenance and downward affect regulation. Here again, Erber and Erber's model would not be able to account for the results, since people facing a clear situational constraint (i.e., forthcoming creativity task) preferred mood-congruent information. Finally, the alternative explanation that respondents may simply be looking for a match between the hedonic tone of the upcoming task and the hedonic tone of the music is ruled out. Our respondents do not necessarily enjoy a creativity task more than an analytical task, and for those who do so, there are no significant differences in choice patterns.

GENERAL DISCUSSION AND LIMITATIONS

Although much is known about the influence of mood on information processing and, consequently, on respondents' ability to perform specific tasks (Martin and Clore 2001), there has been no evidence that people have acquired this knowledge and are willing to use it to regulate affective states in an attempt to improve performance. In a series of four studies, we demonstrated that people deliberately manipulate their affective states to correspond with their apparent intuition about how these adjustments would affect performance. Contrary to previous propositions (e.g., Erber and Erber 2001), upward and downward affect regulation as well as positive and negative mood maintenance are all likely to be deliberately used to achieve instrumental goals. Previously unverified speculations (Parrott 1993) that people's affect regulation strategies might encompass suboptimal hedonic adjustments (i.e., preferences for the negative pole of the affective spectrum such as negative mood maintenance) were confirmed. Moreover, affective changes do follow affect regulation attempts, showing that people are not only motivated to but also capable of changing current moods in order to improve performance.

We introduce and contrast affect discrepancy and strength of signal hypotheses to explain how affect regulation goals are activated. Peoples' attempts to regulate their affective states are not merely a monotonic function of the distance between their current and optimal affective states. Instead, the strength of the affective signal appears to be critical, and affect regulation tendencies were more pronounced when people experienced polarized versus neutral affective states. These results converge partially with Wegener and Petty's (1994) hedonic contingency hypothesis, which also suggests that neutral affective states are less informative, thereby less sensitive to environmental contingencies. However, since hedonic outcomes of action alternatives are skewed downward for those in a positive mood, their theory predicts that they (and not people in a negative mood, whose likely outcomes are reversed) will cautiously scrutinize such alternatives. We show, however, that affect regulation is more functional in its responsiveness to contingencies: just as people do not simply select mood-congruent material or seek out pleasant stimuli in order to feel better, they do not simply avoid negative material when experiencing happiness because they have more to lose. They were, as we predicted, willing to select negatively charged stimuli when facing an analytical task.

Our framework focuses on affect regulation in response to opportunities to develop and apply intuitive theories. As such, directional change became the appropriate criterion. We do not address the extent to which people are sufficiently well calibrated to actually achieve improvements in performance via affect regulation. Moreover, we leave open the question of the origin and development of such intuition, the extent to which people's intuitive theories vary, and how this variance influences affect regulation and eventually performance.

[*Dawn Iacobucci and David Glen Mick served as editors and Punam Anand Keller served as associate editor for this article.*]

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