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## **Critical role of ethical leadership on information security climate and employee ISP violation behavior**

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### **ABSTRACT**

Employees have been considered as one of the major threats to organizational information security. Prior research has considered lots of factors that can influence the information security policy (ISP) violation behaviors. However, the interaction factors between leaders and employees have not been investigated in depth. Based on social learning theory and social information processing theory, this paper aims to investigate the relationship between ethical leadership and employees' ISP violation intentions as well as the mediation effect of organizational information security climate. Our results will provide a guidance to future study on investigating the influences of leadership on employees' security behavioral intention and contribute to both leadership and information security research.

**Keywords:** Ethical leadership, information security policy, policy compliance, policy violation, security climate, factorial survey method

### **INTRODUCTION**

As the weakest link in information security (Warkentin and Willison 2009), employee behaviors continue to be the greatest threat to information security (Crossler et al. 2013; D'Arcy

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and Devaraj 2012). Previous research has studied employee information security policy (ISP) compliance based on several theoretical lenses, including deterrence theory (D'Arcy and Herath 2011; D'Arcy et al. 2009; Hu et al. 2011; Willison and Warkentin 2013), protection motivation theory (PMT) (Johnston and Warkentin, 2010; Johnston et al. 2015), and neutralization (Siponen and Vance 2010; Willison et al. 2018). However, employees' motivations to conduct security behaviors are still poorly understood. Willison and Warkentin (2013) proposed that the interplay between organization and individual plays a critical role in understanding employees' security behaviors. The effect of leadership, as one of the important triggers of individuals' motivations, has been empirically examined in organizational behavior research, but not adequately in information security research. We investigate how leadership influences employees' ISP violation behavioral intention

Leaders, such as managers and top executives, play a critical role in influencing organizational outcomes. Bass (1985) divided leadership into ethical, transactional, and transformational leadership. Brown et al. (2005) suggested that ethical leadership positively influences perceived effectiveness of leadership, employees' job satisfaction, and dedication. Ethical leadership, compared with transformational and transactional leadership, emphasizes ethical rules and policies and focuses more on acceptable and appropriate ethical behaviors in the organization. Research into ethical leaders has been valuable in understanding the impact of leadership on unethical behaviors. Prior research has suggested that ethical leadership effectively reduces employees' misconduct and deviant workplace behaviors (Mayer et al, 2010; Van Gils et al., 2015). This paper explores how ethical leadership influences employees' deviant behavioral intention in the context of security.

Based on social learning theory and social information processing theory, we investigate how ethical leadership influences employees' ISP violation behavioral intention and the mediation effect of information security climate (ISC). We propose that ethical leadership, as a role model, will influence employee's perception of security climate and ISP violation behavioral intention. Previous research has emphasized that climate plays a mediating role between organizational variables and relevant outcomes (Mayer et al. 2010), thus we examine the mediation effect of ISC between ethical leadership and employees' ISP violation behavioral intention.

In the subsequent sections, we (1) introduce the literature on leadership in information security, (2) develop the research model and hypotheses based on social learning theory and social information processing theory, and (3) describe the research method, and expected results, which we plan to present during our conference presentation.

### **LEADERSHIP IN INFORMATION SECURITY**

Prior research has focused on the deterrence of perceived sanctions on employees' violation behavior (Cheng et al. 2013; D'Arcy and Devaraj 2012; D'Arcy et al. 2009; Hu et al. 2011; Willison et al. 2018). But Willison and Warkentin (2013) called for more research into the interactions between organizations and employees as antecedents of ISP violation behavior. Previous research has empirically examined the effect of leadership on employees' workplace behavior (Den Hartog and Belschak 2012; Humaidi and Balakrishnan 2015; Neubert et al. 2008; Puhakainen and Siponen 2010; Walumbwa et al. 2011; Walumbwa et al. 2010; Wang and Hsieh 2013; Yazdanmehr and Wang 2016). More specifically, prior research examined the negative effect of ethical leadership on employees' workplace deviance behaviors (Mayer et al. 2010). *Ethical leadership* plays an important role in influencing these behaviors. In the context of

information security, ethical leadership might also be expected to be an important factor affecting employees' security behaviors, including ISP compliance.

