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ORIGINAL PAPER

Want information? How mood and performance perceptions alter the perceived value of information and influence information-seeking behaviors

Karen Gasper · Matthew J. Zawadzki

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Abstract Currently, it is not well understood when positive and negative moods would encourage and discourage the process of identifying and seeking out valuable information. Building upon the mood-as-a-resource hypothesis and the mood-behavior-model, this project reconciles mixed findings by investigating and finding support for the hypothesis that positive moods encourage seeking instrumental information when performance is perceived to be weak; whereas negative moods encourage it when performance is perceived to be strong. These effects are due to mood influencing the perceived value (i.e. instrumentality) of information and cannot be explained by arguing that mood altered the affective costs/benefits associated with the information. Overall, these results indicate that positive moods may help individuals acquire information to resolve an existing problem, whereas negative moods may help individuals acquire information when there is no apparent problem.

Keywords Information seeking · Mood · Mood-as-a-resource · Mood-behavior-model

Introduction

A student is taking an online practice examination for her class. The exam not only provides her with problems, but with information about how best to solve them. While working on the exam, it is clear to her that she is not performing well. She has to decide whether she should read the online information about how to do better on the exam. The information might help her improve, but it also might be futile given her poor performance. In contrast, a different student finds the practice examination to be rather easy, but she too has to decide whether she should read the online information. The information might help her improve, but it might not be needed given her high performance level. How do these students decide whether they should seek out this potentially valuable source of information?

Research indicates that the students' mood will influence whether they seek out more information. Yet, this work indicates that that both positive (Aspinwall 1998; Trope et al. 2006) and negative (Schwarz 1990) moods can *promote* information seeking, and that both positive (Carver 2003) and negative moods (Trope et al. 2006) can *inhibit* information seeking. The purpose of this project is to integrate these various findings to better understand how mood influences people's perceptions of the value of information and alters information-seeking behavior.

We propose that whether people perceive their performance as strong or weak moderates the effect of mood on information-seeking. Using the example above, our key hypothesis is positive moods will encourage the students to seek out information when their performance is weak, whereas negative moods will encourage it when their performance is strong. Furthermore, we propose that the students' perceptions of whether the information will have instrumental value (perceived informational value, PIV) will mediate the interactive effect of mood and perceived performance on information seeking. However, before discussing this prediction, it is necessary to review past work on mood and information-seeking behavior.

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Moods and information seeking

Much of the work on mood and information seeking focuses on two factors: (1) the instrumental value of the information being sought (i.e., PIV), and (2) the affective costs associated with it, specifically whether the information will make one feel bad or good. The literature reveals two seemingly contradictory findings, with positive and negative moods both promoting and inhibiting information seeking behaviors.

Positive moods may promote information seeking, whereas negative moods may inhibit it

Research indicates that positive moods signal that the environment is fine (Schwarz 1990), and encourage people to expand their knowledge base (Fredrickson 1998, 2001; Isen 1984, 1999; Isen and Reeve 2005). Building on this work, the mood-as-a resource hypothesis (Aspinwall 1998; Gervey et al. 2005; Raghunathan and Trope 2002; Trope et al. 2001a, b, 2006) proposes that positive moods help people acquire information for two reasons. First, positive moods increase the degree to which people are attuned to and seek out instrumental information needed for goal pursuit (Trope et al. 2006). Second, positive moods act as an emotional resource that buffers against the affective costs associated with acquiring mood threatening information, such as information about one's weakness, liabilities, or risks (Aspinwall 1998; Gervey et al. 2005; Raghunathan and Trope 2002; Trope and Pomerantz 1998). In contrast, negative moods can inhibit acquiring instrumental, but affectively costly, information in favor of acquiring less instrumental, but affectively rewarding, information (Raghunathan and Trope 2002; Trope and Neter 1994).

Thus, the mood-as-a-resource hypothesis suggests that positive, rather than negative, moods encourage the acquisition of instrumental information. Unfortunately, it is unclear whether these effects are due to mood altering the degree to which people perceive instrumental information to be of value (PIV) and/or due to the effect that mood has on people's ability to withstand affective costs. This ambiguity arises because these experiments typically confound PIV with costs, with respondents having to choose either instrumental, but affectively costly, information or affectively rewarding, but not instrumental, information. As a result, it is unclear whether individuals in negative moods are failing to seek out instrumental information merely because they do not see the value in it or because they value feeling better more than they value doing better. This question is particularly important because some work suggest that negative moods may promote the acquisition of valuable information.

Negative moods may promote information seeking, whereas positive moods may inhibit it

Negative moods signal that a problem exists (Schwarz 1990) and information is needed to resolve that problem. Indeed, negative moods, more so than positive moods, can promote seeking out diagnostic information (Isbell et al. 2005). Negative moods also create feelings of uncertainty and doubt (Bless 2000, 2001; Tiedens and Linton 2001) that can be alleviated by seeking out information (Ashford 1986; Berlyne 1960; Sorrentino and Roney 1986; Trope 1986). For example, high levels of chronic negative affect, such as depression (Weary and Edwards 1994), worry (Davey et al. 1992), and momentary states of fear (Nabi 2003; Neuwirth et al. 2000), promote information seeking to lessen uncertainty and promote reassurance (Joiner et al. 1999). Thus, negative moods can promote instrumental information seeking, particularly when doing so involves no affective costs and perhaps affective benefits.

Moreover, positive moods can inhibit information seeking. They signal that the situation is fine (Schwarz 1990). Because there is no problem, no additional information is needed, and one can coast (Carver 2003). Indeed, the mood-as-resource hypothesis predicts that when information is not needed or irrelevant, positive moods encourage seeking out less instrumental, but more affectively rewarding, information over instrumental, but affective costly, information (Gervey et al. 2005; Raghunathan and Trope 2002). Unfortunately, it is unclear whether these effects are due to individuals in positive moods no longer valuing instrumental information or due to them valuing feeling better over valuing doing better. Furthermore, the idea that negative moods can promote instrumental information seeking more so than positive moods is not fully addressed in the mood-as-resource perspective, which focuses on positive affect.

Making sense of the mixed findings

These two seemingly discrepant lines of research differ from each other on two key dimensions: affective costs and performance. In terms of affective costs, in the studies discussed above, positive moods always encouraged seeking out valuable, but affectively costly, information, for the information was about weaknesses, liabilities, and/or risks that needed to be addressed. In contrast, negative moods encouraged seeking valuable, but affectively beneficial information, for people learned about others or how to protect and reassure the self. This confound makes it difficult to address whether mood actually alters PIV and/or one's desire to avoid affective costs or obtain affective benefits. Clearly, affective costs matter (Trope et al. 2006). The focus of this paper, however, is to understand whether

mood alters the value placed on information, irrespective of costs.

Second, in the studies discussed above, perceived performance varied. Positive moods encouraged interest in information in contexts where one's performance was weak and problematic, for people learned that they had weaknesses, liabilities, and/or risks that needed to be addressed in order to succeed. In contrast, negative moods encouraged it in situations where one's performance was not in question and where there was no obvious emergency or issue. The fact that perceived performance differs across these experiments may also explain the findings.

