Motion and Emotion: An Integrative Approach of Cognition and Emotion in IS Usage

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Résumé :

In recognition of the importance of emotions as well as cognition in decision and behaviors of individuals, there has been growing interest and research on emotions in informational system (IS) literature. Studies incorporating emotions in IS literature have mainly considered discrete emotions such as anxiety and comfort, focusing on temporal reaction to changes. Moreover, most studies considered emotion effects in isolation from cognition effects. However, given the fact that emotion and cognition co-exist in influencing IS usage, integrating both emotion and cognition could give us a more comprehensive understanding of the drivers of IS usage. Therefore, adapting theories of cognitive appraisal and affective event theory, we propose an integrative model of emotion and cognition in IS usage. By doing so, this paper highlights the complementarity of these two constructs in IS usage.

Mots-clés : IT Usage, Emotion, Affective Event Theory, Cognitive Appraisal

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Introduction

Every day we engage with various information systems (IS) at work, including email and intranet, to communicate, to be informed, and to achieve goals. Organizations depend on IS for the execution of a variety of operational, tactical, and strategic processes (Applegate et al. 2003). However, despite substantial organizational interest and therefore investment in IS, the degree of IS usage amongst organizational members still varies significantly. It is even claimed that, in general, IS investments do not always lead to better organizational outcomes (Roberts and Henderson 2000). Consequently, both academics and practitioners have much interest in discovering the determinants of IS usage. With the popular technology acceptance model (TAM) (Davis 1989), which is broadly based on perceived usefulness (PU) and perceived ease of use (PE) from past experience, there has been a general agreement on the cognitive aspects of IS use (Bhattacherjee and Sanford 2006; Liao et al. 2007; Roca et al. 2006). However, given that our behaviours are determined not only by cognition but also by emotion, consideration of the affective aspects of IS usage could provide a more complete picture of these determinants. However, the prominent core of rationalized professional and academic knowledge within the IS field has frequently been shown as inadequate to cope with the complexity of particular IS projects (Avgerou 2002; Ciborra 2002; McGrath 2006).

With such recognition of the role of affect in human behaviours, there has been much interest in looking at affective (or emotional) aspects of the use of technology (Kim et al. 2007; Zhang and Sun 2006). Recent research on emotions in IS literature have shed some light on how emotion influences IS users. For example, anxiety has been found to be negatively associated with initial appraisal of information technology (IT) system (e.g. Beaudry and Pinsonneault 2010; Venkatesh 2000). While these studies have demonstrated the influence of single discrete emotions on IS use, especially for changes in IS, how positive emotions and negative emotions in general influence continued IS usage is still not clear. Moreover, these studies have considered discrete emotions in a stand-alone context without incorporating cognition in

their frameworks (e.g. Beaudry and Pinsonneault 2010). It is true that some studies have made an attempt to combine affective and cognitive aspects by adapting a range of different labels from aesthetics, satisfaction, intrinsic motivation (or enjoyment) as affective aspects (e.g. Fagan, Neill, and Wooldridge 2008; Lindgaard and Dudek 2003; Wen, Prybutok, and Xu 2011). However, these notions are evaluations of emotion, not emotions per se.

Such label and/or stand-alone approaches to considering the affective dimensions of IS have resulted in inconsistent conclusions and contradictory advice, suggesting weak effect for some studies and strong effect for others (cf. Zhang 2013). Given the distinctive but interactive natures of cognition and emotion in individuals' attitudes and behaviours (cf. Avgerou and McGrath 2005; Brief and Weiss 2002), there is a need to investigate there effects on IS usage together. A joint approach also allows us to understand the role of IS in employee's emotional experience. In particular, as IS (including intranets) underpins large portions of organization processes, as well as employees' experience of the organization, how IS influences employees' emotions could have significant meaning, not only concerning levels of IS usage but also to employee's general psychological well-being.

The prevailing orientation toward cognitive processes suffers from an inherent limitation owing to its one-dimensional focus on the rational aspects of human behavior (cf. Choi, Sung, Lee, and Cho 2011), and has thus failed to address the broader array of theoretically meaningful emotions identified in the emotion literature. Therefore, the main objective of this paper is to demonstrate the effects of emotion as outcomes of cognition, in turn influencing levels of IS usage. Here, we attempt to understand continued use or continuance (in contrast to initial use or acceptance). We adapt cognitive appraisal and affective event theory (AET) and propose mediating roles of positive and negative emotions between cognitions and IS usage. With this framework, we aim to contribute to the literatures of IS continuance as well as of emotion. By considering both cognition and emotion, this paper offers more complete view toward IS use and, at the same time, further supports the significance of PE in IS design. Given the interest in emotions and embeddedness of IS in today's organizations, this paper also illustrates how both positive and negative emotions could be generated at work.

