

Winter 12-13-2015

# When does One Weight Threats more? An Integration of Regulatory Focus Theory and Protection Motivation Theory

Jack Shih-Chieh Hsu  
*National Sun Yat-Sen University*

Sheng-Pao Shih  
*Tamkang University*

Follow this and additional works at: <http://aisel.aisnet.org/wisp2015>

---

## Recommended Citation

Hsu, Jack Shih-Chieh and Shih, Sheng-Pao, "When does One Weight Threats more? An Integration of Regulatory Focus Theory and Protection Motivation Theory" (2015). *WISP 2015 Proceedings*. 12.  
<http://aisel.aisnet.org/wisp2015/12>

This material is brought to you by the Pre-ICIS Workshop on Information Security and Privacy (SIGSEC) at AIS Electronic Library (AISeL). It has been accepted for inclusion in WISP 2015 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

## **When does One Weight Threats more? An Integration of Regulatory Focus Theory and Protection Motivation Theory**

*Research in Progress*

**Jack Shih-Chieh Hsu**

National Sun Yat-Sen University, Taiwan ROC {jackshsu@mis.nsysu.edu.tw}

**Sheng-Pao Shih**

Tamkang University, Taiwan ROC {sbao@mail.tku.edu.tw}

### **ABSTRACT**

Protection motivation theory has been adopted to understand the driver of information security behaviors broadly. Based on theoretical arguments and empirical results, security behaviors are driven by individuals' appraisal toward threats and coping. However, while most study focus on the impacts of independent variables on dependent variables, previous studies largely ignore a fact that, under certain conditions, individuals tend to weight the importance of threat (or coping) appraisal more. Given that the goal of security behavior is to protection information and individuals may be oriented to the goal differently, we argue that the magnitude of the impacts of threat and coping appraisal may be contingent on individuals' goal orientation. Specifically, this study attempts to integrate protection motivation theory with regulatory focus theory and explore whether (1) threat appraisal is more critical when prevention focus is high and (2) coping appraisal generates more impact when promotion focus is high. By integrating protection motivation theory with regulatory focus theory and revealing the moderating roles of regulatory focus on protection motivations, we expect to contribute to protection motivation theory by showing the effects of threat and coping appraisal may be contingent on certain conditions.

**Keywords:** Protection motivation theory, regulatory focus theory, security behaviors

## **INTRODUCTION**

The extent to which information security policies can be effective is associated with behaviors of employees (Boss et al. 2009; D'Arcy and Herath 2011; Herath and Rao 2009a; Herath and Rao 2009b; Hsu et al. 2015; Lee and Lee 2002; Lee et al. 2004). Understanding the drivers of security behavior therefore become one popular research stream in IS area and several popular theories have been widely adopted to understand this issue. For example, protection motivation theory (PMT) based studies pointed out that motivation for taking security related actions is driven by appraisals toward both threat and coping. Specifically, protection motivation is stronger when individuals are aware of the threats and believe can make effective response.

However, even though protection motivation theory based studies have pointed out the effects of threat and coping appraisals, it is noticeable that while some studies reported that threat appraisal have stronger effect (Boss et al. 2015; Workman et al. 2008), other studies reported that coping appraisal is more critical (e.g. Boss et al. 2015; Crossler and Bélanger 2014). This indicates that whether the importance of specific appraisal may vary under different conditions. For example, it is reasonable to suspect that threat appraisal may generate more effect on compliance behavior when employees are more sensitive toward threats.

Information security related behaviors within organization can be viewed as goal persuading behaviors. The goal of such type of behaviors is to assure computer or information systems are free from threats and information or system is secured. Based on regulatory focus theory (RFT) proposed by Higgins (1997), how individuals weight the content of information security policies and action-taking decision depends on how they are oriented to the goal (Higgins 1997). RFT suggests two separate and independent types of self-regulatory orientations: promotion and prevention. While promotion focus individuals tend to weight strategies or

resources for achieving ideal goal more, prevention focus individuals tend to be vigilant with potential threats that drive them away from the minimum goal.

Therefore, through integrating regulatory focus theory with protection motivation theory, the purpose of this study is to understand “*Whether the impact of threat appraisal and coping appraisal on security compliance behavior is moderated by regulatory focus?*” Specifically, we argue that, the impact of threats appraisal is stronger when the level of prevention is high and the impacts of coping appraisal is stronger when the level of promotion is high.

