PREDICTING JOB PERFORMANCE THROUGH PERSONAL FACTORS: THE MEDIATING ROLE OF SAFETY MOTIVATION AND SAFETY PERFORMANCE

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ABSTRACT

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The present study aims to investigate the serially mediating role of safety motivation and safety performance in the relationship between personal factors (conscientiousness, locus of control and risk taking tendency) and job performance for safety critical jobs. In line with this purpose, data were collected from 164 mineworkers and their immediate supervisors (N = 69) in a local coalmining company located in central Anatolia in Turkey. Mineworker participants filled out a questionnaire package including measures of conscientiousness, locus of control, risk taking tendency, safety motivation, safety performance and job performance. In accordance with the approval of mineworkers, their immediate supervisors evaluated safety performance and job performance of their subordinates. Results essentially indicated that safety motivation and self-report safety performance serially mediated the relationship between conscientiousness and self-report job performance. However, both locus of control and risk taking tendency failed to mediate the proposed

relationships. The findings of the study are discussed along with the contributions, practical implications, limitations and suggestions for future research.

Keywords: safety performance, job performance, safety motivation, mining, conscientiousness

ÖZ

BİREYSEL FAKTÖRLERLE İŞ PERFORMANSINI YORDAMAK: GÜVENLİK MOTİVASYONU VE GÜVENLİK PERFORMANSININ ARACI ROLÜ

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Bu çalışmanın amacı, hayati tehlike taşıyan mesleklerde güvenlik performansı ve iş performansının önemini üç bireysel farklılık değişkeni (güvenlik motivasyonu, özdisiplin, kontrol odağı ve risk alma eğilimi) çerçevesinde incelemektir. Diğer bir deyişle, bu çalışma, güvenlik motivasyonu ve güvenlik performansının, üç bireysel farklılık değişkeni ile iş performansı arasındaki ilişkilerdeki seri aracılık rolünü araştırarak mevcut literatüre katkıda bulunmayı hedeflemiştir. Bu bağlamda, Türkiye'nin İç Anadolu Bölgesi'ndeki bir kömür madenciliği şirketinde çalışan maden işçisi katılımcılardan ve onların ilk amirlerinden veriler toplanmıştır. Katılımcılar (N = 164); özdisiplin, kontrol odağı, risk alma eğilimi, güvenlik motivasyonu, güvenlik performansı ve iş performansı değişkenlerinin ölçümlerini içeren bir anket paketini doldurmuşlardır. Maden işçisi katılımcılardan alınan onay doğrultusunda, bu katılımcıların ilk amirleri (N = 69) de çalışanların güvenlik performansını ve iş performansını değerlendirmiştir. Çalışmanın temel sonucu olarak, özdeğerlendirme verileriyle yapılan analizlerde, güvenlik motivasyonu ve güvenlik performansının,

özdisiplin ile iş performansı arasındaki ilişkiye sıralı olarak aracılık ettiği bulunmuştur. Ancak benzer bir ilişki kontrol odağı ve risk alma eğilimi değişkenlerinde görülmemiştir. Çalışmanın bulguları; ilgili literatüre ve uygulama alanına katkıları, sınırlılıkları ve gelecek çalışmalar için öneriler ile birlikte tartışılmıştır.

Anahtar Kelimeler: güvenlik performansı, iş performansı, güvenlik motivasyonu, madencilik, özdisiplin

To Mehmet ☺

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CHAPTER 1

INTRODUCTION

1.1 Overview of the Study

Workplace injuries, illnesses, and fatalities are ubiquitous all over the world. In every 15 seconds, 153 workers have a work related accident in the world. Furthermore, every 15 seconds a worker dies as a result of work-related accidents or diseases (International Labour Organization, n.d.). More than 5000 fatal work injuries were recorded in the United States in 2017 (Bureau of Labor Statistics, 2018). Moreover, 1.4 million employees are reported to be suffering from a work-related illness in Great Britain (Health and Safety Executive, 2017). Furthermore, the annual report for Great Britain (Health and Safety Executive, 2017) revealed 30.7 million lost work days and £15 billion cost of injuries and ill health cases. According to Social Security Institution statistics, in 2016 only, 286,068 workplace injuries took place in Turkey (TÜİSAG, 2017). As a matter of fact, the actual number of workplace injuries is likely to be higher than the official records indicate simply because some cases may not be reported. In short, workplace injuries result in thousands of fatalities, loss of billions of dollars and millions of lost work hours (U.S. Bureau of Labor Statistics, 2012). It is also obvious that financial costs of accidents are likely to be much more than the costs of accident prevention. Hence, studying workplace safety and more specifically safety performance has important practical as well as theoretical implications. Attesting the importance of this topic, a search for the keyword "injury" by the researcher yielded 869,464 results within the Web of Science database in August 2019.

In the workplace safety literature, a number of accident causation theories have been developed over the years. Khanzode, Maiti, and Ray (2012) classified these theories

into four generations. The first generation theories focus on the person as the cause of accidents while the second generation theories treat unsafe conditions and unsafe acts (system-person interaction) as the cause of accidents. For the third generation theories, transient factors are the underlying factor for workplace accidents. Finally, the last generation theories adopt system-as-cause approach (Khanzode et al., 2012). Taking into account all of these theories, it is widely accepted that approximately 80% of all work-related accidents are caused by human error (Camkurt, 2013; Heinrich, Petersen, & Roos, 1980; Kepir, 1983), which means that more research is needed to understand, explain, and predict human factor in workplace safety.

Although personnel training and other safety intervention programs are one way to deal with safety challenges in work organizations, they sometimes fall short of yielding the desired outcomes on their own because achieving long-lasting improvement in behaviors and attitudes are rather difficult (Ocon & Mcfarlane, 2007). Hence such programs need to be supported by effective personnel selection/hiring regimes, which represent proactive solutions to safety challenges in safely critical jobs. Representing this proactive approach, the present study focuses on potential predictors of safety motivation, safety performance, and hence job performance. More specifically the present study aims to contribute to the existing literature by investigating the serial mediation of safety motivation and safety performance in the relationships between individual difference variables of conscientiousness, locus of control, and risk taking tendency and the outcome variable of job performance.

In the following sections of this chapter, firstly, a brief review of the literature on workplace safety and especially work accident and injuries is presented. More specifically the literature on safety motivation, conscientiousness, locus of control and risk taking tendency, as the predictors of safety performance, is presented. Next, job performance as the outcome variable of the current study is introduced. Lastly, the purposes of the present study and the hypothesized model are presented.

1.2 Workplace Safety

Workplace safety describes “policies and procedures in place to ensure the safety and health of employees within a workplace” (Business Dictionary, 2019). Because the magnitude of costs of workplace safety is related to loss of thousands of fatalities, billions of dollars, and millions of lost work hours, workplace safety is a major concern for both researchers and organizations. In the literature, research on workplace safety concentrate on identifying and understanding to what extend various individual and organizational characteristics influence workplace safety and work accidents and injuries.

1.2.1 Work Accidents and Injuries

The terms injury and accident are often used interchangeably even if every accident does not result in an injury (Langley, 1988). The term accident was defined first time in the literature in the First World Conference on Accident and Injury Prevention as “an event that results or could result in an injury” (First World Conference on Accident and Injury Prevention, 1989, p. 4). At the same conference injury was defined as “the result of events and behaviors that have environmental, biological, and behavioral determinants that can often be reduced or eliminated” (First World Conference on Accident and Injury Prevention, 1989, p. 5). A number of accident causation theories have been developed and tested over the years. Khanzode, Maiti, and Ray (2012) categorized these theories into four generations: accident proneness, domino theories, injury epidemiology, and system models. The first generation, namely accident proneness theories, adopted a rough approach to accident causation (e.g., Greenwood & Woods, 1919). The basic assumption of these theories is that a small number of individuals are susceptible to accidents because their characteristics like gender and personality traits make them more vulnerable to accidents (Manheimer & Mellinger, 1967). In other words, according to the first generation theories, workers’ gender, unsafe behaviors, and personality traits are responsible for the accidents (Greenwood & Woods, 1919; Manheimer & Mellinger, 1967). With their focus on personality (or individual differences in general) accident proneness theories had a rather simplistic approach towards accident causation (Green, 1991). Originally, accident proneness

was ascribed to workers' unchangeable characteristics. Later, changing characteristics like stress and cognitive failure were also operationalized as accident proneness (Day, Brasher, & Bridger, 2012). According to Day and colleagues (2012), for instance, workers suffering from stress are more likely to have a workplace accident because they are susceptible to cognitive failures. A review and meta-analysis indicate the existence of accident proneness, which means there are more individuals suffering from repeating injuries than would be expected by chance alone. However, there is large variety in operationalization of accident proneness and consensus on the concept has yet to be reached. Furthermore, although evidence points the existence of accident prone individuals, it is also a fact that some individuals, who are not necessarily accident prone, can experience multiple accidents caused by chance alone and some other factors (Visser, Pijl, Stolk, Neeleman, & Rosmalen, 2007).

Second generation theories of accident causation are domino theories originally developed by Heinrich in 1931. According to Heinrich, there are five consecutive events like a chain called dominos to explain reasons of accidents which are (1^{st} domino) ancestry and social environment, (2^{nd} domino) fault of a person, (3^{rd} domino) unsafe act and mechanical or physical hazards, (4^{th} domino) accident, and finally (5^{th} domino) injury (Heinrich, 1950). One of the first three dominos sets off a chain of reactions resulting in an accident and ultimately an injury or fatality. In other words, accidents which lead to injuries are a result of a problem caused by at least one of the first three dominos. Heinrich's philosophy of accident causation is based on the idea of unsafe acts and people-related factors (Brauer, 2006, p. 26) although the theory also accounts for system related factors like unsafe conditions (Heinrich, 1931). Although domino theory adopts different dynamics of injuries, it fails to account for complex interactions of injury occurrence. The theory has been changed and expanded many times since its first foundation. For instance, Bird and Loftus (1976) changed the first three dominos as lack of control of management, basic causes (personal and job factors), and immediate causes (substandard practices, conditions or errors), respectively. Despite the stated limitations, domino theories are still one of the most widely used theories in exploring the root causes of work-related accidents in the occupational accident literature.

The third generation models of accident causation, called injury epidemiology models, emerged with the conceptualization of injury as the result of the interaction of energy with tissue by Gibson (1961). Gibson stated that injuries might be best studied according to the energy types which instigate them. Haddon (1968) further enhanced this approach of injury by including the infectious disease elements of host (human), agent (energy), vector/vehicle (machine), and environment (sociocultural/physical). Thus, there are three factors that explain the phenomenon injury other than energy: (1) injured person, (2) energy which leads to injury, and (3) biological, physical, and organizational environment (Haddon, Suchman, & Klein, 1964). Among these three factors, transient factors which can change with time are the most immediate factors that result in injury. Although conceptualization of injury has a limited return in practice, this framework is emphasized as an important accident and injury prevention strategy (Hagberg et al., 1997) because epidemiological models are mostly used to monitor safety in statistical accident reporting systems (Andersson, 1991).

System approach to accident causation, representing the last generation theories, arose in the 1970s from the challenge of sustaining workplace safety in increasingly complex work systems. This theory can be seen as a call for cooperation among various accident causation theories. Studies often require the combination of different concepts and models, and systems theory appears to be an attempt in the right direction (Leplat, 1984). Systems theory regards an injury as one of numerous unwanted and abnormal influences of a system (Reason, 1995), and thus, it includes a number of organizational factors for accident causation (Zohar, 2010). Rather than putting the whole responsibility of injuries on individuals, systems theory holds that an injury is a result of deteriorated situation in the system which means that the system does not work safely as planned (Leplat, 1984). Since the model treats incidents as results of interactions between components of the system, the model refuses single causal factors (Leplat, 1987). Specifically, systems theory can handle complex human/nature, intergroup, interpersonal and intrapersonal interactions without reducing accidents to isolated, single variables or factors (Laszlo & Krippner, 1998).

In sum, accident causation theories can be categorized into four generations. The first generation focuses on the person as the major cause of accidents; the second generation theories state unsafe conditions and unsafe acts (system-person interaction) as causes of accidents, the third generation theories focus on job-related factors producing energy interaction, and the last generation supports system-as-cause approach (Khanzode et al., 2012).

Accident causation theories have revealed many factors to explain the occurrence of workplace accidents and injuries throughout the years. Besides, three factors affecting most of the accidents and injuries, which are person related, job related and organization related factors, have been examined in the empirical literature. First, a number of person related accident causation factors have been identified by mostly theorists of first generation in the literature. For instance, in a literature review by Salminen (2004) identified young men under the age of 25 years as a risk group for nonfatal occupational injuries. Ironically, the risk of injury increases with the increasing age (Jeong, 1999). In addition, an inverse relationship was found between workplace injury and job tenure in goods and services industries (Breslin & Smith, 2006) and mining industry (Butani, 1988). Breslin and Smith (2006) also found that job inexperience was especially a risk factor for workplace injuries more for young workers than their older counterparts. Other risk groups for workplace injury are workers suffering from stress and cognitive failure (Day et al., 2012); immigrant workers (Kosny & Lifshen, 2012; Peter M. Smith & Mustard, 2010), workers with low education level (Cubbin, LeClere, & Smith, 2000; Cubbin & Smith, 2002) and workers whose education exceeds their job requirements (Premji & Smith, 2013). Moreover, mental ability was found to be correlated with not only workplace injury but also poor job performance (Ferguson, McNally, & Booth, 1984). In addition, less experienced and young foreign workers had a higher accident frequency rate (Döös, Laflamme, & Backström, 1994). In the literature, these groups of people are labeled as “vulnerable workers” (Laberge & Ledoux, 2011; Law Commission of Ontario, 2012; P. M. Smith et al., 2015). Actually, it is necessary to point out that the construct “vulnerability” is not used for the workers themselves, but for the risky situation that they confront at work and some person related disadvantages like racial status, gender and other

characteristics (Law Commission of Ontario, 2012). Therefore, researchers interested in accident prevention need to focus on interventions based on especially nonpermanent or non-trait characteristics of people like stress and inexperience to reduce work accidents and injuries (Day et al., 2012). Stable characteristics leading to injury like traits, on the other hand, should be taken into consideration more in personnel selection and training practices.

Second factor influencing occurrence of work accidents and injuries is job related accident causation factors. Job related factors negatively affects employees' attitudes, beliefs and motivation to follow safe practices, when these factors become barriers to perform safely (DeJoy, 1996). Some of the common job related accident causation factors are the occupation itself (Leigh, Mulder, Want, Farnsworth, & Morgan, 1990), workload (Wright, 1986) and shift work (Levin, Oler, & Whiteside, 1985). It is a fact that certain sectors and occupations such as mining, construction and agriculture are more dangerous than others (International Labour Organization, n.d.). Specifically, mining is responsible for approximately 8% of fatal work accident in the world, although it corresponds to only 1% of global workforce (International Labour Organization, 2015). Thus, mine workers are definitely more likely to face with workplace accidents and injuries than their counterparts in other sectors/occupations (Leigh et al., 1990). On the other hand, when employees perceive work pressure of any type, they tend to focus on completing their work and may ignore safety issues, which in turn result in accidents and injuries (Wright, 1986). In addition, employees are more likely to be involved in an accident when they are working at night shifts than at day shifts (Levin et al., 1985).

Third factor, organization related accident causation factors, is highly related to safety climate of the organization. The term 'safety climate' was defined by Zohar (1980, p. 96) as "a summary of molar perceptions that employees share about their work environment." Safety climate has been accepted as the leading indicator of safety performance (Flin, Mearns, O'Connor, & Bryden, 2000). Attitudes and actions of management directly influence employees' perception of safety climate (Barling, Loughlin, & Kelloway, 2002). In other words, when management gives priority to

safety, employees are expected to behave safely, which in turn, apparently, reduces accident and injury risks. Management commitment and safety reporting system of the organization also predict employees' safety practices (Lee, 2011). Mullen (2004) stated that organizational socialization also influences employees' perception of safety climate and their safety attitudes and behaviors. Performance feedback and reinforcement are other important organizational accident causation factors since even well-motivated workers may ignore to behave safely if they are not appreciated or reinforced (DeJoy, 1996). Organizational factors may not be noticed when determining the causes of work accidents and injuries (Mullen, 2004). However, organization related factors should not be overlooked because they affect job related factors, which in turn have an impact on predictors of behaving safely and improving workplace safety (Cheyne, Oliver, Tomás, & Cox, 2002).

It is obvious that there is a transition from person-as-cause to system-as cause for accident causation theories in time. On the other hand, due to technological improvements, human factors again started to be discussed and gained attention in understanding the causes of accidents (Qureshi, 2008). Technological advancements appear to have influenced workplace accidents and injuries in two ways. Firstly, technological developments provided employees to work with more secure machines at more secure workplaces. For instance, the need for human power has diminished in fully mechanized coalmines. Thus, miners working in such mines feel less physical fatigue while doing their job. Despite advancements and conveniences for mining, mining is still responsible for high workplace accident rate (approximately 8% of fatal work accident) of the world, which suggests the continued importance of human factors (International Labour Organization, 2015). Secondly, technological developments accompany sophisticated machines and systems, which require humans to monitor and control these complex systems. For example, air traffic controllers encounter mental work overload while remembering positions of airplanes in order to prevent possible accidents and injuries. Apparently, millions of people still suffer from work accidents and injuries every year despite the elimination of technical and technological deficiencies. Therefore, the focus in the field of occupational health and safety has turned from organizational factors to human factors as causes of work

accidents for the reason that technological developments changed the nature of the work and increased dependence on human decision making and problem solving.

