

EFFECTS OF EMOTIONAL STATE ON REACTIONS TO HEALTH FEEDBACK

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The influence of emotion on reactions to a subsequent emotion-inducing event, receiving health feedback, was investigated. 208 male and female undergraduate students were given a film emotion induction procedure intended to elicit happiness, sadness, or neutral affect. They then received false feedback indicating that their risk of getting a fictional type of influenza was high or low. Reactions to the feedback were assessed by measuring affect, risk perceptions, and worry. In addition, intentions to engage in health behaviors and actual health information-seeking behavior were assessed. Receiving high risk feedback resulted in less positive affect, more negative affect and worry, and higher risk perceptions than getting low risk feedback. Risk feedback influenced one measure of behavioral intentions. For low risk participants, experiencing an emotion (happy or sad) resulted in taking more pamphlets than those in the neutral condition who received the same feedback. High risk participants who experienced an emotion took fewer pamphlets than neutral people receiving the same feedback. Increased positive affect, worry, and risk perceptions after receiving feedback predicted intentions to engage in health behavior, and people who worried more were more likely to take pamphlets about the flu. However, these reactions to feedback did not mediate the relationship between feedback and behavior. Behavioral intentions did mediate the relationship between feedback and placing contact information in a box to receive more information about the flu. Overall, the

findings have implications for how potentially threatening personal feedback will be interpreted and acted upon depending on the receiver's emotional state at the time of getting feedback.

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PREFACE

I would like to thank Mindy Kelly for her assistance with data collection and entry, Elizabeth Votruba-Drzal for assistance with statistical analysis, and my committee members for their valuable feedback.

1.0 INTRODUCTION

A woman is on her way to her physician's office for an appointment during which she will get medical test results. Presumably she will react differently depending on whether the results are positive or negative. What if on the way to the office she is pleasantly surprised by a phone call from a close friend? Or, alternatively, what if she gets a call that leaves her feeling down? Could the emotion caused by the phone call influence the woman's reaction to her test results? The study reported here investigated the effects of incidental emotion experienced prior to receiving health feedback on subsequent affective reactions, judgments, and decisions related to the feedback.

1.1 EMOTIONAL REACTIONS TO FEEDBACK

In general, people experience positive affect in response to positive feedback and negative affect in response to negative feedback. This is true in many domains, such as social standing (Buckley, Winkel, & Leary, 2004; Leary et al., 2003; Swann, Griffin, Predmore, & Gaines, 1987) and task performance (Jussim, Yen, & Aiello, 1995; Woo & Mix, 1997). In some studies, investigators provide positive or negative task performance feedback precisely to induce positive and negative emotions, respectively (Gerrards-Hesse, Spies, & Hesse, 1994; Spering, Wagener, & Funke, 2005; Westermann, Spies, Stahl, & Hesse, 1996). People react particularly strongly to comparative feedback in which their standing on one dimension is compared to some other criterion. An individual's standing on a dimension can be compared to some objective

standard (e.g., a national guideline), or to another person's or a group's standing on the same dimension (e.g., the average score on an exam). Studies of the latter type of feedback show that people are more pleased and less anxious when they get positive feedback (regardless of whether it is absolute or comparative) as compared to negative feedback (Klein, 2003a), even when an objective comparison criterion is available (Klein, 1997).

Similar reactions to feedback occur in the domain of health. Fries, Bowen, Hopp, and White (1997) found that when participants were given false feedback about the amount of fat in their diet compared to national intake guidelines, those told their diets were high in fat were less calm and content, and more distressed, nervous, sad, and surprised than those told their diets were low or moderate in fat. Similarly, college students told they had borderline high cholesterol experienced more distress, sadness, and surprise and less elation, contentedness, and calm than did students with normal cholesterol levels (Croyle, Sun, & Louie, 1993). McBride et al. (2000) presented smokers with true information regarding whether they lacked an enzyme whose absence has been associated with increased lung cancer risk. Smokers lacking the enzyme reported more fear immediately upon learning of the enzyme absence and at two-month follow-up as compared to smokers with the enzyme. Another study showed that women who had an abnormal mammogram felt anxiety and worry, even after cancer had been eliminated as a possible diagnosis (Lerman et al., 1991). Other research has found that receiving positive health feedback in the form of a "normal" test result on an ovarian cancer screening test resulted in higher positive affect over the course of a four-month study compared to a matched control group that did not undergo screening (Gaugler, Pavlik, Salsman, & Andrykowski, 2006).

Comparative feedback is also important in the health domain. People pay close attention to how their health risk compares to that of others, and being told that one's percentage of

calories from fat is above average results in more worry and increased intentions to reduce risk by making dietary changes than being told that one's intake is below average (Klein, 2003b). Similarly, participants told that their risk of causing a car accident was above average were more disturbed by this information and expressed greater intentions to take precautions (e.g., wearing a seatbelt) when driving than did people told their risk was below average (Klein, 1997).

These findings show that any form of positive and negative feedback may result in positive and negative affect, and comparative risk feedback is especially likely to influence future behavior. The relevant research has been conducted in both laboratory and naturalistic settings, and both actual and false feedback have been used in these studies. Although affect has been explored as a dependent variable in many feedback studies, the role of affect that is present prior to the receipt of feedback has not been systematically explored.