Perceived performance moderates the effect of mood on information seeking

A plethora of research indicates that task difficulty shapes effort. People put forth more effort (display greater motivational intensity) on tasks that are intermediate in difficulty compared to those that are easy or impossible to do (for review see: Brehm and Self 1989; Kukla 1972). This finding occurs because people do not invest much effort on tasks that are easy to accomplish for the effort is not needed, nor do they invest much effort on tasks that would never be accomplished for the effort is futile. In other words, task difficulty (and more broadly, how one views their potential performance) influences effort.

Building on this work, the mood-behavior-model (MBM) argues that mood states moderate the effect of task difficulty on motivational efforts (Gendolla 2000; Gendolla et al. 2001; Gendolla and Krüsken 2002a, b). Specifically, the MBM proposes that negative moods should signal that a task is more problematic and hence requires more effort than do positive moods. Indeed, Gendolla and colleagues found that when a task is easy (e.g., performance is strong), individuals in negative moods perceived the task as more demanding than those in positive moods, and engaged in more effort mobilization (e.g., Gendolla and Krüsken 2002a). Those in positive moods, however, perceived the easy task as not too demanding, and thus not needing much effort mobilization. Conversely, when respondents completed a difficult task (e.g., performance is weak), the mood effects reversed. Because the task was hard, individuals in negative moods were more likely than those in positive moods to perceive that the task is too demanding, and thus they engaged in less effort mobilization because additional efforts probably would be futile (Martin 2001; Schwarz 1990). In contrast, those in positive moods perceived that they could meet the demands of this difficult task, and they engaged in more effort mobilization than those in negative moods.

Explaining the mood by performance effect: PIV as a mediator

Building upon this work, we hypothesize that performance perception (i.e., whether performance is strong or weak) may explain the differential effects of mood on PIV and information seeking. Following the logic provided by the MBM, we argue that when people perceive their performance to be strong (e.g. the task is easy), negative moods should signal that more effort would be beneficial to a greater degree than do positive moods. Conversely, when people perceive their performance to be weak (e.g. the task is difficult), positive moods should signal that more effort would be beneficial to a greater degree than do negative moods. Furthermore, we move beyond the MBM, by examining how these mood effects may manifest themselves in an information-seeking context.

Specifically, we argue that in an information-seeking context, the key behavior-relevant judgment is whether the information acquired would be valuable for improvement. That is, respondents ask themselves whether more information would be useful in improving performance (i.e., PIV). Consistent with past work (Martin 2001; Richter and Gendolla 2009), we hypothesize this behavior-related judgment (whether the information is valuable) should be altered by mood and perceptions of performance. Specifically, when perceived performance is strong (e.g. the task is easy), negative moods should signal the need to do more, resulting in more information being perceived as valuable (i.e., PIV) and encouraging information-seeking behaviors. In contrast, given the easy nature of the task, positive moods should signal that there is no need to do more, information is not valuable, and discourage information-seeking behaviors. This prediction coincides with work indicating that respondents in negative moods may see a greater need for diagnostic information than those in positive moods (Isbell et al. 2005) because negative moods signal that one needs to step up their efforts (Carver and Scheier 1990, 1998); whereas positive moods signal that there is no issue and promote coasting behaviors (Carver 2003). This prediction goes beyond the mood-as-a-resource hypothesis, for it addresses when negative moods would promote information acquisition more so than positive moods.

When perceived performance is weak (e.g., the task is hard), positive moods should signal that information would be of value to a greater degree than do negative moods. Specifically, now that the task is more difficult, respondents in positive moods should realize the need to step up their efforts, perceive information to be of value, and seek it out. In contrast, negative moods should indicate that more information would not be of use in light of the difficulty, reduce PIV, and decrease information seeking. In

other words, the situation is seen as a lost cause encouraging withdrawal (see Carver and Scheier 1990). This prediction concurs with mood-as-a-resource hypothesis, for it is precisely under challenging situations in which positive moods should promote more information-seeking behaviors relative to negative moods. However, unlike current studies examining mood-as-a resource, we will test whether these effects occur even when the information does not hold high affective costs.

The present research

We conducted three studies to investigate whether mood interacts with perceived performance to influence information-seeking behavior. Hypothesis 1 was that mood and perceived performance will interact to influence information seeking such that (a) when perceived performance is weak, then individuals in positive moods will seek out more information than those in negative moods, and (b) when perceived performance is strong, then individuals in negative moods will seek out more information than those in positive moods. Furthermore, Hypotheses 2 was that PIV will mediate the interactive effect of perceived performance and mood on information seeking.

To test these hypotheses, we conducted three experiments with the following key elements. (1) We investigated actual information-seeking behavior, not just interest in receiving information (as often done in past work), because people may express a desire to see information, but then not actually seek it out. (2) We manipulated the degree to which performance was perceived to be problematic through multiple techniques. (3) We held constant the affective costs/benefits and type of information to be acquired.

Experiment 1

Overview

Experiment 1 investigated whether performance perceptions moderate the effect of mood on information seeking, and if PIV mediates this effect. Respondents first completed logic problems. After each problem they could seek out more information about how to solve it. To manipulate perceptions of performance, half of the respondents could seek out the correct answer and the other half could not. We reasoned that respondents would be overconfident in their performance (Taylor and Brown 1988) when they could not see the correct answer, and thus overestimate how well they were doing. When respondents could see the correct answer, they would find out that they were performing poorly because the problems were difficult (mean correct was less than 50 %).

Method

Participants

Students participated for course credit (48 women, 31 men; age: $M = 19.46$). Three participants were dropped from analyses because they failed to look at the correct response on more than half of the problems. Two participants were dropped for being outliers on the number of items searched (2 SD away from mean) and spending less than 5 s on each problem, leaving 44 women and 30 men.

Mood manipulation

To manipulate mood, participants watched a 6-min video from either *Sophie's Choice* (negative mood condition) in which Sophie must choose which one of her children will be taken from her in Auschwitz or *Everybody Loves Raymond* (positive mood condition) in which Robert celebrates being a bachelor. Afterwards, embedded in a questionnaire about the clips, participants rated how happy and sad they felt at the moment on a 1 ("Not at all") to 10 ("Very much") scale. These items were negatively correlated, $r(74) = -.46$, $p < .001$, thus we combined them so that higher numbers indicated more positive moods (Cronbach's $\alpha = .63$). Finally, to make sure that the performance feedback did not differentially influence participants' post-task mood, they completed a post-task mood check where they rated their positive (happy, pleasant, positive) and negative (sad, negative, and unpleasant) moods using the same scale as the pre-task mood check. These two measures were then combined to form a measure of post-task mood (Cronbach's $\alpha = .84$), with higher numbers indicating a more positive mood.