The fact that approximately 80% of all work-related accidents are caused by human error (Camkurt, 2013; Heinrich et al., 1980; Kepir, 1983) requires more research and development studies of human factor in workplace safety. Health and Safety Executive (HSE), responsible for the regulations of health and safety in the United Kingdom, defines human factors as "environmental, organizational and job factors, and human and individual characteristics which influence behavior at work in a way which can affect health and safety" (1989, p. 5). To understand human factor, it is necessary to think about the individual, the job and the organization and how they influence safety-related behaviors of people (Health and Safety Executive, 2009). Research, for example, has indicated that effectively designed behavioral safety methods reduce accidents (Krause, Seymour, & Sloat, 1999). Behavioral safety decreases accidents by identifying, measuring, and reducing situations that produce risky behaviors and improves safety related behaviors (Krause et al., 1999). However, behavioral safety and other human factor methods do not always bring successful results because changing attitudes and behaviors are really difficult (Ocon & Mcfarlane, 2007).

Although each of the methods contributes to decrease occurrence of workplace accidents and injuries, they accompany their limitations. The common characteristic of these methods is that they offer reactive solutions for improving workplace safety instead of offering proactive solutions. In other words, these methods emerge after generating an accident-prone environment. The alternative solution is hiring candidates who are likely to behave safely on the job. Thus, the present study essentially aims to investigate the importance of both safety performance and job performance and their predictors for safety critical jobs during the hiring process. The topic of safety performance, which is the focal variable of the current study, will be presented in the following section.

1.3 Safety Performance

Safety performance is defined as "actions or behaviors that individuals exhibit in almost all jobs to promote the health and safety of workers, clients, the public, and the environment" (Burke, Sarpy, Tesluk, & Smith-Crowe, 2002, p. 432). It has been consistently found by research that better safety performance is correlated with fewer accidents and injuries (Cornelissen, Van Hoof, & De Jong, 2017). Both organizational factors and individual factors influence employees' safety performance (Cornelissen et al., 2017).

Griffin and Neal (2000) point out that safety related work behaviors can be conceptualized in the manner of other work related behaviors constituting job performance. In this way, Neal and Griffin developed a framework for safety performance which is based on job performance theories (1997). The framework includes (1) the component of safety performance itself, (2) the determinants of safety performance, and (3) its antecedents like in the components of job performance (Campbell, McCloy, Oppler, & Sager, 1993; Neal & Griffin, 1997). Borman and Motowidlo (1993) described job performance as being composed of two main components: task performance and contextual performance. Task performance includes activities which are identified as part of the job and contribute directly or indirectly to the technical core of the organization. On the other hand, contextual performance includes activities that are voluntary in nature and not necessarily defined in the formal job descriptions yet contribute to organizational effectiveness (Borman & Motowidlo, 1993). Based on these components, Neal and Griffin (1997) used safety compliance and safety participation terms to describe safety performance. Safety compliance, corresponding to task performance in the Borman-Motowidko model, includes following safety procedures and doing work in a safe manner (Neal, Griffin, & Hart, 2000). Safety participation, corresponding to contextual performance in the Borman-Motowidko model, refers to voluntary behaviors to enhance workplace safety which are not regulated by the organization. These behaviors include encouraging the safety program within the workplace, helping coworkers, taking initiative and making effort to improve safety in the workplace. Determinants of safety performance, which

constitute the second part of the framework, reflect individual differences for safety compliance and safety participation. Because it is argued that determinants of job performance are knowledge, skill, and motivation (Campbell et al., 1993), safety performance should be determined by the knowledge and skills required for safety behaviors and by the motivation to perform safety behaviors of employees (Griffin & Neal, 2000; Neal, Griffin, & Hart, 2000).

Lastly, antecedents of safety performance include distal factors which affect safety performance through their influence on knowledge, skill, and motivation determinants of safety performance. These antecedents can be both individual and organizational level factors as in the same way of job performance (Campbell et al., 1993). Neal and Griffin (2004) suggested that both individual and organizational factors directly affect safety knowledge and safety motivation, which in turn have an effect on safety performance behaviors and other safety outcomes like accidents and injuries.

Besides their similar characteristics, safety performance and job performance are viewed to be incompatible with each other because safety and productivity are largely considered as mutually exclusive choices. However, Heinrich (1950) noticed that job performance and safety do not have to be conflicting goals since problems that they create are similar. In recent years, research indicated that improving safety is likely to improve job performance (i.e. Drew, 2014). Specifically, a recent study showed that the marginal effect of safety on productivity of employees is 27 percent (Adjotor, 2013). Thus, investigating both safety performance and job performance is needed to develop proactive solutions to decrease workplace accidents and injuries. Hence, the purpose of the current study is to investigate predictors of both safety performance and job performance, which is also an expected outcome of safety performance.

1.3.1 Predictors of Safety Performance

The framework developed by Neal and Griffin (1997) contains proximal and distal predictors of safety performance. In this framework, proximal predictors or determinants of safety performance are safety motivation and safety knowledge (Neal & Griffin, 2004), while distal predictors or antecedents are work environment factors

(i.e. safety climate, work design) and individual factors (i.e., attitudes, conscientiousness). Christian and colleagues (2009) conducted a meta-analytic study and found empirical evidence parallel to this framework. Determinants of safety performance, which are safety motivation and safety knowledge, were found to mediate the relationship between safety performance and various situation related and person related antecedents (Christian, Bradley, Wallace, & Burke, 2009; Neal & Griffin, 2004). Safety performance was also found to be negatively associated with accidents and injuries (Christian et al., 2009).

Although organization-related factors like safety climate are important predictors of safety performance, the focus of the current study will only be on person-related factors. The reason for this is that the current study aims to integrate safety performance with personnel selection as a proactive approach for accident prevention. The ultimate goal of personnel selection is to enhance person-job fit by using individual difference factors (e.g., general cognitive ability, job-related knowledge and personality) to predict job performance (see Brannick, Cadle, & Levine, 2012). Situational factors, however, are more likely to be targeted through organizational development and training efforts. In the following sections the literatures on person-related predictors of safety performance which are investigated in the current study and job performance as an outcome variable are briefly reviewed.

1.3.1.1 Safety Motivation

Neal and Griffin (2006) described safety motivation as "an individual's willingness to exert effort to enact safety behaviors and the valence associated with those behaviors" (p. 947). Empirical evidence has shown that there is a significant relationship between safety motivation and safety performance (Christian et al., 2009; Neal & Griffin, 2006). In terms of two different dimensions of safety performance, which are safety compliance and safety participation, motivation for safety compliance means willingness to perform safety related behaviors whereas motivation for safety participation means willingness to participate in activities that contribute to safety (Griffin & Neal, 2000). In other words, motivation for safety compliance includes willingness to work in a safe manner within the context of safety procedures while

motivation for safety participation involves intentness to perform voluntary behavior which are not enforced by the organization.

Neal and Griffin (2006) studied the lagged influences of safety climate on safety motivation and safety performance during five years and found that self-report of safety motivation predicted safety behavior. They showed that two years later, employees who connected to groups with positive safety climate reported improvement in safety motivation, which in turn resulted in safety participation. Results of the study suggested that when employees think safety is important, they are more likely to perform activities even if these activities do not necessarily contribute to their own safety but help to render broader workplace safer. Hence, this study indicated that safety motivation could have lasting effects on employees (Neal & Griffin, 2006).

In sum, employees who are willing to perform their work safely are expected to behave safely. Thus, the following hypothesis is proposed (see Figure 1):

H1: Safety motivation predicts safety performance.

1.3.1.2 Conscientiousness

Conscientiousness is defined by John and Srivastava (1999, p. 30) as "socially prescribed impulse control which enhances task- and goal-directed behavior such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks." Individuals with high conscientiousness are identified with attributes like organized, systematic, thorough, practical, neat, and efficient (Goldberg, 1992). Hence, conscientiousness has been accepted and established as an important predictor of job performance (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Ohme & Zacher, 2015).

There are a number of studies that have shown the relationship between conscientiousness and safety. Beus, Dhanani, and McCord (2015) reported that conscientiousness was negatively related with unsafe behaviors. In addition, they confirmed that personality traits like conscientiousness were more influential in

explaining variance of safety related behavior than contextual influence of safety climate perceptions. These results supported the previous finding that conscientious individuals are disposed to avoid risks and follow rules because they are responsible and thorough (McCrae & Costa, 1987). Conscientiousness was also found to be negatively associated with accidents (Arthur & Doverspike, 2001). In another study, Hogan and Foster (2013) identified six safety performance dimensions by using meta-analysis. These dimensions are avoiding risk, following rules, controlling temper, being steady under pressure, being vigilant, and being responsive to training and feedback. After that, they developed personality based safety scales using these safety performance dimensions and found that personality predicts safety related outcomes (accidents and injuries) with the mediation of safety performance (Hogan & Foster, 2013). Besides, conscientiousness was found to be positively correlated with safety motivation (Christian et al., 2009). Christian and colleagues (2009) drew attention to the importance of conscientiousness in personnel selection contexts for increasing safe behaviors and reducing accidents and injuries.

Based on the reviewed literature above, the following hypotheses are proposed (see Figure 1):

H2: Conscientiousness is predictive of safety performance.

H3: Safety motivation mediates the relationship between conscientiousness and safety performance.

1.3.1.3 Locus of Control

The construct locus of control, introduced by Rotter (1966), is defined as the degree to which an individual thinks that he/she has control over a situation as opposed to situations being controlled by outside factors such as chance and faith. In other words, locus of control refers to the belief of an individual in his/her ability to control his/her environment (Bono & Judge, 2003). According to Rotter (1966), there are two types of locus of control: internal locus of control and external locus of control. People with high internal locus of control think that they have control over their lives or situations they confront, whereas people with high external locus of control believe that the

control is provided by factors outside of themselves (i.e., chance, fate, and other people).

People who think that they have control over events should be more motivated to engage in safety practices more than people who do not think that they have control over the occurrence of accidents (Christian et al., 2009). Christian and colleagues (2009) found that locus of control was moderately associated with safety performance. In addition, they supported that locus of control had a stronger association with safety participation than safety compliance. People with internal locus of control have more proactive approach while setting safety related goals (Clarke, 2011). However, more research is needed to reach a conclusion that locus of control is the predictor of safety compliance and safety participation (Burke & Signal, 2010).

Hence, the following hypotheses are proposed (see Figure 1):

H4: Internal locus of control is predictive of safety performance.

H5: Safety motivation mediates the relationship between locus of control and safety performance.

1.3.1.4 Risk Taking Tendency

Risk taking can be defined as individuals' deliberate participation of behavior which has potential losses or other negative consequences as well as gains or other positive consequences (Ben-Zur & Zeidner, 2009). Both human factors and external factors like technology and organization contribute to risk taking behaviors of employees at work (Nordlöf, Wiitavaara, Winblad, Wijk, & Westerling, 2015). In the literature, different studies reached the conclusion that there is a significant relationship between risk taking and accidents and injuries (e.g., Brauer, 2006; Turner, McClure, & Pirozzo, 2004; Westaby & Lee, 2003; Yücebilgiç, 2007). Christian and colleagues (2009) expected a negative relationship between risk taking tendency and safety performance. Their expectations were partially supported as they found only a weak relationship. On the other hand, these authors did not find support for the relationships between risk taking and accidents and injuries. Contrary to this finding, Zeyan and Liancang (1996)

found a high correlation between risk taking and human caused accidents for coal miners. The underlying rationale of this relationship was probably that employees with lower levels of risk taking tendency were more likely to use safety equipment than those with higher levels of risk taking tendency, and more use of safety equipment in turn resulted in fewer accidents (Medsker, Burnfield, & Knapp, 1999). Paul and Maiti (2007) found similar relationship between risk taking and safety incidents for miners. In addition, Probst (2004) stated that lower safety motivation is related with more violations of safety rules in the organization. It seems fair to argue that employees with low risk taking tendencies may have higher safety motivation and hence safety performance than employees with high risk taking tendencies. Therefore, the following hypotheses are proposed (see Figure 1):

H6: Risk taking tendency is predictive of safety performance.

H7: Safety motivation mediates the relationship between risk taking tendency and safety performance.

1.3.2 Job Performance as an Outcome of Safety Performance

Although safety performance includes some aspects of work behavior (i.e. safety behavior), it is not treated as a dimension of job performance since it fits into neither task performance nor contextual performance. Therefore, safety performance can be handled as the third domain or separate dimension of job performance (Burke et al., 2002). This point of view is especially important for safety critical jobs such as mining, construction and agriculture. As discussed in the previous sections of this introduction, one of the aims of the present research is to identify predictors of safety performance. Another goal of the present study is to focus on job performance as an outcome of safety performance, a relatively under researched topic in the literature. Although there are many studies in the literature concerning the determinants or antecedents of safety performance (e.g., Burke et al., 2002; Christian et al., 2009), the same progress has not been made in terms of outcomes of safety performance. Only a few studies explained the relationship between safety performance and job performance. Common sense would suggest a positive linkage between safety performance and task performance.

Consistent with this expectation, in their study, Casillas, Robbins, McKinniss, Postlethwaite, and Oh (2009) found a positive association between safety behaviors and supervisor report task performance of incumbents in nine organizations including various industries such as manufacturing, healthcare, and information services. Moreover, Drew (2014) attempted to answer the question "Are safe workers better workers?" in a large automotive organization. Results indicated that safe workers (forklift/loader operators) truthfully had higher job performance, which offers an insight for safety performance to be considered in personnel selection as a way of promoting performance in organizations. This study also showed that safety performance mediated the relationship between different predictors of safety performance (agreeableness, conscientiousness, and safety orientation) and job performance (Drew, 2014). Therefore, more research aiming to identifying the link between safety and job performance is needed. Thus, the following hypotheses are proposed (see Figure 1):

H8: Safety performance predicts job performance.

H9: Safety motivation and safety performance serially mediates the relationship between safety performance predictors (conscientiousness (a), locus of control (b), and risk taking tendency (c)) and job performance.

1.4 The Present Study

In their meta-analysis, Christian and colleagues (2009) concluded that both personal and situational factors are important for workplace safety because employees can be selected, hired, trained, and supported with positive safety climate in order to maximize safety knowledge and safety motivation. Most of the accident prevention strategies emerge as a reaction to an accident-prone environment. Therefore, Turner McClure, and Pirozzo (2004) stated that it is possible to alter individuals' risk-taking behavior, which in turn result in a decrease in injury rates. However, because attitude change is difficult to actualize (Ocon & Mcfarlane, 2007), this issue can be handled on personnel selection process. Christian and colleagues (2009) suggested that Schneider's (1987) attraction–selection–attrition model could be a good approach for

person–situation interactions. Accordingly, individuals should be attracted, selected, and retained differentially within different work environments based on their personality, values, and other characteristics (Schneider, 1987). For example, individuals with high external locus of control may not be suitable for high risky jobs because they probably think that they have no control over occurrence of accidents. Thus, personnel selection literature should not be separate from safety literature.

As indicated earlier in this chapter, although situational factors (i.e. safety culture and safety climate) are important predictors of safety performance, the focus of the present study will only be on individual-related factors. The reason for this is a practical one from a human resource management perspective. That is, identification of critical individual difference variables as predictors of safety performance and job performance can help recruiters or selection specialist to incorporate measures of these critical variables into their selection procedures. The present study focuses on conscientiousness, locus of control, risk taking tendency and safety motivation as the predictors of safety performance and job performance. Thus, this study aims to contribute to the existing literature by examining the serially mediating role of safety motivation and safety performance in the relationship between personal factors (conscientiousness, locus of control and risk taking tendency) and job performance. In a way, this study represents a proactive approach to workplace safety by focusing on the predictive role of individual factors critical in both safety performance and job performance. Safety-focused hiring can offer a proactive approach to creating and maintaining workplace safety by removing candidates who are more likely to perform unsafe work behaviors from the applicant pool. Adapting such a proactive approach, recruiters or selection specialists can hire candidates who are likely to behave safely on the job. Thus, employees are expected to have fewer workplace injuries since their safety performance will be higher than those of employees who were not selected for safety criteria.

Another goal of the present study is to examine the association between safety performance and job performance. Inspired by Drew's study (2014), the current study aims to contribute to the relevant literature by investigating the role of safety

performance in predicting job performance for safety critical jobs. The hypothesized relationships are depicted in Figure 1.

