The Influence of Affect on Health Decisions

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Recommendations for health decision-making

Instead of a focus on providing complete and accurate information, the emphasis in supporting decision-making needs to shift to providing usable, meaningful, and accurate information that will support better choices. This shift brings with it a new level of responsibility for health practitioners and communicators who will need to know how to present information to patients in ways that ethically support good decision-making. It also requires a delicate balance between informing patients (about information and its meaning) and telling them what to do (this option is excellent whereas that one is only fair). The provision of more subjective interpretations may be difficult and health professionals who prefer to provide only “objective facts” may resist this change. Nonetheless, patients need more than mere exposure to information; they also need to be able to understand and use that information. Providing information in formats that allow them to draw affective meaning from the information may help patients understand and use important information more in health and health-related decisions.

Applications: Using Affect to Facilitate Better Health Decisions

Understanding how affect influences judgment and choice is important because it is often a better predictor than thoughts. In addition, affect manipulations can facilitate judgment and choice. By making the affective meaning of important information easier to access, complex information can be processed more effectively, allowing for comparison between different options and influencing choices. Affect, of course, also can hinder decision-making. When emotions are high, health care providers should ensure that patients have time to stop and think; otherwise, perceptions of the disease and treatment options may be biased when dealing with the immediate emotion of a new diagnosis. Understanding how to maximize the beneficial effects of affect while minimizing any harms will assist patients in making better, more reasoned choices about their health.
The Influence of Affect on Health Decisions

When deciding whether or not to vaccinate, what cancer treatment to choose, or whether to exercise and eat well, it is often assumed that people “make” choices; they deliberately evaluate information about treatments and screening options, represent the information appropriately, carefully weigh risks and benefits, and then choose the “best” option that is concordant with their individual values. Increasingly though, evidence suggests that preferences are often constructed instead. They are developed “on-the-spot” and influenced by cues in the situation (Lichtenstein and Slovic 2006).

This construction appears to be driven by two different modes of thinking—an affective, experiential mode and a deliberative one (Epstein 1994; Kahneman 2003). Processing in the deliberative mode is conscious, analytical, reason-based, verbal, and relatively slow. It is the deliberative mode that policy makers tend to consider in attempts to inform choices (e.g., provide more information for better choices). Decision makers, however, often want to reduce the amount of effort exerted. As a result, a decision maker choosing among six diets might identify the most important attribute (e.g., quickest way to drop the pounds) and choose the diet that maximizes it, ignoring all other attributes.

More recent research, however, has developed and tested theories of judgment and decision-making that incorporate the affect of the experiential system as a key component in the process of constructing values and preferences. One of the primary functions of affect is to highlight information important enough to warrant further consideration. Within these theories, integral affect (positive and negative feelings about a stimulus) and incidental affect (positive and negative feelings such as mood states that are independent of a stimulus but can be misattributed to it) are used to predict and explain a wide variety of judgments and decisions (Slovic et al. 2002; Schwarz and Clore 2003). In this chapter, we review these theories and their evidence base and suggest future avenues for research concerning the role of affect in health decision-making.

Health-related decisions require an accurate understanding of provided information so that decision makers can choose options that meet their health care needs. This understanding is generally thought to emerge from the deliberative mode (e.g., understanding what a number is). Affect provides a different kind of understanding. As shown in a number of studies, affect provides meaning and motivation to choice processes (Damasio 1994), and it is critical to facilitating informed choice (affect is a part of the gist understanding of Fuzzy Trace Theory; Reyna 2008). Thus, affect is intrinsic to the process of communicating health information and facilitating patient choices. It can be used to persuade (e.g., fear appeals) but can also hinder a person’s ability to make the best decision (e.g., by exacerbating perceived risk or overwhelming the patient). In this chapter, we focus on the multiple roles of affect in medical decisions and outline four key functions that affect plays in health judgments and decisions.