## **THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT**

### **Protection Motivation Theory**

Protection motivation theory is initially proposed to understand fear appraisal and later is extended to understand the cognitive process that mediate behavioral change (Floyd et al. 2000). PMT also has been adopted widely in information security research to understand the threat appraisal and coping appraisal process of information security behaviors (Anderson and Agarwal 2010; Johnston and Warkentin 2010) and security policy compliance (Herath and Rao 2009b; Ifinedo 2012; Vance et al. 2012). There are two major cognitive mediating processes in PMT: the threat appraisal process and coping appraisal process. The *threat appraisal* process is initiated since an individual needs to recognize the threat prior to assessing the coping behaviors. Threat appraisal includes threat severity, threat vulnerability and rewards. Perceived threat severity is an individual’s belief of the magnitude of the threat while perceived threat vulnerability is the belief of the probability of experiencing a certain threat (Ifinedo 2012). Rewards include the extrinsic and intrinsic benefits gained by an individual for not adopting the recommended response. In information security context, Vance et al. (2012) refers rewards as saving time by not complying with the information security policy. The *coping appraisal* process is initiated when the individual seeks means of protection against the degree of harm that threats

cause. The process includes the consideration of the effect and cost of coping. Self-efficacy is an individual's belief that he or she can successfully carry out the recommended response. Response efficacy is the belief that an adaptive response in protecting oneself (Floyd et al. 2000). Response costs are any related costs in carrying out the recommended response.

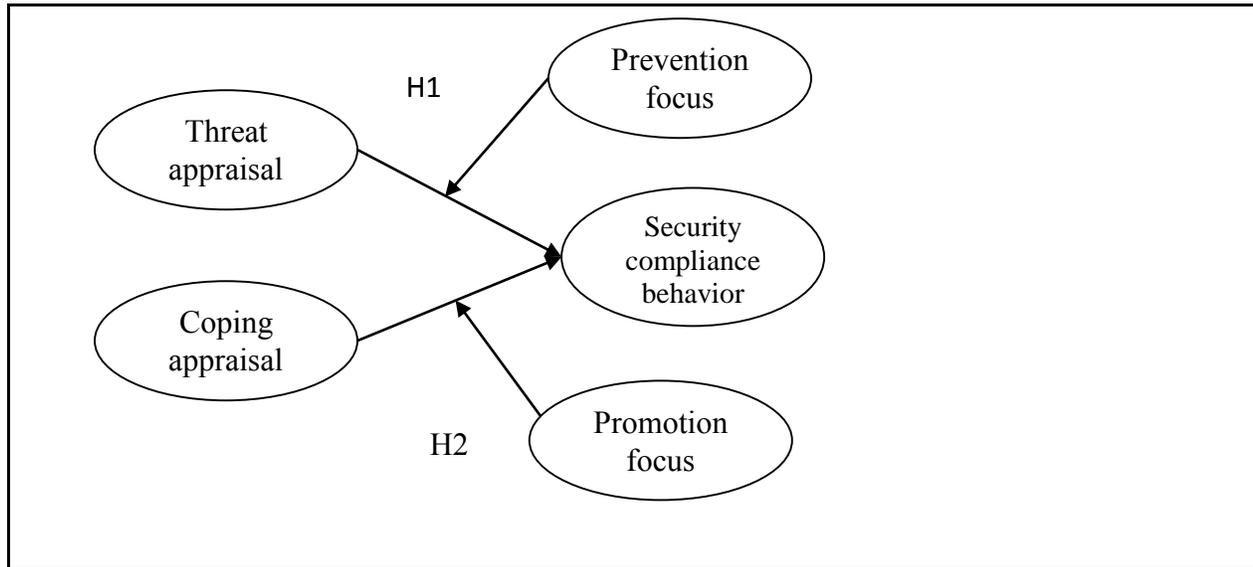
### **Regulatory Focus Theory**

Higgins (1997) developed regulatory focus theory to describe the relationship between one's motivation for goal achieving and the way to achieve the goal. Higgins (1997) proposed that goal can be classified into ideal and ought to be two types and individuals are oriented to achieve different types of goal based on different needs. *Promotion focus* is more associated with nurturance needs and the desired end-states with characteristics of accomplishment, achievement, and aspiration. Individuals with high promotion focus are sensitive and concentrate on the presence or absence of the positive outcomes. Promotion individuals tend to utilize approach strategy to achieve pleasant outcomes. On the other hand, *prevention focus* is more associated with security needs and the desired end-states with characteristics of safety, duties, and responsibilities. Such individuals pay more attention of the presence or absence of the negative outcome. Individuals with prevention focus tend to adopt avoidance and vigilance strategy to avoid unpleasant outcomes to maintain a secure and safe state (Florack et al. 2013).

