



The impact of perfectionism on situational judgment among Chinese civil flying cadets: The roles of safety motivation and self-efficacy



Ming Ji ^{a, b, *}, Yi Li ^{a, b}, Chenchen Zhou ^{a, b}, Haiyan Han ^c, Bo Liu ^{a, b}, Lina He ^{a, b}

^a School of Psychology, Shaanxi Normal University, Xi'an, Shaanxi 710062, China

^b Shaanxi Provincial Key Laboratory of Behavior and Cognitive Neuroscience, Xi'an, Shaanxi 710062, China

^c Mental Health Education Center for College Students, Xi'an University, Xi'an, Shaanxi 710065, China

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ABSTRACT

The objective of this study is to test a mediation model in which safety motivation and self-efficacy mediate the relationship between perfectionism and situational judgment in Chinese civil flying cadets. We collected self-reported data from 218 civil flying cadets from Civil Aviation Flight University of China. The results show that concern over mistakes and personal standards have direct effects on flying cadets' situational judgment. Concern over mistakes, parental expectation and organization have indirect effects on flying cadets' situational judgment through safety motivation; whereas concern over mistakes and parental criticism have indirect effects through self-efficacy. Managerial implications of the study as well as the future research directions are discussed.

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1. Introduction

The majority of accidents and incidents in aviation can be attributed to poor decision making strategies adopted by the pilots (Wiegmann and Shappell, 1997; O'Hare and Wiegmann, 2003). It is estimated that decision-making errors contributed to 56% of accidents in airlines, 53% of accidents in military aviation (Diehl, 1991), and over 50% of accidents in general aviation (Jensen and Benel, 1977). Jensen (1995) pointed out that pilot judgment was "the mental process that we use in making decisions" (p. 27), which could be divided into two main categories, namely rational judgment and motivational judgment. Rational judgment was defined as the ability of pilots to discover and establish the relevance of all available information relating to problems of flight, to diagnose these problems, to specify alternative courses of action and to assess the risk associated with each alternative courses of action. Correspondingly, motivational judgment was defined as the ability of pilots to choose and execute a suitable course of action within the available time frame. Hunter (2003) regarded pilot situational judgment as the aeronautical decision making (ADM) at the meta-

construct level. Jensen (1995) also regarded pilot situational judgment as the most central decision making process and the capacity of pilots to produce satisfactory outcomes, which had a significant effect on pilots' decision and safety operation behavior. Consequently, a number of studies have been performed to identify variables affecting situational judgment errors in aviation.

Some studies have shown that cognitive components affecting situational judgment of pilots include general cognitive process (e.g., attentional strategy, expertise, information processing and recall of stored events), situation awareness, metacognition and self-evaluation (Clevenger et al., 2001; Lester and Bombaci, 1984; Kennedy et al., 2010; Endsley, 1995). Thus, context-related cognitive skills (e.g., situation assessment, mental simulation, choice among alternative courses of action and crew resource management) are critical to pilots' situational judgment (Hunter, 2003, 2006; Endsley, 1995; O'Hare, 1990; Drinkwater and Molesworth, 2010). The decision making is required to be taught as a part of the pilot-training curriculum by Federal Aviation Administration (FAA), Canada and Australia (e.g., Berlin et al., 1982; Jensen and Adrion, 1988; Buch and Diehl, 1984). However, little guidance is provided as to how that might be accomplished. An important reason is that both practitioners and researchers in this area have been confused over the terms, such as judgment, decision making, and ADM. The relationship between personality traits and situational judgment has also been a topic of considerable research. For

* Corresponding author. School of Psychology, Shaanxi Normal University, No.199, South Chang'an Road, Yanta District, Xi'an 710062, Shaanxi Province, China. Tel.: +8602985303236; fax: +8602985303236.

E-mail address: jiming@snnu.edu.cn (M. Ji).

example, the Big Five personality traits, self-concept control, conscientiousness, risk tolerance and locus of control have a close association with pilots' judgment and decision errors (Brand and Altstötter-Gleich, 2008; Lester and Bombaci, 1984; Hunter, 2002; Stewart, 2006). However, the psychological selection of pilots based on personality is not very successful (You et al., 2009).

Pilot situational judgment can be considered as a dynamic process that depends more on the dispositional traits. Helmreich et al. (1999) found that airline pilots had a perfectionist tendency because of the influence of professional culture. Perfectionism can influence decision making or judgment of pilots in risky situations (Brand and Altstötter-Gleich, 2008). In addition, the indirect effect of these personality factors might be underestimated with regard to situational judgment errors and accident involvement. In particular, the role of personality traits in the relationship between social cognitive variables and the situational judgment of pilots has rarely been studied. Theoretically, personality traits should have an effect on an individual's social cognition and appraisal of the environment (McCrae and Costa, 1995), which in turn can affect situational judgment. A similar observation has been reported in previous studies (Michael and Lois, 2008; Stewart, 2006). However, no research has explicitly examined these relationships. In this study, we empirically examined (1) does perfectionism predict pilot situational judgment? and (2) does perfectionism have an indirect effect on situational judgment through social cognition variables?