Four Functions of Affect in Constructing Judgments and Decisions

Mild incidental affect and integral affect are ubiquitous in everyday life. Imagine finding a dollar lying on the sidewalk (a mild positive mood state is induced) or considering whether you will have a bowl of oatmeal or a chocolate croissant for breakfast (mild negative and positive integral affective feelings are experienced). These feelings can influence the processing of information and, thus, what is judged or decided. For example, a 35-year-old woman who is being counseled about amniocentesis may evaluate its risks differently depending on whether she just learned that her best friend was in a car accident or that her husband won a long-earned promotion at work. The absolute risk of the procedure is the same, but its risks and benefits will be perceived in light of the emotions she is experiencing. In particular, she is likely to perceive less risk and more benefit when
related about her husband’s success and the opposite when she is fearful about her friend’s prognosis. As reviewed below, research in this area has begun to delineate some of the various ways that affect alters how we process information, form judgments, and make decisions.

When studying the influence of affect in decision-making, researchers have focused on two key approaches. The first examines the effects of valenced affect (good or bad feelings) such as in the Affect-Heuristic (Finucane et al. 2000; Slovic et al. 2002) and Risk-As-Feelings (Loewenstein et al. 2001) hypotheses. In both, affect is used intuitively to inform judgments based on an experienced feeling of goodness or badness towards information or an option. The second approach examines the effect of discrete emotions (e.g., anger versus fear) based on cognitive appraisals and motivations underlying a specific emotion. This research demonstrates that two discrete emotions with the same valence can have very different effects on judgments such as risk perceptions (Lerner and Keltner 2001). It suggests that emotional appraisals other than valence (e.g., certainty) can also exert influence on judgment and decision processes. In this chapter, we focus primarily on the influence of valenced affect because emotions are often mixed (Peters et al. 2004) and occur naturally only for brief periods of time. Health decisions, in particular, often involve complex mixtures of emotion over time.

We argue that affect plays four separable roles in health decisions. We describe them briefly here and then expand on each role below. First, affect can act as information. Most recent research in affect has considered this informational value. That is, at the moment of judgment or choice, decision makers consult their feelings about a target or option and ask “how do I feel about this?” (Schwarz and Clore 2003; Slovic et al. 2002). These feelings then act as information in a heuristic process to guide the formation of judgments and decisions. Second, affect can act as a spotlight focusing us on different information—numerical cues, for example—depending on the extent of our affect. Third, it can motivate us to take action or do extra work. Finally, affect, when present, acts as a common currency allowing us to compare and integrate very different attributes more effectively than when it is absent.

### Affect as Information

One of the most comprehensive theoretical accounts of the role of affect and emotion in decision-making was presented by the neurologist, Antonio Damasio (1994). In seeking to determine “what in the brain allows humans to behave rationally,” Damasio argued that a lifetime of learning leads decision options and attributes to become “marked” by positive and negative feelings linked directly or indirectly to somatic (bodily) states. When a negative somatic marker is linked to an outcome, it acts as information by sounding an alarm warning us away from that choice. When a positive marker is associated with the outcome, it becomes a beacon of incentive drawing us towards that option. Affect developed through experience thus provides information about what to choose and avoid. Damasio claims that we make better quality, more efficient decisions by consulting and being guided by these feelings. Without these feelings, information in a decision lacks meaning, does not get used, and the resulting choice suffers.

The Affect Heuristic is based, in part, on this earlier research. Affective reactions occur faster than cognitive appraisals (Zajonc 1980) and appear to be used in addition to or instead of cognitive thoughts to influence judgments. For example, positive affect about an option (such as a medication or an exercise routine) appears to lead to perceptions of more benefits and less risk; the opposite is true for negative affect (i.e., reduced perceptions of benefits and increased risk perceptions; Finucane et al. 2000; Slovic et al. 2007). Affect appears to act as information in the construction of risk perceptions (Loewenstein et al. 2001; Peters and Slovic 1996). For example, Johnson and Tversky (1983) induced negative affect in participants and found that it led to a generalized increase in perceived risk across many adverse events, rather than simply increasing risk perceptions for cognitively similar
events. These findings are important because they illustrate affect’s causal impact on risk perceptions. Peters et al. (2006) also linked affect to the adjustment process in fatality estimates. Specifically, they found that decision makers asked to estimate the number of annual US fatalities from various causes of death anchored on a provided number (the actual number of deaths from a different disease) and then appeared to adjust away from the anchor based on the extent of their worry about the disease under consideration. Thus, affect is a possible mechanism underlying the adjustment process.