Within this scope, the data were gathered from coal mining workers. The reason why coalmining industry is chosen as the sample of the study is that one of the highest accident rates and the highest rate of work related illnesses were reported in the mining industry in Turkey (Turkish Statistical Institute, 2014). The high rates of accidents and work related illnesses in mining sector requires an urgent need for different attempts to cope with shortcomings of the organization from a safety perspective and then developing accident prevention strategies.

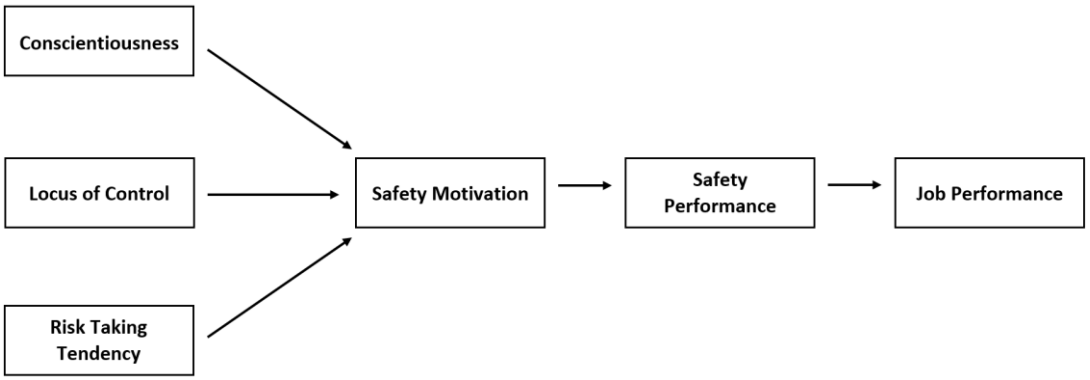

Figure 1. The Hypothesized Model of Safety Performance

CHAPTER 2

METHOD

2.1 Participants

The present study was conducted in a local coalmining company located in central Anatolia in Turkey. The sample of the study was composed of 164 mineworkers and their 69 immediate supervisors in the organization. All participants were male mineworkers since it is judicially forbidden to employ women in underground mines (4857 İş Kanunu, 2003). Age of the participants ranged from 22 to 52 years (M = 34.01, SD = 6.06). In terms of education level, 54.9 % of the mineworker participants had a high school degree, 22 % had a secondary school degree, 11% had an elementary school degree, 8.5 % had a two-year college degree and 2.4 % had a four-year college degree. Of the participants, 84 % were married. Participants' tenure in the current organization ranged from a year to 23 years (M = 7.42, SD = 5.63). Their total experience in mining sector also ranged from a year to 23 years (M = 9.13, SD = 5.60).

For the immediate supervisors, age ranged from 25 to 51 years (M = 35.33, SD = 6.30). Of the participant supervisors, 59.1 % had a four-year college degree, 38.4 % had a two-year college degree, and 2.4 % had a high school degree. In terms of marital status, 76.8 % of them reported that they were married. Their tenure in the organization ranged from a year to 22 years (M = 9.32, SD = 6.77). Their total experience in this industry also ranged from one year to 32 years (M = 10.45, SD = 6.58).

2.2 Measures

2.2.1 Conscientiousness

The Turkish version of the 9-item conscientiousness sub-scale of the Big Five Inventory (BFI) (John & Srivastava, 1999) was used as a measure of conscientiousness. The scale was adapted to Turkish by Sümer and Sümer (2002). Items are rated on a 5-point Likert type scale ranging from (1) strongly disagree to (5) strongly agree. A sample item is "I see myself as someone who is a reliable worker." The Cronbach alpha of the scale was reported as .75 (Nebi Sümer, Lajunen, & Özkan, 2005). In this study, The Cronbach's alpha value for the whole scale was found to be .74.

2.2.2 Locus of Control

Locus of control was measured by the Locus of Control Scale originally developed by Rotter (1966). The original scale includes 23 dichotomous items (true/false). Later, Dağ (2002) developed the Turkish version of the scale by enhancing the items and replacing dichotomous rating with 5-point Likert type scale ranging from (1) strongly disagree to (5) strongly agree. The scale consists of 47 items with five factors which are internal locus of control/personal control, fatalism, belief in chance, belief in an unfair world and senselessness of scrambling. Higher scores in the scale indicate having more external locus of control tendencies. Cronbach's alpha of the scale is .91 and test-retest reliability of the scale is .88 (Dağ, 2002). However, since participants of the reliability and validity study conducted by Dağ (2002) were university students, and they are less likely to be representative of blue collar mineworkers of the current study. In the present study, we created an 18-item shorter version of the scale by selecting the items that had higher loadings and looked more relevant for the current participants. Since Cronbach's alpha of the newly created shorter version was only .58 in the current study, eight items were deleted. After that, Cronbach's alpha of the 10-item scale increased to .76.

2.2.3 Risk Taking Tendency

In order to measure risk taking tendency, a comprehensive literature review was conducted related to risk taking scales used worldwide. After the review, a decision was made to use 14 items that were relevant for the purpose as well as sample/participants of the study. Four of the items were taken from Multidimensional Self-Destructiveness Scale (Persing & Schick, 1999) which were adapted to Turkish by Sümer (2003), three items from High Sensation Seeking Test (Aron, 2006), two items from The Domain-Specific Risk Taking Scale (Weber, Blais, & Betz, 2002), two items from Stimulating – Instrumental Risk Inventory (Zaleskiewicz, 2001), one item from Passive Risk Taking Scale (Keinan & Bereby-Meyer, 2012), one item from Brief Sensation Seeking Scale (Stephenson, Velez, Chalela, Ramirez, & Hoyle, 2007), and one item from Paul and Maiti' study published in 2007. This newly developed 14-item scale was called Risk Taking Tendency Scale. The scale items are rated on a 5-point Likert type scale, ranging from 1 (describes me very well) to 5 (does not describe me at all).

An exploratory factor analysis with principal component analysis and varimax rotation was conducted on 14 items of Risk Taking Tendency Scale data. According to Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.79) and Bartlett's Test of Sphericity ($\chi 2 = 564.94$, $p < .000$), the data was suitable for factor analysis. Initially, results showed that 14 items of the scale were loaded on 4 factors. However, since the fourth factor, which included only two items, was not a theoretically meaningful factor, these two items were excluded from the analysis. The remaining 12 items explained 49.22 % of the total variance. Based on their theoretical background, the three factors were called sensation seeking (factor 1), risk taking (factor 2) and disobeying the rules (factor 3). Cronbach's alpha of the sensation seeking, risk taking, and disobeying the rules were. 71, .73, .68, respectively. The factor loadings of the items and percent of explained variances for each factor are presented in Table 1. In addition, Cronbach's alpha of the total scale was .80. In the present study, total scale score was used in the analyses as the hypotheses of the study treated risk taking as a single construct rather than differentiating among the sub factors of the construct.

Table 1

Factor Loadings and Percent of Explained Variances of Risk Taking Tendency Scale

Item	Factor Loadings 1	2	3
Factor 1: Sensation Seeking (α = .70)			
6. I like exciting things.	.74		
4. I would like to try something new, even if it's dangerous.	.69		
7. My friends say it is hard to predict what I will want to do.	.67		
10. I think life is dull if there is no danger in life.	.55		
14. I want to immediately go and see when there is a fight, fire or accident near me.	.46		
Factor 2: Risk Taking (α = .72)			
3. I get bored spending time with the same people every day.		.74	
1. I make sudden decisions.		.73	
9. I enjoy risk taking.		.73	
8. I make risky decisions quickly without an unnecessary waste of time.		.55	
Factor 3: Disobeying the Rules (α = .69)			
11. I ride a motorcycle without a helmet.			.84
12. I like new and exciting experiences, even if I have to break the rules.			.71
5. I drive a car without wearing a seat belt.			.69

2.2.4 Safety Motivation

Safety motivation was measured with three items from the study conducted by Neal, Griffin, and Hart (2000). The items measured whether individuals see safety as an important portion of their work life or not. Items were rated on a 5-point Likert type scale ranging from (1) strongly disagree to (5) strongly agree. Example items are “I feel that it is worthwhile to put in effort to maintain or improve my personal safety” and “I feel that it is important to maintain safety at all times.” The scale was translated to Turkish by the author. The Cronbach alpha of the scale was found .92 and .85 in two different years of a longitudinal study (Neal & Griffin, 2006). In the current study, the Cronbach alpha of the scale was found to be .79.

2.2.5 Safety Performance

Two components of safety performance, safety compliance and safety participation, were measured in this study. Each component was measured via three items developed by Neal and colleagues (2000). Items were rated on a 5-point Likert type scale ranging from (1) strongly disagree to (5) strongly agree. Example items for safety compliance are "I ensure the highest levels of safety when I carry out my job" and "I use the correct safety procedures for carrying out my job." Example items related to participation of safety-related activities are "I help my coworkers when they are working under risky or hazardous conditions" and "I voluntarily carry out tasks or activities that help to improve workplace safety." Items of each component were translated into Turkish by Dursun (2011). The Cronbach alpha of the Turkish version of safety compliance and safety participation was found to be .87 and .85, respectively (Dursun, 2011). The Cronbach alpha of the supervisor report and self-report safety performance was found as .92 and .87, respectively in the current study.

2.2.6 Job Performance

Both task and contextual performance was measured in the current study. Performance Scale (Befort & Hattrup, 2003), adapted to Turkish by Karakurum in 2005, was used. The scale consists of 11 items. Of the 11 items six item tap into task performance, four items adapted from Befort and Hattrup (2003) and two items developed by Karakurum (2005) herself. The other five items measure contextual performance. Sample items of the scale are "I perform my work with a high quality" and "I produce high quality work." Items are rated on a 5-point Likert type scale ranging from (1) strongly disagree to (5) strongly agree. The internal consistency reliabilities for task performance, contextual performance, and overall job performance were reported as .81, .80, and .85, respectively (Karakurum, 2005).

For the current study, two items were eliminated since they were not appropriate for the sample. These items are "I can effectively use written communication skills in performing my duties" and "I can effectively use oral communication skills in performing my duties." The remaining nine items which were used in the current study

can be seen in Appendix E. The internal consistency reliabilities for overall job performance reported by immediate supervisors were found to be .92 and reliability of the self-ratings of the scale was .80 in the current study.

2.2.7 Demographic Information Form

The demographic information forms for both mineworkers and their immediate supervisors can be seen in Appendix G. The forms included questions concerning age, education level, marital status, accident history, tenure in the current organization and total tenure in order to facilitate to understand the effects of human factors on safety performance.

2.3 Procedure

After receiving the approval of the Human Subjects Ethics Committee of Middle East Technical University, data collection procedure started. Data were collected over a two-month period, starting from March and ending at June 2018.

Initially, questionnaire packages and informed consent forms were prepared both for mineworkers and immediate supervisors. In order to match the questionnaires from mineworkers and their immediate supervisors each survey assigned a number. During the data collection process, questionnaires packages for mineworkers which included measures of conscientiousness, locus of control, risk taking tendency, safety motivation, safety performance, job performance and demographics were administered to a sample of 300 mineworkers at the beginning or end of their shifts. Mineworker participants were involved in the study on a voluntary basis. Before the participation of the study, they were informed that the data collected would only be used for scientific purposes as a requirement for master thesis. In the informed consent form, participants were asked whether they would allow data collection from their supervisors. Participants who approved data collection from their supervisors were asked to provide their supervisors' contact information. Of the administered 300 questionnaire packages, 166 were returned (return rate = 55.33 %).

For the second part of the study, the questionnaire packages and informed consent forms were given to the immediate supervisors in closed envelopes. They also were informed about voluntary nature of the participation and study purposes. All questionnaires were returned from supervisors (return rate of 100 %).

CHAPTER 3

RESULTS

3.1 Overview

Analyses conducted in this study are presented under four section in this chapter. First, results of initial data screening and assumption testing are presented. Second section includes descriptive statistics and bivariate correlations among the study variables. Third section includes results of hypotheses testing. In the last section, some additional analyses conducted for exploratory purposes are presented.

Data were analyzed by using the Statistical Package of Social Sciences (SPSS), version 25.0 (IBM Corp, 2017). In order to conduct the mediation analyses of the study, PROCESS version 3.3 for SPSS which was developed by Hayes (2017) was used.

3.2 Data Screening

In order to screen and clean data, several steps were followed. Firstly, the accuracy of data entry was checked with the examination of out of range values. Results showed that the data didn't contain any out of range values. After that, the data were examined for missing values. There were only 2.66% of missing values in all data set. According to Tabachnick and Fidell (2013), if missing values constitute less than 5% of the data set, almost any procedure would work to handle missing cases. Therefore, in the present study missing values were handled using series mean method.

The data were also analyzed for multivariate outliers. According to Mahalanobis distance, two cases were deleted from the data set. Thus, the main analyses were

conducted on the data from the remaining 164 mineworker participants and 69 supervisors.

Normality assumptions of variables were investigated by checking skewness and kurtosis values. All but one variable met the normality assumptions stated by Tabachnick and Fidell (2013). Since safety motivation was negatively skewed, data transformation was conducted. After that, skewness and kurtosis values were found to be -1.00 and -.38, respectively.

3.3 Descriptive Statistics and Bivariate Correlations

Means, standard deviations, minimum and maximum values of study variables and reliabilities can be seen in Table 2.

Table 2

Means, Standard Deviations, and Minimum and Maximum Values of Study Variables

Variable	Mean	SD	Min.	Max.	Skewness
Age	34.01	6.06	22.00	52.00	0.47
Tenure	7.42	5.63	1.00	23.00	1.06
Total Tenure	9.13	5.60	1.00	23.00	0.57
# of Accidents (Self-Report)	2.44	1.78	0.00	6.00	0.45
Near Misses (Self-Report)	2.07	2.10	0.00	6.00	0.75
Supervising Time	1.79	0.75	1.00	5.00	1.17
# of Accidents (Supervisor-Report)	0.73	1.23	0.00	6.00	2.16
# of Near Misses (Supervisor-Report)	0.71	1.31	0.00	6.00	2.47
Age (Supervisor)	35.33	6.30	25.00	51.00	0.27
Tenure (Supervisor)	9.32	6.77	1.00	22.00	0.44
Total Tenure (Supervisor)	10.45	6.58	1.00	32.00	0.43
Safety Motivation	4.72	0.45	3.00	5.00	-1.78
Conscientiousness	4.41	0.48	3.00	5.00	-0.67
Locus of Control	3.03	0.73	1.50	5.00	0.13
Risk Taking Tendency	2.30	0.70	1.00	4.83	0.76
Self-Report Job Performance	4.32	0.49	2.89	5.00	-0.72
Self-Report Safety Performance	4.38	0.58	2.67	5.00	-0.82
Supervisor-Report Job Performance	3.99	0.65	2.00	5.00	-0.39
Supervisor-Report Safety Performance	3.91	0.70	1.67	5.00	-0.44

Note: Age, tenure, total tenure and supervising time were measured on the basis of years. Safety motivation, conscientiousness, locus of control, risk taking tendency, safety performance and job performance are rated on a 5-point Likert type scale (1 = Strongly disagree; 5 = Strongly agree).

Bivariate correlations among study variables are presented in Table 3. As can be seen in this table, supervisor report job performance of workers, which is the dependent variable of the study, was found to be positively correlated with supervisor report safety performance (r = .81, p <.01) and negatively correlated with the number of workers' mine accident reported by immediate supervisors (r = -.24, p <.01), and the number of workers' near misses reported by immediate supervisors (r = -.26, p <.01).

Mineworkers' self-report job performance was positively correlated with their safety motivation (r = .45, p <.01), conscientiousness (r = .56, p <.01), and self-report safety performance (r = .63, p <.01).

Moreover, conscientiousness was positively correlated with safety motivation (r = .43, p <.01) and self-report safety performance (r = .47, p <.01) and negatively correlated with risk taking tendency (r = -.26, p <.01). External locus of control was positively correlated with risk taking tendency (r = .36, p <.01). Lastly, safety motivation was positively correlated with tenure (r = .18, p <.05) and self-report safety performance (r = .46, p <.01).

However, it is important to note that no correlation was significant between self-report performance measures and supervisor-report performance measures.

