

The Impact of IT Identity on Users' Emotions: A Conceptual Framework in Health-Care Setting

Full Paper

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Abstract

Stimulating positive emotions in patients and alleviating their negative emotions is valuable in health care IT contexts. One form of health IT are patient-centric tools which are used directly by patients to manage their condition, facilitate access to their medical history, and receive feedback about their health status. The goal of this study is to understand what factors influence the arousal of emotions in patients while using these tools. Past studies, in general, tend to emphasize on how IT shapes emotions, underplaying the role of the individual user and his or her shared identity with IT in the process. In this research, we argue that patients' IT identity (i.e., the extent to which they consider IT as integral to their sense of self) and their aspect of personality, namely core self-evaluation (i.e., their sense of how capable they are in managing their disease) can play an important role in shaping users' evaluation of IT, and eventually their emotions about IT.

Keywords

IT identity, emotions, health IT, patient-centric systems

Introduction

Past research emphasizes the role of emotions in driving IT use (Cenfetelli 2004, Markus 2009, Ortiz de Guinea and, Stein et al. 2015, Zhang 2013). These studies suggest that under certain circumstances, affect and emotions can even have more power to explain behavior than cognition (Zhang 2013). Positive emotions can lead to more usage; on the other hand, negative emotions can decrease usage or lead to resistance and discontinued usage (Maier et al. 2015). The role of emotions is salient in the healthcare context as well. Extant literature provides examples of the arousal of both positive and negative emotions as a consequence of using health IT (e.g. Sittig et al. 2005).

Encouraging positive emotions in patients and relieving their negative emotions is likely to be beneficial in health care IT use contexts. One form of health IT are patient-centric tools. Such technologies are used directly by patients to manage their condition by being an active participant in the treatment process. These tools are designed to empower patients (Gustafson et al. 1999) and improve decision making, facilitate access to their medical history, and provide social and emotional support that support health and well-being (Or and Karsh 2009). For example, patients dealing with chronic diseases often have to change their life styles, which can evoke negative emotions, for instance, anxiety, depression, and stress (Turner and Kelly 2000). Thus, to provide better quality of care, it would be important to understand what influences emotional responses of patients to patient-centric IT and how such emotions influence patients' behaviors, and ultimately their health. Engaging positively with IT can not only increase IT usage and its adoption, but can also influence people's engagement in self-management, which can lead to positive health outcomes.

Past studies, in general, tend to emphasize on how IT shapes emotions, underplaying the role of the individual user and his or her shared identity with IT in the process. Even research that considers the role

of individual, tends to limit itself to users' affective tendencies, for example their moods and temperament (e.g., Zhang, 2013). This is surprising considering past research has suggested that certain aspects of personality may bear upon how they manage emotions (e.g., Özer, Hamarta, and Deniz, 2016). Further, recently Carter and Grover (2015) suggested that it is important to consider an individual's relationship with IT and argued that IT identity or the extent to which an individual considers IT as relevant to his or her self-concept drives IT use. Interestingly, both these strands of research – emotions in IT use and IT identity - remain disconnected. We argue that IT use can be best explained by combining the two fields of work. For instance, while Carter and Grover (2015) argue that IT identity drives IT use, one might argue that this becomes possible due to the emotions that the user experiences during IT use.

In this paper, we address these gaps by arguing that users' IT identity (i.e., the extent to which they consider IT as integral to their sense of self) and their aspect of personality, namely core self-evaluation (i.e., their sense of how capable they are) can play a role in shaping users' evaluation of IT, their emotions toward technology and eventual IT use. Our framework integrates the perspectives on emotions, IT identity and role of individual user in shaping IT use. Thus, in the context of patient centric IT, we attempt to address the following question: *What factors influence the arousal of emotions in patients while using these tools? In particular, how does patients' IT identity shape their emotions towards IT and eventual IT use? What is the role of their core self-evaluation in shaping this relationship?*

The paper is structured as follows. First it discusses the main constructs of the research, i.e. emotions about IT, IT identity, and core self-evaluation. Then a conceptual framework is proposed that explains the relationship between these constructs. The last section discusses the contribution of the paper and future research.