The remainder of the paper is organized as follows. We start the following section by examining notions of cognition, emotion and IS use. Next, we propose our research model and

hypotheses. The paper ends with expected contributions for both research and practice. Cognition, emotion and IT use intention.

1. Theoretical Foundation

1.1. Cognition

Cognition (i.e., thinking) means the mental process of knowing, including aspects such as perception, reasoning, and judgment (Kim et al. 2007 p. 515). Dominant IS research has been guided by rationalism or rational decision making (cf. McGrath, 2006). In this regard, the technology acceptance model (TAM) is arguably the most popular and effective model used to predict IS usage in both acceptance and continuance. TAM posits that IS usage can be explained by two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PE). PU encompasses beliefs concerning instrumental outcomes associated with technology use, and PE encompasses beliefs that technology use will be relatively free of cognitive burden. TAM is grounded on the theory of reasoned action (TRA) where attitudes, influenced by beliefs, lead to intentions and thereby to behaviours (Fishbein and Ajzen 1975). Research on TAM has suggested that PE may influence PU, but not vice versa (Davis 1993; Davis et al. 1989), however, as a predictor of user acceptance, PU has been the strongest across a diverse area of research settings at the expense of PE (e.g. Taylor and Todd 1995; Venkatesh and Davis 2000).

Despite its popularity, TAM has been perceived to be a barrier to the success of information systems, sometimes leading to perplexing findings, especially for the study of continuing IS usage (Ortiz de Guinea, and Markus 2009). There are differences between initial adoption of IS and IS continuance. One of these differences is that continuance is salient when the user has accumulated usage experience of the target system, and affective reaction from direct experience often becomes stable over time (Schelling 1984). However, cognition based TAM seldom explores the feedback effect (Lin, Chen, and Fang 2011). Even though TAM provides a reasonable foundation for consideration of the external factors (cognitions) that affect acceptance (Amoako-Gyampah 2007), it misses out on the internal factors (emotions) that affect attitude formation which in turn play an important role in determining users' IT system continuance intention (Thüring and Mahlke 2007).

1.2. Cognition

Human behaviour is affected not only by rational and cognitive processes, but also by emotional processes that can often be irrational (Brief and Weiss 2002; Huy 2002). Emotions play a powerful and central role in our lives. They influence our beliefs and attitudes and they help guide our thinking, decision making, and actions (Gratch and Marsella 2004; Lazarus and Folkman 1984). It is therefore necessary to investigate how IS users' emotions emerge and drive their actions.

Affect has been defined variously in the literature. It is generally understood to comprise a class of mental phenomena characterized by a consciously experienced, subjective feeling state, commonly accompanying emotions and moods (Parkinson 1995). The term emotion is used to specify feelings towards an event, object or a person (Frijda 1986). On the other hand, the term mood is used to imply feelings that cannot necessarily be linked to a particular event, object or a person. Despite these subtle differences, affect and emotion are used interchangeably quite often, and we will not differentiate these terms in this paper.

Following theories of affective influence on choice and judgement, we take a valence based approach which contrasts the effects of positive versus negative feeling states or emotions. While discrete emotions do not demonstrate emotion-consistent and emotion-specific directional changes (Lindquist, Siegel, Quigley, and Barrett 2013), valence remains the organizing principle for emotion effects on judgment and decision making (Elster 1998; Forgas 2003). Valence-based approaches predict that distinct emotions of the same valence exert similar influences on judgement and choice. Moreover, valence-based approaches serve the purpose of parsimony (cf. Higgins 1997) which suits our exploration of the overall relationship between cognition, emotion, and IS usage. There is robust evidence for emotional dimensions of valence in organizationally relevant attitudes such as job satisfaction, commitment, evaluation of consumer goods (Clore, Schwarz, & Conway, 1994; Forgas & George, 2001).

1.3. IS use intention

Motivation to perform a behaviour is labelled behavioural intention. Behavioural intention is the person’s subjective probability that he/she will perform the behaviour in question (Fishbein and Ajzen 1975) and a person who intends to take a certain action is likely to carry out that behaviour. Theory of reasoned action (TRA: Fishbein and Ajzen 1975) states that atti-

tudes, influenced by beliefs, lead to intentions and thereby to behaviours. In the same vein, a great deal of research on IS shows that TAM retains its robustness even without including behavioural attitude, since behavioural intention is largely explained by beliefs (cf. Chea, and Luo 2008). Therefore, we consider IS use intention as an indication of user's behaviours.

