Fear Appeals, Threat Perceptions, and Protection Motivation in Information Systems Security

Narasimha Paravastu
Metropolitan State University, USA

Murugan Anandarajan
Drexel University, USA

INTRODUCTION

Information systems security is defined as protection of information systems assets against the threats of unauthorized access to or modification of information, that is stored, being processed or in transmission, that result in disruptions to authorized users, or availability to unauthorized users, and the measures of protections that include detection, documentation and successfully thwarting such threats (Whitman & Mattord, 2012). The information systems assets include components of information system, software, hardware, communication systems, data and storage, and several tangible and intangible aspects of an information system (Schou & Shoemaker, 2007).

Past research identified several threats to information systems (IS) security such as viruses, worms and infections, hacking and unauthorized access, malware, data breaches, credit card and identity theft etc. The catastrophic impact of such information systems incidents or compromises on organizations is well documented (Choobineh, Dhillon, Grimaila, & Rees, 2007; Loch, Carr, & Warkentin, 1992; Panko, 2003). Therefore the importance of information security forms an important aspect of organizational as well as personal information systems.

While IS Security comprises of technical aspects such as firewalls, antivirus software, intrusion detection systems, and other software and hardware controls, ensuring effective information IS security goes beyond the technical controls, and calls for a socio-technical approach to security (Panko, 2004; Workman, Bommer, & Straub, 2009). Arguably, users are the weakest link in IS security because they are often error prone and may lack proper understanding of IS security, or often not in compliance with the security requirements (Dhillon & Moores, 2001; Siponen, 2005; Stanton & Stam, 2006). IS research has studied the impact and effectiveness of deterrence, workplace monitoring and implementing strict IS security policies in organizations extensively (Herath & Rao, 2009; Hu, Dinev, Hart, & Cooke, 2012; Smith, Milberg, & Burke, 1996; Stanton & Stam, 2006). The role of users, and importance of user awareness is well recognized in research as being fundamental to for IS security measures to be effective (Herath & Rao, 2009; Spears & Barki, 2010; Straub & Weike, 1998; Straub & Nance, 1990). However, understanding the factors that can bring an attitude change, motivate the users to protect themselves against IS security threats or create user awareness about the importance of security can be helpful in implementing effective counter measures for the IS security threats.

Protection motivation theory provides a framework for understanding how user's perceptions of threats and their perceptions about the severity and vulnerability of threats influence user intentions and actions towards protecting themselves. The theoretical framework of protection motivation and persuasive fear appeals is considered appropriate for information systems security because threats to information security is an important issue that warrants understanding of how individuals respond to such threats. This article reviews the protection motivation theory framework and the past research in the area of fear appeals and protection motivation as it relates to information systems security.

DOI: 10.4018/978-1-4666-5888-2.ch423

THEORETICAL BACKGROUND

Protection Motivation Theory

Protection Motivation Theory (PMT) (Rogers, 1975; Rogers, 1983) forms the basis for most of the research on fear appeals. Fear appeal is a persuasive message imploring an individual to follow certain recommended actions, failing which, negative consequences of not following the recommended actions are presented (Witte, 1992; Witte & Allen, 2000). PMT explains the relationship between the fear appeals, threat perceptions, persuasive messages and influence on behavioral intent through two appraisal processes: *threat appraisal* comprising of perceived severity and perceived vulnerability, and *coping appraisal* comprising of response efficacy, and self-efficacy. Fear appeal, and threat appraisal and the coping appraisal processes and the PMT framework is explained in the following paragraphs.

Fear is defined as a negative emotion towards an object, event, person or a perceived threat, accompanied by high arousal (Witte, 1992). Fear is conceptualized as an emotional state that protects a person from danger (Freud, 1963), and is considered to be a motivational factor that facilitates and increases the effectiveness of persuasion (Dillard & Anderson, 2004; Witte, 1992). *Perceived threat* is the stimuli arousing the emotion of fear. However, fear is not an essential condition to influence behavior, nor directly influence or change the attitudes or behaviors (Rogers, 1975). Fear arising out of a threatening message is a consequence of the *threat appraisal*, and therefore does not have a direct impact on the ongoing appraisal and the coping processes (Rogers, 1975; Rogers, 1983). Fear heightens arousal and generates a greater interest in a message related to the fear and the recommendations offered by the message to overcome fear (Ray & Wilkie, 1970). Perception of threat triggers two appraisal processes: Threat appraisal, and coping appraisal. The threat appraisal processes involve the individual's *perceived severity* of the threat and the *perceived vulnerability* to the threat. Perceived severity is defined as the magnitude of the threat or seriousness perceived by a person (Rippetoe & Rogers, 1987; Witte, 1992; Witte, Andersen, & Guerrero, 1998). Perceived vulnerability is defined as the subjective perception of the impending possibility of a negative event happening to him or her (Rippetoe & Rogers, 1987; Witte, 1992; Witte, et al., 1998).

The coping appraisal processes focus on the responses that that will avert the threat. Such factors include *response efficacy* and *self-efficacy*. Response efficacy refers to the person's belief that the recommended behaviors will be effective in reducing or eliminating the perceived threat (Rippetoe & Rogers, 1987). Self-efficacy refers to the person's belief that he or she has the ability to perform the recommended behaviors (Bandura, 1977). It is expected that the higher the perceived self-efficacy, the more positive the response (Rippetoe & Rogers, 1987). The positive responses to cope with the threat are known as adaptive coping. On the other hand, if the individual perceives the threat as something that is beyond his or her control, it results in negative responses to cope with threat such as denial that a threat exists, so as to control or overcome the fear of threat. These are negative responses to threat known as maladaptive coping behaviors.

Threat appraisal and coping appraisal processes together determine motivation to take self-protective action and mediate the relationship between a perceived threat and protection motivation. Protection motivation is an individual's *intention* to adopt the recommended behavior contained within the fear appeal (Rogers, 1975). These influence the behavioral intent and subsequently, the actions of the individual to cope with a threat, known as *protection motivation*. Protection motivation occurs from an individual's perception of an event or likely occurrence of the event as harmful (stimulus of fear), coupled with a belief that a recommended course of action (persuasive message) could alleviate the occurrence of the adverse event (Rogers, 1975). Protection motivation results in change in behavioral intentions, and then the individual behavior. Protection motivation mediates the relationship between the appraisal processes and the protective behaviors, and it activates and maintains the protective behaviors (Boer & Seydel, 1996).

Fear appeals are considered as a very effective persuasive strategy in motivating a person to do a recommended positive actions such as quitting smoking, alcohol etc., or taking preventive or protective health measures (Witte, 1994). PMT has been applied to a variety of contexts such as health and alcohol abuse (Rogers, 1983; Stainback & Rogers, 1983; Taylor & May, 1996; Van der Velde & Van der Pligt, 1991). Fear appeals are extensively used in marketing contexts such as marketing of products and services, social causes