Theoretical Background

Emotions about IT

According to cognitive appraisal theories (e.g., Lazarus, 1991), emotions are “mental states of readiness that arise from the appraisal of events and one's own thoughts” (Bagozzi et al. 1999, p. 184). According to Russel (2003), emotions reside between a person and a stimulus. A stimulus is defined as “something or some event that a person reacts or responds to” (Zhang 2013, p. 250). Stimulus is a psychological representation which can be imagined or real (Russel 2003). In IT literature, examples of stimuli are software applications, websites, instant messengers, group support systems, e-vendors, and mobile data services (Zhang 2013). It is important to note that stimuli can have affective characteristics, which can be defined as “a stimulus' features, properties, or natures that contain affective information independent of the perceivers” (Zhang 2013, p. 260). For example, colorful, and sharp screen displays of a game can be considered as affective characteristics of a specific computer game (Zhang 2013). Emotions are “affective states induced by or attributed to a specific stimulus. Emotions typically arise as reactions to situational events and objects in one's environment that are relevant to the needs, goals, or concerns of an individual” (Zhang 2013, p. 251). In other words, people appraise and evaluate the stimulus and respond to it which elicit certain feelings and emotions in them.

Although affect and emotions have been discussed in IS literature (e.g. concepts like emotional design (Norman 2004), computer playfulness (Webster and Martocchio, 1992), cognitive absorption (Agarwal and Karahanna 2000), attitude (Ajzen and Fishbein, 2005), mood (Loiacono and Djamasbi, 2010)), studies examining antecedents of emotions toward IT remain rare. One of the studies that mainly investigates antecedents of emotions is Beaudry and Pinsonneault (2010). They argued that individuals appraise any IT stimulus based on two dimensions: first they assess whether the stimulus is a threat or opportunity to them, and second, they assess how much control they have over its potential consequences. This assessment can trigger one of four classes of emotions: a loss (activated by appraisals of threat and low control) can lead to emotions like anger, hate, dissatisfaction, and frustration; deterrence (activated by appraisals threat and high control) can lead to anxiety, and fear; achievement (activated by appraisals of opportunity and low control) can result in positive emotions like happiness, pleasure, contentment, and liking; and challenge (activated by appraisals of opportunity and high control) can lead to excitement and hope. Moreover, Stein et al. (2015) showed that we can “unpack an IT stimulus event into a set of cues” to consider the potential for such events “to trigger not just a single emotion but an array of

emotions.”(p.371). They found that there are five different characteristics of an IT stimulus that evoke “a single class of emotions”, when interacting in a “reinforcing manner”, and elicit “mixed emotions”, when “interacting in an oppositional manner” (p.367).

Other studies have mainly looked at how IT as a stimulus can trigger emotions and affect. These studies relied on affective characteristics of stimulus (e.g. web page design) to explain emotional responses of users (Stein et al. 2015). For example, Ethier et al. (2006) investigated how website quality impacts customers' cognitive processes that evoke emotions like joy, liking, pride, dislike, and frustration. Moreover, poor mobile phone usability has been found to increase users' negative emotions (Thuring and Mahlke 2007); similarly, Ayyagari et al. (2011) found that IT characteristics such as usability, intrusiveness, and dynamism influence users' stress levels. .

IT identity

The question “Who am I?” captures the core of identity (Corley et al. 2006). Individuals' identity has three bases or loci – a) personal identity or the aspects of self that differentiate the self from others, b) relational identity or the self-concept derived from connections with others (Brewer and Gardener 1996, p.84), and c) collective self, which refers to the social identity that one derives from membership in a group or category, such as occupation, race, gender, team or organizational membership, etc. (Brewer and Gardener 1996).

Drawing from the relational notion of identity, Carter and Grover (2015) defined IT identity as “the extent to which a person views use of an IT as integral to his or her sense of self.”(p.832). By IT, they mean any technology that an individual may use for information generation, storage and communication. According to Carter and Grover (2015), IT identity has three dimensions: 1) individuals' sense of relatedness or connectedness with IT, 2) reliance on IT, and 3) emotional attachment with IT. Thus, IT identity captures a person's relationship with IT. A strong IT identity would mean that an individual is highly identified with the IT. Such a situation is characterized by self-expansion where individuals includes the IT in their definition of self (Aron and Aron 1986); thus, they will see a blurring of boundaries between self and the IT, considering IT as integral to their sense of self. Conversely, a weak IT identity would mean that the person is not identified with the IT and will see IT as distinct from (and not integral to) their self (Carter and Grover 2015).

Past research on identity based on connection with other individuals suggests that it has an implication for affect and emotion experienced in the interaction (Anderson and Chen 2002, Chen et al. 2006); for instance, emotions such as embarrassment (Keltner et al. 1997), guilt (Baumeister et al. 1994), and jealousy (Buss and Schnitt 1993) are evoked when an individual is interacting with others he or she identifies with. Drawing from this research, one may argue that IT identity may associate with emotions generated while interacting with IT.