1.2 EFFECTS OF AN INITIAL EMOTIONAL STATE ON REACTIONS TO A NEW EMOTION-INVOKING EVENT

Given that people experience various emotional states throughout the course of a day that can each influence feelings, thoughts, and actions, the consequences of one emotion acting in concert with another must be explored. Being in an initial emotional state could influence people's affective reactions to a new emotion-invoking incident, such as receiving health feedback, in a variety of ways. For example, one emotion may affect the magnitude of the emotional reaction produced in response to the incident. The resulting emotional state could then affect subsequent cognitions, including risk perceptions and worry, and behavior, such as health protective actions and information-seeking.

Effects of an emotional state on a subsequent emotional state. Support for the idea that emotions can influence the nature and magnitude of subsequent emotional states comes from theory and research on cognitive appraisal patterns and emotions (e.g., Lazarus, 1991; Roseman, Antoniou, & Jose, 1996; Smith & Ellsworth, 1985). Lerner and Keltner (2000, 2001) proposed an appraisal tendency framework showing that experiencing an emotion can cause a person to appraise subsequent situations in line with the cognitive appraisals typical of the original emotional state. Recently, researchers have speculated and found some support for the notion that experiencing one emotion followed by another emotion with conflicting appraisal patterns can result in the minimization of affect (Winterich, Han, & Lerner, 2008). For example, it has been found that anger is associated with appraisals of personal control, and sadness with appraisals of situational control (Smith & Ellsworth, 1985). In preliminary work by Winterich and colleagues (2008), inducing anger followed by sadness “blunted” self-reported experience of sadness, meaning that the difference between reported sadness post-anger induction and post-sadness induction was smaller than when sadness was preceded by neutral affect. The researchers also reported that in a subsequent study, experiencing sadness followed by anger resulted in blunted reported anger when compared to people experiencing neutral mood before anger. Following the logic that conflicting appraisal patterns may lead to minimizing reported affect, the converse outcome is plausible. More specifically, experiencing one emotion followed by another with a similar appraisal pattern may enhance the affective experience.

Additional research addresses the question of how one emotional state can affect emotional reactions to a new event. Zillmann (1971; 1978; 1996) proposed and has found some support for his theory of excitation transfer. He postulates that sympathetic activation or “excitation” from one situation takes time to dissipate, and as long as residual excitation is still

present, it can “transfer” to another situation after the initial event triggering the excitation has subsided. Zillmann specifically predicts that the persisting excitation can enhance subsequent affective experiences, strengthening the intensity of the experience. Classic experiments have created excitation through physical exercise or sexual arousal, assessing the effect of the excitation on subsequent emotion and behavior, such as aggression (e.g., Zillman, Katcher, & Milavsky, 1972; Zillmann & Sapolsky, 1977).

Positive and negative emotional experiences have both been associated with varying levels of sympathetic activation (see Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000 for review), and thus emotion is a candidate for creating excitation that may carry over to enhance subsequent emotions. Some research has already investigated this possibility. Zillmann, Mody, and Cantor (1974) found that viewing an arousing emotional film clip (either a hedonic clip of a sexual encounter or a clip of a brutal physical assault) influenced participants’ perceptions of a character’s feelings in a subsequent negative film featuring an arguing couple. Sadness ratings were higher when the initial film clip was arousing compared to when it was non-arousing. Other research shows that excitation associated with a negative emotion, anxiety, enhanced sexual arousal compared to people who were neutral prior to viewing the sexually arousing stimulus (Hoon, Wincze, & Hoon, 1977). Zillmann’s findings lead to the somewhat counterintuitive prediction that an initial emotional event of any valence can increase the intensity of the emotion experienced after a subsequent emotion-provoking event, although in some cases, “hedonic compatibility” effects have been found such that experiencing an emotion followed by another of similar valence results in maximizing the emotional experience (e.g., Zillmann, Bryant, Comisky, Medoff, 1981; Zillmann, Mody, & Cantor, 1974). Zillmann (1996) admits that such hedonic compatibility needs to be further explored. The research in which

hedonic compatibility effects are found aligns with the previously discussed findings of Winterich et al. (2008) that emotions with differing appraisals can result in the blunting of affect and with the prediction that matching appraisals can result in increased affect. Excitation transfer has been demonstrated in the enhancement of aggression and other affective variables, but no research has investigated how the excitation associated with emotional states can influence reactions to subsequent feedback.

Effect of an emotional state on subsequent cognition. Research and theory support the notion that an emotional state can also affect cognition. Johnson and Tversky (1983) found that negative mood resulted in increased risk perceptions for a variety of negative events, and positive mood diminished perceived risk for the same events. Similarly, Salovey and Birnbaum (1989) found that sad participants who considered negative future events judged the probabilities of the events as being more likely than did happy participants.

In his Affect Infusion Model (AIM), Forgas (1995) proposed that when making judgments, people can use one of four processing methods – direct access of previous judgments, motivated processing when pressured to render a particular judgment, heuristic processing when trying to exert minimum effort, and substantive processing when interpreting new and often complex information to make a judgment. Using either heuristic or substantive processing methods can result in the infusion of affect into judgments. When processing heuristically, affect can become a source of information factored into a judgment. The use of a systematic processing strategy can result in affect-priming such that one's affective state influences the types of items retrieved from memory that are then used for making judgments. Systematic processing is predicted to occur when judging a new, complex, or personally relevant target and when no specific motivation (other than accuracy) is present. It is notable that these factors