Table 3

Bivariate Correlations between Study Variables

Variable		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1.	Age	1															
2.	Education	-.25**	1														
3.	Tenure	.69**	-.16*	1													
4.	Total Tenure	.74**	-.31**	.79**	1												
5.	# of Accident (Self-Report)	.22**	-.19*	.30**	.31**	1											
6.	# of Near Misses (Self-Report)	.23**	.07	.17*	.17*	.25**	1										
7.	# of Accident (Supervisor-Report)	-.08	-.04	.01	-.06	.21**	.04	1									
8.	# of Near Misses (Supervisor-Report)	-.03	-.00	.01	-.05	.08	-.10	.47**	1								
9.	Locus of Control	-.15	.01	-.05	-.09	.02	-.11	.03	-.01	1							
10.	Risk Taking Tendency	-.03	.01	.07	-.00	.12	.13	.01	-.04	.36**	1						
11.	Safety Motivation	.09	-.12	.18*	.08	.12	.14	.03	.09	-.05	-.08	1					
12.	Conscientiousness	.05	-.11	.05	.11	.03	-.01	-.03	.08	-.11	-.26**	.43**	1				
13.	Self-Report Job Performance	.14	-.11	.13	.15	.06	-.01	-.01	.03	-.08	-.02	.45**	.56**	1			
14.	Self-Report Safety Performance	.10	-.10	.11	.07	.06	-.05	.01	.08	-.08	-.12	.46**	.47**	.63**	1		
15.	Supervisor-Report Job Performance	.06	.05	.09	.12	-.06	.13	-.24**	-.26**	-.05	.07	.11	-.06	-.01	-.06	1	
16.	Supervisor-Report Safety Performance	.09	.02	.13	.13	-.09	.10	-.26**	-.22**	-.00	.12	.05	-.15	-.06	-.08	.81**	1

Note. * p < .05, ** p < .01

3.4 Hypotheses Testing

The main purpose of the current study was to investigate whether safety motivation and safety performance mediate the relationship between safety performance predictors (conscientiousness, locus of control, risk taking tendency) and job performance. In order not to suffer from common method bias, performance measures, which are safety performance and job performance, were gathered from both immediate supervisors and mineworkers themselves.

Three serial mediation analysis was conducted with Model 6 and Model 4 of PROCESS macro for SPSS (Hayes, 2017). Mediation pathways of the study were constructed separately for each personal variable which are conscientiousness, locus of control, and risk taking tendency and for different sources of job performance and safety performance data. The mediation models were used to test direct, indirect, and total effects of the proposed hypotheses. Indirect effects were gathered via Bootstrapping which is one of the most widely preferred and suggested method due to its accurate and powerful estimates for testing the indirect effects (Preacher & Hayes, 2004). The number of bootstrap samples for percentile bootstrap confidence intervals is 5000 and level of confidence for all confidence intervals are 95 %. For the significance tests of the analysis, .05 of alpha level was used.

3.4.1 Hypotheses Testing Using Self-Report Performance Measures

In testing the hypotheses of the study, three mediational analyses were conducted. First, conscientiousness was modelled as the predictor of safety motivation (Mediator 1), which in turn, predicts self-report safety performance (Mediator 2), thereby predicting self-report job performance. Second, locus of control was modelled as the predictor of safety motivation (Mediator 1), which in turn, predicts self-report safety performance (Mediator 2), thereby predicting self-report job performance. Third, risk taking tendency was modelled as the predictor of safety motivation (Mediator 1), which in turn, predicts self-report safety performance (Mediator 2), thereby predicting self-report job performance. In addition, these models were regenerated for supervisor-report job performance and safety performance for each individual difference variable.

Concerning the first mediation analysis, Hypothesis 1 stated that safety motivation predicts safety performance. Hypothesis 2 stated conscientiousness is predictive of safety performance. The third hypothesis stated that safety motivation mediates the relationship between conscientiousness and safety performance. Hypothesis 8 stated that safety performance predicts job performance. In addition, Hypothesis 9a stated that safety motivation and safety performance serially mediate the relationship between conscientiousness and job performance. The hypothesized model with standardized estimates indicated direct and indirect effects of conscientiousness, safety motivation, and self-report safety performance on self-report job performance (see Figure 2). As shown in Figure 2, conscientiousness had significant direct effect on safety motivation (β = .40, *SE* = .07, $p < .001$), self-report safety performance (β = .40, *SE* = .09, $p < .001$), and self-report job performance (β = .32, *SE* = .07, $p < .001$). Safety motivation had also significant direct effect on self-reported safety performance (β = .42, *SE* = .09, $p < .001$) and non-significant direct effect on self-report job performance (β = .13, *SE* = .07, $p > .05$). The direct effect of self-report safety performance on self-report job performance was also found to be significant (β = .36, *SE* = .06, $p < .001$). That is, participants with higher safety motivation depicted to have higher safety performance, supporting Hypothesis 1. In addition, the ones who had higher safety motivation reported higher job performance. Similarly, participants with more conscientiousness reported higher safety performance, supporting Hypothesis 2. They also reported higher safety motivation and higher job performance. Lastly, participants reporting higher safety performance had also higher job performance, supporting Hypothesis 8. However, safety motivation did not directly contribute to job performance. In addition to direct effects, indirect effects of conscientiousness and safety motivation was investigated with Bootstrapping method. Two of three indirect effects were found to be significant in the hypothesized model. The indirect effect of conscientiousness on self-report job performance via safety performance was significant (β = .15, *SE* = .05, 95 % CI [.06, .25]). For the indirect effect of conscientiousness on self-report job performance via safety motivation and self-report safety performance, the result was significant (β = .06, *SE* = .02, 95 % CI [.02, .11]). The indirect effect of conscientiousness on self-report job performance via safety motivation was not significant (β = .05, *SE* = .03, 95 % CI [.00, .13]). In sum,

participants with higher conscientiousness had higher job performance via safety performance. Those who were more conscientious reported higher job performance by means of safety motivation and safety performance sequentially, supporting Hypothesis 9a (see Table 4).

In order to test Hypothesis 3, which stated that safety motivation mediates the relationship between conscientiousness and safety performance, another mediation analysis was conducted with Hayes Macro Model 4 to understand the indirect effect while safety performance was the outcome variable. The result showed that the indirect effect of conscientiousness on self-report safety performance via safety motivation was significant (β = .17, *SE* = .06, 95 % CI [.07, .30]). This means that participants with higher conscientiousness had higher safety performance via safety motivation, supporting Hypothesis 3.

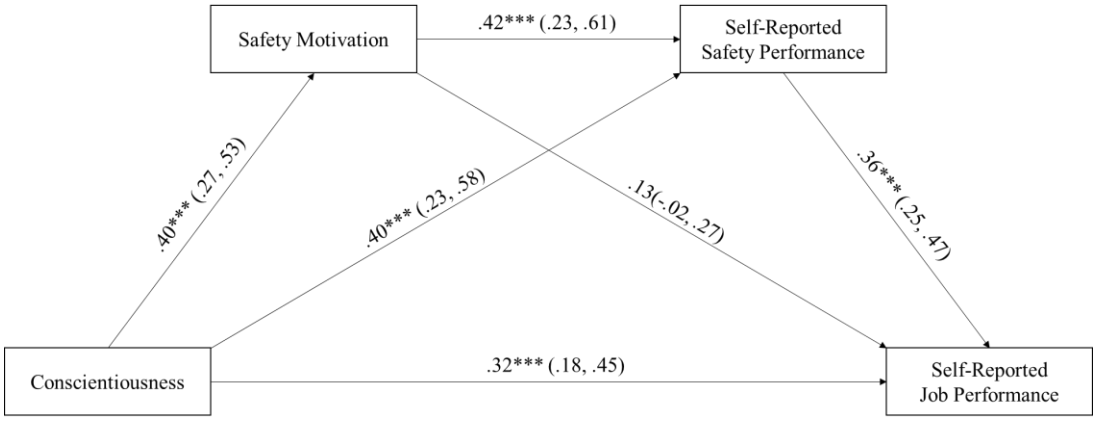

Figure 2. Direct Effect of Conscientiousness on Safety Motivation, Self-Report Safety Performance and Self-Report Job Performance
Note: ***p < .001, Numbers in parenthesis represent Lower Lever Confidence Interval (LLCI) and Upper Lever Confidence Interval (ULCI), respectively.

Concerning second mediation analysis, Hypothesis 4 stated that internal locus of control is predictive of safety performance. Hypothesis 5 stated safety motivation mediates the relationship between locus of control and safety performance. Hypothesis 9b stated that safety motivation and safety performance serially mediate the relationship between locus of control and job performance. The mediation model with standardized estimates indicated direct and indirect effects of locus of control, safety motivation, and self-report safety performance on self-report job performance (see

Figure 3). In this model, locus of control had no direct effects on the variables of interest which means that Hypothesis 4 was not supported. On the other hand, safety motivation had significant direct effects on self-report safety performance (β = .61, *SE* = .09, $p < .01$) and self-report job performance (β = .22, *SE* = .07, $p < .01$). The direct effect of self-report safety performance on self-report job performance was also found to be significant (β = .45, *SE* = .06, $p < .01$). In other words, participants with higher safety motivation reported higher safety performance and higher job performance. Moreover, participants reporting higher safety performance had also higher job performance. The indirect effects of this model were investigated and no indirect effect was found. Thus, Hypothesis 9b was not supported.

In order to test Hypothesis 5, which stated that safety motivation mediates the relationship between locus of control and safety performance, Hayes Macro Model 4 was conducted. According to the results, the indirect effect of locus of control on self-report safety performance via safety motivation was found to be nonsignificant (β = -.03, *SE* = .04, 95 % CI [-.11, .06]). Thus Hypothesis 5 was not supported.

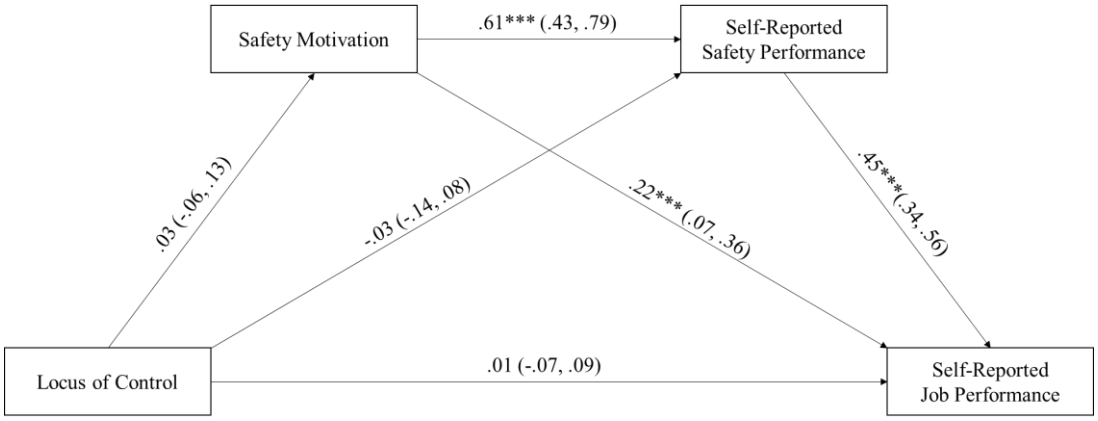

Figure 3. Direct Effect of Locus of Control on Safety Motivation, Self-Report Safety Performance and Self-Report Job Performance
Note: ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.

Hypothesis 6 stated that risk taking tendency is predictive of safety performance. Hypothesis 7 stated that safety motivation mediates the relationship between risk taking tendency and safety performance. The last hypothesis, Hypothesis 9c stated that safety motivation and safety performance serially mediate the relationship between risk taking tendency and job performance. Related with these hypotheses, the last

model with self-report performance measures indicated direct and indirect effects of risk taking tendency, safety motivation, and safety performance on job performance (see Figure 4). Similar to the previous model, predictor variable, risk taking tendency, had no direct effect on the other variables. Thus, Hypothesis 6 was not supported. Safety motivation had significant direct effects on self-report safety performance (β = .60, *SE* = .09, $p < .001$) and self-report job performance (β = .22, *SE* = .07, $p < .001$). The direct effect of self-report safety performance on self-report job performance was also significant (β = .45, *SE* = .06, $p < .001$). Thus, participants with higher safety motivation reported higher safety performance and job performance. Also, participants reporting higher safety performance had also higher job performance. No indirect effect was found to be significant in this model, which means that Hypothesis 9c was not supported.

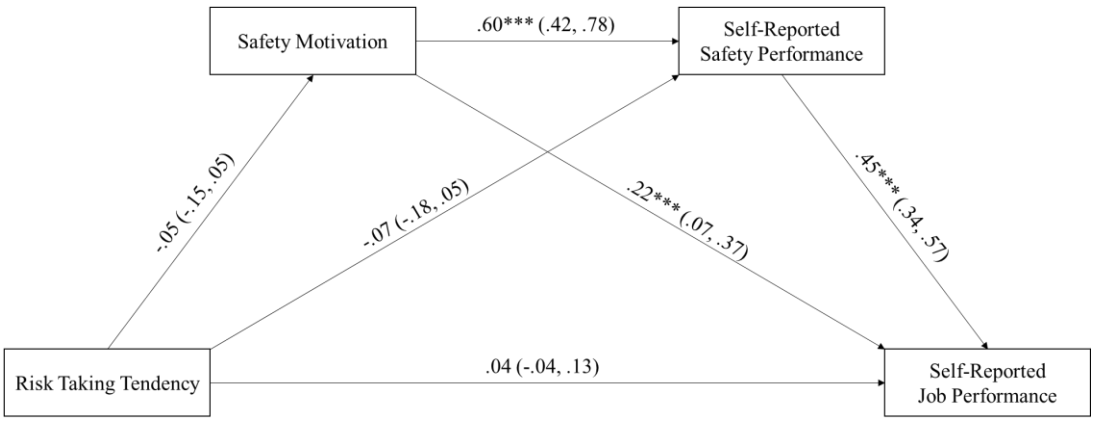

Figure 4. Direct Effect of Risk Taking Tendency on Safety Motivation, Self-Report Safety Performance and Self-Report Job Performance
Note: ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.

Hypothesis 7, which stated that safety motivation mediates the relationship between risk taking tendency and safety performance, was tested with Hayes Macro Model 4. Since the indirect effect of risk taking tendency on self- report safety performance via safety motivation was not significant (β = .02, *SE* = .03, 95 % CI [-.04, .08]), Hypothesis 7 was not supported.

Table 4

Bootstrapped Results of Indirect Effects

Path	*β*	*SE*	*BC Interval*
Indirect Effects Using Self-Report Performance Measures			
Conscientiousness → Safety Motivation → Job Performance	.05	.03	[.00, .13]
Conscientiousness → Safety Performance → Job Performance	.15	.05	[.06, .25]
Conscientiousness → Safety Motivation → Safety Performance → Job Performance	.06	.02	[.02, .11]
Conscientiousness → Safety Motivation → Safety Performance	.17	.06	[.07, .30]
Locus of Control → Safety Motivation → Job Performance	.01	.01	[-.02, .04]
Locus of Control → Safety Performance → Job Performance	.00	.01	[-.02, .03]
Locus of Control → Safety Motivation → Safety Performance → Job Performance	.00	.01	[-.02, .01]
Locus of Control → Safety Motivation → Safety Performance	.03	.04	[-.11, .06]
Risk Taking Tendency → Safety Motivation → Job Performance	-.01	.01	[-.04, .01]
Risk Taking Tendency → Safety Performance → Job Performance	-.03	.03	[-.09, .02]
Risk Taking Tendency → Safety Motivation → Safety Performance → Job Performance	-.02	.02	[-.05, .01]
Risk Taking Tendency → Safety Motivation → Safety Performance	.02	.03	[-.04, .08]
Indirect Effects Using Supervisor-Report Performance Measures			
Conscientiousness → Safety Motivation → Job Performance	.04	.04	[-.02, .12]
Conscientiousness → Safety Performance → Job Performance	-.22	.09	[-.39, -.06]
Conscientiousness → Safety Motivation → Safety Performance → Job Performance	.06	.04	[.00, .14]
Conscientiousness → Safety Motivation → Safety Performance	.08	.05	[-.00, .19]
Locus of Control → Safety Motivation → Job Performance	.00	.01	[-.01, .02]
Locus of Control → Safety Performance → Job Performance	.03	.06	[-.09, .14]
Locus of Control → Safety Motivation → Safety Performance → Job Performance	.00	.01	[-.01, .01]
Risk Taking Tendency → Safety Motivation → Job Performance	-.01	.01	[-.02, .01]

Table 4 (Continued)

Path	*β*	*SE*	*BC Interval*
Risk Taking Tendency → Safety Performance → Job Performance	.09	.06	[-.03, .21]
Risk Taking Tendency → Safety Motivation → Safety Performance → Job Performance	.00	.01	[-.02, .01]
Indirect Effects Using Mix Performance Measures			
Conscientiousness → Safety Motivation → Job Performance	.12	.06	[.02, .26]
Conscientiousness → Safety Performance → Job Performance	-.05	.04	[-.14, .03]
Conscientiousness → Safety Motivation → Safety Performance → Job Performance	-.02	.02	[-.07, .01]
Locus of Control → Safety Motivation → Job Performance	.01	.01	[-.02, .04]
Locus of Control → Safety Performance → Job Performance	.01	.01	[-.02, .03]
Locus of Control → Safety Motivation → Safety Performance → Job Performance	.00	.01	[-.02, .01]
Risk Taking Tendency → Safety Motivation → Job Performance	-.01	.02	[-.06, .01]
Risk Taking Tendency → Safety Performance → Job Performance	.01	.01	[-.01, .04]
Risk Taking Tendency → Safety Motivation → Safety Performance → Job Performance	.01	.01	[.00, .02]

Note. The number of bootstrap samples for percentile bootstrap confidence intervals is 5000 and level of confidence for all confidence intervals are 95 %.