Core self-evaluation

Core self-evaluation (CSE), a construct introduced by Judge, et al. (1997) is defined as the “fundamental premises that individuals hold about themselves and their functioning in the world” (Judge et al.1998, p. 161). Judge, et al. (1997) suggested that CSE includes four personality traits: 1) self-esteem or appraisals of one's own self-worth, 2) generalized self-efficacy or an estimate of one's ability to perform and cope in different situations, 3) locus of control or belief in one's ability to control the environment and 4) emotional stability or the extent to which one feels calm and secure in day to day life (see Johnson et al. 2008 for a review). Thus, CSE is not merely a description of an individual's traits; instead, it involves evaluation of oneself and is “a basic, fundamental appraisal of one's worthiness, effectiveness, and capability as a person” (Judge et al. 2003, p. 304). In the context of patient centered IT, those with high CSE, would believe that they are capable of solving their health related issues, consider themselves in control of their health situation, and would be optimistic about their health in general.

Past research suggests that CSE is related to several job attitudes and behaviors. For instance, those with high CSE see themselves as competent; they are more positive about accepting responsibilities in their jobs (Judge and Kammeyer-Mueller 2011), set higher goals for themselves and are more committed to the task (Erez and Judge 2001). Since, those with high CSE are more confident of their ability to manage

their health, one might contend that this characteristics may have a bearing on how such individuals interact with patient centered IT.

Conceptual Framework

Our paper builds upon the idea that emotions reside between a person and a stimulus (Russel, 2003) and user's affective response will arise while interacting with technology and appraising the stimulus (Figure 1). Thus, emotions are essentially about "a person's responses to a stimulus and thus considered to be between a person and a stimulus. For the same stimulus, different people may have different responses; while for the same person, different stimuli may generate different responses." (Zhang 2013, p. 254).

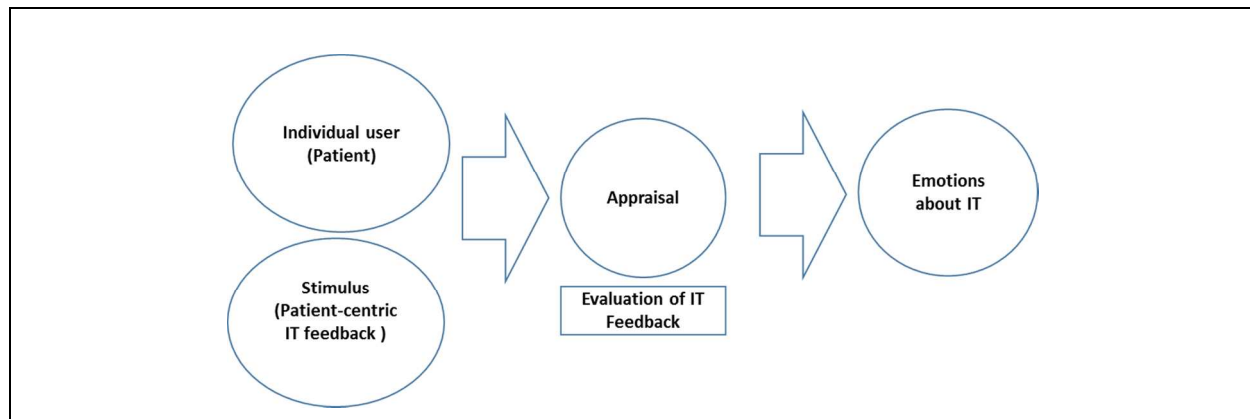


Figure 1- Appraisal of IT Feedback

Patient centric IT or self-management systems are health record systems that can be accessed at home or at work, at the convenience of the patient (Polomano et al., 2007). Many of these tools can help patients afflicted by chronic conditions like asthma and diabetes (Demiris et al., 2008). The main functions of patient-centric tools are providing feedback to patients about their health status, while also providing the possibility to communicate with health care providers or other patient communities (Solomon, 2008). These systems can automatically generate feedback about patients' self-management performance, which can be a warning to take action or a motivational feedback to continue being active in their care process (Hunt, 2015). The clinical information feedback received from self-management tools, improves patients' ability to see how their disease is affected by their behavior and promotes decision-making and problem-solving (Hunt, 2015). Thus, one of the main functions of patient-centric systems is to provide feedback so that patients could self-monitor their symptoms, medications and physical activities. As such, the main stimulus is the feedback they provide to the user. According to the cognitive appraisal theories (Lazarus 1991, Russel 2003), the way users appraise the IT feedback will influence their emotions. As such, the question pertaining to how patients might appraise the feedback received from patient-centric systems assumed importance. Based on cognitive appraisal theory, during the appraisal process, a person evaluates the potential harm or benefit in the stimulus. If it is appraised as a harm, negative emotions arise and if it is appraised as an opportunity, positive emotions are elicited. Since the feedback that the users receive from patient-centric systems targets their health and their capability of taking care of their disease, system-induced perceptions that make patients feel unqualified may trigger negative feelings. On the other hand, system-induced perceptions of being qualified in managing their health may trigger positive feelings.