Much of the research on the use of affect as information has focused on the valence of affect (good or bad) as opposed to discrete emotions. Although the positive or negative valence of emotion does act as information, two discrete emotions that are similarly valenced (e.g., anger and fear) also can influence risk perceptions differently (Lerner and Keltner 2001). For example, DeSteno et al. (2000) induced either a sad or angry mood in participants and found that, when participants were induced to anger, they later rated events that caused angry reactions as more likely than sad events. Conversely, participants induced to sadness rated sad events as more likely than angering events. These differences between same-valence emotions are presumably due to other appraisals (e.g., certainty) or behavioral predispositions that are inherent components of the emotion (by this latter explanation, these results could perhaps be more fruitfully categorized under the function of affect as a direct motivator of behavior).

Decision makers appear to consult their affective feelings and use them as information in judgment and decision processes. Affect as information thus acts as a substitute for the assessment of more normatively-relevant information such as probabilities and outcomes (Kahneman 2003). Without affect, information appears to lack meaning and to be weighed less in judgment and choice processes. As a result, affect tends to be beneficial although it sometimes causes detrimental effects. For example, women tend to greatly overestimate their risk of breast cancer. When they learn the correct risk numbers, the relief experienced in comparison with their overestimation can lead to decreased risk perceptions (Fagerlin et al. 2005). Thus, counseling for breast cancer screening may sometimes result in lower risk perceptions, which in turn lead to reduced mammography rates.

Frequently, when making health decisions, people face unfamiliar situations that require the evaluation of many pieces of new information. Peters et al. (2009) were interested in the processes by which decision makers bring meaning to dry, cold facts and whether affect may be used to facilitate the valuation of different options and new information. In particular, they attempted to influence the interpretation of health-plan attributes by providing numeric information along with affective cues that could be used to evaluate the overall goodness or badness of a health plan. In two separate studies, older-adult and younger-adult participants were presented with attribute information (quality of care and member satisfaction) about two health plans. The information was presented in bar chart format with the actual score displayed to the right of the bar chart (see Fig. 8.1). The information for half of the subjects in each group was supplemented by the addition of evaluative categories (i.e., the category lines plus affective labels that placed the health plans into categories of poor, fair, good, or excellent). The attribute information was designed such that Plan A was good on both attributes while Plan B was good on quality of care but fair on member satisfaction. The specific scores for quality of care and member satisfaction were counterbalanced across subjects such that, for half of the subjects, the average quality of care scores were higher; for the other half, average member satisfaction scores were higher. They predicted and found that evaluative categories influenced choices. Specifically, individuals (older and younger) preferred health plan A more, often when the categories were present (plan A was in the better affective category when the categories were present). Further tests of the manipulation supported its affective basis. These findings suggest that information about treatment and other options can be communicated in ways that convey affective meaning to facilitate information use.
Affect as Common Currency

Considerably less work has been done on the other three proposed functions of affect in the construction of preferences. Several theorists have suggested that affect plays a role as a common currency, allowing decision makers to compare apples to oranges (Cabanac 1992; Peters 2006). This role may be due to affect being simpler in some ways than thoughts. It comes in simple “flavors,” (e.g., positive and negative) whereas thoughts include more and more complex, cost-benefit and other tradeoffs. By translating more complex thoughts into simpler affective evaluations, decision makers can compare and integrate good and bad feelings rather than attempting to make sense out of a multitude of conflicting logical reasons.

In the health-plan choice studies of Peters et al. (2009), evaluative categories were hypothesized to act as overt markers of affective meaning in choices. If true, then these overt markers should help participants to consider relevant information (that is not considered when evaluative categories are not present) such that they can apply that information to a complex judgment. Thus, evaluative categories should influence not just the choice of a health plan, as shown in previous studies, but it should help decision makers to take into account more information and be more sensitive to variation in information. Peters et al. (2009) conducted a test of this hypothesis. Participants were asked to judge the attractiveness of a hospital. They received information about three quality attributes presented with one of three numerical scores (e.g., hospital A scored 78 out of 100 points when patients rated its quality of care). The hospitals evaluated thus represented a $3 \times 3 \times 3$ design of low, medium, and high scores on each of the three attributes; 27 versions were constructed.