3.4.2 Hypotheses Testing Using Supervisor-Report Performance Measures

The hypotheses were also tested with supervisor-report safety performance and supervisor-report job performance for each predictor variable (see Figure 5). According to the results, safety motivation had no significant direct effect on supervisor-report safety performance (β= .09, *SE* = .13, $p > .05$) and job performance (β= .09, *SE* = .05, $p > .05$). Thus, Hypothesis 1 was not supported with supervisor ratings. In addition, conscientiousness had a non-significant direct effect on supervisor-report job performance (β= .04, *SE* = .07, $p > .05$). However, the direct effects of conscientiousness on safety motivation (β = .40, *SE* = .07, $p < .001$) and safety performance (β = -.30, *SE* = .13, $p < .001$) were significant. In addition, Lastly, direct effect of supervisor-report safety performance on supervisor-report job

performance was significant (β = .75, *SE* = .04, p < .001). That is, participants with more conscientiousness reported higher safety motivation. However, immediate supervisors of participants with higher conscientiousness reported lower safety performance for these participants. Thus, Hypothesis 2 was not supported. In addition to these findings, participants who were evaluated to have higher safety performance by their immediate supervisors were also evaluated to have higher job performance. None of the indirect effects was significant in this model.

Hypothesis 3 was investigated with Hayes Macro Model 4. Since the indirect effect conscientiousness on supervisor-report safety performance via safety motivation was not significant (β = .08, *SE* = .05, 95 % CI [-.00, .19]), Hypothesis 3 was not supported.

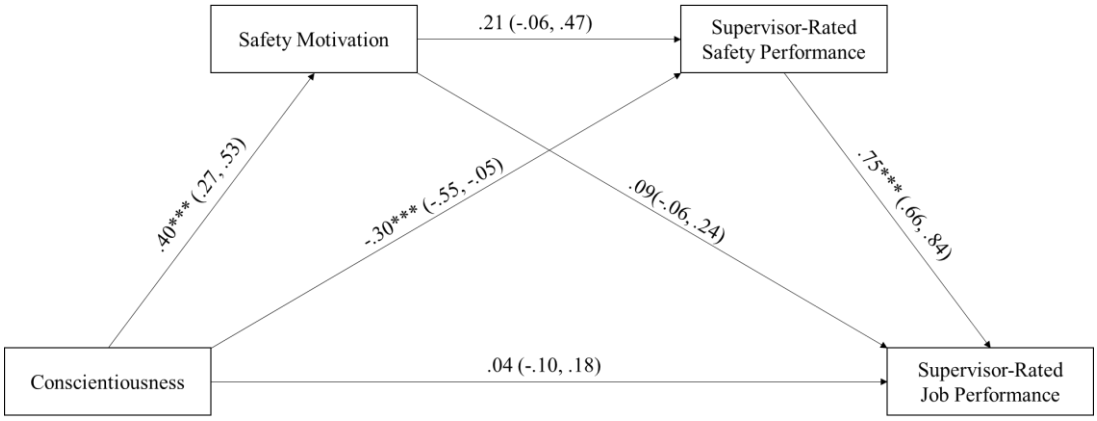

Figure 5. Direct Effect of Conscientiousness on Safety Motivation, Supervisor-Report Safety Performance and Supervisor-Report Job Performance
Note: ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.

Lastly, hypothesized model for locus of control (see Figure 6) and risk taking tendency (see Figure 7) was also tested with supervisory ratings of safety performance and job performance. These models yielded similar results such that the only significant effect was the direct effect of supervisor-report safety performance on supervisor-report job performance, yielding support for Hypothesis 8 only.

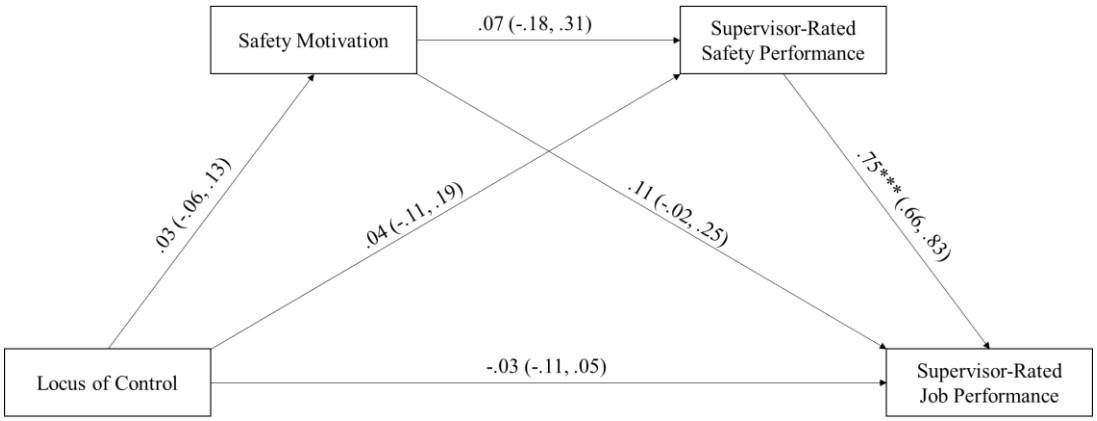

Figure 6. Direct Effect of Locus of Control on Safety Motivation, Supervisor-Report Safety Performance and Supervisor-Report Job Performance
*Note: ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.*

The remaining hypotheses, which are Hypothesis 4, Hypothesis 5, Hypothesis 6, Hypothesis 7 and Hypothesis 9, were not supported either when supervisor-report safety performance and supervisor-report job performance were used.

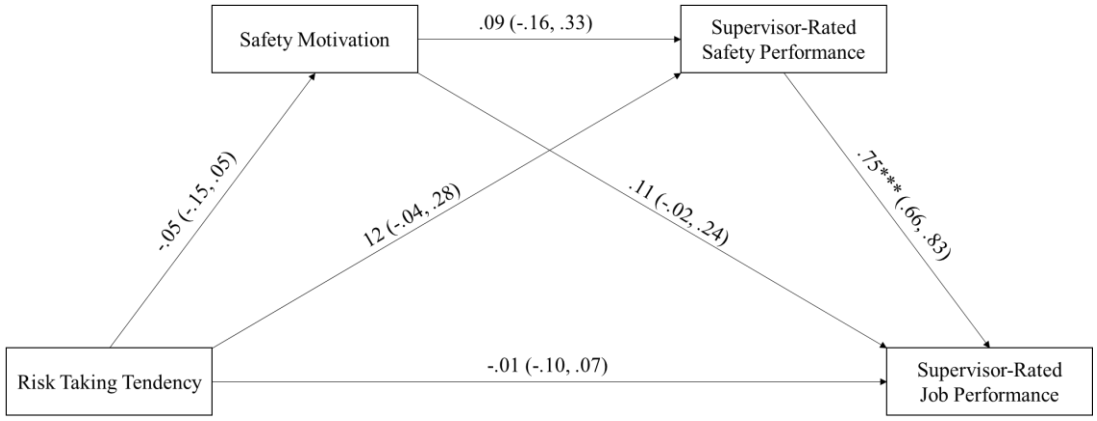

Figure 7. Direct Effect of Risk Taking Tendency on Safety Motivation, Supervisor-Report Safety Performance and Supervisor-Report Job Performance
*Note: ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.*

3.5 Additional Analyses

Because of the fact that supervisors are likely to have more opportunity to observe subordinates' job performance than their safety performance, three additional serial mediation analyses were conducted with Model 6 in order to investigate the serially mediating role of safety motivation and self-report safety performance in the prediction of supervisor-report safety performance. Mediation pathways of the

analyses were constructed separately for each personal variable of the study. Firstly, conscientiousness was handled as the predictor of safety motivation (Mediator 1), which in turn, predicted self-report safety performance (Mediator 2), thereby predicting supervisor-report job performance. Second, locus of control was modelled as the predictor of safety motivation (Mediator 1), which in turn, predicted self-report safety performance (Mediator 2), thereby predicting supervisor-report job performance. Third, risk taking tendency was modelled as the predictor of safety motivation (Mediator 1), which in turn, predicted self-report safety performance (Mediator 2), thereby predicting supervisor-report job performance.

The first hypothesized model with standardized estimates indicated direct and indirect effects of conscientiousness, safety motivation, and self-report safety performance on supervisor-report job performance (see Figure 8). Conscientiousness had significant direct effect on safety motivation (β = .40, *SE* = .07, $p < .001$) and self-report safety performance (β = .40, *SE* = .09, $p < .001$), while the direct effect of conscientiousness on supervisor-report job performance was not significant (β = -.13, *SE* = .12, $p > .05$). Safety motivation had significant direct effect on self-report safety performance (β = .42, *SE* = .09, $p < .001$) and supervisor-report job performance (β = .30, *SE* = .13, $p < .05$). The direct effect of self-report safety performance on supervisor-report job performance was not significant (β = -.12, *SE* = .10, $p > .05$). Thus, supporting Hypothesis 1, participants with higher safety motivation reported to have higher safety performance. Moreover, supporting Hypothesis 2, participants high on conscientiousness reported to have higher safety performance. However, contrary to Hypothesis 8, self-report safety performance did not directly contribute to supervisor-report job performance.

The most critical result of the additional analyses was that the indirect effect of conscientiousness on supervisor-report job performance via safety motivation was significant (β = .12, *SE* = .06, 95 % CI [.02, .26]). That is, participants high on conscientiousness had higher job performance via safety motivation. On the other hand, the indirect effect of conscientiousness on supervisor-report job performance via self-report safety performance was not significant (β = -.05, *SE* = .04, 95 % CI [-.13,

.03]). Also, the presumed serially mediated effect of conscientiousness on supervisor-report job performance via safety motivation and self-report safety performance was not significant (β = -.02, *SE* = .02, 95 % CI [-.07, .01]). Thus, Hypothesis 9a was not supported.

Since Hayes Macro Model 4 gave the same result with hypotheses testing using self-report measures, this analysis is not reported here.

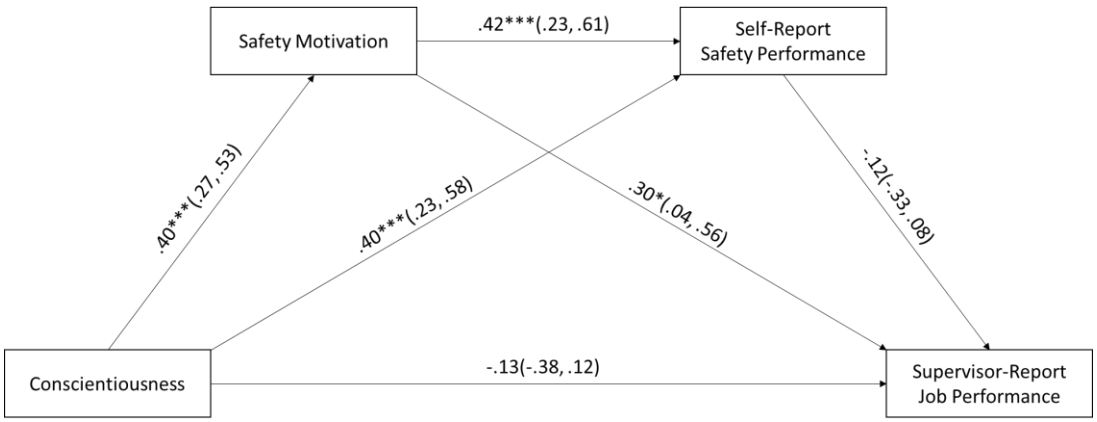

Figure 8. Direct Effect of Conscientiousness on Safety Motivation, Self-Report Safety Performance and Supervisor-Report Job Performance
*Note: *p < .05, ***p < .001, Numbers in parenthesis represent LLCI and ULCI, respectively.*

Because the hypothesized models including locus of control and risk taking tendency failed to yield any significant effects, these analyses were not reported again.

Table 5 summarizes the comparative results of hypothesis testing using performance measures from different sources in the present study.

Table 5

The Comparative Results of Hypotheses Testing with Self-Report Performance Measures, Supervisor-Report Performance Measures and Mix Performance Measures

	Self-Report Performance Measures	Supervisor-Report Performance Measures	Mix Performance Measures (Additional Analyses)
Hypothesis 1	Supported	Not Supported	Supported
Hypothesis 2	Supported	Not Supported*	Supported
Hypothesis 3	Supported	Not Supported	Supported
Hypothesis 4	Not Supported	Not Supported	Not Supported
Hypothesis 5	Not Supported	Not Supported	Not Supported
Hypothesis 6	Not Supported	Not Supported	Not Supported
Hypothesis 7	Not Supported	Not Supported	Not Supported
Hypothesis 8	Supported	Supported	Not Supported
Hypothesis 9a	Supported	Not Supported	Not Supported
Hypothesis 9b	Not Supported	Not Supported	Not Supported
Hypothesis 9c	Not Supported	Not Supported	Not Supported

*Note: *A Negative Relationship was observed.*

CHAPTER 4

DISCUSSION

The main purpose of the present study was to investigate whether safety motivation and safety performance mediate the relationship between personal factors (conscientiousness, locus of control, risk taking tendency) and job performance. The results yielded support for some, but not all the hypotheses tested in the current study. In this chapter, the results are discussed within the scope of self-report performance measures, supervisor-report performance measures and additional analysis with both self and supervisor report measures, respectively. Following these discussions, contributions and practical implications of the study are provided. Lastly, limitations of the study and suggestions for future research are presented.

4.1 Discussion of the Results Using Self-Report Performance Measures

In line with the previous studies, which reported a significant relationship between safety motivation and safety performance (Christian et al., 2009; Neal & Griffin, 2006), the results of the present study using self-report performance measures indicated that safety motivation (Hypothesis 1) predicts safety performance. Specifically, a meta-analytic study conducted by Christian and colleagues (2009) showed a significant and positive correlation between safety motivation and safety performance. This literature consistent finding is not surprising as participants would be more likely to comply with safety policies when their safety motivation is high (Probst, 2004).

Hypothesis 2, which suggested that conscientiousness is predictive of safety performance, was supported. Similar to this finding, Neal and Griffin (2004) found

that direct effect of conscientiousness on safety behavior (safety performance) was significant. In addition, conscientiousness positively predicted safety behavior (Postlethwaite, Robbins, Rickerson, & McKinniss, 2009). Moreover, Pourmazaherian, Baqutayan, and Idrus (2018) stated conscientiousness as an important antecedents of safety performance. Findings of the present study yielded further evidence for the importance of conscientiousness as an individual difference variable in workplace safety behavior. Hypothesis 3 stated that safety motivation mediates the relationship between conscientiousness and safety performance. Results with self-report performance measures supported this hypothesis. This finding is again consistent with the available empirical evidence. Previously, conscientiousness has been found to be positively correlated with safety motivation (Christian et al., 2009; Neal & Griffin, 2006) and safety behaviors (Neal & Griffin, 2006). Conscientious was also found to be a good predictor of safety performance (Drew, 2014). In another study, safety performance mediated the relationship between conscientiousness and safety-related outcomes (Hogan & Foster, 2013). The closest finding from the literature to the current finding is that safety motivation mediated the relationship between cautiousness facet of conscientiousness and dimensions of safety performance (Buck, 2011). Thus, it would be fair to say that the current study is rare example examining the mediating role of safety motivation between global conscientiousness and safety performance. Relatedly, Hypothesis 9a suggested that safety motivation and safety performance serially mediate the relationship between conscientiousness and job performance. In the literature, there is convincing evidence supporting the relationship between conscientiousness and job performance (e.g., Barrick & Mount, 1991; Barrick et al., 2001; Stewart, 1999). Nevertheless, the current study is the first study investigating the serial mediating effects of safety motivation and safety performance in this well-established relationship.

Contrary to Hypothesis 4, which suggested internal locus of control is predictive of safety performance, no relationship was found between locus of control and safety performance. The reason why Hypothesis 4 was not supported may be that Locus of Control Scale were not appropriate for blue-collar workers as the original scale development/adaptation studies were conducted with university students. Although we

only used the items that were both relevant and with the highest loadings to their factor, the scale may not have worked with the participants of the current study. Another plausible explanation may be that external locus of control and internal locus of control may not totally be opposite of each other. For instance, a person with high internal locus of control can believe in fate. As a consequence of such situation, the scale would not work for the research purposes. These explanations can also be used in explaining the lack of support for Hypothesis 5 which stated that safety motivation mediates the relationship between locus of control and safety performance. On the other hand, although there is limited research investigating the relation of locus of control with safety motivation and safety performance, Christian and colleagues (2009) found that locus of control was moderately associated with safety performance. I believe this hypothesis needs retesting using sounder measures of the variables of interest especially locus of control. Furthermore, since Hypothesis 4 and Hypothesis 5 were not supported, Hypothesis 9b suggesting an indirect effect of locus of control, safety motivation and safety performance on job performance was also not supported.

