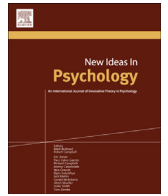




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Going with your gut: How William James' theory of emotions brings insights to risk perception and decision making research

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ABSTRACT

The basic premise of William James' theory of emotions – that bodily changes lead to emotional feelings – ignited debate about the relative importance of bodily processes and cognitive appraisals in determining emotions. Similarly, theories of risk perception have been expanding to include emotional and physiological processes along with cognitive processes. Taking a closer look at *The Principles of Psychology*, this article examines how James' propositions support and extend current research on risk perception and decision making. Specifically, James (1) described emotional feelings and their related cognitions in ways similar to current dual processing models; (2) defended the proposition that emotions and their expressions serve useful and adaptive functions; (3) suggested that anticipating an emotion can trigger that emotion due to associations learned from past experiences; and (4) highlighted individual differences in emotional experiences that map on well with individual differences in risk-related decision making.

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1. Introduction

Imagine that you are in a grocery store about to purchase a bag of potato chips for a child's birthday party. Taking a look at the labels, you notice that the ingredient list on one of them includes “genetically modified potatoes.” Do you sense a small pang of unease in your gut? Do you feel wary or anxious? Do you wonder about the likelihood and severity of negative health effects from children eating these chips? Do any of these feelings or thoughts influence your ultimate purchasing decision?

This experience at the grocery store highlights some of the responses individuals might experience when faced with a potentially risky object or situation. Some are analytical processes, but others are intuitive feelings. Specifically, when we describe our decisions, we often mention bodily sensations that are associated with emotional feelings. We “turn our nose up” at the genetically modified chips, decide to “go with our gut,” and avoid the food that “just doesn't feel right.” One explanation for this is that emotional feelings are derived from the sensation of bodily changes, and that these feelings serve to help us make decisions when faced with new, risky, or uncertain stimuli.

In his classic text *The Principles of Psychology*, William James

(1890) presented a theory of emotions that maps on well with this premise, sparking a century of research and debate regarding the connections between bodily changes, cognitive processes, and emotional feelings (e.g., Cannon, 1927; Laird & Lacasse, 2014; Schachter & Singer, 1962). In more recent decades there has been a growing interest in the role that emotional processes and their physiological counterparts play in risk perception and decision making (e.g., Damasio, 1994; Dunn et al., 2010; Slovic, Finucane, Peters, & MacGregor, 2007), much of which has roots in James' theory of emotions. In this article, I will review the some of the specifics of James' theory, and examine how his proposals can provide unique understandings of human reliance on emotional feelings when presented with potential risks.

1.1. James' theory of emotions

James (1890) presented a bold proposal in *The Principles of Psychology*: emotions are the sensation of bodily changes, or as he put it, “the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur IS the emotion” (Vol. 2, p. 449, italics original). Bodily changes arrive first, and the conscious experience of feeling an emotion follows. Physiological changes, facial expressions, and bodily movements were all included in the bodily changes that are perceived and felt as part of an emotional experience. He goes on to explain that without

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bodily manifestations, there can be no *feeling* of emotion, and all that would remain “would be purely cognitive in form, pale, colorless, destitute of emotional warmth” (Vol. 2, p. 450). Through this description, James acknowledged that cognitions co-occur with emotions, but are not a direct part of the experience of an emotional feeling.

Further, James took the position that emotional feelings serve a useful function. By comparing their bodily and reflexive nature to instincts, James suggested that emotions and their expression have adaptive value. James also proposed that anticipating an emotion can bring the sensations of that emotion into being. Therefore, emotions that have become associated with a particular experience may be anticipated and triggered when an individual is placed in a similar scenario again. Finally, James pointed to individual differences in emotional feeling, suggesting that people differ in what triggers their emotions, and, more importantly, in what particular bodily changes lead to a specific emotional feeling. Individuals may display different outward and physiological symptoms while reporting that they are experiencing the same emotion.

Although James' theory of emotions has garnered support since its inception, many have questioned his central premise. Physiologist Walter Cannon (1927) argued that visceral changes were part of a more generalized fight or flight response, and offered a variety of reasons why sensation of those changes could not explain emotions. He reviewed research demonstrating that artificially inducing visceral arousal via an adrenaline injection rarely led to self-reports of an emotional experience, and that surgically separating the viscera from the central nervous system did not halt the emotional behaviors of animals. He also argued that visceral responses were too slow and too undifferentiated to be the sole cause of emotional experience. However, Cannon did not consider James' full proposal. James was most concerned with explaining emotional feelings and conscious emotional experience, which Cannon himself did not study largely because they cannot be measured in the animals that were his regular experimental subjects. When Cannon did discuss human emotional experience, he largely ignored the role of non-visceral bodily stimuli, such as facial expressions and expressive behavior.