2. A framework for mediating emotions between cognitions and IS usage

In this paper, we propose a model highlighting the mediating role of emotion between cognition and IS use intention.

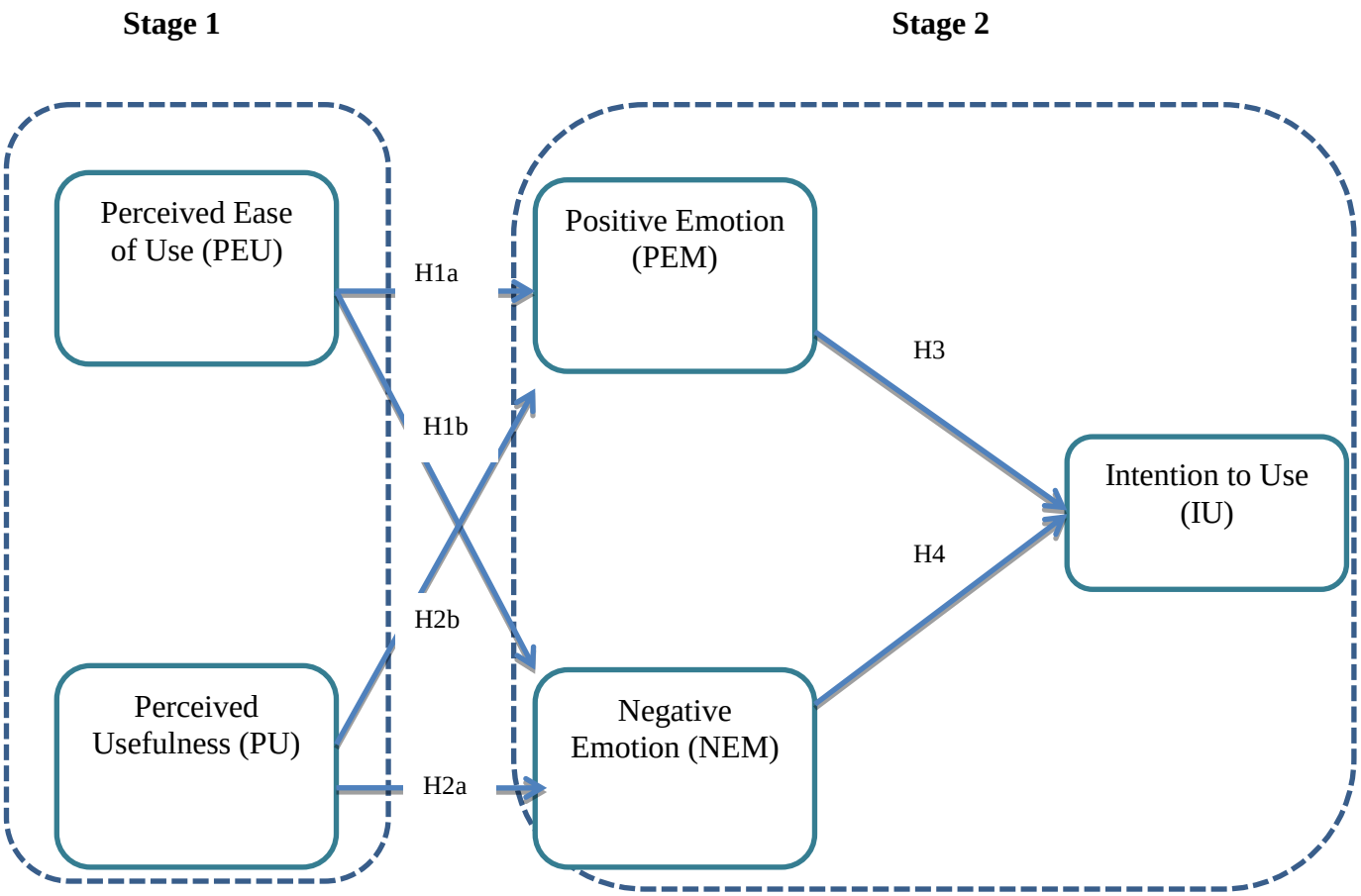

Figure 1. Research Model

2.1. Linking cognition to IS use intention

TAM suggests that two specific cognitions, PE and PU, determine one's behavioral intention to use a technology, which has been linked to subsequent actual behavior (cf. Sheppard et al.