Hypothesis 6 suggested that risk taking tendency is predictive of safety performance. Hypothesis 7 suggested safety motivation mediates the relationship between risk taking tendency and safety performance. Hypothesis 9c suggested safety motivation and safety performance serially mediates the relationship between risk taking tendency and job performance. None of these hypotheses was supported in the current study. Almost similar to the findings of the current study, Christian and colleagues (2009) found only a weak relationship between risk taking tendency and safety performance although they expected a strong negative relationship. A plausible explanation of this unexpected result in the present study might be that individuals' attitudes and behaviors may differ in different context and since the scale used in the current study is not specific for miners, the results may not represent participants' risk taking tendencies in the context of their jobs. Specifically, a person with a high level of reported general risk taking tendency may not necessarily be a risk taker at work. There may be different reasons why their tendencies differ at work like strict rules in the organization. Another convincing explanation comes from Arnett's theory of broad and narrow socialization. According to this theory, in cultures which are characterized

by extensive socialization, independence and individualism are encouraged, and there are few constraints on individuals' behavior. On the other hand, cultures with narrow socialization promote obedience and conformity. In such cultures, there might be less variance in children' behavior since disobedience is closely observed and quickly and severely punished. Thus, individuals in these cultures shows less disobedience, concern less with the self, and concern more for others. Risky behaviors are rarer in narrow cultures because these cultures reinforce obedience and conformity to the standards of the community and punish deviations from the norms (Arnett, 1992). When considered from this point of view, Turkey, a relatively collectivistic, high power distance culture where there is less tolerance for uncertainty, can better be characterized as a narrow culture (see Hoftstede, 1980, 2019). Therefore, as one would expect in such narrow cultures, participants of the current study could have responded to the questionnaires in a socially desirable way, avoiding reflecting their true risk taking tendency, safety motivation and safety performance.

In accordance with the existing literature, Hypothesis 8 which suggested that safety performance predicts job performance was supported. Although there is a substantial amount of research on the determinants or antecedents of safety performance (e.g., Burke et al., 2002; Christian et al., 2009), the same progress has not been made in terms of outcomes of safety performance. Casillas and colleagues (2009) conducted one of the studies showing a positive association between safety behaviors and supervisor report task performance. Drew (2014) also found that safe workers truthfully had higher job performance. More research is needed to better understand the mechanism underlying the safety performance- job performance relationship.

4.2 Discussion of the Results Using Supervisor-Report Performance Measures

The hypotheses of the current study were also tested with supervisor-report performance measures. However, only Hypothesis 8, which suggested that safety performance predicts job performance, was supported. This finding is compatible with the related limited literature. That is, there is evidence supporting the relationships between sub-factors of safety performance and sub-factors of job performance (e.g.,

Casillas et al., 2009). In the present study, the effect of this relationship was quite high (β = .75) and one plausible explanation for this finding could be common method bias. That is, since supervisors filled out both measures of performance, the observed correlation may have been inflated.

Hypothesis 2 stated that conscientiousness is (positively) predictive of safety performance. Interestingly, although conscientiousness was predictive of safety performance, it was not in the expected direction. There was a negative association between these two variables. This counterintuitive finding may be explained by Yuan, Li, Xu, and Huang (2018)'s argument. These authors stated that extremely high conscientiousness may be detrimental for safety performance because individuals with high conscientiousness may be self-deceptive (Martocchio & Judge, 1997 cited in Yuan et al., 2018) and heavily concentrate on their tasks (Judge & LePine, 2007 cited in Yuan et al., 2018) and both of these characteristics may result in inhibiting safety performance. In the present study the mean of conscientiousness score (rated on a 5-point scale) was quite high (M = 4.41, SS = 0.48). Additionally, high conscientiousness may have resulted in a decrease in safety participation, which is one of the two factors of safety performance. Since highly conscientious individuals are inflexible in their jobs, they may think that it is inappropriate to go beyond their defined responsibilities. Thus, although helping coworkers can be seen as an important behavior for the organization, highly conscientious individuals may be less likely to be involved in such behavior (Le et al., 2011).

The remaining hypotheses were not supported using supervisor-report performance measures. This may be a result of Type II error. That is, immediate supervisors who provided the performance ratings may not have discriminated effectively both between different mineworkers and between a mineworker's safety performance and job performance reports.

4.3 Discussion of Additional Analyses

In addition to the main analyses of the current study, additional analyses were conducted by using self-report safety performance and supervisor-report job

performance. The underlying reason to do these analyses is that supervisors have or create an opportunity to observe employee's job performance in any case. On the other hand, supervisors may not have an equal chance to fully observe safety-related actions of their subordinates. According to the Heinrich's Law, for every accident resulting in major injuries in a workplace, 29 accidents causing minor injuries and 300 near misses take place (Heinrich, 1931). Yet, supervisors may not have chance to observe all these safety threatening actions. Therefore, it makes more sense to rely on supervisory ratings for job performance and self-ratings for safety performance.

Apart from the previous analyses, additional analyses yielded two important results. Contrary to hypotheses testing using supervisor-report performance measures, safety motivation had a significant direct effect on supervisor-report job performance. The next and perhaps more critical finding was that the indirect effect of conscientiousness on supervisor-report job performance via safety motivation was significant. Thus, participants with higher conscientiousness had higher job performance by means of safety motivation. This finding is consistent with the existing literature since conscientiousness has been previously found to be positively correlated with safety motivation (Christian et al., 2009; Neal & Griffin, 2006). Moreover, conscientiousness has been accepted as an important predictor of job performance (Barrick & Mount, 1991; Barrick et al., 2001; Ohme & Zacher, 2015). Apart from these, the current finding contributes to the existing literature by revealing the mediating role of safety motivation in the relationship between conscientiousness and supervisor-report job performance.

4.4 Contributions and Practical Implications of the Study

Although many of the hypotheses of the current study were not supported, it should be noted that there are some important findings with potential to contribute to the existing literature. Firstly, to the best of our knowledge, this is a unique study in that it is the first study conducted in Turkey with underground coal miners and their immediate supervisors. In addition, although there are many studies which showed the relationship between conscientiousness and job performance (e.g., Barrick & Mount, 1991), the current study is the first one both testing and supporting the serially

mediating role of safety motivation and safety performance in the conscientiousness-job performance relationship. Therefore, present findings add to the accumulating knowledge pointing the importance of conscientiousness in the recruitment of personnel in safety critical jobs.

In her study, Drew (2014) answered the question "Are safe workers better workers?" as safe workers truthfully had higher job performance. Similar to Drew's finding, this study offers an insight concerning how to improve safety performance and job performance of workers. This study also challenges the common belief that employees engage in safety practices at the expense of job performance.

4.5 Limitations of the Study and Suggestions for Future Research

An important limitation of the current study that needs to be acknowledged is that although safety performance and job performance measures were gathered from both mineworkers and their immediate supervisors, supervisor-report performance results supported almost no hypothesis. When self-ratings of mineworkers were used, there were more support for the hypotheses, probably because of common method bias. Future studies may benefit from using objective indices of both safety performance and job performance. In the current study, accidents and nears misses reports were obtained from the participants themselves. Knowing the potential biases in such self-reports, future research may use more objective indices of safety behaviors and outcomes. For example, personnel records of accidents, near misses and objective indices of job performance could be collected. Relatedly, future research may also benefit from involvement of other sources in data collection. For example, peer ratings may be used in measuring safety performance.

Furthermore, although the findings of this study appear to be applicable to underground mining, future studies are needed to investigate the hypothesized relationships in other safety critical occupations, both blue collar and white collar.

Another limitation of the present study is related to the measurement of two of the individual difference variables that were included as distal predictors, namely locus of

control and risk taking tendency. Future research should use sounder and more context specific measures of locus of control and risk taking tendency.

Finally, other predictors and moderators of the proposed relationships may be inquired in future research. For example, safety knowledge can be included among the predictors of safety motivation, safety performance, and job performance. Variables such as regulatory focus (Liu & Brockner, 2015) and goal orientation (Porath & Bateman, 2006) which have been reported to be associated with performance (Johnson, Shull, & Wallace, 2011) may be included as potential moderators of the proposed relationships.

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APPENDICES

APPENDIX A: LOCUS OF CONTROL

Aşağıda sunulan maddeler, insanların yaşama ilişkin bazı düşüncelerini belirlemeyi amaçlamaktadır. Sizden, bu maddelerde yansıtılan düşüncelere ne ölçüde katıldığınızı ifade etmeniz istenmektedir.

Bunun için, her maddeyi dikkatle okuyunuz ve o maddede ifade edilen düşüncenin *sizin* düşüncelerinize uygunluk derecesini beş basamaklı ölçek üzerinde belirtiniz. Bunun için de, her ifadenin karşısındaki seçeneklerden sizin görüşünüzü yansıtan kutucuğu daire içine alınız. "Doğru" ya da "yanlış" cevap diye bir şey söz konusu değildir.

1	**2**	**3**	**4**	**5**
Hiç uygun değil	Pek uygun değil	Uygun	Oldukça uygun	Tamamen uygun

1. İnsanın yaşamındaki mutsuzlukların çoğu, biraz da şanssızlığına bağlıdır.	1	2	3	4	5
2. İnsan ne yaparsa yapsın üşütüp hasta olmanın önüne geçemez.	1	2	3	4	5
3. Bir şeyin olacağı varsa eninde sonunda mutlaka olur.	1	2	3	4	5
4. İnsan ne kadar çabalarsa çabalasın, ne yazık ki değeri genellikle anlaşılmaz.	1	2	3	4	5
5. İnsan ilerlemek için güç sahibi kişilerin gönlünü hoş tutmak zorundadır.	1	2	3	4	5
6. İnsan ne yaparsa yapsın, hiçbir şey istediği gibi sonuçlanmaz.	1	2	3	4	5
7. Bir sonucu elde etmede insanın neleri bildiği değil, kimleri tanıdığı önemlidir.	1	2	3	4	5
8. Başarılı olmak çok çalışmaya bağlıdır; şansın bunda payı ya hiç yoktur ya da çok azdır.	1	2	3	4	5
9. Aslında şans diye bir şey yoktur.	1	2	3	4	5
10. İnsanın ne yapacağı konusunda kararlı olması, kadere güvenmesinden daima iyidir.	1	2	3	4	5

11. İnsan ne yaparsa yapsın, olabilecek kötü şeylerin önüne geçemez.	1	2	3	4	5
12. Bir insanın başına gelenler, temelde kendi yaptıklarının sonucudur.	1	2	3	4	5
13. Şans ya da talih hayatta önemli bir rol oynamaz.	1	2	3	4	5
14. İnsan bugün yaptıklarıyla gelecekte olabilecekleri değiştirebilir.	1	2	3	4	5
15. Kazalar, doğrudan doğruya hataların sonucudur.	1	2	3	4	5
16. İnsanın dini inancının olması, hayatta karşılaşacağı birçok zorluğu daha kolay aşmasına yardım eder.	1	2	3	4	5
17. Kararlılık bir insanın istediği sonuçları almasında en önemli etkendir.	1	2	3	4	5
18. İnsanın yaşamının alacağı yönü, çevresindeki güç sahibi kişiler belirler.	1	2	3	4	5

APPENDIX B: RISK TAKING TENDENCY

Aşağıda yaşamın çeşitli alanlarına ilişkin ifadeler sunulmuştur. Lütfen aşağıdaki ifadelerin, sizi ne kadar yansıttığını, aşağıda verilen beş basamaklı ölçeğe göre belirtiniz. İfade edilen cümlenin sizin için doğruluk derecesini en iyi belirten rakamı daire içine alınız. **Lütfen hiçbir maddeyi boş bırakmayınız.**

1	**2**	**3**	**4**	**5**
Hiç yansıtmıyor	Az yansıtıyor	Orta derecede yansıtıyor	Büyük ölçüde yansıtıyor	Tamamen yansıtıyor

1. Ani kararlar alırım.	1	2	3	4	5
2. Yapacak hiçbir şeyim olmadan beklemeyi sevmem.	1	2	3	4	5
3. Her gün aynı insanlarla vakit geçirmekten sıkılırım.	1	2	3	4	5
4. Tehlikeli bile olsa yeni şeyler denemek isterim.	1	2	3	4	5
5. Emniyet kemeri takmadan araba kullanırım.	1	2	3	4	5
6. Heyecanlı işlere bayılırım.	1	2	3	4	5
7. Arkadaşlarım yapmak istediğim şeyleri önceden tahmin etmenin zor olduğunu söyler.	1	2	3	4	5
8. Gereksiz vakit kaybetmeden, hızlı bir şekilde riskli kararlar alırım.	1	2	3	4	5
9. Risk almaktan hoşlanırım.	1	2	3	4	5
10. Hayatta herhangi bir tehlike yoksa hayat sıkıcı demektir.	1	2	3	4	5
11. Kask olmadan motosiklet kullanmakta bir sakınca görmüyorum.	1	2	3	4	5
12. Kuralları çiğnemem gerekse bile yeni ve heyecan verici şeyler yapmayı severim.	1	2	3	4	5
13. Arabanın arka koltuğunda otururken emniyet kemerimi takarım.	1	2	3	4	5
14. Yakınımda bir kavga, yangın ya da kaza olduğunda hemen gidip bakmak isterim.	1	2	3	4	5

APPENDIX C: SAFETY MOTIVATION

Aşağıda verilen ifadeleri dikkatlice okuyarak size en uygun seçeneği işaretleyiniz. **Lütfen hiçbir maddeyi boş bırakmayınız.**

1	2	3	4	5
Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Tamamen Katılıyorum

1. Kişisel güvenliğimi korumak veya geliştirmek için gayret göstermenin faydalı olduğuna inanıyorum.	1	2	3	4	5
2. Güvenliği sağlamanın her zaman önemli olduğunu düşünüyorum.	1	2	3	4	5
3. İş yerinde kaza riskini azaltmanın önemli olduğuna inanıyorum.	1	2	3	4	5

APPENDIX D: CONSCIENTIOUSNESS

Aşağıda sizi kısmen tanımlayan (ya da pek tanımlayamayan) bir takım özellikler sunulmaktadır. Örneğin, başkaları ile zaman geçirmekten hoşlanan birisi olduğunuzu düşünüyor musunuz? Lütfen aşağıda verilen özelliklerin sizi ne oranda yansıttığını ya da yansıtmadığını belirtmek için sizi en iyi tanımlayan rakamı daire içine alınız.

1	**2**	**3**	**4**	**5**
Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Tamamen Katılıyorum

'Kendimi ..... biri olarak görüyorum.'

1. İşini tam yapan	1	2	3	4	5
2. Biraz umursamaz	1	2	3	4	5
3. Güvenilir bir çalışan	1	2	3	4	5
4. Dağınık olma eğiliminde olan	1	2	3	4	5
5. Tembel olma eğiliminde olan	1	2	3	4	5
6. Görevi tamamlanıncaya kadar zorluklarla baş edebilen	1	2	3	4	5
7. İşleri verimli yapan	1	2	3	4	5
8. Planlar yapan ve bunları takip eden	1	2	3	4	5
9. Kolaylıkla dikkati dağılan	1	2	3	4	5

APPENDIX E: JOB PERFORMANCE

Aşağıdaki cümleler kişilerin çalıştıkları kurumda sergiledikleri performans hakkındaki düşüncelerini yansıtmaktadır. Aşağıda sunulan 11 ifadeye ne derece katıldığınızı her ifadenin yanında verilen ölçek üzerinde uygun rakamı daire içine alarak belirtiniz.