Experimental paradigm

After watching the video clip, participants completed a set of 7 logic problems from the online practice test for the Law School Admissions Test (Law School Admission Council 2007). For these problems, participants read an argument or set of facts and then had to identify: the assumption in the argument, errors or facts that would weaken the argument, or other arguments with similar rationales. Participants then choose the correct answer from a set of five choices. After each problem, half of the participants were able to seek out the correct answer, while the other half were not. Apart from the correct answer, all respondents could seek out the following information: an explanation of the rationale behind the problem, the difficultly of the problem, information on what were key phrases needed to solve the problem, and general tips on the problems (e.g., look for themes found at the beginning

and end of the passage). All of the information that respondents could seek was about the problem and none of it was affectively costly/beneficial, for it did not discuss the participants' personal attributes. Respondents could choose which type of information they wanted to see, in any order, and any number of times. A computer recorded this information and how much time respondents spent solving and seeking out information about the problems. Because only half of the respondents could seek out the correct answer, looking at the correct answer was not included in the measure of information seeking, which was the average number of pieces of information respondents sought per problem (Cronbach's $\alpha = .92$).

Measures of perceived performance, PIV, and self-handicapping

To make sure that being able to see the correct responses manipulated respondents' perceptions of their performance, respondents completed a perceived performance manipulation check, where they rated how well they perceived themselves doing on the task (3 questions, Cronbach's $\alpha = .97$: How well did you do on the task? How confident do you feel that you did well on the task? How certain do you feel that you performed well on the task?) using a 0 ("Not at All") to 10 ("Very Much") scale. As noted above, we predict that only the feedback manipulation should alter this measure; mood states should not alter perceptions of performance, only the value of seeking out instrumental information to improve performance.

PIV was assessed using a 0 ("Strongly Disagree") to 10 ("Strongly Agree") scale (5 items, Cronbach's $\alpha = .93$: I found the feedback to be helpful. I depended on the feedback to help me understand the task. I relied a lot on the feedback in order to learn about the task. The feedback helped me understand the task. The feedback helped me learn how to do better.).

Past research reveals that individuals may fail to acquire information as a means to self-handicap (Arkin and Oleson 1998; Hirt et al. 1991). To address this issue, respondents filled out a shortened from of Jones and Rhodewalt's (1982) self-handicapping scale (Cronbach's $\alpha = .64$), see Strube (1986), along with some other personality measures that are irrelevant to this experiment. Controlling for self-handicapping did not alter the findings, indicating that these effects occurred regardless of differences in self-handicapping.

Results

A series of 2 (Mood: Positive vs. Negative) × 2 (Performance: Weak—Correct Response Known vs. Strong—Correct Response Unknown) ANOVAs were conducted on the data unless otherwise noted.

Manipulation checks

Mood We conducted a 2 (Mood Manipulation) × 2 (Perceived Performance) × 2 (Pre vs. Post-task Mood) ANOVA, with pre/post-task mood as a within-participants factor that was standardized because the two reports used different items. The mood manipulation was successful, but as one might expect, while working on the task mood faded, Mood Manipulation × Pre/Post-task interaction, $F(1, 70) = 18.31$, $p < .001$, $\eta_p^2 = .21$. Respondents reported feeling more positive immediately after seeing the positive than negative clip, $M = 0.41, -0.43$, SD = 0.88, 0.90, $F(1, 70)$, 15.95 $p < .001$, $\eta_p^2 = .19$, but this was not true after completing the information-seeking task, $M = -0.03, 0.11$, SD = 0.98, 1.03, $F(1, 70) < 1$, NS. Moreover, perceived performance had no effect on these ratings, Fs < 1, NS, indicating that learning that one had strong or weak performance did not alter respondents' post information-seeking feelings.

Perceived performance The performance manipulation was effective and respondents were aware of their performance. All but 3 respondents sought out the correct response for all seven problems, and these three sought it out for five out of seven. As predicted, respondents who could find out the correct answer believed that they were performing worse (weak perceived performance) than those who could not see the correct answer (strong perceived performance), $M = 4.71$ versus 6.30, SD = 2.44, 2.31, $F(1, 68) = 7.65$, $p = .007$, $\eta_p^2 = .10$.

Performance on the problems Mood and perceived performance did not influence actual performance on the problems (amount of time spent solving the problems or number correctly solved, all ps > .20).

Information seeking

A main effect of performance perceptions revealed that respondents sought out less information in the weak than strong perceived performance conditions, $M = 2.12$ versus 3.57, SD = 1.52, 1.45, $F(1, 70) = 18.35$, $p < .001$, $\eta_p^2 = .21$. More importantly, there was a significant interaction between mood and performance perceptions on information-seeking behavior, see Table 1, $F(1, 70) = 5.70$, $p = .02$, $\eta_p^2 = .08$. Because we had a set of a priori predictions, we conducted a series of planned one-tailed tests to diagnosis this interaction. In support of Hypothesis 1a, when respondents perceived their performance as weak, individuals in positive moods searched more than those in negative moods,

Table 1 The effect of mood and perceived performance on information-seeking behavior in Experiment 1

Mood	Perceived performance	
	Weak: Correct responses known *M* (SD)	Strong: Correct responses unknown *M* (SD)
Positive	2.50 (1.56)	3.14 (1.70)
Negative	1.74 (1.38)	4.00 (0.91)

$F(1, 70) = 2.65$, $p = .05$, $\eta_p^2 = .04$. In support of Hypothesis 1b, when respondents perceived their performance as strong, individuals in negative moods searched more than those in positive moods, $F(1, 70) = 3.05$, $p = .04$, $\eta_p^2 = .04$, due to individuals in negative moods increasing their information-seeking efforts, $F(1, 70) = 20.12$, $p < .001$, $\eta_p^2 = .22$, whereas there was no statistically significant effect in positive moods, $F(1, 70) = 2.01$, $p = .16$.

We also examined the possibility that respondents might have differed in their information-seeking efforts because they differed in how much they processed the information (e.g., respondents who sought out less information might have spent more time thinking about each piece of information than those who sought out more information). We conducted analyses on the average amount of time respondents spent looking at each piece of information. There were no significant effects.

PIV as a mediator

First, we examined whether mood and perceived performance interacted to alter PIV. Analyses revealed that the only effect on PIV was a mood × perceived performance interaction, $F(1, 70) = 5.32$, $p = .02$, $\eta_p^2 = .07$. Because we had a priori predictions, we conducted a series of one-tailed tests on these means. As predicted in the weak condition, respondents thought that the information had more value in positive than negative moods, $M = 6.14$, 4.36, SD = 1.30, 2.45, $F(1, 70) = 4.64$, $p = .02$. In the strong condition, respondents in positive moods lowered their PIV ratings relative to the weak condition, $M = 4.36$, SD = 2.54, $F(1, 70) = 7.63$, $p < .001$. Even though the means were in the predicted pattern, these ratings were not statistically lower than the ratings of those in the negative mood, weak condition $M = 5.15$, SD = 1.79, $p = .13$.