1988). The underlying objective of PE is to predict usage behavior although it is associated with intention in TAM. There is a significant body of research supporting the importance of PE on both initial user acceptance and sustained usage of systems (Bhattacherjee and Sanford 2006; Venkatesh 1999). PE has also been shown to be an important factor influencing attitudes toward behaviour (Shih 2004; Barkhi and Wallace 2007). Post-adoptive intentions derive from an individual's understanding both of how to use an application's features and how these features complement other work system elements (Jasperson et al. 2005, p. 540).

Some empirical studies comparing the relative effects of perceived usefulness and ease of use during pre-acceptance and post-acceptance stages of IS use report that PU impacts attitude substantively and consistently during both stages of IS use; and PE has an inconsistent effect on attitude in the initial stages, which seems to further subside and become non-significant in later stages (e.g. Davis et al. 1989; Karahanna et al. 1999). This is because when users gain experience with the system, ease of use concerns seem to be resolved and displaced by more instrumental considerations involving the efficiency of the innovation to increase one's job performance (i.e. PU) (Karahanna et al. 1999, p. 200). However, other studies show that PU does not have a direct significant impact on continuance intention in the e-learning and e-shopping contexts (e.g. Lin, Chen, and Fang 2011; Shih 2004). PU is influenced by PE because as the easier a technology is to use, the more useful it can be (cf. Bhattacherjee and Sanford 2006). These studies illustrate that cognitive beliefs of PE and PU could lead to IS use intention, although relative effects of PE and PU toward IS continuance is not clear.

2.2. Linking cognition to emotion

The predominant theoretical model of emotion in the literature is, in essence, a model in which cognitions lead to emotions which in turn predispose or motivate the individual towards particular behaviors (Roseman et al. 1994; Weiner 1986). Emotions are conceived as experienced states arising out of cognitive appraisal and assessment of circumstances (i.e. the rational hierarchy of effects: cognition as the driver of emotion; Lazarus and Folkman 1984; Roseman et al. 1990). As emotions or affects are psychological states that entail an evaluative component (Bagozzi et al. 1999), emotion often constitutes background to consciousness and to other mental states (Kelly and Barsade 2001; Lazarus 1991). Within such cognitive processing of emotion, the notion of *appraisal*, or the assertion that 'emotion is a response to

meaning', is a core component of most theories (Lazarus 1999, p. 8; Parkinson 1997) as emotional experiences occur as a result of an individual's appraisal or evaluation of the likely impact of an event for their goals. While outcome dependent emotions of being up or down could occur as a result of success or failure, these global emotions also give rise to attribution-linked emotions that are produced as a consequence of cognitive attempts to interpret and make sense of the source of global emotions. On the basis of an appraisal of their positive or negative consequences, a process of 'causal attribution' focuses a specific emotion on a particular social object identified as the cause of the emotion (Hewstone 1989, p. 67). Similarly, *affective events theory* (AET) (Weiss and Cropanzano 1996) illustrates that mood and emotions flow from discrete affective occurrences such as job and task characteristics/design, reward systems and performance feedback.

Taking these approaches together, we could expect that IS users can cognitively evaluate a system's ease of use and usefulness and subsequently form affective responses. In other words, even though PE and PU may not be affective events per se, cognitive evaluations of daily use of IS systems will give rise to emotions towards those systems. Research has shown that actions demonstrating an person's control, efficacy, self-determination, or mastery over the environment produce positive emotions (Deci 1975; Izard 1977; Kemper 1978). For example, empirical studies show that efficacy beliefs including self-efficacy influence positive affects over time (e.g. Salanova, Llorens, and Schaufeli 2011); on the other hand, insufficient goal attainment is associated with negative emotions and progress toward goal attainment is associated with positive emotions (Martin et al. 1993).

Given PE taps into the self-efficacy dimension and PU captures the instrumentality of IS use (cf. Bhattacherjee 2001), we would expect that high PE should generate positive emotions whereas low PE should generate negative emotions. At the same time, high PU should also generate positive emotions and low PU should generate negative emotions. Similarly, a low degree of novelty (which is relate to PE) is associated with more positive emotions (cf. Thüring and Mahlke 2007); and the more useful a technology (which is related to PU) lower the anticipated negative emotions (cf. Connolly and Zeelenberg 2002; Pieters and Zeelenberg 2005).