1.1. Perfectionism

Perfectionism is commonly conceived of as a personality style characterized by striving for flawlessness and setting of excessively high standards for performance accompanied by tendencies for overly critical evaluations of one's behavior (Flett and Hewitt, 2002; Frost et al., 1990). Hamachek (1978) suggested that two forms of perfectionism be differentiated, a negative form labeled "neurotic perfectionism" in which the individuals set high standards but allow little latitude for making mistakes, and thus they never feel that anything is done completely or well enough, and a positive form labeled "normal perfectionism" in which the individuals also set high standards for themselves but feel free to be less precise as the situation permits. Neurotic perfectionism has been associated with psychopathology, and it is considered a sign of a neurotic and disordered personality (Missildine and Bernard, 1963), such as obsessive-compulsive disorder (Boisseau et al., 2013) and anorexia nervosa (Fornasari et al., 2014). The negative correlation and consequence of perfectionism have been attracting attention, particularly including the concurrent psychopathology and the future vulnerability of perfectionists to distress (Antony et al., 1998; Bieling et al., 2004; Hewitt and Flett, 1993; Hewitt et al., 1996). Focusing on the positive, Stoeber and Otto (2006) put forward that there are two dimensions of perfectionism: positive strivings and maladaptive evaluation concerns. Positive strivings consist of personal standards, organization, self-oriented perfectionism and other-oriented perfectionism; and maladaptive evaluation concerns consist of concern over mistakes, doubts about actions, socially prescribed perfectionism, parental expectations and parental criticism. Maladaptive evaluation concerns are related to higher levels of negative affect and depression, while positive strivings are related to higher levels of positive affect. Thus, individuals with high personal standards, which are associated with positive achievement striving and work habits (Frost et al., 1990), may strive to achieve high performance. Even in high risk situations, such as extreme weather, pilots with high personal standards will complete their flight task. Maladaptive evaluation concerns may lead one to overestimate the rules and contingencies provided by work circumstances. Individuals with high maladaptive evaluation

concerns may perform worse in high risk situations for avoiding errors and negative consequences. Thus, we hypothesized that

H1. *Positive strivings are positively related to flying cadets' situational judgment; while maladaptive evaluation concerns are negatively related to flying cadets' situational judgment.*

1.2. Safety motivation

Safety motivation is defined as "an individual's willingness to exert effort to enact safety behaviors and the valence associated with those behaviors" (Neal and Griffin, 2006). Christian et al. (2009) argued that safety motivation was most strongly related to safety performance behaviors. Therefore, the higher the safety motivation of employees is, the more willing they are to practice safety behaviors (Chen and Chen, 2014). Based on social cognitive theory, motivation represents an external event that is cognitively processed and synthesized in a judgment performance before any action is taken (Bandura and Locke, 2003). In aviation, safety motivation is crucial for crews to judge accurately and rapidly how to act in uncertain situations, such as encountering bad weather and terrorists. How pilots judge the situation and which is the best choice during flight are essential considerations to safety outcomes. We accordingly propose the following hypotheses:

H2. *Safety motivation is positively related to flying cadets' situational judgment.*

Fletcher et al. (2012) found that perfectionism have contacted to adolescent's motivation. Perfectionistic concerns involves individuals' anxiety and self-doubt about not being able to meet high personal standards or hypersensitivity to others' negative judgment, including concern over mistakes, doubts about actions, parental criticism, parental expectations, and socially prescribed. Motivation and achievement between perfectionists and non-perfectionists are distinct due to their different attitudes to strive for challenging goals (Bong et al., 2014; Stoeber and Otto, 2006). Moreover, maladaptive and adaptive perfectionism play distinctive roles in individuals' motivation behaviors (Sirois et al., 2010). For instance, maladaptive perfectionism is negatively associated with the motivation to exert endeavor to benefit behavior consequences in the future. However, in counterfactual conditions, high personal standards are linked to greater motivation for future striving. Based on this, we hypothesized that:

H3. *Positive strivings are positively related to flying cadets' safety motivation; while maladaptive evaluation concerns are negatively related to flying cadets' safety motivation.*

Based on Hypotheses 2–3, we further posit the following prediction:

H4. *Safety motivation partially mediates the relationship between perfectionism and flying cadets' situational judgment.*

1.3. Self-efficacy

Self-efficacy is defined as "the extent or strength of one's belief in one's own ability to complete tasks and reach goals" (Ormrod, 2000), which can drive individuals to choose more challenging task and exert more striving to overcome such challenges (for a review, Bandura and Locke, 2003). Moreover, self-efficacy is a motivational construct that can affect an individual's choice of activities, achievement level, persistence, and performance in various contexts (Zhao et al., 2005). Obviously, there is a close relationship between self-efficacy and safety motivation. Individual with higher self-efficacy levels have higher safety motivation levels than those with low self-efficacy levels. Thus, the following hypothesis is proposed.

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