Given the interactive effect of mood and perceived performance on PIV, we then conducted a mediational analysis to examine whether PIV mediated the effect of mood and perceived performance on information-seeking behavior (see the upper numbers marked E1 in Fig. 1 for the meditational results). We used Hayes' (2012) PROCESS procedure, which employees a bootstrapping method to estimate the confidence intervals for the indirect effect. We used model 8, 5,000 bootstrap samples, and report bias corrected confidence intervals. For all mediational analyses, the data were coded so that positive mood = 1, negative mood = −1; weak performance = 1, strong performance = −1, and the continuous variables were centered. Hypothesis 2 was supported, as is indicated in Fig. 1. The interaction between mood and performance predicted the mediator, PIV, $b = 0.56$, SE = 0.24, $t(70) = 2.31$, $p = .02$. In turn, PIV predicted the average number of items searched, $b = 0.24$, SE = 0.08, $t(70) = 3.07$, $p = .003$, as did perceived performance, $b = -0.81$, SE = 0.16, $t(70) = -4.98$, $p < .001$. Moreover, the confidence interval for the indirect effect of this interaction on information seeking did not include zero, indirect effect = 0.14, SE = 0.08, 95 % CI [0.02, 0.33], indicating that PIV mediated the interactive effect of mood and perceived performance on information seeking. Finally, the total effect of the interaction on information seeking, $b = 0.40$, SE = 9.17, $t(70) = 2.39$, $p = .02$, was no longer significant when PIV was included, $b = 0.27$, SE = 0.17, $t(69) = 1.62$, $p = .11$.

Discussion

Experiment 1 supports the key hypotheses, in that mood and performance perceptions moderate information seeking by influencing people's perceptions of the instrumental value of additional information. Supporting Hypothesis 1, when respondents perceived their performance as weak, individuals in positive moods acquired more information than those in negative moods. When respondents perceived their performance as strong, individuals in negative moods now acquired more information than those in positive moods. Supporting Hypothesis 2, the interaction between mood and perceived performance was mediated by differences in PIV.

Experiment 2 builds on Experiment 1 by using a different manipulation of perceived performance. In Experiment 1, people in the weak performance condition tended to seek out less information relative to those in the strong performance condition. This effect might have occurred because people doubted the link between information seeking and improved performance. Thus, a goal of Experiment 2 was to examine whether this effect would occur in situations where people were explicitly aware that information seeking could improve performance. This way we could to determine whether mood would still alter PIV

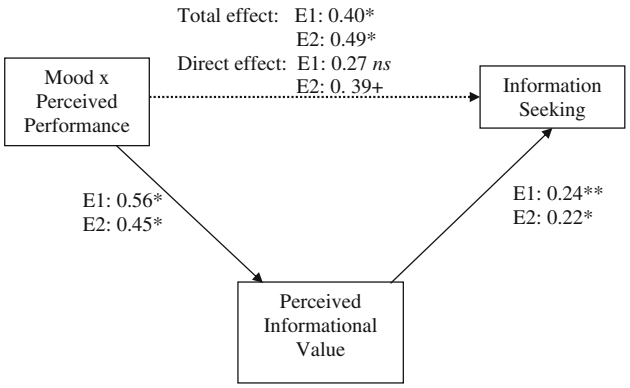

Fig. 1 Examining whether PIV mediates the Mood × Perceived Performance interaction on Information Seeking in Experiments 1 and 2. Effects marked as E1 correspond to results from Experiment 1, whereas effects marked E2 correspond to results from Experiment 2. The main effects of Mood and Perceived Performance are part of the analyses, but are not depicted to simplify the presentation. $^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$

even when the need for information is clear. Thus, we manipulated perceived performance by altering whether respondents were told that they were learning how to do the problems at a rate that was either ahead (strong performance) or behind (weak performance) an ideal rate. We predicted that even when respondents receive feedback that they should learn more (perceived performance is weak), participants in positive moods see the information as more valuable and thus seek out more information than those in negative moods. In contrast, when they were assured that they were learning at a superior rate (perceived performance is strong), this effect should reverse. Thus, even when the need for information is clear, mood and perceived performance still should alter PIV and information-seeking behavior.

Experiment 2

Method

Participants

Students participated for course credit (55 women, 59 men; age: $M = 19.19$). Three participants were dropped due to providing outlying data (2.7 standard deviations above the mean on information-seeking), leaving 53 women and 58 men.

Experimental paradigm

The procedure was the same as Experiment 1 except for the manipulation of perceived performance. Respondents' mood was manipulated, they completed a mood check, pre-task mood (Cronbach's $\alpha = .79$), and then worked on the information seeking task. As with Experiment 1, all participants were told that they should approach the problems as though they were studying for an exam. To help them gauge how well they were learning the material, all participants saw: (1) a progress number that indicated how well they were learning the material (ostensibly based on a complex formula that the lab developed), and (2) a target number that indicated an ideal learning rate. To manipulate weak perceived performance, respondents were randomly assigned to either always receive a progress number that was lower (weak perceived performance) or higher (strong perceived performance) than the target number. When the progress number was lower than the ideal number, respondents learned that this meant that they could do more to learn the material. When it was higher than the ideal number, respondents learned that this meant that they could be doing too much to learn the material. Finally, this number was stressed to be an additional way to gauge performance. Thus, while everyone had the norm to learn as much material as possible, the progress numbers indicated to some that they were either under or over learning the material relative to a standard.

After completing the problems, participants rated their performance perceptions (Cronbach's $\alpha = .96$), PIV (Cronbach's $\alpha = .93$), and post-task mood (Cronbach's $\alpha = .86$). They also rated how much they relied on or followed the progress numbers, using a 0 ("Not at All") to 10 ("Very Much") scale (3 items: Cronbach's $\alpha = .86$, I paid at lot of attention to the progress numbers. The progress numbers helped me figure out how much I work on the task. I depended on the progress numbers to give me a good assessment of how well I was doing on this task.).[1]

Results

A series of 2 (Mood: Positive vs. Negative) × 2 (Perceptions of Performance: Weak vs. Strong) ANOVAs were conducted on the data unless otherwise noted.

Manipulation checks

Mood We conducted a 2 (Mood Manipulation) × 2 (Perceived Performance) × 2 (Pre vs. Post-task Mood) ANOVA, with pre/post-task mood as a standardized within-participants factor. The mood manipulation was successful. Respondents reported feeling more positive after seeing the positive, than the negative, clip (mood main effect, $M = 0.49$ versus -0.44, SD = 0.77, 0.69,

[1] Two respondents did not complete all the perceived performance items. Thus, we replaced these missing data with the cell mean for their respective conditions.

$F(1, 107) = 44.88$, $p < .001$, $\eta_p^2 = .30$). Once again, these mood differences faded, Mood Manipulation × Pre/Post interaction, $F(1, 107) = 17.90$, $p < .001$, $\eta_p^2 = .14$, but even with this fading, respondents reported feeling more positive after seeing the positive, than negative clip, both before, $M = 0.69, -0.63$, SD = 0.74, 0.82, $F(1,107) = 83.49$, $p < .001$, $\eta_p^2 = .44$, and after completing the information-seeking task, $M = 0.30, -0.26$, SD = 0.98, 0.95, $F(1, 107) = 8.85$, $p = .004$, $\eta_p^2 = .08$.