Our framework (see Figure 2) proposes that there are three variables that play a key role in shaping the appraisal process and consequently the users' emotional response to technology. These variables pertain to the relationship between the technology and the patient (i.e. IT identity), patients' evaluation of IT feedback, and patients' evaluation of their own capabilities in managing their health (i.e., core self-evaluation). Below, we first define the key constructs followed by a description of our framework. We begin with how IT identity – which reflects a user's relationship with IT – might associate with both how users evaluate the feedback from IT and their emotions about IT.

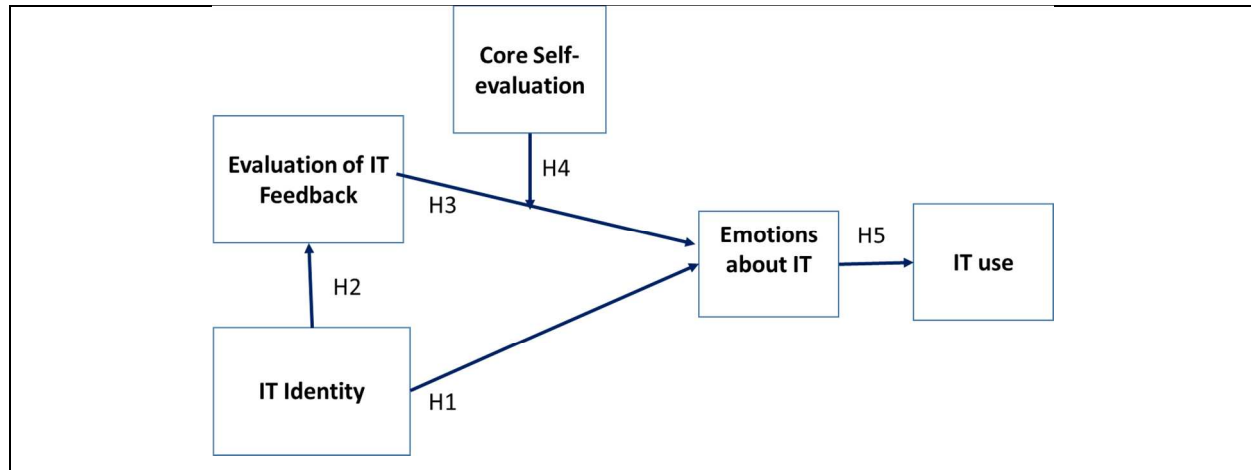


Figure 2-Conceptual Framework

The constructs and their definitions are explained in Table 1.

Construct	Definition	Reference
IT Identity	The extent to which users consider IT as integral to their sense of self	Carter and Grover (2015)
Evaluation of IT feedback	If users appraise the feedback to be supportive or not-supportive (disapproving) and the extent of value users attach to the feedback (i.e. how important the message is for users)	Russel (2003)
Core Self Evaluation	Individuals' sense of how capable they are - in this context, how capable they consider themselves in managing their chronic condition	Judge, Locke, and Durham (1997)
Emotions about IT	Affective states induced by or attributed to a specific IT stimulus. They have two characteristics 1-Valence (positive or negative), 2- Arousal or strength (how activated the emotion is)	Zhang (2013), Russel (1980)
IT Use	The extent to which one actively interacts with IT	Beaudry and Pinsonneault (2010)

Table1-Constructs and their definitions

IT Identity and Emotions about IT

Emotions can be looked at in terms of a circumplex model (Russell, 1980). According to this model, affect has two dimensions: 1) valence or the extent to which they are positive (e.g., happy) or negative (e.g., gloomy) and 2) arousal or the extent to which they are activated (e.g., excited) as against being deactivated (e.g., calm).

IT identity denotes how important a particular IT is to the individual or how identified an individual is with IT. The notion of identification is important as it has an implication for a wide variety of phenomena. For instance, past research on emotions argues that we react emotionally in a situation only when we find the situation relevant (Arnold, 1960); as such high identification with IT (or a stronger IT identity) should associate with emotional reaction to IT. Further, past research on identification with other targets suggests that those with higher identification tend to experience more intense emotions (Smith et al. 2007). We, therefore, argue that IT identity will positively associate with the strength of the both positive and negative emotions.

We hence propose:

Hypothesis 1: Stronger the IT identity, stronger will be the (positive or negative) emotion about IT.