They found that judgments of less numerate adults (those who scored lower on a test of probabilistic understanding) were influenced more than the highly numerate by the presence versus absence of evaluative categories. In particular, less numerate adults did not significantly use any provided numeric information when evaluative categories were not provided; they relied instead on current mood states, whether good or bad, to judge the quality of a hospital.
When evaluative categories were present, however, they used the provided information instead and judged a hospital as more attractive when told that it provided greater quality of care based on numeric indicators compared to worse quality of care. In other words, with evaluative categories, the less numerate became sensitive to the different levels of numeric information. More numerate adults were more successful in their information use even in the absence of evaluative categories, but providing information in a more affective format also helped more and less numerate judges to integrate more information into their judgments.

In situations where patients are faced with the stress of a new diagnosis and must evaluate a large quantity of unfamiliar information in a short period of time, it is possible that the situation causes enough cognitive overload that all patients “act like” less numerate adults. As a result, the use of evaluative categories may allow them to evaluate options more accurately and take into consideration more information when choosing between different treatment options. Future research should examine the benefits and any unintended drawbacks of such an approach in settings where stress and time pressure can be experimentally varied and then (if the approach looks promising) in patient populations.

The power of affect thus can be harnessed and used as an intervention to improve decisions and the decision-making process. The use of methods such as evaluative categories does call, however, for a different emphasis in health and other communications. Instead of a focus on providing complete and accurate information, the emphasis shifts to providing usable, meaningful, and accurate information that will support better choices. It brings with it a new level of responsibility for health practitioners and communicators who would need to know how patients currently respond to information, and would need to bring their expertise to bear not only on what information to provide, but also on how to present that information in ways that ethically support good decision-making. It also requires a delicate balance between informing patients (about information and its meaning) and being paternalistic (this option is excellent whereas that one is only fair). The provision of more subjective interpretations may be difficult and be resisted by health professionals who prefer to provide only “objective facts,” but it is important to help patients understand and use provided information rather than simply exposing patients to data. Providing information in a more affective format may help patients understand and use important information more when making their choices.

**Affect as a Spotlight**

In a third function for affect, Peters et al. (2003) proposed that affect plays a role as a lens or spotlight in a two-stage process. First, the quality of affective feelings (e.g., weak versus strong or positive versus negative) focuses the decision maker on different information. Then, that information (rather than the feelings themselves) is used to guide the judgment or decision. Although the impact of incidental feelings has been shown to function as a spotlight in memory and judgment (e.g., mood-congruent biases on memory; Bower 1981), little research has examined how feelings about a target might alter what information becomes salient.

In one relevant example, strong affect associated with outcomes seems to desensitize people to numeric information such as the probability or magnitude of an outcome. Hsee and Rottenstreich (2004), for example, demonstrated that strong affect desensitized people to the magnitude or scope of a stimulus in judgments of its subjective value. In their studies, participants, faced with affect-rich objects (e.g., a picture of a cute animal in need of help), seemed to base their valuation on the presence or absence of at least one object while being relatively insensitive to greater numbers of the object (e.g., whether one or four pictured cute animals were in need). In contrast, when the object was affect-poor (the same animal depicted with a number of dots), value was closer to a linear function, and decision makers were willing to pay more for larger numbers of the object. Watson et al. (1999) showed what may be
a similar effect with genetic counseling in women with a family history of breast cancer. In particular, women who were quite worried demonstrated probability neglect; less worried women were more sensitive to probability levels. As a result, when patients are highly emotional about a disease or treatment, it may be particularly difficult to accurately convey important information such as the objective risk of a disease.