Unexpectedly, perceived performance interacted with pre/post-task reports of mood, $F(1, 107) = 5.87$, $p = .02$, $\eta_p^2 = .05$. This effect was due to individuals reporting feeling happier in the weak condition than in the strong condition prior to learning that their learning rate was behind or ahead of the target rate, $M = 0.24$ versus -0.18, SD = 1.00, 0.99, $F(1, 107) = 8.60$, $p = .004$, $\eta_p^2 = .07$. There were no mood differences after completing the task, $M = 0.01, 0.03$, SD = 1.05, 0.96, $F < 1$, NS. Thus, once again, the feedback did not significantly alter respondents' post-task feelings. The mood difference prior to completing the task does not present a problem for there was no significant pre-task interaction between mood and performance that could account for their potential effect on information-seeking behavior, $p > .26$.

Performance perceptions The performance manipulation was effective in that participants perceived that they performing more strongly in the strong than in the weak condition, $M = 6.22, 5.37$, SD = 1.86, 2.17, $F(1, 107) = 4.82$, $p < .03$, $\eta_p^2 = .04$.

Reliance on the progress numbers Respondents in the strong condition relied on the feedback from the progress numbers more than those in the weak condition, $M = 5.29$ versus 4.40, SD = 2.20, 2.34, $F(1, 107) = 4.14$, $p = .04$, $\eta_p^2 = .04$. This finding makes sense in that respondents are probably more accepting of and likely to follow feedback which indicated that they are doing well rather than poorly.

Performance on the problems Replicating Experiment 1, mood and perceived performance did not influence performance on the problems, as measured by total number correct and the amount of time spent solving the problems, $ps > .11$.

Information seeking

A main effect of perceived performance revealed that respondents sought out more information when they were behind rather than ahead, $M = 3.67$ versus 2.65, SD = 2.50, 1.85, $F(1, 107) = 6.13$, $p = .02$, $\eta_p^2 = .05$. As predicted, mood and perceived performance interacted, see Table 2, $F(1, 107) = 5.61$, $p = .02$, $\eta_p^2 = .05$. Planned one-tailed tests revealed that, in support of Hypothesis 1a, when individuals perceived their performance as weak (i.e., learned that they were behind schedule), those in positive moods sought out more information than those in negative moods, $F(1, 107) = 2.57$, $p = .055$, $\eta_p^2 = .02$. In support of Hypothesis 1b, when respondents perceived their performance as strong (i.e., learned that they were ahead of schedule), the effect reversed, with individuals in negative moods seeking out more information than those in positive moods $F(1, 107) = 3.06$, $p = .04$, $\eta_p^2 = .03$. This occurred due to individuals in positive moods decreasing their information seeking, $F(1, 107) = 11.34$, $p < .001$, $\eta_p^2 = .10$. Once again, these differences could not be explained by arguing that respondents differed in the amount of time respondents spent looking at each piece of information.

PIV as a mediator

First, as predicted, analyses on PIV revealed only a mood × performance perceptions interaction, $F(1, 107) = 6.65$, $p = .01$, $\eta_p^2 = .06$. Because we had a priori predictions, we conducted a series of one-tailed tests on these means. Consistent with predictions, in the weak performance condition, respondents once again rated the information as more valuable in positive than negative moods, $M = 5.03, 4.11$, SD = 2.28, 1.94, $F(1, 107) = 3.34$, $p = .035$. Whereas in the strong condition, this effect reversed, $M = 4.11, 5.27$, SD = 1.50, 1.55, $F(1, 107) = 3.31$, $p = .035$, with individuals in negative moods significantly raising their PIV ratings from the strong to weak condition, $F(1, 107) = 5.72$, $p = .009$.

We conducted a meditational analysis using the same procedure as described in Experiment 1 (see the numbers marked E2 in Fig. 1). Again we found support for Hypothesis 2. Mood and perceived performance interacted to predict PIV ratings in the predicted direction, $b = 0.45$, SE = 0.17, $t(107) = 2.58$, $p = .01$. PIV ratings predicted information seeking, $b = 0.22$, SE = 0.11, $t(106) =$

Table 2 The effect of mood and perceived performance on information-seeking behavior in Experiment 2

Mood	Perceived performance	
	Weak: Behind progress *M* (SD)	Strong: Ahead of progress *M* (SD)
Positive	4.15 (2.85)	2.15 (1.72)
Negative	3.20 (2.17)	3.15 (1.88)

1.94, $p = .05$, as did perceived performance, $b = 0.54$, SE = 0.20, $t(106) = 2.64$, $p = .01$. Moreover, the confidence interval for the indirect effect of the interaction through PIV on information seeking did not include zero for the two-tailed test, indirect effect = 0.10, SE = 0.06, 95 % CI [0.01, 0.27], indicating that PIV mediates the interactive effect of mood and perceived performance on information seeking. Finally, the total effect of the interaction on information seeking, $b = 0.49$, SE = 0.21, $t(107) = 2.36$, $p = .02$, was reduced to marginal significance when PIV was included, $b = 0.39$, SE = 0.21, $t(106) = 1.86$, $p = .07$.

Discussion

In both Experiments 1 and 2, mood and perceived performance interacted to alter PIV and shape information-seeking behavior. Supporting Hypothesis 1, when participants perceived their performance was weak, individuals in positive moods searched more than those in negative moods. When participants perceived their performance was strong, individuals in negative moods searched more than those in positive moods. Supporting Hypothesis 2, PIV mediated this effect. What is striking about Experiment 2 is that when performance was weak, individuals in negative moods failed to seek out information despite being told that they needed to learn more about the problem. Similarly, when they were ahead of progress, they sought out more information than those in happy moods despite knowing that they were ahead of the game. Thus, even with instructions influencing the normative need for information, mood still affected the perceived value of information and information-seeking behavior. This finding indicates that the feedback that respondents receive from their feelings about the value of the information can sometimes override external cues about the need for information.

One possible alternative interpretation, however, is that these effects may be due to experimental demand. Compared to negative moods, positive moods may make people more agreeable and hence more likely to adhere to the progress feedback. Indeed, when respondents were behind, individuals in positive moods increased their information-seeking efforts; and when they were ahead, they decreased their information-seeking efforts. If it were the case that positive moods increase adherence to the progress feedback, then individuals in positive moods should indicate that they relied on the progress feedback more than those in negative moods. This result did not appear for mood did not alter adherence to the progress feedback. Thus, demand does not seem to explain the results. However, to further address this issue, in Experiment 3 we used a different manipulation of perceived performance. Respondents now learned that they were doing (a) well, (b) poorly, or (c) given no information about their performance.

In addition to changing this manipulation, Experiment 3 investigated whether affective costs/benefits associated with seeking out information could have influenced information-seeking behavior. It might be that perceived performance altered affective costs/benefits as well as PIV. Specifically, when people perceive their performance as weak on a task, individuals in negative moods may seek out less information than those in positive moods because that information makes them feel bad and has less PIV. Whereas when they perceive their performance as strong, that information makes them feel good and has high PIV. To assess whether affective costs/benefits are tied to PIV and to make our findings more directly comparable to Gervey et al. (2005), we used their measures of affective costs/benefits.