IT Identity and Evaluation of IT feedback

By evaluation of IT feedback, we mean the extent of value the user attaches to the feedback. That is, how important the message is for the user. Past research on appraisal theory suggests that when an event occurs, individuals go through a two stage appraisal process (Lazarus and Smith, 2001). In the first stage, they try to assess if the event is relevant or irrelevant and in the second stage they focus on the cause of the event and how possibly they can cope with it. Assessing relevance is important as “personally insignificant situations do not garner enough attention to warrant appraisal and emotional reaction” events that are not personally significant may not garner an appraisal (Mitchell 2010, p. 83). As discussed, IT identity reflects the extent to which the IT is an integral part of an individual’s sense of self; stronger the identity, more important IT is to the individual. Drawing from this assertion, one might say that the stronger the IT identity, more relevant will be the IT feedback for the user and higher will be the importance that he or she will assign to it.

Therefore:

Hypothesis 2: Stronger the users’ IT identity, higher will be the users’ value attached to feedback from IT.

Evaluation of IT Feedback and Emotions about IT

As discussed before, according to Folkman et al. (1986), during the appraisal process, a person evaluates whether there is potential harm or benefit in the stimulus. If it is appraised as a harm or threat, negative emotions are evoked and if it is appraised as an opportunity, positive emotions are elicited (Beaudry and Pinsonnault 2010). Since in patient-centric systems, the main stimulus is the feedback received from the system, if patients appraise the feedback as a threat that diminishes their capability, they will feel negative emotions toward IT; conversely, if they appraise the feedback to be supportive they would engage in positive emotions and feel positively about it. Therefore, here we argue if patients appraise the message to be supportive and they assign a high value to it, they will feel more positive emotions about IT. On the other hand, if they appraise it as a threat and they assign a high value to it, they will feel more negative emotions about IT. Further, the feedback evaluation not only influences users’ emotion about the feedback, but also their emotions about the IT as whole. This argument is in line with past research that has studied the effect of IT stimuli on users’ emotions (Zhang 2013). Based on extant research, affective characteristics of stimulus can explain emotional responses of users to it (Stein et al. 2015).

We hence propose:

Hypothesis 3: Higher the value attached to the IT feedback, stronger will be the (positive or negative) emotion about IT.

Moderating effect of Core Self-evaluation

One of the dimensions of CSE is locus of control. Those with high CSE have internal locus of control and are intrinsically driven. For instance, they tend to follow goals that they value rather than the ones that are simply valued by others (Judge et al. 2005). Further, they tend to see themselves more in control over the environment and are not perturbed by feedback from others. As Judge and Kammeyer-Mueller (2011, p.334) mentioned, they are more confident of their own opinions and are “likely to be more secure in the face of criticism.” Similarly, Bono and Colbert (2005) found that feedback tend to affect those with high CSE much less than the ones with low CSE.

Drawing from the above, one may argue that the individuals with high CSE will not be affected as much by the feedback from IT. In other words, higher the CSE, weaker will be the relationship between IT feedback and emotions.

Hypothesis 4: Core self-evaluation will moderate the relationship between evaluation of IT feedback and emotions about IT such that higher the CSE, weaker will be the relationship between evaluation of IT feedback and emotions about IT.

Emotions about IT and IT use

Past research studied the role of emotions in IT use and also indicated that emotions are associated with IT use (Beaudry and Pinsonneault 2010, Ortiz de Guinea and Markus 2009, Stein et al. 2015). For example, Cenfetelli (2004) showed that positive/negative emotions are positively/negatively related to perceived ease of use which consequently influences usage. Moreover, Beaudry and Pinsonneault (2005) showed that emotions influence IT use through their influence on adaptation behaviors. Moreover, relying on coping theory, Stein et al. (2015) argue that interacting with technology elicit emotion(s) and in turn people engage in different coping strategies which then become revealed in particular use patterns. Confirming past literature and by defining IT use as “the extent to which one actively interacts with IT” (Beaudry and Pinsonneault(2010, p.699), we propose that the stronger positive emotions about IT is, the patients use it more. On the other hand, the stronger negative emotions about IT is, the patients use it less.

We hence propose:

Hypothesis 5a: Stronger the positive emotions about IT, higher will be the usage.

Hypothesis 5b: Stronger the negative emotions about IT, lower will be the usage.

Discussion and Conclusion

The importance of understanding emotions and how they are elicited during the use of health IT cannot be emphasized enough. The main objectives of health IT are to improve the quality of care and access to health care. Health IT have been observed to arouse different positive and negative emotions. In order to increase the chances of acceptance of health IT, and also to improve the quality of care, it is important to find ways of motivating positive emotions while reducing negative emotions and their undesirable effects.