More recently, Peters et al. (2012) found that decision makers neglected time in affect-rich and not affect-poor settings. These findings may be important in health decisions involving time such as the decision to vaccinate against hepatitis when traveling to Mexico for either a week’s vacation or a 6 months stay for business. Travelers should be more inclined to vaccinate for the longer stay, but if the prospect is affect-rich (the pleasure of vacation or discomfort of disease), they may ignore time and choose to vaccinate for the shorter trip as well. A potentially more troublesome effect is that, for the longer trip, they may be more likely to vaccinate if it is affect-poor (and they are sensitive to time) than affect-rich (and they weigh only affect but future affect is less salient than immediate). Many negative health behaviors (tobacco use, high caloric consumption, sedentary lifestyles) do not pose an immediate threat to health, but their effects accumulate over time. As such, it is difficult to motivate patients to make behavioral changes to avoid a consequence that may not come for years. Future research concerning the interaction of affect and time could explore the repeated decisions necessary to improve and maintain good health.

In another example relevant to health decisions, Alhakami and Slovic (1994) demonstrated that the negative correlation between perceptions of risk and benefit is mediated by affect. In other words, decision makers with positive affect towards a treatment tend to perceive it as high in benefit and low in risk; the reverse happens if decision makers have a negative affect about it. Although this effect has been interpreted in terms of the role of affect as information, it may be related to affect’s role as a spotlight. The affect-as-spotlight hypothesis predicts that decision makers who have positive feelings about a treatment will spend more time looking at its benefits and will remember them better while they spend less time looking at its risks and will remember them less well. It predicts the reverse for treatments that they do not like.

In a recent study, Ferrer et al. (2012) tested the influence of an “affective booster” on framing effects. Participants were provided information about colon cancer screening in either a gain frame (e.g., testing can find precancerous polyps before they become cancerous), or a loss frame (e.g., without screening, precancerous polyps will not be found before they turn to cancer). Because losses loom larger than gains, the loss frame resulted in greater intentions to screen for cancer. However, when participants were asked to vividly imagine that they received (or did not receive) the screening and how they would feel to find out that they did not have colon cancer (or developed cancer if they did not receive the screening), participants in the gain condition who received this vivid affective booster showed a marked increase in their intentions to screen (the affective booster had no effect on participants in the loss condition, perhaps due to ceiling effects or defensive response). They also measured self-efficacy and found that the affective booster was effective in increasing self-efficacy only in the gain condition. The affective booster in the gain frame appeared to act as a spotlight highlighting the participant’s ability to avoid colon cancer, thus resulting in greater intentions to screen.

Affect as a Motivator of Behavior

In a fourth role for affect, it functions as a motivator of behavior. Classical theories of emotion include, as the core of an emotion, a readiness to act and the prompting of plans (Frijda 1986). Although affect is a much milder experience compared to a full-blown emotion state, recent research has demonstrated that we tend to automatically classify stimuli around us as good or bad and that this tendency is linked to behavioral tendencies (Chen and Bargh 1999). In
multiple studies, for example, research has demonstrated that negative affect is a better predictor of health behaviors such as getting vaccinated or screened than more cognitive predictors such as perceived vulnerability or risk (Chapman and Coups 2006; Diefenbach et al. 1999; McCaul et al. 1996). Negative affect may also motivate improved daily health choices such as the decision to eat more fruit to reduce cancer risk (Ferrer et al. 2013).

Although one-time decisions about health care treatments or options are critical to the well-being of patients, these daily health-related decisions are likely to have a broader and more significant impact. Historically, the majority of deaths were caused by communicable diseases and accidental injury, but, in the past century, behavior-related disease has become a major cause of mortality. Mortality rates are generally presented by the disease that caused the death (e.g., cancer, stroke), but in actuality, health behaviors like tobacco use and excessive caloric intake/lack of physical exercise are the true cause of death (Mokdad et al. 2004) as they lead to the specific disease that causes death. Affect also plays a role in these decisions. Kwan and Bryan (2010), for example, measured integral affect towards exercising and found that increased positive affect and decreased negative affect, experienced during exercise, were associated with greater motivation to exercise three months later. Thus, affect plays an important role, not just in one-time decisions (e.g., choosing a treatment), but in the repeated decisions necessary to maintain many healthy behaviors.

Affect also appears to be linked with the extent of deliberative effort decision makers are willing to put forth to make the best decision (Peters et al. 2003). For example, people who experience strong affect regarding a health decision may work harder to find and process information about treatments and other options and may take on more positive health behaviors (e.g., Hovick et al. 2011).