James' theory was also questioned on the grounds that cognitive appraisal of one's situation was necessary to the production of emotional feelings. Duffy's (1941) activation theory proposed that emotions are the awareness of both variations in activity level and in understanding of the stimulus situation. Schachter and Singer (1962) offered a more specific two-factor theory in which individuals first feel arousal, and then cognitively appraise their situation to label the arousal as the proper emotion. To explain how people arrive at different emotions, Smith and Ellsworth (1985) posited six different dimensions of appraisal (e.g., pleasantness, certainty, self-responsibility), and demonstrated that different emotions have unique appraisal patterns.

During the same period, however, researchers in the Jamesian tradition conducted studies demonstrating the impact of facial expressions, expressive behavior, and physiological changes on emotional feelings, often in situations where cognitive appraisals would not be able to explain the emotions reported (for a review, see Laird & Lacasse, 2014). With both sides presenting convincing ideas and supportive data, the debate over the role of bodily changes and cognitions in explaining emotional feelings is still contentious today.

While appraisal theories have underscored how cognitive appraisals lead to emotional experiences, others researchers have demonstrated how emotions and affect can influence cognitions and judgments (e.g., Forgas, 1995; Schwarz, 2011). Affect, more specifically the positive or negative valence of an experienced feeling, and specific emotions often shape interpersonal and moral

judgments (Forgas & George, 2001; Haidt, 2001), and impact perception of risk and decision making under uncertainty (e.g., Lerner & Keltner, 2000; Slovic et al., 2007). A comparable debate has thus arisen regarding the relative importance of affective and cognitive processes in the perception of risk.

1.2. Risk perception and decision making

For many years, prevailing theories held that risk perception and related decision making were the outcome of analytical processes. People estimated the relative probability and severity of a risk's negative and positive outcomes, and these calculations led to conclusions (for a review, see Yates, 1992). For example, expected utility theory presents risky decision making as an almost entirely cognitive process (e.g., Barberis, 2013; Harrison & Rutström, 2009). However, there is evidence that people have a more comprehensive conception of risk than such theories allow, and that affective and emotional processes influence an individual's risk-related decision making (Kahneman, 2011; Loewenstein, Weber, Hsee, & Welch, 2001; Slovic et al., 2007). For example, studies of the affect heuristic demonstrate how people rely on the positive affect associated with objects or events to indicate greater benefits and negative affect to indicate greater risks (Slovic et al., 2007). Additionally, research on prospect theory highlights the power of loss aversion, revealing that negative feelings regarding a loss have a greater influence on decision making than positive feelings regarding an equal-sized gain (Kahneman, 2011). Although the risk perception literature remains sparse regarding specific emotions, decision making research finds that similar yet distinct emotions, such as regret and disappointment, lead people to make different assessments and decisions about future choices (Zeelenberg & Pieters, 2006).

Evidence supporting the role of affect along with cognitions in risk perception fits well with dual processing models of thinking and decision making. These models distinguish between the emotionally-driven and intuitive “experiential route” and the analytically-driven and deliberate “rational route” (e.g., Epstein, 1994; Kahneman, 2011; Zajonc, 1980). People tend to rely on the experiential route more often, since it operates quickly without a sense of effort or voluntary control, but it is also common for the two routes to work together (Kahneman, 2011).

Dual processing models can help explain why the lay public often understands risks differently than risk experts, who rely more heavily on analytical models (Hornig, 1993; Slovic, 2000). Lay decision makers do employ some analytical processes, such as reviewing knowledge about the risk, weighing perceived costs and benefits, considering the trustworthiness of the actors involved, and determining the fairness surrounding the distribution of risks, costs, and benefits (e.g., Huijts, Molin, & Steg, 2012). However, people often report positive or negative opinions about risks about which they have very little knowledge, indicating the operation of intuitive processes (Krishnamurti et al., 2012; Scheufele & Lewenstein, 2005). In many instances, intuitive processes precede and shape cognitive processes. Emotions like fear and compassion arouse concepts such as “fairness” and “choice” and bring them into consideration when decision making about a risk (Roesser, 2012). Additionally, strong initial emotional responses can limit the influence of new knowledge on people's attitudes towards a risk (Lee, Scheufele, & Lewenstein, 2005). Other research has found that the automatic associations and images a person experiences when presented with a potentially risky object, and his or her affective responses to those images, contribute to that individual's risk perception (Keller, Visschers, & Siegrist, 2012; Truelove, 2012).

If emotional feelings are the sensation of bodily changes as James suggests, and if emotions and related affective processes play

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