The theoretical framework proposed in this paper provides a detailed understanding of how emotions are evoked in user's interaction with IT and as such can be used to predict and explain emotions about IT. In particular, we argued that IT identity, evaluation of health IT feedback, and core self-evaluation of patients play important roles in explaining emotions toward these health IT systems. An example to illustrate the framework can be the usage of self-management systems to control chronic diseases like asthma. These tools are designed to help patients control their asthma by avoiding its triggers and reducing its symptoms (Kotses and Creer, 2010). Asthma patients are required to enter information regarding their medication-adherence and their symptoms to the system, and based on the data entered the system provides feedback about the patients' health status and their performance in controlling their asthma. The feedback also advises patients about what to do if their asthma is not under control. A strong identification with technology, influences patients to assign a high value to technology, which in turn can trigger strong emotions in patients. Moreover, the appraisal of technology's feedback plays an important role in evoking positive or negative patients' emotions. While identifying themselves with technology, patients might experience strong positive emotions because they perceive themselves to be valuable people who were taken care of by the technology (i.e. appraising the feedback to be supportive). On the other hand, patients might feel strong negative emotions (e.g. guilt, helplessness) because they feel disapproved by the technology, which they see as an extension of health care providers.

While past research emphasizes the importance of emotions during IT use and also argues that IT identity shapes IT use, what has been lacking is an examination of how these two constructs – emotions and IT identity – are related. Our framework, thus, contributes to this literature by integrating these two distinct fields to provide a more complete understanding of emotions elicited during IT use. Further, most studies do not take into account the role of user's evaluation of his or her own competence in the experience of emotions. By including core self-evaluation (CSE) in the framework, we argue that not only IT but also user's evaluation of their own capability in managing their health may play an important role in their experience of emotions. In sum, the framework suggests that to understand the user's emotions towards patient-centered IT, it is important to take into account the role of both the relationship of IT with the user (i.e., IT identity) and user's own notions about their competence in managing their health (i.e., core self-evaluation). Finally, the paper puts forth several hypotheses that can be tested in future research. Table 2 depicts potential measures for the constructs.

Construct	Potential measures adapted from	Reference
IT Identity	Single item graphical scale of organizational identification	Bergami and Bagozzi (2000)
Evaluation of IT feedback	Feedback environment scale	Steelman et al. (2004)
Core Self Evaluation	12 item scale in organizational literature	Judge, Erez, Bono, and Thoreson (2003)
Emotions about IT	Self-assessment Manikin (SAM) – pictorial measure of emotional valence, arousal, and dominance	Bradley and Lang (1994)
IT Use	Frequency and duration of use	Venkatesh and Davis (2000)

Table2-Constructs and their measures

Our framework is specific to self-management IT because of the important role of IT feedback in these systems. The nature of feedback in these systems can influence patients to perceive themselves to be qualified or unqualified in managing their disease. And since these systems have been designed to empower patients, the appraisal of the feedback as a harm can defeat the purpose of the system. While our proposed framework applies to the patient healthcare IT context, it can also be extended to examine emotions in the use of IT by other actors of the health care system. For example, clinical decision making tools used by nurses or doctors that provide clinical decision support such as medication suggestions, general clinical guidance, or intelligently processed patient data. Moreover, our framework can be applied to other contexts, specifically systems that provide personal feedback to users.

REFERENCES

- Ackoff, R. L. 1961. "Management Misinformation Systems," *Management Science* (14:4), pp. 147-156.
- Agarwal, R., and Karahanna, E. 2000. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage," *MIS quarterly*, pp. 665-694.
- Ajzen, I., and Fishbein, M. 2005. "The Influence of Attitudes on Behavior," *The handbook of attitudes* (173), p. 221.
- Andersen, S. M., and Chen, S. 2002. "The relational self: An interpersonal social-cognitive theory," *Psychological Review* (109:2), 619-645.
- Arnold, M. B. 1960. *Emotion and personality: Vol.1 Psychological aspects*. New York: Columbia University Press
- Aron, A., and Aron, E. 1986. *Love and the expansion of self: Understanding attraction and satisfaction*. New York: Hemisphere.
- Ayyagari, R., Grover, V., and Purvis, R. 2011. "Technostress: Technological Antecedents and Implications," *MIS quarterly* (35:4), pp. 831-858.
- Bagozzi, R.P., Gopinath, M., and Nyer, P.U. 1999. "The Role of Emotions in Marketing," *Journal of the academy of marketing science* (27:2), pp. 184-206.
- Baumeister, R. F., Stillwell, A. M., and Heatherton, T. F. 1994. "Guilt: An interpersonal approach," *Psychological Bulletin* (115:2), pp. 243-267.
- Beaudry, A., and Pinsonneault, A. 2010. "The Other Side of Acceptance: Studying the Direct and Indirect Effects of Emotions on Information Technology Use," *MIS quarterly* (34:4), pp. 689-710.
- Benbasat, I., and Zmud, R. W. 2003. "The Identity Crisis within the IS Discipline: Defining and Communicating the Discipline's Core Properties," *MIS Quarterly* (27:2), pp. 183-194.
- Bergami, M., and Bagozzi, R.P. 2000. "Self-Categorization, Affective Commitment and Group Self-Esteem as Distinct Aspects of Social Identity in the Organization," *British Journal of Social Psychology* (39:4), pp. 555-577.
- Bono, J. E., and Colbert, A. E. 2005. "Understanding responses to multi-source feedback: The role of core self-evaluations," *Personnel Psychology* (58), pp. 171-203.