Decision makers’ motivation to maintain or attain positive moods also might lead those in a positive mood to make better decisions among treatment, screening, and other options. Research has already begun to examine whether mild positive mood interventions may lead to improved health behaviors (Ogedegbe et al. 2012). Alternatively, patients may delay a decision if they do not believe the outcome will sufficiently maintain or improve their mood. Expectations of what an outcome will do to one’s mood therefore may influence decisions in unexpected ways. For example, when considering genetic testing, a patient may perceive screening for breast cancer as helping her to avoid cancer risk (and protect her mood), thus leading to increased screening rates. However, in cases where patients dread the disease or treatment, that negative affect may create an expectation of a negative mood state and the patient may decide not to be screened in order to avoid the knowledge and dread of increased risk. For example, a patient with a family history of early colon cancer may have such negative feelings about treatments (e.g., need for colostomy) that they may choose not to be screened in order to avoid the negative emotions that accompany knowledge of increased disease risk (Croyle and Lerman 1999). Future research could consider communication or other interventions that take advantage of the human tendency to want to be in positive mood states and avoid negative mood states.

Factors that Influence the Balance Between Affect and Deliberation

Many factors are involved in determining what sources of affective and non-affective information are used in making a decision and how they are used (e.g., affect as information vs. as a spotlight). Decision importance is one obvious factor in health decisions where outcomes can mean life or death. It is likely that, for simple, unimportant decisions, we rely more heavily on affect rather than deliberating at length (Kahneman 2003; Slovic et al. 2002). High-impact decisions, on the other hand, are likely to be deliberated more thoroughly, with the best decisions involving an interaction of affect and deliberation (Damasio 1994). Prior experience
may increase reliance on affect as decision makers rely on memories of past feelings rather than on memories of the situational details.

Factors that influence the ease (or difficulty) of processing such as familiarity, cognitive load, time pressure, or decision complexity can also influence the reliance on affect over deliberation. For example, Shiv and Fedorikhin (1999) found that, when asked to remember a long string of numbers at the same time (a high-cognitive load), people were more likely to choose chocolate cake (the affect-rich option), whereas people in a low-load situation tended to choose fruit salad. In another study, Finucane et al. (2000) found that placing participants under time pressure increased the inverse relationship between risks and benefits. With little time for deliberation, participants were thought to rely more on affect to infer benefits and risks, thus causing perceptions of them to align even more negatively. Considering how common increased cognitive load and time pressure are in our daily lives, the potential impact on decision-making is far reaching. In medical decisions about treatment options, it may be possible to assist the decision maker by reducing cognitive load and time pressure and allowing patients more time in a comfortable setting with new and unfamiliar information (Peters et al. 2013).

**Future Research Directions in Affect**

Throughout this chapter, we have presented possible future research directions when they were relevant to a particular function of affect. Overall, however, further research is needed to understand the process mechanisms that underlie the influence of affect and emotions in health decisions. Affect, for example, does appear to play a role in what information becomes salient in a decision or disappears outside of the spotlight. This role has barely been described at this point, and additional studies are needed to understand the characteristics of the affective reaction (and in interaction with the situation) that causes affect to function in this way. Through a more clear descriptive understanding of the process, researchers may also be able to identify ways in which affect can be used prescriptively to cause more important health information to loom in affect’s spotlight while less important information fades into the background.

Important research is also needed to understand the impact of mixed discrete emotions (e.g., he is angry about and fearful of her cancer) on the emerging mixed appraisals and decisions. What little research exists suggests that, with mixed emotions, appraisals that differ in direction across the mixed emotions (e.g., appraisals of certainty are greater with anger and lower with fear) cancel one another out. The mixed appraisals drop out in terms of their predictive value in the mixed emotions that guide risk perceptions and other judgments. The valence appraisal, however, appears to increase in predictive power relative to other appraisals (Peters et al. 2003).