We also improved how we measured PIV. In the previous experiments, PIV was assessed after respondents completed the problems, this was done so as to not interfere with the information seeking process by asking respondents to rate PIV. To assure that PIV truly mediates this effect, we now assess it during information-seeking behavior. In addition, our previous measure of PIV assessed the extent to which participants viewed the entire set of feedback as instrumental. Instrumental feedback is information that helps people improve or master the task. Even though the feedback that participants could access was largely instrumental feedback (e.g., key phrases, tips), some of it was performance-based feedback (e.g., problem difficulty). Performance-based feedback tells one how one is doing on the task rather than how to improve on the task. Now that participants rate the value of each type of feedback separately, it is possible distinguish preference for instrumental information from preference for performance-based information. Lastly, we added a neutral mood condition so that we can compare the positive and negative mood manipulations to a more neutral state.

Experiment 3

Method

Participants

Students participated for course credit (116 women, 113 men; age: $M = 19.31$). Five participants were dropped from analyses because they spent less than 15 s reading and responding to all the LSAT problems, one person was dropped for being an outlier (3.29 standard deviations above the mean on PIV) leaving 112 women and 111 men.

Experimental paradigm

We made the following modifications: (1) we added a neutral mood clip, a segment on vineyards in Napa Valley.

(2) Prior to actually working on the logic problems, respondents completed a difficult sample problem. The experimenter then discussed each type of information that respondents could seek out about the problem (e.g., key phrases, tips, explanations, difficulty, percentile score). This procedure served multiple purposes. First, it provided respondents with task experience. Second, for those in the no feedback condition, it conveyed to them that they were going to complete a difficult task for the experimenter stressed the problem difficulty information of the sample problem, which indicated that only 44 % of test-takers get the problem correct. Third, it explained the performance manipulation to the participants in the strong (i.e., success) or weak (i.e., failure) performance conditions. For participants in these conditions, after completing the sample problem, they saw percentile score feedback and learned that this percentile score indicated how well they were performing relative to other participants. They learned that they could get the problem wrong and have a high percentile score because most other participants also got the problem wrong or they could get the problem right and have a low percentile score because most other participants got the problem right but solved it faster. During the task, percentile scores ranged from 90 to 94 % in the success (strong) condition and 18–22 % in the failure (weak) condition. Respondents who received feedback could also relook at their percentile score information. Because this information was not given to respondents in the no feedback condition, it was not included in the calculations of the average amount of information sought by participants.

Respondents answered questions to assess PIV and affective costs/benefits associated with the information they could acquire halfway through the problem set. We now used Gervey et al.'s (2005) measure of perceived benefits as our measure of PIV. This measure required respondents to rate to what extent looking at explanations, tips, key phrases, problem difficulty, percentile scores, and the feedback in general provides an accurate assessment of (a) how to improve, (b) how to increase their understanding of how to improve, and (c) how to help them improve their skills, using a 1 ("Not at All") to 7 ("Very Much") scale. Because respondents provided ratings for each type of feedback, it was possible to examine the degree to which individuals placed greater value on instrumental information (i.e., explanations, key phrases, tips, or feedback in general) and less value on information that merely satisfies performance goals (i.e., problem difficulty and percentile scores). Thus, PIV was computed by subtracting the mean ratings for valuing performance information (problem difficulty and percentile scores, Cronbach's $\alpha = .83, .81$) from the mean ratings for valuing instrumental information (all other items, Cronbach's $\alpha = .79, .86$). To measure affective costs/benefits, respondents rated whether looking at explanations, tips, key phrases, problem difficulty, percentile scores, and the feedback in general makes them feel: better/worse, good/bad, satisfied/dissatisfied, confident/unconfident, and pleasant/unpleasant, using a 1 ("Not at All") to 7 ("Very Much") scale (Cronbach's $\alpha = .80, .84$). A repeated measures ANOVA on these ratings revealed no significant differences, indicating that respondents indeed rated the affective costs for each type of feedback equally: percentile feedback ($M = 4.33$, SD = 1.91), explanations ($M = 4.51$, SD = 1.21), tips ($M = 4.37$, SD = 1.11), problem difficulty ($M = 4.52$, SD = 1.37), and key phrases ($M = 4.34$, SD = 1.12), $F(4, 612) = 1.45$, $p = .23$.

To make up for the extra time it took to go through the sample problem, participants only solved six logic problems. They also completed the same pre (Cronbach's $\alpha = .75$) and post (Cronbach's $\alpha = .86$) mood measures as described previously.

Results

A series of 3 (Mood: Positive, Negative, Neutral) × 3 (Perceived Performance: Failure—Weak, Success—Strong, No Feedback—Weak) ANOVAs were conducted on the data unless otherwise noted.

Manipulation checks

Mood We conducted a 3 (Mood Manipulation) × 3 (Perceived Performance) × 2 (Pre vs. Post-task Mood) ANOVA, with pre/post-task mood as a standardized within-participants factor. Five respondents were missing post-task mood, thus we replaced these missing data with the cell means for each respondents' respective condition. The mood manipulation resulted in respondents feeling more negative after seeing the negative, than the positive and neutral, clips, $M = -0.42$ versus 0.25, 0.16, SE = 0.09, 0.09, 0.09, $ps < .001$, which did not differ, $p > .49$, mood manipulation main effect: $F(2, 214) = 15.57$, $p < .001$, $\eta_p^2 = .13$. Once again, these mood effects faded, appearing prior to, Negative = −0.80, Neutral = 0.33, Positive = 0.39, SD = 0.96, 0.72, 0.86, $F(2, 214) = 43.39$, $p < .001$, $\eta_p^2 = .29$, but not after completing the information-seeking task, Negative = −0.05, Neutral = −0.02, Positive = 0.10, SD = 1.06, 0.99, 0.94, $F(2, 214) = .58$, NS, Mood Manipulation × Pre/Post interaction, $F(2, 214) = 29.97$, $p < .001$, $\eta_p^2 = .22$.

In addition, perceived performance altered post-task, $F(2, 214) = 5.49$, $p = .005$, $\eta_p^2 = .05$, but not pre-task, $F < 1$, NS, mood ratings, perceived performance × pre/post interaction, $F(2, 214) = 5.83$, $p = .003$, $\eta_p^2 = .05$. Respondents who received failure feedback were less positive at the end of the task than those in the no or success feedback conditions, $M = -0.26$ versus 0.03, 0.26,

SD = 0.95, 1.06, 0.90, $F(1, 214) = 8.79$, $p = .003$, which did not differ significantly from each other, $F(1, 214) = 1.96$, $p = .16$.

Perceived performance The feedback successfully altered perceived performance, $F(1, 172) = 21.88$, $p < .001$, $\eta_p^2 = .20$. Respondents perceived their performance as stronger in the success condition, $M = 6.91$, SD = 1.97, than in the no feedback condition, $M = 5.37$, SD = 2.17, $F(1, 214) = 14.09$, $p < .001$, and respondents in no feedback conditions perceived that their performance was stronger than those in the failure condition, $M = 4.36$, SD = 2.28, $F(1, 214) = 6.55$, $p = .01$. As with Experiments 1 and 2, mood did not directly affect, or interact with the performance manipulation to influence, perceptions of performance, Fs < 1.36, ps ≥ .26.