- Bradley, M.M., and Lang, P.J. 1994. "Measuring Emotion: The Self-Assessment Manikin and the Semantic Differential," *Journal of behavior therapy and experimental psychiatry* (25:1), pp. 49-59.
- Brewer, M. B., and Gardner, W. L. 1996. "Who is this "we"? Levels of collective identity and self-representations," *Journal of Personality and Social Psychology*, (71), pp. 83-93.
- Buss, D. M., and Schmitt, D. P. 1993. "Sexual strategies theory: An evolutionary perspective on human mating," *Psychological Review* (100: 2), pp. 204-232.
- Carter, M., and Grover, V. 2015. "Me, My Self, and I (T): Conceptualizing Information Technology Identity and Its Implications," *Mis Quarterly* (39:4), pp. 931-957.
- Cenfetelli, R. 2004. "Getting in Touch with Our Feelings Towards Technology " *Academy of Management Proceedings: Academy of Management*, pp. F1-F6.
- Chen, S., Boucher, H. C., and Tapias, M. P. 2006. "The relational self revealed: Integrative conceptualization and implications for interpersonal life," *Psychological Bulletin* (132:2), pp. 151-179.
- Corley, K., Harquail, C., Pratt, M., Glynn, M., Fiol, C., and Hatch, M. 2006. "Guiding Organizational Identity through Aged Adolescence," *Journal of Management Inquiry* (15), pp. 85-99.
- De Guinea, A.O., and Markus, M.L. 2009. "Why Break the Habit of a Lifetime? Rethinking the Roles of Intention, Habit, and Emotion in Continuing Information Technology Use," *Mis Quarterly*, pp. 433-444.
- Demiris, G., Afrin, L.B., Speedie, S., Courtney, K.L., Sondhi, M., Vimarlund, V., Lovis, C., Goossen, W., and Lynch, C. 2008. "Patient-Centered Applications: Use of Information Technology to Promote Disease Management and Wellness. A White Paper by the Amia Knowledge in Motion Working Group," *Journal of the American Medical Informatics Association* (15:1), pp. 8-13.
- Erez, A., and Judge, T. A. 2001. "Relationship of core self-evaluations to goal setting, motivation, and performance," *Journal of Applied Psychology* (86: 6), pp. 1270-1279.
- Éthier, J., Hadaya, P., Talbot, J., and Cadieux, J. 2006. "B2c Web Site Quality and Emotions During Online Shopping Episodes: An Empirical Study," *Information & Management* (43:5), pp. 627-639.
- Folkman, S., Lazarus, R.S., Dunkel-Schetter, C., DeLongis, A., and Gruen, R.J. 1986. "Dynamics of a Stressful Encounter: Cognitive Appraisal, Coping, and Encounter Outcomes," *Journal of personality and social psychology* (50:5), p. 992.
- Gustafson, D.H., Hawkins, R., Boberg, E., Pingree, S., Serlin, R.E., Graziano, F., and Chan, C.L. 1999. "Impact of a Patient-Centered, Computer-Based Health Information/Support System," *American journal of preventive medicine* (16:1), pp. 1-9.
- Holman, H., and Lorig, K. 2004. "Patient Self-Management: A Key to Effectiveness and Efficiency in Care of Chronic Disease," *Public health reports* (119:3), p. 239.
- Hunt, C.W. 2015. "Technology and Diabetes Self-Management: An Integrative Review," *World journal of diabetes* (6:2), p. 225.
- Johnson, R. E., Rosen, C. C., and Levy, P. E. 2008. "Getting to the core of core self-evaluation: A review and recommendations," *Journal of Organizational Behavior* (29: 3) pp. 391-413.
- Judge, T. A., Bono, J. E., Erez, A., and Locke, E. A. 2005. "Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment," *Journal of Applied Psychology* (90: 2), pp. 257-268.
- Judge, T. A., Erez, A., and Bono, J. E. 1998. "The power of being positive: The relation between positive self-concept and job performance," *Human Performance* (11) pp. 167-188.
- Judge, T. A., Erez, A., Bono, J. E., and Thoresen, C. J. 2003. "The Core Self-Evaluations Scale (CSES): Development of a measure," *Personnel Psychology* (56), pp. 303-331.
- Judge, T. A., Locke, E. A., and Durham, C. C. 1997. "The dispositional causes of job satisfaction: A core evaluations approach," *Research in Organizational Behavior* (19), pp. 151-188
- Judge, T. A., and Kammeyer-Mueller, J. D. 2011. "Implications of core self-evaluations for a changing organizational context," *Human Resource Management Review* (21), pp. 331-341.
- Keltner, D., Young, R. C., and Buswell, B. N. 1997. "Appraisal in human emotion, social practice, and personality," *Aggressive Behavior* (23: 5), pp. 359-374.
- Kotses, H., and Creer, T.L. 2010. "Asthma Self-Management," in *Asthma, Health and Society*. Springer, pp. 117-139.
- Lazarus, R.S. 1991. *Emotion and Adaptation*. Oxford University Press.