1	**2**	**3**	**4**	**5**
Hiç yansıtmıyor	Az yansıtıyor	Orta derecede yansıtıyor	Büyük ölçüde yansıtıyor	Tamamen yansıtıyor

1. Yüksek kalitede iş ortaya koymaktayım.	1	2	3	4	5
2. İşimin esasını oluşturan ana görevlerimi başarıyla yerine getirmekteyim.	1	2	3	4	5
3. İşimi yaparken zamanı verimli bir şekilde kullanabilmekte ve iş planlarına bağlı kalmaktayım.	1	2	3	4	5
4. İşi başarılı bir şekilde yapabilmek için gerekli teknik bilgiyi, görevlerimi yerine getirirken etkili bir şekilde kullanabilmekteyim.	1	2	3	4	5
5. Kendi işimin bir parçası olmayan işleri de yapmak için gönüllü olmaktayım.	1	2	3	4	5
6. Kendi işlerimi yaparken büyük bir heves ve gayret içerisindeyim.	1	2	3	4	5
7. Gerektiğinde çalışma arkadaşlarıma yardım etmekte ve onlarla işbirliği içerisinde çalışmaktayım.	1	2	3	4	5
8. Kurum kurallarını ve prosedürlerini onaylamakta ve bunlara uyum göstermekteyim.	1	2	3	4	5
9. Kurum hedeflerini onaylamakta, desteklemekte ve savunmaktayım.	1	2	3	4	5

APPENDIX F: SAFETY PERFORMANCE

Aşağıda verilen ifadeleri dikkatlice okuyarak size en uygun seçeneği işaretleyiniz. **Lütfen hiçbir maddeyi boş bırakmayınız.**

1	2	3	4	5
Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Tamamen Katılıyorum

1. İşimi yaptığım esnada bütün gerekli güvenlik ekipmanlarını kullanırım.	1	2	3	4	5
2. İşimi yaparken uygun güvenlik prosedürlerini kullanırım.	1	2	3	4	5
3. İşimi yaparken güvenliğin en üst seviyede olduğundan emin olurum.	1	2	3	4	5
4. İşyeri içinde güvenlik programlarını desteklerim.	1	2	3	4	5
5. İşyeri güvenliğinin iyileştirilmesi için fazladan çaba harcarım.	1	2	3	4	5
6. İşyeri güvenliğinin iyileştirilmesine yardım edecek görev ve aktiviteleri gönüllü olarak yaparım.	1	2	3	4	5

APPENDIX G: DEMOGRAPHIC INFORMATION FORM

1. Yaşınız: _____

2. Medeni Haliniz: ☐ Evli ☐ Bekar ☐ Boşanmış ☐ Dul

3. Eğitim Durumunuz:

☐ Okuryazar ☐ Lise

☐ İlkokul ☐ Yüksekokul

☐ Ortaokul ☐ Üniversite

4. Ne kadar zamandır bu işletmede çalışıyorsunuz?

_____ yıl _____ ay

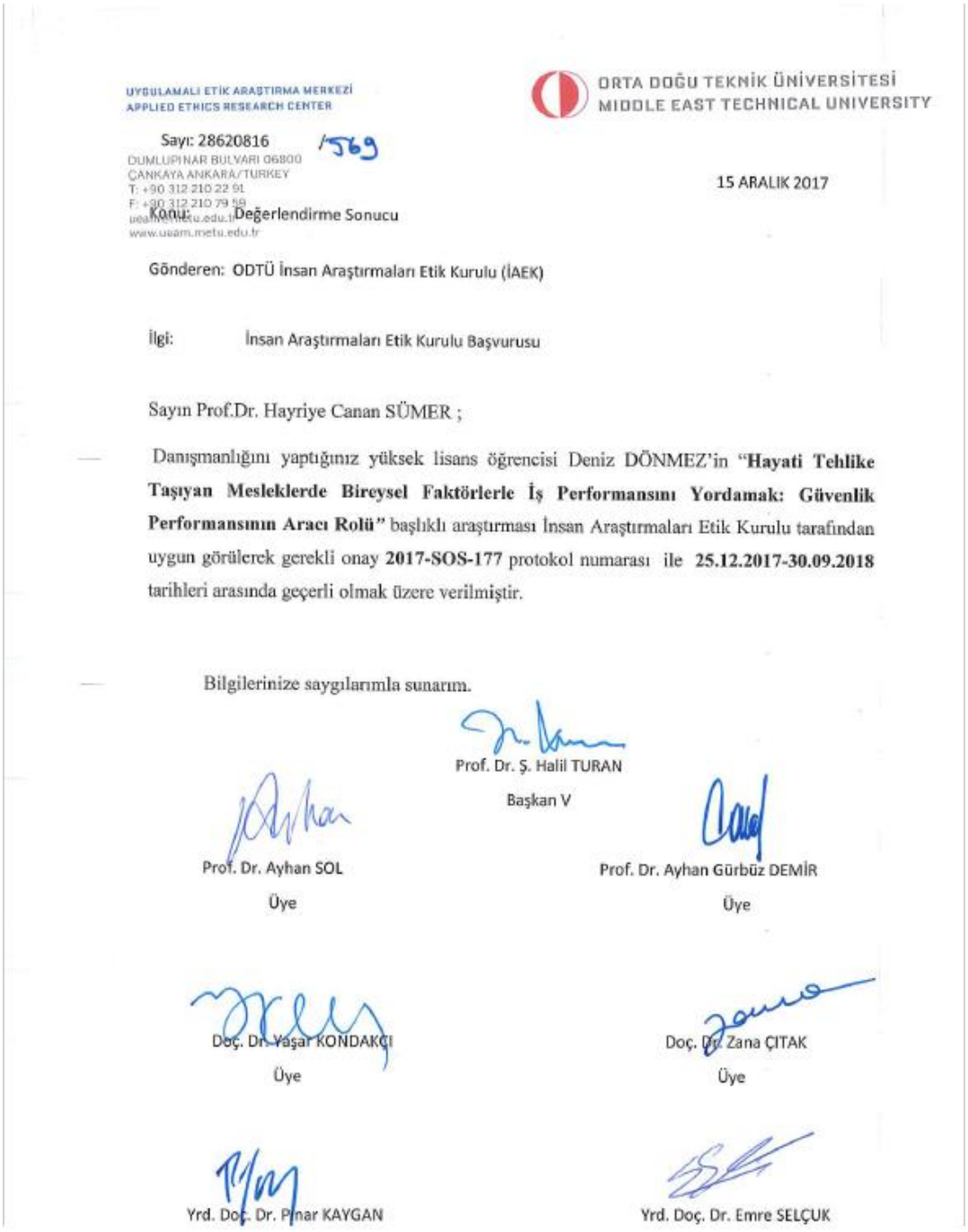
5. Hayatınız boyunca madencilikte toplam kaç yıl çalıştınız?

_____ yıl ___ ____ ay

6. Madencilikte çalıştığınız zaman boyunca kaç kez iş kazası geçirdiniz?						
Hiç	1	2	3	4	5	Daha fazla

7. Madencilikte çalıştığınız zaman boyunca kaç kez ramak kala olay yaşadınız?						
Hiç	1	2	3	4	5	Daha fazla

APPENDIX H: APPROVAL OF METU HUMAN SUBJECTS ETHICS COMMITTEE



UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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15 ARALIK 2017

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Hayriye Canan SÜMER ;

Danışmanlığını yaptığınız yüksek lisans öğrencisi Deniz DÖNMEZ'in "**Hayati Tehlike Taşıyan Mesleklerde Bireysel Faktörlerle İş Performansını Yordamak: Güvenlik Performansının Aracı Rolü"** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2017-SOS-177** protokol numarası ile **25.12.2017-30.09.2018** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan V

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Doç. Dr. Yaşar KONDAKÇI
Üye

Doç. Dr. Zana ÇITAK
Üye

Yrd. Doç. Dr. Pınar KAYGAN

Yrd. Doç. Dr. Emre SELÇUK

APPENDIX I: INFORMED CONSENT FORM I

Bu araştırma, ODTÜ Endüstri ve Örgüt Psikolojisi Yüksek Lisans öğrencisi Deniz Dönmez tarafından Prof. Dr. Hayriye Canan Sümer danışmanlığındaki yüksek lisans tezi kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Araştırmanın amacı, iş yeri davranışlarında etkili olan çalışan özellikleri ile ilgili bilgiler toplamaktır. Araştırmaya katılmayı kabul ederseniz, size iş yeri davranışlarıyla ilgili olabilecek bir dizi sorunun yer aldığı bir anket uygulanacaktır. Ankette yer alan soruları, sunulan derecelendirme ölçeklerini kullanarak cevaplamanız istenmektedir. Bu çalışmaya katılım ortalama olarak 20-25 dakika sürmektedir. Bu çalışmanın devamında onay vermeniz durumunda amirinizden de sizin yaptığınız işe yönelik bazı bilgiler toplanacaktır.

Araştırmaya katılımınız tamamen gönüllülük esasına dayalıdır. **Sizin verdiğiniz bilgiler amirinizle ya da herhangi bir başka kişiyle <u>kesinlikle</u> paylaşılmayacaktır.** Ayrıca, **amirinizden toplanan veriler de sadece araştırmacılar tarafından analiz amaçlı görülecek, <u>kesinlikle</u> kimseyle paylaşılmayacaktır.** Bilgileriniz ve cevaplarınız tamamıyla gizli tutulacak, sadece araştırmacılar tarafından toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır. Sağladığınız veriler gönüllü katılım formlarında toplanan kimlik bilgileri ile eşleştirilmeyecektir.

Anket, genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakabilirsiniz. Böyle bir durumda araştırmacıya, anketi tamamlamadığınızı söylemeniz yeterli olacaktır.

Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Psikoloji Bölümü öğretim üyelerinden Prof. Dr. Hayriye Canan Sümer

(E-posta: hcanan@metu.edu.tr) ya da yüksek lisans öğrencisi Deniz Dönmez (E-posta: e171817@metu.edu.tr) ile iletişim kurabilirsiniz.

☐ **Bu çalışmanın devamı olarak amirimden benim yaptığım işe yönelik bazı bilgiler toplanmasını onaylıyorum.** (Lütfen kutucuğu işaretleyiniz.)

Yukarıdaki bilgileri okudum ve bu çalışmaya gönüllü olarak katılıyorum.

(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih İmza

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APPENDIX J: INFORMED CONSENT FORM II

Bu araştırma, ODTÜ Endüstri ve Örgüt Psikolojisi Yüksek Lisans öğrencisi Deniz Dönmez tarafından Prof. Dr. Hayriye Canan Sümer danışmanlığındaki yüksek lisans tezi kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Araştırmanın amacı, kişilerin güvenlik kurallarına uymalarını belirleyen faktörleri araştırmak ve belirlenen faktörlerin eleman seçme sürecinde dikkate alınması koşulunda iş yerlerindeki güvenlik performansının ve iş performansının ne oranda artırılabileceğini araştırmaktır. Bu kapsamda, amiri olduğunuz çalışanlar iş yeri davranışlarında etkili olan bazı çalışan özellikleri ile ilgili bir dizi anket doldurdu. Araştırmaya katılmayı kabul ederseniz, sizin de amiri olduğunuz çalışan için ankette yer alan bir dizi soruyu derecelendirme ölçeği kullanarak yanıtlamanız istenmektedir. Bu çalışmaya katılım ortalama olarak 10 dakika sürmektedir.

Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. **Bilgileriniz ve cevaplarınız tamamıyla gizli tutulacak, sadece araştırmacılar tarafından değerlendirilecek ve <u>kesinlikle</u> kimseyle paylaşılmayacaktır.** Katılımcılardan elde edilecek bilgiler toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır. Sağladığınız veriler gönüllü katılım formlarında toplanan kimlik bilgileri ile eşleştirilmeyecektir.

Anket, genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakabilirsiniz. Böyle bir durumda araştırmacıya, anketi tamamlamadığınızı söylemeniz yeterli olacaktır.

Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Psikoloji Bölümü öğretim üyelerinden Prof. Dr. Hayriye Canan Sümer

(E-posta: hcanan@metu.edu.tr) ya da yüksek lisans öğrencisi Deniz Dönmez (E-posta: e171817@metu.edu.tr) ile iletişim kurabilirsiniz.

Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.

(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih İmza

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APPENDIX K: DEBRIEFING FORM

Öncelikle araştırmamıza katıldığınız için teşekkür ederiz.

Bu araştırma, daha önce de belirtildiği gibi, ODTÜ Endüstri ve Örgüt Psikolojisi Yüksek Lisans öğrencisi Deniz Dönmez tarafından Prof. Dr. Hayriye Canan Sümer danışmanlığındaki yüksek lisans tezi kapsamında yürütülmektedir.

Katıldığınız araştırmanın amacı, kişilerin güvenlik kurallarına uymalarını belirleyen faktörleri araştırmak ve belirlenen faktörlerin eleman seçme sürecinde dikkate alınması koşulunda iş yerlerindeki güvenlik performansının ve iş performansının ne oranda artırılabileceğini araştırmaktır. Bu amaçla sizden, iş yeri davranışlarında etkili olan bazı çalışan özellikleri (özdisiplin, kontrol odağı, risk alma eğilimi, güvenlik motivasyonu, güvenlik performansı ve iş performansı) ile ilgili bir ankette yer alan soruları, sunulan derecelendirme ölçeklerini kullanarak cevaplamanız istenmiştir.

Bu çalışmadan alınacak ilk verilerin Haziran 2018 tarihinde elde edilmesi amaçlanmaktadır. Elde edilen bilgiler sadece bilimsel araştırma ve yazılarda kullanılacaktır. Çalışmanın sağlıklı ilerleyebilmesi ve bulguların güvenilir olması için çalışmaya katılacağını bildiğiniz diğer kişilerle çalışma ile ilgili detaylı bilgi paylaşımında bulunmamanızı dileriz. Bu araştırmaya katıldığınız için tekrar çok teşekkür ederiz.

Araştırmanın sonuçlarını öğrenmek ya da daha fazla bilgi almak için ODTÜ Psikoloji Bölümü öğretim üyelerinden Prof. Dr. Hayriye Canan Sümer (E-posta: hcanan@metu.edu.tr) ya da yüksek lisans öğrencisi Deniz Dönmez (E-posta: e171817@metu.edu.tr) ile iletişim kurabilirsiniz.

Çalışmaya katkıda bulunan bir gönüllü olarak katılımcı haklarınızla ilgili veya etik ilkelerle ilgi soru veya görüşlerinizi ODTÜ Uygulamalı Etik Araştırma Merkezi'ne (e-posta: ueam@metu.edu.tr) iletebilirsiniz.

APPENDIX L: TURKISH SUMMARY/TÜRKÇE ÖZET

1. GİRİŞ

Dünyada her 15 saniyede, 153 işçi işle ilgili kaza geçirirken, bir işçi işle ilgili kaza veya hastalık nedeniyle yaşamını yitirmektedir (Uluslararası Çalışma Örgütü, t.y.). Sosyal Güvenlik Kurumu istatistiklerine göre, Türkiye'de sadece 2016 yılında 286.068 sigortalı çalışan iş kazası geçirmiştir (TÜİSAG, 2017). Nitekim gerçek iş kazası sayılarının resmi kayıtların gösterdiğinden daha yüksek olması muhtemeldir, çünkü bazı vakalar rapor edilmeyebilmektedir. Dolayısıyla işyerinde meydana gelen kazalar binlerce ölüm, milyarlarca dolar para kaybı ve milyonlarca çalışma saati kaybıyla sonuçlanmaktadır (ABD Çalışma İstatistikleri Bürosu, 2012). Ayrıca, kazaların finansal maliyetlerinin kaza önleme maliyetlerinden çok daha fazla olacağı açıktır. Bu nedenle, iş güvenliği ve hatta güvenlik performansı üzerinde çalışmalar yapmak hem kuramsal hem de uygulamaya yönelik kazanımlar sağlayacaktır.

İş güvenliği literatüründe kazaların nedenlerine ilişkin yıllar boyunca bir dizi kuram geliştirilmiştir. Khanzode, Maiti ve Ray (2012) bu kuramları dört nesilde sınıflandırmıştır. Birinci nesil kuramlar kaza sebebi olarak bireylere odaklanırken, ikinci nesil kuramlar güvensiz koşullara ve güvensiz davranışlara (sistem-kişi etkileşimi) kazaların sebebi olarak bakar. Üçüncü nesil kuramlar için geçici faktörler, işyeri kazaları için temel nedendir. Dördüncü nesil kuramlar ise neden-sonuç yaklaşımını benimsemektedir (Khanzode ve ark., 2012). Tüm bu kuramlar göz önüne alındığında, iş kazalarının yaklaşık %80'inin insan hatasından kaynaklandığı yaygın olarak kabul edilmektedir (Camkurt, 2013; Heinrich, Petersen ve Roos, 1980; Kepir, 1983).

İş kazalarındaki insan faktörünün etkisini azaltmaya yönelik olarak, davranış güvenliği odaklı farklı eğitim ve müdahale yöntemleri bulunmaktadır. Ancak davranışları ve tutumları değiştirmek zor olduğundan bu yöntemler genellikle tam anlamıyla başarılı sonuçlar verememektedir (Ocon ve Mcfarlane, 2007). Ayrıca bu yöntemler çoğunlukla kazaya yatkın bir çevreye tepki olarak kullanılmaktadır. Öte yandan, alternatif proaktif bir yaklaşım olarak personel seçme süreçlerinde iş yerinde güvenli davranma potansiyelindeki adayların seçilmesine odaklanılabilir. Bu nedenle, bu çalışmada üç bireysel farklılık değişkeninin (özdisiplin, kontrol odağı ve risk alma eğilimi) güvenlik motivasyonu ve güvenlik performansı aracılığıyla iş performansı üzerindeki etkileri araştırılmıştır. Diğer bir deyişle, bu çalışma, güvenlik motivasyonu ve güvenlik performansının, üç bireysel farklılık değişkeni ile iş performansı arasındaki ilişkilerdeki seri aracılık rolünü araştırarak mevcut literatüre katkıda bulunmayı hedeflemiştir. Bu kapsamda örneklem olarak kömür madenciliği işçileri seçilmiştir çünkü Türkiye'de iş kazası ve meslek hastalığı bildiriminin en yüksek olduğu sektör madencilik sektörüdür (Türkiye İstatistik Kurumu, 2014).

1.1. Güvenlik Performansı

Neal ve Griffin (1997) güvenlik performansını tanımlamak için güvenlik uyumu ve güvenlik katılımı olarak iki ana başlık tanımlamıştır. Güvenlik uyumu, güvenlik prosedürlerinin izlenmesini ve güvenli bir şekilde çalışılmasını içerir (Neal, Griffin ve Hart, 2000). Güvenlik katılımı ise kurum tarafından düzenlenmeyen iş güvenliği iyileştirme faaliyetleri için gönüllü davranışlarda bulunmayı içermektedir. Güvenlik katılımı davranışları arasında iş güvenliği programlarını teşvik etmek, iş arkadaşlarına yardım etmek, inisiyatif almak ve işyerinde güvenliği artırmak için çaba sarf etmek yer almaktadır.