2.3. Linking emotions to IS use intention

Emotional valence has substantial implications for individuals' motivation and subsequent behavior (Frijda 1986; Lazarus 1991). People are motivated to understand the sources of these feelings because they want to reproduce good feelings and avoid bad feelings in the future (Lawler, Thye, and Yoon 2000). In addition, while proposing both causes and consequences of momentary mood and emotions at work, AET proposes that events produce positive or negative emotions which, in turn, directly shape work attitudes and judgment-driven behaviors. Emotional responses lead either to approach or avoidance behavioural intention (Kim et al. 2007, p. 517).

In the IS literature on continuing IT use, scholars seem to agree that emotion is an input to the formation of conscious behavioural intentions to continue (or not to continue) using IT (cf. Ortiz de Guinea, and Markus, 2009). A set of affective or emotional responses are related to the use of technology (cf. Chea and Luo 2008; Kim et al. 2007). For example, the evidence indicates that emotions, such as anxiety in using computers, general computer playfulness, or affect toward computers, influence users' attitudes and use of specific IT (e.g., Compeau et al. 1999; Venkatesh 2000). Similarly, negative computer incidents were found to be the primitive cause of a user's discontinuance behaviour (Lin, Chen, and Fang 2011). Therefore, we could expect that positive emotions from PE and PU should lead high levels of IS use intention whereas negative emotions from PE and PU should lead low level of IS use intention.

2.4. Research model and hypotheses

Thus far, we have illustrated how cognition of IS triggers both positive and negative emotions, and in turn, how these emotions influence subsequent user intentions. Based on the relationships that we have investigated so far, we propose two sets of hypotheses below that create a series of bivariate relationships among the components of cognition, emotion and IS use intention in our model. When combined, these hypotheses together suggest a mediated causal sequence, in which IS users' emotional reactions mediate the effects of cognitive evaluations on IS use intention.

Hypothesis 1a: *The relationship between perceived ease of use (PE) and information system (IS) use intention is mediated by positive emotion regarding information system (IS), in*

that a high level of PE will lead to high levels of positive emotion which in turn will lead high levels of IS use intention.

Hypothesis 1a: *There is a positive relationship between perceived ease of use (PE) and positive emotion*

Hypothesis 1b: *There is a negative relationship between perceived ease of use (PE) and negative emotion*

Hypothesis 2a: *There is a positive relationship between perceived usefulness PU) and positive emotion*

Hypothesis 2b: *There is a negative relationship between perceived usefulness PU) and negative emotion*

Hypothesis 3: *There is a positive relationship between positive emotion and intention to use*

Hypothesis 4: *There is a negative relationship between negative emotion and intention to use*

3. Expected Contributions for Research and Practice

This paper joins in the growing body of IS literature that emphasizes the importance of emotions by considering the fact that IS users' emotions influence their behaviors (e.g. Beaudry and Pinsonneault 2010; Loiacono and Djamasbi 2010; McGrath 2006). Ciborra (2002) argues that we always act within an emotional medium. In this view, purely rational action is not possible and the relationship between rationality and emotionality (Avgerou &McGrath, 2005) should be explored to explain their consequences on IT use. Drawing on cognitive appraisal, this paper presents a new and comprehensive approach to existing stand-alone cognition- and affect- based models by studying emotion as a mediator between cognition and IS use intention. In doing so, this paper contributes to predicting IS continuance. No study has yet attempted to measure together the impact of the cognitive and affective processes leading to IS continuance.

Moreover, while only a small number of studies consider more than one affective construct in the same study, there has also been a lack of agreement on the names, labels, meanings, connotations, and even measures of affective concepts, resulting in inconsistent conclusions and

contradictory advice for researchers and practitioners (cf. Zhang, 2013). Our adaptation of emotional variance contributes a more parsimonious model to the IS literature.

Given the embeddeness of IS in most organizations, future research should therefore consider IT usage in relation to intensity, frequency, time length, and should actual log this data, as there will be different degrees of acceptances or utilisation even when people have to use IT to perform their tasks. In addition, goal-directed behaviours mean that actions may not be consciously decided or planned (Ortiz de Guinea, & Markus, 2009; Verkanplen and Orbell 2003). If individuals are frequently performing a particular behaviour, this behaviour tends to become habitual over time (Gefen 2003; Jasperson et al. 2005) and the more behaviour is performed out of habit, the less cognitive planning it involves (cf. Hong, Kim and Lee 2008). While good IT design can trigger automatic IT usage allowing users to focus on their tasks (cf. Ortiz de Guinea and Markus 2009), the real challenges for IS design is how to minimize the negative emotions which hinder this automatic task performance. In-depth studies adapting case studies and negative incident reports may yield further insight as to what gives rise to negative emotions toward IS.