In the information security context, Hu et al. (2012) investigated the role of top management participation and organizational culture in influencing employees' ISP compliance. Prior research has realized the importance of leaders in influencing employees' security behaviors (Hu et al, 2012; Humaidi and Balakrishnan, 2015). However, they have not deeply explored how leaders influence employees' behaviors. Based on ethical leadership research, we explore the process of how ethical leadership influences employees' ISP violation intentions.

### **Ethical leadership and employees' workplace behaviors**

Ethical leadership is defined as "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (Brown and Treviño 2006, p.120). Ethical leadership comprises dimensions of morality as a person and as a manager. Moral persons are leaders who are honest, caring, and principled, and always make fair and balanced decisions. Moral managers are leaders who frequently communicate with employees about ethics, and who reward ethical behaviors and punish unethical behaviors.

Social learning theory suggests that ethical leadership influences employees' behaviors by role modeling (Brown and Treviño 2006), a process whereby leaders set an example to employees and demonstrate "right behavior." Leaders also emphasize the importance of ethical standards and policies and will punish individuals who conduct unethical behaviors. Ethical leadership has significant influences on employees' work performance (Walumbwa et al. 2011), satisfaction with leader (Brown et al. 2005), job satisfaction (Kim and Brymer 2011; Okan and Akyüz 2015), and ethical climate (Barnett and Vaicys 2000; Mayer et al. 2010; Schwepker 2001). Van Gils et al (2015) tested the relationship between ethical leadership and followers'

deviant behavior and established the positive moderation effect of followers' moral attentiveness on this relationship. Prior research also examined the effect of ethical leadership on organizational citizenship behavior (Kacmar et al. 2011; Mayer et al. 2009).

In the context of information security, ethical leadership is also expected to play a critical role in influencing security behaviors. Ethical leadership will emphasize which security behaviors are appropriate and acceptable. Identifying these effects will enhance our understanding of employee motivations for conducting security behaviors.

### **The mediation effect of information security climate**

In order to better understand the effect of ethical leadership on employees' workplace behaviors, the process mechanism needs further study. Prior research has identified ethical climate as an important mediation variable (Mayer et al, 2010). The ethical climate refers to "the stable, psychologically meaningful, shared perceptions employees hold concerning ethical procedures and policies existing in their organizations" (Wimbush et al. 1994). Based on social information processing theory, employees learn from ethical climate which provides cues about what are right things to do in the organization. Ethical climate has been found to influence employees' physiological well-being and dysfunctional behavior (Martin and Cullen 2006), organization commitment (Cullen et al. 2003), unethical behavior (Peterson 2002b; Trevino et al. 1998), and deviant work place behavior (Appelbaum et al. 2005; Peterson 2002a). The relationship between the ethical leadership, ethical climate, and employee workplace deviant behavior has been tested by many studies (Appelbaum et al. 2005; Mayer et al. 2010; Peterson 2002a; Van Gils et al. 2015; Vardi 2001).

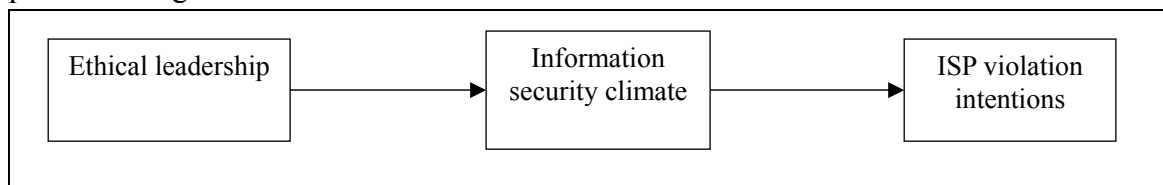
In the context of information security, we will explore the mediation effect of security climate. Security climate represents the extent of organizational concentration on information security (Chan et al. 2005). A high perception of organizational information security climate

indicates that security is considered important and critical in the organization. For example, if the organization provides sufficient training related to information security and if top managers consider security as an important agenda for the organizations, the climate can be said to be strong. Although ethical climate has been tested, the mediation effect of information security climate has not been examined in prior literature.

## THEORETICAL BACKGROUND AND HYPOTHESIS

### Ethical leadership and security climate

Organization learning theory emphasizes that individuals perform behaviors through a role modeling process by observing and learning from others (Bandura 1977, 1986). Individuals will learn from people who are credible and attractive. In the organization, leaders are those whom employees trust and respect. Leaders have the power to determine rewards or punishments for employees' behaviors. Leader plays an important role in modeling employees' attitudes and behaviors (Mulki et al. 2009). Prior research has investigated the relationship between ethical leadership and ethical climate (Mayer et al. 2010; Shin et al. 2015). Leaders in the organization provide guidance to employees on how to conduct behaviors. Leaders will reward ethical behaviors and punish unethical behaviors. With the enforcement of ethical rules, employees will perceive a high ethical climate.