- Loiacono, E., and Djasasbi, S. 2010. "Moods and Their Relevance to Systems Usage Models within Organizations: An Extended Framework," *AIS Transactions on Human-Computer Interaction* (2:2), pp. 55-72.
- Lorig, K.R., Ritter, P.L., Laurent, D.D., and Plant, K. 2006. "Internet-Based Chronic Disease Self-Management: A Randomized Trial," *Medical care* (44:11), pp. 964-971.
- Maier, C., Laumer, S., Weinert, C., and Weitzel, T. 2015. "The Effects of Technostress and Switching Stress on Discontinued Use of Social Networking Services: A Study of Facebook Use," *Information Systems Journal* (25:3), pp. 275-308.
- Mitchell, Lorianne D. 2010. "Emotional Responses to Performance Appraisal Feedback: Implications for Organizations," *Journal of Applied Business and Economics* (11: 4), pp. 82-108.
- Norman, D.A. 2004. *Emotional Design: Why We Love (or Hate) Everyday Things*. Basic books.
- Or, C.K., and Karsh, B.-T. 2009. "A Systematic Review of Patient Acceptance of Consumer Health Information Technology," *Journal of the American Medical Informatics Association* (16:4), pp. 550-560.
- Özer, E., Hamarta, E., and Deniz, M. 2016. "Emotional Intelligence, Core-Self Evaluation, and Life Satisfaction," *Psychology* (7: 2), pp. 145-153.
- Polomano, R.C., Droog, N., Purinton, M.C.P., and Cohen, A.S. 2007. "Social Support Web-Based Resources for Patients with Chronic Pain," *Journal of Pain and Palliative Care Pharmacotherapy* (21:3), pp. 49-55.
- Russell J. A. 1980. "A circumplex model of affect," *Journal of Personality and Social Psychology* (39: 6), pp. 1161-1178.
- Russell, J.A. 2003. "Core Affect and the Psychological Construction of Emotion," *Psychological review* (110:1), p. 145.
- Sittig, D.F., Krall, M., Kaalaas-Sittig, J., and Ash, J.S. 2005. "Emotional Aspects of Computer-Based Provider Order Entry: A Qualitative Study," *Journal of the American Medical Informatics Association* (12:5), pp. 561-567.
- Solomon, M.R. 2008. "Information Technology to Support Self-Management in Chronic Care," *Disease Management & Health Outcomes* (16:6), pp. 391-401.
- Steelman, L.A., Levy, P.E., and Snell, A.F. 2004. "The Feedback Environment Scale: Construct Definition, Measurement, and Validation," *Educational and psychological measurement* (64:1), pp. 165-184.
- Stein, M.-K., Newell, S., Wagner, E.L., and Galliers, R.D. 2015. "Coping with Information Technology: Mixed Emotions, Vacillation, and Nonconforming Use Patterns," *MIS Quarterly* (39:2), pp. 367-392.
- Smith, E. R., Seger, C. R., and Mackie, D. M. 2007. "Can emotions be truly group-level? Evidence regarding four conceptual criteria," *Journal of Personality and Social Psychology* (93: 3), pp. 431-446
- Thüring, M., and Mahlke, S. 2007. "Usability, Aesthetics and Emotions in Human-Technology Interaction," *International Journal of Psychology* (42:4), pp. 253-264.
- Turner, J., and Kelly, B. 2000. "Emotional Dimensions of Chronic Disease," *Western Journal of Medicine* (172:2), p. 124.
- Venkatesh, V., and Davis, F.D. 2000. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management science* (46:2), pp. 186-204.
- Webster, J., and Martocchio, J.J. 1992. "Microcomputer Playfulness: Development of a Measure with Workplace Implications," *MIS quarterly*, pp. 201-226.
- Zhang, P. 2013. "The Affective Response Model: A Theoretical Framework of Affective Concepts and Their Relationships in the ICT Context," *MIS quarterly* (37:1), pp. 247-274.