Despite the growing recognition in IS usage literature of the importance of emotion, alongside cognition, research findings adapting these notions have not been conclusive. This is due to the fact that there has been no clear agreement in identifying the affective aspects leading to IS usage. In addition, in those studies of emotion influencing IS usage, affective aspects of IS usage tend to be examined within models which exclude the cognitive aspects. Such approaches could miss out on opportunities to understand the dynamics between the cognitive and affective aspects of IS usage. As the success of IS depends on the users' continued use of the system, an integrated model adapting both cognitive and affects aspects will be better equipped to explain continuance of IS usage. Based on literature covering the concepts of technology adaptation theory, emotions, as well as the theoretical foundations in cognitive appraisal, we have examined the relationship between cognition and IS usage with mediating emotion. An understanding of how emotions are generated from cognition toward IS can assist the practical design of IS in an organization.

References

Amoako-Gyampah, K. 2007. Perceived usefulness, user involvement and behavioral intention: An empirical study of ERP implementation, Computers in Human Behavior, 23, pp. 1232-1248.

Applegate, L. M., Austin, R. D., & McFarlan, W. 2003. Corporate information strategy and management: The challenges of managing in a network economy, Boston: McGraw-Hill.

Avgerou, C., and McGrath, K. 2005. "Rationalities and emotions in IS innovation," in Handbook of information systems research: Critical perspectives on information systems design, implementation and use, D. Howcroft and E. Trauth (eds), Cheltenham: Edward Elgar, pp. 299–324.

Bagozzi, R. P., Gopinanth, M., and Nyer, P. U. 1999. "The Role of Emotions in Marketing," Journal of the Academy of Marketing Science (27:2), pp.184-206.

Barkhi R, Wallace L 2007. The impact of personality type on purchasing decisions in virtual stores. Information Technol. Manage., 8: 313-330.

Beaudry, A. & Pinsonneault, A. 2010. The Other Side of Acceptance: Studying the Direct and Indirect Effects of Emotions on IT Use, MIS Quarterly, (34:4), pp. 689-710.

Berkowitz L. 1993. Pain and aggression: some findings and implications. Motiv. Emot. 17:277–93

Bhattacherjee, A. and Sanford, C. 2006. Influencing processes for information technology acceptance: An elaboration likelihood model. MIS Quarterly, 30 (4), 805-825.

Brief, A. P., & Weiss, H. 2002. Organizational behavior: Affect in the workplace. Annual Review of Psychology, 53, 279-307.

Chea, S. and Luo, M. M. 2008. Post-adoption behaviors of e-service customers: The interplay of cognition and emotion. International Journal of Electronic Commerce, 12(3), 29-56.

Chea, S., & Luo, M.M. 2006. E-service customer retention: The roles of negative affectivity and perceived switching costs. Journal of Information Science and Technology, 3, 2, 5–22.

Choi, J. N., Sung, S. Y., Lee, K., Cho, D.-S. 2011. Balancing cognition and emotion: Innovation implementation as a function of cognitive appraisal and emotional reactions toward the innovation. Journal of Organizational Behavior, 32, 107-124.

Clore, G. L. 1994. Why emotions vary in intensity. In P. Ekman & R. J. Davidson (Eds.), The nature of emotion: Fundamental questions (pp. 386-393)

Compeau, D., Higgins, C. A., and Huff, S. 1999. "Social cognitive theory and individual reactions to computing technology: A longitudinal study," MIS Quarterly (23), 145–158.

Connolly, T., and Zeelenberg, M. 2002. "Regret in decision making. Current Directions," Psychological Science (11), pp.212–216

Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly 13, 319–339.

Davis, F.D., 1993. User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. International Journal of Man–Machine Studies 38, 475–487.

Davis, F.D., Bagozzi, R.P., Warshaw, P.R., 1989. User acceptance of computer technology: a comparison of two theoretical models. Management Science 35, 982–1002.

Davis, F.D., Bagozzi, R.P., Warshaw, P.R., 1992. Extrinsic and intrinsic motivation to use computers in the workplace. Journal of Applied Social Psychology 22, 1111–1132.

Deci, E. L. 1975. Intrinsic Motivation. Plenum Press, New York.

Elster, J. 1998. "Emotions and Economic Theory," Journal of Economic Literature, American Economic Association (36:1), pp. 47-74,

Fagan, M., Neill, S., Ross-Wooldridge, B. (2008). Exploring the intention to use computers: an empirical investigation of the role of intrinsic motivation, extrinsic motivation, and perceived ease of use. Journal of Computer Information Systems, 48(3), 31-37.