While regulatory focus can be a trait (or so called chronic regulatory focus), theorists pointed out that regulator focus can also be a state. Individuals are oriented to different goals while facing different targets (Gorman et al. 2012). For example, one employee may be promotion on one task and be prevention on another task. In addition, it is manageable since many experiment-based studies manipulate individuals' regulatory focus to understand its impact on various dependent variables (please see Lanaj et al. 2012 for a complete review).

### **Hypotheses Development**

Figure 1 shows our research model. Based on the results of past studies (e.g. Herath and Rao 2009b; Ifinedo 2012; Vance et al. 2012), we move further to investigate the moderating effect of regulatory focus on the effect of threat and coping appraisals. We propose that the impact of threat appraisal will be enlarged by prevention focus and the effect of coping appraisal will be enhanced by promotion focus. Our finding should consistent with research showing that promotion-focused individuals are more sensitive to gains (information security assured) and prevention-focused individuals are more sensitive to losses (negative security outcomes) (Shah et al. 1998).



**Figure 1. Research Model**

Perceived probability of been harmed and severity of damage lead to be fear of the unwanted outcome which directly, or in turns, increases the possibility to comply with information security policies (Boss et al. 2015; Herath and Rao 2009b; Ifinedo 2012; Vance et al. 2012). The impact of perceived threats (including severity and vulnerability) will be stronger for individuals with high prevention focus because high prevention focus individuals tend to focus on the ought to be goal and adopt avoiding approach (avoiding below the ought to be goal)

(Higgins 1997). Given that the outcomes of threats are undesired, individuals tend to adopt avoidance strategy while facing threats (Liang and Xue 2009). Prevention oriented individuals are afraid of not meeting the minimum requirements and threats are barriers that prevent individuals to meet the minimum requirements. Therefore, they tend to take action to avoid such condition to happen. Since information security policies provide a guidance to avoid those negative outcomes, high prevention focus individuals are more likely to comply with information security policies to avoid potential harm or avoid potential responsibility (if information is leaked). They are more likely to perform behaviors indicated in the policies while facing the same level of threats. Therefore, we hypothesize that

*H1: The impact of threat appraisal on security compliance behavior is higher when individuals are high prevention focus.*

According to protection motivation theory, in addition to the cost of coping, individuals consider whether they are able to take actions and whether such actions can generate expected effect. Individuals are more likely to comply with security policies and perform behaviors specified in the policies when they are confident toward their capability on taking expected actions without other people's assistance (self-efficacy) and believe that taking those actions does help to have information assured (response efficacy) (Lai et al. 2012; Rhee et al. 2009). We expect that the impact of coping appraisal on compliance behavior is higher when individuals are high promotion focus. According to regulatory focus theory, high promotion focus individuals lean on taking action to approach ideal goal – securing information in our case (Higgins 1997). Arming them psychologically (self-efficacy) and physically (response efficacy) make them believe that ideal goal can be achieved and, therefore encourage them to take such behavior (compliance). Therefore, in the same level of coping appraisal, high promotion individuals are

more likely to comply with security policy. We therefore can expect that high promotion focus individuals put more weights on the effect of coping resources.

*H2: The impact of coping appraisal on security compliance behavior is higher when individuals are high promotion focus.*

## RESEARCH METHOD

Based on the purpose of this study, we will adopt a survey method to collect required data from employees of organizations to verify the proposed hypotheses. We will focus on individuals in organizations with clearly specified security policy. Few questions to test respondent's awareness of the security policy will serve as screening items to exclude potential unqualified individuals. Respondent's age, education, position, and functional department will be controlled. Items to capture our main constructs will be adopted from literatures: threat and coping appraisal from Vance et al. (2012); regulatory focus from Summerville and Roesse (2008); compliance behaviors from Herath and Rao (2009b).

## Acknowledgement

We thank the referees for their invaluable comments and suggestions. This research is supported by the Ministry of Science and Technology (Taiwan) under project number MOST 104-2410-H-032 -073 -MY3.