**Figure 1.** The Conceptual Research Model

In the context of security, leaders will also emphasize engaging in correct actions, such as specific ISP compliance acts. Ethical leaders will reward and punish employees' security behaviors based on organizational security rules and policies. Through the role modeling process, leaders create an organizational security climate which emphasizes how to do things the

right way. Employees observe that leaders pay attention to organizational security and will be more likely to perceive a strong ISC. Thus, similar to the ethical climate, we believe that ethical leadership will increase employees' perception of information security climate.

*Hypothesis 1: Ethical leadership will be positively related to strong information security climate*

### **Security climate and ISP violation behaviors**

Prior research has investigated the effect of ethical climate on misconduct behaviors based on social information processing theory (SIPT) (Mayer et al. 2010). SIPT proposes that the environment provides cues to individuals about what behaviors are appropriate (Salancik and Pfeffer 1978). Ethical climate provides cues to employees about ethical and acceptable behaviors in the organization. Similarly, ISC provides cues about which security behaviors are acceptable in the organization. Prior research has empirically examined the relationship between ISC and employee security behavior. Chan et al. (2005) found that security climate positively influences employees' compliance behavior. Goo et al. (2014) position security climate as a formative construct which includes top management attention, security enforcement, security, policy and security awareness training. Their results also find a positive relationship between security climate and ISP compliance intention. Therefore, we consider that security climate will negatively influence employee ISP violation intention.

*Hypothesis 2: Security climate will be negatively related to employee ISP violation intention.*

We also assert that ISC mediates the relationship between ethical leadership and employee ISP violation intention. Prior research suggested that leaders influence employees' behaviors and attitudes by creating a climate which emphasizes the rules and policies (Zohar and Luria 2005). Employees react to leaders through their perception of their environment (Schminke et al. 2005), which provides cues to employees about how to respond to leaders' actions.



Learning from the ISC, they are more likely to comply with policy, but not when the ISC is weak, when it is evident that compliance is not considered important.

In the security context, ethical leadership contributes to an organizational security climate which positively motivates employees' behaviors and attitudes; the climate is the process through which ethical leadership influences employee intentions. The security climate emphasizes that violating security policy is not approved within the organization and violations are considered inappropriate by others in the organization.

*Hypothesis 3: Security climate will mediate the relationship between ethical leadership and employee ISP violation intention.*

## METHOD

Research participants (in China), currently employed full time in a job which requires computer use and which has explicit information security procedures, will be surveyed. Our survey packets each include 5 employees and 1 supervisor. Employees will answer questions related to perception of ethical leadership and security climate. The direct supervisor of the 5 employees will answer questions related to employees' ISP violation behavioral intention. All constructs are measured with multi-item scales adapted from previous research to fit the focal context; all items use a 5-point fully-anchored agreement scale. The measurement of ethical leadership is adapted from Brown et al. (2005). (Page limits prevent presenting the instrument here, but items will be presented at the workshop.) The measurement of security climate is adopted from Goo et al. (2014), a formative construct which includes top management attention, security enforcement, security policy, and security awareness training. The ISP violation intention measure is adapted from Johnston et al. (2016). We will use scenario analysis to measure employees' ISP violation intention, consistent with extensive prior literature in the field.

## EXPECTED OUTCOMES

We aim to empirically test the relationship between ethical leadership and employee ISP violation behavioral intention and the mediation effect of security climate. First, we expect to examine the effect of ethical leadership on information security climate. We believe that ethical leadership promote the generation of organizational information security climate. Second, we expect to find the negative effect of security climate on ISP violation intention. Prior research has examined the positive relationship between security climate and compliance behavior. We expect to find the negative effect of security climate on ISP violation intention. Third, we expect to investigate the direct and indirect effect of ethical leadership on employee ISP violation intentions. Prior research emphasizes the mediation effect of climate between organizational variables and relevant outcomes. We expect to find out that information security climate mediates the relationship between ethical leadership and employee ISP violation intention.

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