Fishbein, M., & Ajzen, I. 1975. Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison-Wesley.

Forgas, J.P. & George, J.M. 2001. Affective influences on judgments and behavior in organizations: An information processing perspective. Organizational Behavior and Human decision Processes, 86, 3-34.

Forgas, J.P. 1995. Mood and judgment: The Affect Infusion Model (AIM). Psychological Bulletin, 117, 39-66.

Forgas, J.P. 2003. Why don't we do it in the road…? Stereotyping and prejudice in mundane situations. Psychological Inquiry, 14, 249-255.

Frijda, N.H. 1994. Emotions are functional, most of the time. In P. Ekman & R.J. Davidson (Eds.), The nature of emotion: Fundamental questions (pp. 112±122). New York: Oxford University Press.

Frijda, N. H. 1986. The emotions. London: Cambridge University Press.

George, J. M. 1991. State or trait: Effects of positive mood on prosocial behaviors at work. Journal of Applied Psychology, 76, 299-307.

Gefen, D. 2003. "Assessing unidimensionality through Lisrel: an explanation and example," Communications of the Association for Information Systems (12), pp. 23–47.

Gratch, J., & Marsella, S. 2004. Evaluating a General Model of Emotional Appraisal and Coping. Paper presented at the AAAI Symposium on Architectures for modeling emotion: cross-disciplinary foundations, Palo Alto, CA.

Hewstone, M. 1989. Causal Attribution: From Cognitive Processes to Cognitive Beliefs, Oxford: Blackwell.

Higgins, E. T. 1997. "Beyond pleasure and pain," American Psychologist (52,) pp.1280-1300.

Hong, S.J., Thong, J. & Tam, K.Y., 2006. Understanding continued information technology usage behavior: a comparison of three models in the context of mobile internet, Decision Support Systems (42), 1819- 1834.

Hong, W., Thong, J.Y.L., Chasalow, L., and Dhillon, G. 2011. Understanding User Acceptance of Agile Information Systems: A Model and Empirical Test, Journal of Management Information Systems, 28 (1), 235-272.

Huy, Q. N. 2002. "Emotional balancing of organizational continuity and radical change: The contribution of middle managers," Administrative Science Quarterly (47), pp. 31–69.

Izard, C. E. 1984. Emotion-cognition relationships and human development. In C. E. Izard, J. Kagan, & R. B. Zajonc (Eds.), Emotions, cognition, and behavior (pp. 17-37). New York: Cambridge University Press.

Jasperson, J., Carter, P.E., and Zmud, R.W. 2000. "A Comprehensive Conceptualization of Post-Adoptive Behaviors Associated With Information Technology Enabled Work Systems," MIS Quarterly (29:3), pp 525-557.

Karahanna, E., Straub, D.W., & Chervany, N.L. 1999. Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. Mis Quarterly , 23(2): 183-213.

Kelly, J. R., and Barsade, S. 2001. "Emotions in small groups and work teams," Organizational Behavior and Human Decision Processes (86), pp. 99–130.

Kemper, T. D. 1978. A social interactional theory of emotion, New York: Wiley

Kim, B, & Han, I. 2007. The role of trust belief in community-driven knowledge and its antecedents. Journal of the American Society for Information Science & Technology, 60:1012–26.

Lawler, E. J., Thye, S. R., and Yoon, J. 2000. "Emotion and group cohesion in productive exchange,"American Journal of Sociology 106(3), pp. 616-657.

Lazarus, R S and Folkman, S. 1984. Stress, Appraisal, and Coping. New York: Springer.

Lazarus, R S, 1991. Emotion and Adaptation. New York: Oxford University Press.

Lazarus, R. S. 1994. `Psychological stress in the workplace', In: Crandall, R. and PerreweÂ , P. L. (Eds), Occupational Stress: A Handbook, Taylor and Francis, New York.

Lazarus, R. S., 1984. On the Primacy of Cognition. American Psychologist, 39, 124-130.

Lin, K., Chen, N., and Fang, K. 2011. Understanding e-learning continuance intention: a negative critical incidents perspective. Behaviour & Information Technology. 30 (1),

Lindgaard, G. & Dudek, C. 2003. What is this evasive beast we call user satisfaction?, Interacting with Computers, 15 (3), 429-452.