## REFERENCES

- Anderson, C.L., and Agarwal, R. "Practicing safe computing: A multimedia empirical examination of home computer user security behavioral intentions," *MIS Quarterly* (34:3), 2010, pp. 613-643.
- Boss, S.R., Galletta, D.F., Lowry, P.B., Moody, G.D., and Polak, P. "What do systems users have to fear? Using fear appeals to engender threats and fear that motivate protective security behaviors," *MIS Quarterly* (39:4), 2015, pp. 837-864.
- Boss, S.R., Kirsch, L.J., Angermeier, I., Shingler, R.A., and Boss, R.W. "If someone is watching, I'll do what I'm asked: Mandatoriness, control, and information security," *European Journal of Information Systems* (18:2), 2009, pp. 151-164.
- Crossler, R., and Bélanger, F. "An extended perspective on individual security behaviors: Protection motivation theory and a unified security practices (USP) instrument," *DATA BASE for Advances in Information Systems* (45:4), 2014, pp. 51-71.
- D'Arcy, J., and Herath, T. "A review and analysis of deterrence theory in the IS security literature: Making sense of the disparate findings," *European Journal of Information Systems* (20:6), 2011, pp. 643-658.
- Florack, A., Palcu, J., and Friese, M. "The moderating role of regulatory focus on the social modeling of food intake," *Appetite* (69), 2013, pp. 114-122.

- Floyd, D.L., Prentice-Dunn, S., and Rogers, R.W. "A meta-analysis of research on protection motivation theory," *Journal of Applied Social Psychology* (30:2), 2000, pp. 407-429.
- Gorman, C.A., Meriac, J.P., Overstreet, B.L., Apodaca, S., McIntyre, A.L., Park, P., and Godbey, J.N. "A meta-analysis of the regulatory focus nomological network: Work-related antecedents and consequences," *Journal of Vocational Behavior* (80:1), 2012, pp. 160-172.
- Herath, T., and Rao, H.R. "Encouraging information security behaviors in organizations: Role of penalties, pressures and perceived effectiveness," *Decision Support Systems* (47:2), 2009a, pp. 154-165.
- Herath, T., and Rao, H.R. "Protection motivation and deterrence: A framework for security policy compliance in organisations," *European Journal of Information Systems* (18:2), 2009b, pp. 106-125.
- Higgins, E.T. "Beyond pleasure and pain," *American Psychologist* (52:12), 1997, pp. 1280-1300.
- Hsu, J.S.-C., Shih, S.-P., Hung, Y.W., and Lowry, P.B. "The role of extra-role behaviors and social controls in information security policy effectiveness," *Information Systems Research* (26:2), 2015, pp. 282-300.
- Ifinedo, P. "Understanding information systems security policy compliance: An integration of the theory of planned behavior and the protection motivation theory," *Computers & Security* (31:1), 2012, pp. 83-95.
- Johnston, A.C., and Warkentin, M. "Fear appeals and information security behaviors: An empirical study," *MIS Quarterly* (34:3), 2010, pp. 549-566.
- Lai, F., Li, D., and Hsieh, C.T. "Fighting identity theft: The coping perspective," *Decision Support Systems* (52:2), 2012, pp. 353-363.
- Lanaj, K., Chang, C.-H., and Johnson, R.E. "Regulatory focus and work-related outcomes: A review and meta-analysis," *Psychological Bulletin* (138:5), 2012, pp. 998-1034.
- Lee, J., and Lee, Y. "A holistic model of computer abuse within organizations," *Information Management & Computer Security* (10:2), 2002, pp. 57-63.
- Lee, S.M., Lee, S.G., and Yoo, S. "An integrative model of computer abuse based on social control and general deterrence theories," *Information & Management* (41:6), 2004, pp. 707-718.
- Liang, H., and Xue, Y. "Avoidance of information technology threats: A theoretical perspective," *MIS Quarterly* (33:1), 2009, pp. 71-90.
- Rhee, H.S., Kim, C., and Ryu, Y.U. "Self-efficacy in information security: Its influence on end users' information security practice behavior," *Computers and Security* (28:8), 2009, pp. 816-826.
- Shah, J., Higgins, T., and Friedman, R.S. "Performance incentives and means: How regulatory focus influences goal attainment," *Journal of Personality and Social Psychology* (74:2), 1998, pp. 285-293.
- Summerville, A., and Roese, N.J. "Self-report measures of individual differences in regulatory focus: A cautionary note," *Journal of Research in Personality* (42:1), 2008, pp. 247-254.
- Vance, A., Siponen, M., and Pahnla, S. "Motivating IS security compliance: Insights from habit and protection motivation theory," *Information & Management* (49:3), 2012, pp. 190-198.
- Workman, M., Bommer, W.H., and Straub, D. "Security lapses and the omission of information security measures: A threat control model and empirical test," *Computers in Human Behavior* (24:6), 2008, pp. 2799-2816.