Performance on the problems As in the previous experiments, neither mood nor perceived performance interacted to influence people's ability to solve the problems (number correct and time spent solving, ps > .22).

Information seeking

As predicted, perceived performance and mood interacted to alter information seeking, $F(4, 214) = 3.87$, $p = .005$, $\eta_p^2 = .07$ (see Table 3). Supporting Hypothesis 1a, when individuals learned that they were failing, individuals sought out more information in positive, than in negative, moods, $F(1, 214) = 4.24$, $p = .04$, $\eta_p^2 = .02$ with neutral moods failing in-between, ps > .24. Consistent with the hypothesis that weak perceived performance, rather than the feedback itself, underlies the effect, in the no feedback condition individuals once again sought out more information in positive, than in negative, moods, $F(1, 214) = 4.06$, $p = .05$, $\eta_p^2 = .02$, with neutral moods failing in-between, ps > .23. Supporting Hypothesis 1b, when individuals perceived their performance as strong, participants in negative moods now sought out more information than those in positive, $F(1, 214) = 4.78$, $p = .03$, $\eta_p^2 = .02$, or neutral moods, $F(1, 214) = 9.10$, $p = .003$, $\eta_p^2 = .04$ (positive and neutral did not differ, $p > .33$). This effect was due to individuals in positive $F(1, 214) = 8.67$, $p = .004$, $\eta_p^2 = .04$, and neutral, $F(1, 214) = 8.47$, $p = .004$, $\eta_p^2 = .04$, moods significantly decreasing their information-seeking activities relative to those in the failure and no feedback conditions, and those in negative moods increasing their information seeking relative to those in the failure and no feedback conditions, $F(1, 214) = 3.99$, $p = .05$, $\eta_p^2 = .02$.

Unlike the other two experiments, perceived feedback influenced the amount time looking at each item, $F(2, 214) = 6.74$, $p = .001$, $\eta_p^2 = .06$. As found in the previous experiments, the success and failure manipulations did not differentially influence the amount of time spent looking at any one item, $p > .23$. The effect was due to respondents in the no feedback condition spending more time looking at each item on average than did those in the success and failure conditions, $M = 8.08, 6.03, 6.69$, SD = 3.10, 3.75, 3.24, $F(1, 214) = 13.04$, $p < .001$, $F(1, 214) = 6.06$, $p = .02$. The result may have occurred because respondents in the no feedback condition had no idea how they were doing and thus needed the extra time to evaluate their performance.

PIV and affective costs/benefits as mediators

First, we conducted a 3 (Mood) × 2 (Perceived Performance) ANOVA on PIV and affective costs. Because the no feedback condition did not rate some of the measures relevant to these assessments (e.g., percentile correct), participants in this condition could not be included in these analyses. The data revealed that participants thought that the information had higher PIV and lower affective costs in the success than in the failure conditions, PIV: $M = 13.02$, 11.38, SD = 3.46, 4.18, $F(1,148) = 7.10$, $p = .009$, $\eta_p^2 = .05$; Affective costs (note higher numbers indicate less costs): $M = 5.11$, 3.78, SD = 0.75, 1.03, $F(1,148) = 81.96$, $p < .001$, $\eta_p^2 = .36$. Mood and perceived performance tended to interact to alter PIV, $F(2, 148) = 2.52$, $p = .08$, $\eta_p^2 = .03$, but not affective costs, $p = .53$. Replicating the previous experiments, when perceived performance was weak, respondents in negative moods perceived the information as being significantly less valuable than those in the positive and neutral conditions, $M = 9.80$, 11.73, 12.60, SD = 5.23, 3.45, 3.54, $F(1, 148) = 3.40$, $p = .07$, $F(1, 214) = 6.55$, $p = .01$. When the respondents in negative moods were in the strong perceived performance condition, their PIV increased, $M = 13.44$, SD = 3.72, $p = .002$, however, within the strong condition, this number did not differ from respondents in the happy or neutral conditions, $M = 12.30$, 13.31, SD = 3.27, 3.47, ps > .45.

We conducted the same mediational analysis as described in Experiments 1 and 2, but now added affective costs/benefits ratings as a mediator alongside PIV (see Fig. 2). Because we were interested in differences between positive and negative mood conditions, and success/failure feedback, we used only those cells in the analysis. The data support Hypothesis 2. First, mood and perceived performance interacted to predict PIV in the predicted direction, $b = 0.77$, SE = 0.39, $t(100) = 1.98$, $p = .05$, but not affective costs/benefits, $p > .27$. As in the ANOVA data, there was a main effect of progress condition on PIV, $b = -1.05$, SE = 0.39, $t(100) = -2.72$, $p = .008$, and affective costs, $b = -0.68$, SE = 0.09, $t(100) = -7.30$,

Table 3 The effect of mood and perceived performance on information-seeking behavior in Experiment 3

Mood	Perceived performance		
	Weak: Failure *M* (SD)	Strong: Success *M* (SD)	Weak: No feedback *M* (SD)
Positive	4.00 (0.95)	3.22 (1.50)	4.01 (0.86)
Neutral	3.76 (1.27)	2.92 (1.54)	3.75 (0.76)
Negative	3.34 (1.25)	3.94 (0.74)	3.34 (1.07)

$p = .001$. In turn, PIV, $b = 0.06$, SE = 0.03, $t(98) = 1.96$, $p = .05$, but not affective costs/benefits, $b = 0.09$, SE = 0.13, $t(98) = .72$, NS, predicted information seeking. Moreover, the confidence interval (indirect effect = 0.05, SE = 0.04, 95 % CI [0.00, 0.15]) indicated that PIV tended to mediate the effect. Finally, the total effect of the interaction on information seeking, $b = 0.34$, SE = 0.12, $t(100) = 2.99$, $p = .004$, was reduced when PIV was included, $b = 0.29$, SE = 0.13, $t(98) = 2.50$, $p = .01$.

Meta-analysis

In all experiments, the interaction between mood and perceived performance was statistically significant ($p < .05$). To determine the overall magnitude of mood within strong and weak perceived performance conditions, we conducted a meta-analysis using DSTAT which revealed medium effect sizes for both of the predicted effects (i.e., Hypotheses 1a and 1b). When perceived performance was weak, individuals in positive moods sought out significantly more information than those in negative moods (mean weighted $d = 0.49$, 95 % CI [0.16, 0.81], $z = 2.90$, $p = .003$, homogenous sample: $Q = .28$, NS).