Lindquist, K.A., Siegel, E.H., Quigley, K.S., and Barrett, L.F. 2013. "The Hundred-Year Emotion War: Are Emotions Natural Kinds or Psychological Constructions? Comment on Lench, Flores, and Bench (2011)," Psychological Bulletin (139:1), pp. 255–263

McGrath, K., 2006. Affection not affliction: The role of emotions in information systems and organizational change. Information and Organization, 16, 277–303

Ortiz de Guinea, A., & Markus, M.L. 2009. Why Break the Habit of a Lifetime? Rethinking the Roles of Intention, Habit, and Emotion in Continuing IT Use. MIS Quarterly, 33(3), pp. 433-444.

Parkinson, B. (1994). Emotion. In A.M. Coleman (Ed.), Companion encyclopaedia of psychology, Vol. 2. London: Routledge.

Pieters, Rik and Zeelenberg, M. 2005. "On Bad Decisions and Deciding Badly: When Intention Behavior Inconsistency is Regrettable," Organizational Behavior and Human Decision Processes (97), pp. 18-30.

Phillips, D.M., & Baumgartner, H. 2002. The role of consumption emotions in the satisfaction response. Journal of Consumer Psychology, 12, 3, 243–252.

Roberts, P., and Henderson, R. 2000. Information technology acceptance in a sample of government employees: A test of the technology acceptance model. Interacting With Computers, 12, 427–443.

Roseman, I.J. 1984. Cognitive determinants of emotions: A structural theory. In P. Shaver (Ed.), Review of personality and social psychology (Vol. 5, pp. 11-36). Beverly Hills, CA: Sage.

Roseman, I.J. 1991. Appraisal determinants of discrete emotions. Cognitio n and Emotion, 5, 161-200.

Roseman, I.J., Spinde l, M.S., & Jose, P.E. 1990. Appraisal of emotion-elic iting events: Testing a theory of discrete emotions. Journal of Personality and Social Psychology, 59, 899-915.

Salanova, M., Lorente, L., Chambel, M.J. and Martínez, I.M. 2011. "Linking transformational leadership to nurses' extra-role performance: the mediating role of self-efficacy and work engagement," Journal of Advanced Nursing (67:10), pp. 2256–2266. doi: 10.1111/j.1365-2648.2011.05652.x.

Schelling, T. C. 1984. Self-command in practice, in policy, and in a theory of rational choice. American Economic Review, 74, 1–11.

Sheppard, B. H., J. Hartwick, P. R. Warshaw. 1988. "The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research," Journal of Consumer Research (15), pp. 325-343.

Shih, J. 2004. Building the mathematics and literature connection through children's responses. Teaching Children Mathematics. 328-333.

Thong, J.Y.L., Hong, W., & Tam, K.Y. 2002. Understanding user acceptance of digital libraries: What are the roles of interface characteristics, organizational context, and individual differences? International Journal of Human–Computer Studies, 57, 3: 215–242.

Thüring, M. & Mahlke, S. 2007. Usability, aesthetics, and emotions in human-technology-interaction. International Journal of Psychology, 64, 225-236.

Venkatesh, V. & Speier, C., 1999. Computer Technology Training in the Workplace: A longitudinal Investigation of the Effect of Mood. Organizational Behavior and Human Decision Processes, 79 (1), July, pp. 1-28.

Venkatesh, V. 2000. Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model, Information systems research, 11, pp. 342–365

Venkatesh, V.; Davis, F. D. 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies, Management Science 46(2): 186–204

Verkanplen, B., and Orbell, S. 2003. "Reflections on Past Behavior: A Self-Reported Index of Habit Strength," Journal of Applied Social Psychology (33:6), pp. 1313-1330.

Weiss, H. M. 2002. Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences. Human Resource Management Review, 12, 173–194.

Weiss, H. M., & Cropanzano, R. 1996. Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B. M. Staw & L. L. Cummings (Eds.), Research in organizational behavior: An annual series of analytical essays and critical reviews (pp. 1–74). Greenwich, CT: JAI Press.

Weiss, H.M., & Cropanzano, R. 1996. Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B.M. Staw and L.L. Cummings (eds.), Research in Organizational Behavior: An Annual Series of Analytical Essays and Critical Reviews. Vol. 18. Greenwich, CT: JAI Press, pp. 1–74.

Wen, C., Prybutok, V. R., & Xu, C. 2011. An integrated model for customer online repurchase intention. The Journal of Computer Information Systems, 52(1), 14-23.

Zhang, P., Li, N., & Sun, H. 2006. Affective quality and cognitive absorption: Extending technology acceptance research. Paper presented at the Hawaii International Conference on System Sciences (HICSS), Kauai, Hawaii, IEEE.