Affect is often discussed as being comprised of two dimensions—valence (good or bad) and arousal (intensity). Little is known, however, about the differential effects of valence and arousal in health decision-making. The well-known negativity effect—negative losses and emotions have a bigger impact on decisions and judgments than positive gains and emotions—is likely due, in part, to valence but could also be due to arousal and the confound of negative things generally being higher in arousal. Research in the area of eating behaviors indicates a complex relationship between arousal, valence, and individual differences, with the effect on behavior dependent on their interaction (Macht 2008). For example, high arousal emotions tend to reduce consumption regardless of valence, whereas moderate arousal emotions increase consumption differently depending on the valence of emotion and individual differences in consumption motivation (whether people are dieters, emotional eaters, or normal eaters).

Further research, of course, is needed. In what situations do high/low arousal and positive/negative valence best facilitate healthy behaviors? We can see, for example, the effectiveness of high arousal, negative valence messages in tobacco warning labels used outside of
the US (e.g., Hammond 2011), but could they be more effective if either the valence or level of arousal were varied and what level of each dimension results in the greatest impact to smokers intentions to quit? Or perhaps specific emotions should be used (e.g., fear appeals)?

Recent research has also questioned how well explicit, reportable thoughts predict health behaviors as opposed to more implicit reactions that exist beneath the level of awareness. Using fMRI data, Falk et al. (2012) collected the neural responses of participants viewing anti-smoking advertisements from three different media campaigns. After the fMRI session, participants completed a survey about the advertisements, ranking their projected effectiveness, their favorite advertisements, and each advertisement’s individual effectiveness. A priori, the researchers had identified the ventral subregion of the medial prefrontal cortex (MPFC) as a region of interest due to its association with behavioral change (Falk et al. 2010). This area has been associated with affect’s influence on decisions in past studies (Damasio 1996). Falk et al. then used the extent of the neural activity in this area and self-reported judgments to predict which of the three advertisement campaigns was most effective, using the number of calls placed to quit smoking phone lines as the dependent measure. MPFC activation was a significantly better predictor of the advertisement campaign that elicited the most quit-line calls than the explicit judgments participants made after watching the advertisements. Falk et al. suggested that an unconscious mechanism is involved in determining the influence of different ads on smokers. Given the link with Damasio’s research, it seems likely that this mechanism would concern the function of affect as information. Of course, because the researchers did not assess self-reported affect and emotions to the advertisements, it is unclear whether self-report measures might predict as well as the more expensive neuroimaging technique. After all, a history of studies exists illustrating the greater predictive power of self-reported affect over more cognitive assessments in health behaviors (e.g., Diefenbach et al. 1999).

**Is Affect Rational?**

Affect’s influence in health decisions can be overwhelming. Patients may suffer undue anxiety or fear, vastly overestimate risks (e.g., with breast cancer patients), or avoid choices among treatment options. Affect can also be a distraction when it provides information or motivation to attend to or act on emotional information at the expense of other more important message content. Often times, when people consider the impact of emotion on health decisions, these negative impacts are most salient, but they neglect the critical importance of affect. Damasio (1994) and others argue that integral affect increases the accuracy and efficiency of the decision process, and its absence (e.g., in patients with damage to the ventral MPFC) degrades decision performance. Decision researchers have expanded on this view of affect in health and other decisions. Affect is rational in the sense that some level of integral affect is necessary for information to have meaning so that decisions can be made. This “affective rationality” is a key for health communications that have normally focused less on the role of affect and more on deliberative means (Hibbard and Peters 2003). Previous warning labels on cigarette packages in the United States exemplify this deliberative approach, providing only factual information about the related risks of tobacco use. Based on evidence of the greater effectiveness of affective and graphic warning labels (Hammond 2011), the FDA proposed new labels to take effect in 2012.

Affect’s role in health decisions is also likely to be nuanced; it therefore deserves careful empirical study. Affect sometimes will help and other times hurt decision processes. Which occurs will depend on the affect elicited by the stimulus (including how information is presented), how affect influences the information processing that takes place in the construction of preferences, and how that particular influence matches whatever processing will produce the best decision for the individual in a given situation. In other words, the presence of affect does not guarantee good or bad decisions; it does guarantee that communicated information will be
processed in ways that are different from when it is not present. Understanding these processes presents important challenges in health decision-making research.

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