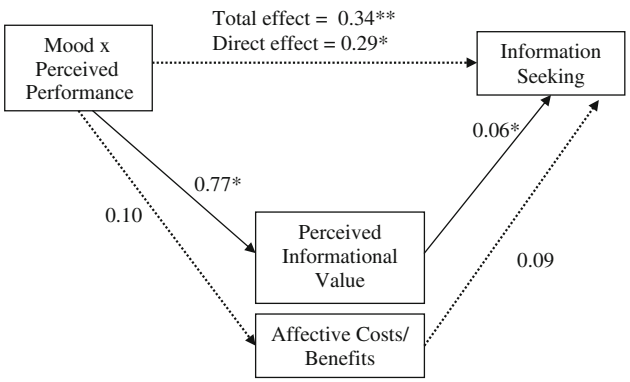

Fig. 2 Examining whether PIV and Affective Costs/Benefits mediate the Mood × Perceived Performance interaction on Information Seeking in Experiment 3. The main effects of Mood and Perceived Performance are part of the analyses, but are not depicted to simplify the presentation. *$p < .05$; **$p < .01$

Whereas when perceived performance was strong, individuals in negative moods sought out significantly more information than those in positive moods (mean weighted $d = -0.62$, 95 % CI [−0.95, −0.27], $z = -3.50$, $p < .001$, $Q = .11$, NS).

General discussion

Research on how mood alters information seeking reveals a rather mixed picture, with both positive and negative moods promoting information-seeking behavior by altering the perceived instrumental value of information. Building upon the mood-as-a-resource hypothesis and the MBM, we hypothesized and found evidence that these mixed findings may be due to performance perceptions moderating the mood effects on perceived informational value, which in turn alters information seeking. Specifically, when individuals perceived their performance as weak (i.e., getting problems wrong, being behind progress, receiving failure feedback), positive moods signaled that more information would be valuable and promoted information-seeking behavior more than negative moods. However, when individuals perceived their performance was strong, these effects reversed due to negative moods signaling that more information would be of value than positive moods.

In line with Isen, Fredrickson, Aspinwall, Trope, and their colleagues' view that positive moods operate as a resource encouraging the quest for helpful information, we interpret our results to mean that positive moods may promote information-seeking efforts to resolve actual problems due to weak performance. These experiments also extend this work in that it was previously unclear why respondents in positive moods may have failed to seek out information when it was not useful. These effects could have been due to respondents not valuing the information or merely placing greater value on information that makes them feel better. Our data suggest that positive moods do effect the value of this information, for costs and benefits were not a factor in this study. Keep in mind, that we view affective costs as important influences on information seeking. The purpose of these data was to examine whether mood can alter PIV, regardless of costs. In sum, positive moods appear to be adaptive, in that they not only promoted information-seeking efforts when performance was weak, but curtailed it when performance was strong (see Aspinwall 1998 for a similar point concerning optimism). Of course, not seeking out information when one is doing well has a potential downside in that individuals may miss critical information that could bolster their performance.

The findings regarding negative moods are consistent with the idea that negative affect may promote information seeking about non-apparent, but potential, problems. That

is, negative moods may function like an early warning alarm, promoting effort to prevent problems from occurring in the first place. Recall that when respondents perceived their performance as strong, negative moods signaled that more information would be valuable, and promoted information seeking in an effort to resolve the problem. At first glance, seeking out extra information in this type of situation may seem like a wasted effort because no problem actually exists. However, given that negative moods typically arise for a reason, this system may be adaptive because it encourages people to work hard before the problem fully manifests itself, resulting in people avoiding the problem altogether. This system becomes less functional when performance clearly is problematic or weak as negative moods may now signal that the problem is too great and that more information would not be valuable, and thus decreasing information-seeking efforts. This point is an important one, for it suggests that negative moods may sometimes inhibit information seeking not because individuals are fearful of finding hurtful and affectively costly information, but because individuals actually question the value of the information in light of their performance. Thus, this work moves beyond the mood-as-a resource hypothesis by delineating when negative moods would both promote and inhibit information-seeking efforts.

The results in these experiments align nicely with Gendolla and colleague's (2001, 2002a, b) work on the MBM and may have some ramifications for this research. In this work, effort mobilization is measured as cardiovascular responses, not as task performance. Some effort mobilization experiments, however, have measured both cardiovascular responses and task performance. These studies revealed that systolic blood pressure correlates with performance, but the manipulations of mood and difficulty that altered blood pressure did not interact to influence performance (Gendolla et al. 2001; Gendolla and Krüsken 2002a, b). This finding is interesting for one might expect that the interaction between mood and difficulty would also appear on performance. This discrepancy might have happened because these experiments used performance measures that may not necessarily be sensitive to increased effort, specifically memory, accuracy, and speed. That is, putting forth more effort may not necessarily result in one remembering more, being more accurate, or becoming faster. Our work suggests that researchers might find this performance effect if they used a measure in which more effort would be more likely to manifest itself in changes in performance, such as information-seeking behavior.

Research on mood and effort mobilization also could potentially inform research on mood and information-seeking behavior. For example, research on effort mobilization reveals that performance contingencies, such as incentives, can alter these effects (Gendolla and Krüsken 2002b). If true, then providing individuals with incentives may be one way to increase information-seeking efforts. This work also indicates that there should be a point in which goal attainment is so unlikely, because the task is too difficult, that regardless of mood, all individuals should fail to seek out information about the problems.

Finally, there are a few issues that should be noted. First, even though the critical comparisons to test the predictions concerned positive versus negative moods, the neutral mood manipulation in Experiment 3 operated akin to the positive mood manipulation. This effect may have occurred because the mood manipulation did not create significant positive versus neutral mood difference, perhaps due to the fact that most people are happy (Diener and Diener 1996), thus resulting in relatively high levels of reported positive mood in the neutral mood condition. Second, performance feedback often manipulates people's mood, and some might argue that these mood changes drive the effects. We believe that it is initial mood, rather than changes in mood, that drive this effect, in part because the mood measures taken after respondents' completed the problems revealed that the perceptions of performance never significantly interacted with mood to alter post-task feelings. Finally, in these experiments, information-seeking behaviors did not influence actual performance, perhaps because respondents completed too few problems for their information-seeking efforts to influence performance. This fact added control to the experiment, but it also made it impossible for us to explore the interactive effects of information seeking on knowledge and subsequent information acquisition. For instance, positive mood enhances people's ability to integrate and focus on information (Bramesfeld and Gasper 2008; Isen 1999), which could reduce subsequent information-seeking efforts.

In sum, this project sought to integrate disparate findings in the literature concerning the role that positive and negative moods play in information-seeking behavior. We argue that both positive and negative mood states encourage and discourage information-seeking behaviors, depending on perceived performance. When perceived performance is strong, negative moods signal that more information would be valuable and promote information-seeking behavior, whereas positive moods signal that it would not be valuable and discourage information-seeking behaviors. When perceived performance is weak, negative moods signal that more information would not be of value and decrease information-seeking behavior. In contrast, positive moods now indicate that more information would be valuable and promote information-seeking behavior Furthermore, the data reveal that these effects were due to PIV and could not be explained by differences in response to potential affective costs or benefits. Overall, these

findings indicate that both positive and negative moods may be adaptive, with positive moods perhaps helping individuals acquire information to resolve existing problems; and negative moods helping individuals acquire information to solve non-apparent, problems.

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