Neal ve Griffin (2004), hem bireysel hem de örgütsel faktörlerin güvenlik bilgisi ve güvenlik motivasyonunu doğrudan etkilediğini, böylelikle güvenlik performansının ve iş kazaları gibi diğer sonuçların etkilendiğini belirtmiştir. Güvenlik performansı ve iş performansı birbiriyle uyumsuzmuş gibi algılanmaktır çünkü güvenlik ve verimlilik büyük ölçüde ayrışık olarak kabul ediliyor. Ancak Heinrich (1950), iş performansı ve güvenliğinin, yarattıkları problemlerin benzer olması nedeniyle birbiriyle çelişen

kavramlar olması gerekmediğini belirtmiştir. Son yıllarda yapılan araştırmalarda güvenliğin arttırılmasıyla iş performansının iyileştirmesinin mümkün olduğunu görülmüştür (Örneğin, Drew, 2014). Ayrıca yapılan bir araştırmaya göre güvenliğin çalışanların verimliliği üzerindeki marjinal etkisi %27'dir (Adjotor, 2013). Bu nedenle, iş kazalarını ve yaralanmaları azaltmak ve proaktif çözümler geliştirmek için hem güvenlik performansını hem de iş performansını araştırmak gerektiğinden, bu çalışmanın amacı, hem güvenlik performansının hem de iş performansının yordayıcılarını araştırmaktır.

1.1.1. Güvenlik Performansının Yordayıcıları

Güvenlik performansının yakınsal yordayıcıları güvenlik motivasyonu ve güvenlik bilgisidir (Neal ve Griffin, 2004. Uzaksal yordayıcılar ise güvenlik iklimi, iş tasarımı gibi çalışma ortamı faktörleri tutumlar gibi bireysel faktörlerdir. Güvenlik performansının kaza ve yaralanmalarla da olumsuz yönde ilişkili olduğu bilinmektedir (Christian ve ark. 2009).

1.1.1.1. Güvenlik Motivasyonu

Neal ve Griffin (2006) güvenlik motivasyonunu "bireyin güvenlik davranışlarını ve bu davranışlarla ilişkili değerliği ortaya koyma çabasını gösterme istekliliği" olarak tanımlamıştır (s. 947). Görgül bulgular, güvenlik motivasyonu ve güvenlik performansı arasında anlamlı bir ilişki olduğunu göstermiştir (Christian ve ark. 2009; Neal ve Griffin, 2006). Özetle, işlerini güvenli bir şekilde yapmak isteyen çalışanların güvenli davranmaları beklendiğinden güvenlik motivasyonunun güvenlik performansını yordayacağı önerilmektedir (H1).

1.1.1.2. Özdisiplin/Sorumluluk Bilinci

Özdisiplin, John ve Srivastava (1999, s. 30) tarafından harekete geçmeden önce düşünmek, normları ve kuralları takip etmek, planlama gibi görev ve hedefe yönelik davranışları geliştiren sosyal olarak belirlenmiş dürtü kontrolü olarak tanımlanmaktadır. Dolayısıyla, özdisiplin iş performansının önemli bir öngörücüsü olarak bilinmektedir (Barrick ve Mount, 1991; Barrick, Mount ve Judge, 2001; Ohme

ve Zacher, 2015). Özdisiplin ve güvenlik arasındaki ilişkiyi gösteren çok sayıda çalışma vardır. Örneğin, Beus, Dhanani ve McCord (2015), özdisiplinin güvensiz davranışlarla olumsuz yönde ilişkili olduğunu ortaya koymuştur. Bunun gibi araştırmalar, özdisiplin yüksek olan bireylerin risklerden kaçındıkları ve kurallara uyduklarına ilişkin daha önceki bulguları desteklemektedir (McCrae ve Costa, 1987). Ayrıca, özdisiplinin güvenlik motivasyonu ile de pozitif korelasyon gösterdiği bulunmuştur (Christian ve ark. 2009). İlgili literatüre dayanarak, özdisiplinin güvenlik performansını yordayacağı önerilmiştir (H2). Ayrıca, güvenlik motivasyonunun özdisiplin ile güvenlik performansı arasındaki ilişkiye aracılık etmesi önerilmiştir (H3).

1.1.1.3. Kontrol Odağı

Rotter (1966) tarafından ortaya koyulan kontrol odağı, bireyin çevresini kontrol etme becerisine olan inancını ifade eder (Bono ve Judge, 2003). Rotter'e (1966) göre iki tür kontrol odağı vardır: iç kontrol odağı ve dış kontrol odağı. İç kontrol odağı yüksek olan insanlar yaşamları üzerinde kontrol sahibi olduklarını düşünürken, dış kontrol odağı yüksek olan insanlar kontrolün kendileri dışındaki faktörler (örneğin; şans, kader) tarafından sağlandığına inanırlar.

Olaylar üzerinde kontrol sahibi olduklarını düşünen insanların, kazaların oluşumu üzerinde kontrol sahibi olmadıklarını düşünenlere göre güvenlik uygulamalarına katılma konusunda daha istekli olmaları beklenir (Christian ve ark., 2009). Christian ve arkadaşları (2009) kontrol odağının güvenlik performansı ile orta derecede ilişkili olduğunu bulmuşlardır. Ancak, kontrol odağının güvenlik performansını yordadığı sonucuna varmak için daha fazla araştırmaya ihtiyaç vardır (Burke ve Signal, 2010). Dolayısıyla, bu çalışmada iç kontrol odağının güvenlik performansını yordayacağı önerilmiştir (H4). Ayrıca, Güvenlik motivasyonunun kontrol odağı ile güvenlik performansı arasındaki ilişkiye aracılık edeceği önerilmiştir (H5).

1.1.1.4. Risk Alma Eğilimi

Risk alma, bireylerin kasıtlı olarak potansiyel zararlara yol açacak ya da kazanç sağlayacak davranışlarda bulunması olarak tanımlanabilir (Ben-Zur ve Zeidner, 2009).

Hem insan faktörleri hem de teknoloji ve organizasyon gibi dış faktörler çalışanların işteki risk alma davranışlarına katkıda bulunur (Nordlöf, Wiitavaara, Winblad, Wijk, & Westerling, 2015). Literatürde farklı çalışmalar risk alma ile kaza ve yaralanma arasında anlamlı bir ilişki olduğunu göstermiştir (örneğin, Brauer, 2006; Turner, McClure ve Pirozzo, 2004; Westaby ve Lee, 2003; Yücebilgiç, 2007). Christian ve meslektaşları (2009) risk alma eğilimi ile güvenlik performansı arasında negatif bir ilişki beklemekteyken kısmen zayıf ancak anlamlı bir ilişki bulmuştur. Öte yandan, Zeyan ve Liancang (1996), kömür madencilerinde risk alma ile insan hatasından kaynaklanan kazalar arasında yüksek bir korelasyon bulmuşlardır. Bu ilişkinin altında yatan mantık, muhtemelen düşük risk alma eğilimine sahip çalışanların güvenlik ekipmanlarını kullanma olasılıklarının daha yüksek olduğu ve buna bağlı olarak daha az kaza geçirmeleri ile ilgilidir (Medsker, Burnfield). Ve Knapp, 1999). Ek olarak, Probst (2004) düşük güvenlik motivasyonunun organizasyondaki güvenlik kurallarının ihlali ile ilgili olduğunu belirtmiştir. Dolayısıyla, risk alma eğilimi düşük çalışanların, risk alma eğilimi yüksek çalışanlardan daha yüksek güvenlik motivasyonu ve güvenlik performansına sahip olabileceği söylenebilir. Bu nedenle, bu çalışmada risk alma eğiliminin güvenlik performansını yordayacağı önerilmektedir (H6). Ayrıca, güvenlik motivasyonunun, risk alma eğilimi ile güvenlik performansı arasındaki ilişkiye aracılık edeceği önerilmektedir (H7).

1.1.2. İş Performansı

Her ne kadar güvenlik performansı iş davranışının bazı yönlerini (güvenlik davranışı) içeriyor olsa da, ne görev performansına ne de bağlamsal performansa uymadığından iş performansının bir boyutu olarak değerlendirilmez. Bu nedenle, güvenlik performansı üçüncü alan olarak veya iş performansının ayrı bir boyutu olarak ele alınabilir (Burke ve ark. 2002). Bu bakış açısı madencilik, inşaat ve tarım gibi güvenlik açısından kritik işler için özellikle önemlidir. Bu çalışmanın önemli amaçlarından biri de, güvenlik performansının bir sonucu olarak iş performansına odaklanmaktır. Literatürde güvenlik performansının belirleyicileri veya öncülleriyle ilgili pek çok çalışma olmasına rağmen (örneğin, Burke ve diğerleri, 2002; Christian ve diğerleri, 2009), aynı durum, güvenlik performansı sonuçları konusunda gözlemlenmemiştir.

Drew (2014), büyük bir otomotiv organizasyonunda "Güvenli çalışanlar daha iyi çalışanlar mı?" sorusunu yanıtlamaya çalışmış ve güvenli çalışanların gerçek anlamda daha yüksek bir iş performansına sahip olduğu sonucuna ulaşmıştır. Bu bulgu personel seçiminde güvenlik performansının organizasyonlarda performansı arttırmanın bir yolu olarak göz önünde bulundurulması için bir fikir sunmaktadır. Dolayısıyla, güvenlik performansı ve iş performansı arasındaki bağlantıyı belirlemeyi amaçlayan daha fazla araştırmaya ihtiyaç vardır. Böylece, bu çalışmada güvenlik performansının iş performansını yordayacağı önerilmiştir (H8). Ayrıca, güvenlik motivasyonu ve güvenlik performansının, güvenlik performansı belirleyicileri (özdisiplin (a), kontrol odağı (b) ve risk alma eğilimi (c)) ile iş performansı arasındaki ilişkiye seri olarak aracılık edeceği önerilmiştir (H9).

2. YÖNTEM

2.1 Katılımcılar

Bu çalışma, Türkiye'nin İç Anadolu Bölgesi'ndeki bir kömür madenciliği şirketinde yürütülmüştür. Çalışmanın örneklemini 164 maden işçisi ve onların ilk amiri olan 69 kişiden oluşturmaktadır. Yasal olarak kadınların bu sektörde çalışması yasak olduğundan, tüm katılımcılar erkeklerden oluşmaktadır (4857 İş Kanunu, 2003). İşçi örneklemindeki katılımcıların yaşı 22 ile 52 arasında değişmektedir (Ortalama = 34.01, SS = 6.06). Katılımcıların %54.9'u lise, %22'si ortaokul, %11'i ilkokul, %8.5'i yüksekokul, %2.4'ü dört yıllık üniversite mezunudur. Katılımcıların %84'ü evlidir. Katılımcıların hem mevcut kurumdaki çalışma süreleri (Ortalama = 7.42, SS = 5.63) hem de madencilik sektöründeki toplam çalışma süreleri (Ortalama = 9.13, SD = 5.60) bir ile 23 yıl arasında değişmektedir.

Amir örnekleminde, yaş 25 ile 51 arasında değişmektedir (Ortalama = 35.33, SS = 6.30). Amir katılımcıların %59.1'i dört yıllık üniversite, %38.4'ü yüksekokul, %2.4'ü lise mezunudur. Amirlerin %76.8'i evlidir. Amirlerin mevcut kurumdaki çalışma süreleri bir ile 22 yıl arasında değişirken (Ortalama = 9.32, SS = 6.77), bu sektördeki toplam çalışma süreleri bir yıl ile 32 yıl arasında değişmektedir (Ortalama = 10.45, SS = 6.58).

2.2. Veri Toplama Araçları

2.2.1. Özdisiplin

Özdisiplini ölçmek için, Beş Faktör (Büyük Beşli) Kişilik Envanterinin (John & Srivastava, 1999) dokuz maddelik özdisiplin alt ölçeği kullanılmıştır. Sümer ve Sümer (2002) tarafından Türkçe' ye adapte edilen ölçek, beş basamaklı Likert-tipi ölçektir. Sümer, Lajunen ve Özkan (2005) tarafından .75 olarak rapor edilen iç tutarlılık katsayısı, mevcut çalışmada .74 olarak bulunmuştur.

2.2.2. Kontrol Odağı

Kontrol odağı, orijinal olarak Rotter (1966) tarafından geliştirilen, Dağ (2002) tarafından ise maddeleri iyileştirilerek Türkçe versiyonu geliştirilen ve beşli Likert-tipi ölçüme dönüştürülen Kontrol Odağı Ölçeği ile ölçülmüştür. Ölçekten yüksek puan almak, yüksek dışsal kontrol odağı eğilimine sahip olmaya işaret etmektedir. Ölçeğin iç tutarlılık katsayısı .91, test-tekrar test güvenirlik katsayısı .88'dir (Dağ, 2002). Ancak, Dağ (2002) tarafından yürütülen güvenirlik ve geçerlik çalışmasının örneklemi olan üniversite öğrencilerinin, mevcut çalışmanın örneklemi olan mavi yaka maden işçilerini temsil etme olasılığının az olduğu düşünülmektedir. Bu nedenle, bu çalışmada, daha yüksek faktör yüklemesine sahip ve mevcut çalışmanın katılımcılarıyla daha ilgili olacağı düşünülen 18 madde seçilerek daha kısa bir ölçek oluşturulmuştur. Ölçeğin kısa versiyonunun iç tutarlılık katsayısı mevcut çalışmada .58 olarak bulunduğundan, sekiz madde silinmiş; 10-maddelik ölçeğin iç tutarlılık katsayısı .76'ya yükselmiştir.

2.2.3. Risk Alma Eğilimi

Risk alma eğilimini ölçmek için, dünyadaki risk alma ölçekleri ile ilgili kapsamlı bir literatür taraması yapılmıştır. Tarama sonunda, çalışmanın amacı ve örneklemine uygun olan farklı ölçeklerden alınan farklı maddeler birleştirilerek 14 maddelik bir ölçeğin kullanılmasına karar verilmiştir. Bu yeni geliştirilen 14-maddelik ölçeğe 'Risk Alma Eğilimi Ölçeği' adı verilmiştir. Ölçek maddeleri 5-basamaklı Likert Tipi ölçek formatında puanlanmıştır. Bu 14 maddeye yapılan açımlayıcı faktör analizi

sonucunda, iki madde çıkarılmış ve 12 maddelik ölçeğin anlamlı bir örüntü oluşturduğu görülmüştür. 12 maddeye dayanarak oluşan üç faktör şu şekilde isimlendirilmiştir: 'heyecan arama' (α = .71), 'risk alma' (α = .73) ve 'kurallara uymama' (α = .68). Ölçeğin toplam (tek faktörlü) iç tutarlılık katsayısı .80'dir. Ölçeğin istatistiksel ve teorik olarak anlamlı faktörleri olduğundan ve tek faktörlü ölçek çalışmanın amacıyla uyumlu olduğundan, ölçek bu çalışmada tek faktör şeklinde kullanılmıştır.

2.2.4. Güvenlik Motivasyonu

Güvenlik motivasyonu, Neal, Griffin ve Hart (2000)'ın çalışmasındaki üç madde kullanılarak ölçülmüştür. Bu maddeler, bireylerin güvenliği hayatlarının önemli bir parçası olarak görüp görmediklerini ölçmektedir. Maddeler beş-basamaklı Likert-tipi ölçek üzerinden değerlendirilmiştir. Ölçek Türkçe'ye yazar tarafından çevrilmiştir. Ölçeğin iç tutarlılık katsayısı boylamsal bir çalışmanın iki farklı yılında .92 ve .85 olarak bulunurken (Neal & Griffin, 2006); mevcut çalışmada .79 şeklindedir.

2.2.5. Güvenlik Performansı

Bu çalışmada güvenlik performansı güvenlik uyumu ve güvenlik katılımı şeklinde iki ana başlık ile ölçülmüştür. Her bir başlık, Neal ve çalışma arkadaşları (2000) tarafından geliştirilen üçer madde ile ölçülmüştür. Maddeler beş-basamaklı Likert-tipi ölçek üzerinden değerlendirilmiştir. Güvenlik uyumu ve güvenlik katılımı öğelerinin maddeleri Dursun (2011) tarafından Türkçe' ye çevrilmiş ve iç tutarlılık katsayıları sırası ile .87 ve .85 şeklinde bulunmuştur. Bu çalışmada, yönetici değerlendirmesine ve öz bildirime dayalı güvenlik performansı iç tutarlılık katsayıları sırası ile .92 ve .87 olarak bulunmuştur.

2.2.6. İş Performansı

Bu çalışmada iş performansı kapsamında hem görev performansı hem bağlamsal performans ölçülmüştür. Befort ve Hattrup (2003) tarafından geliştirilen ve Karakurum (2005) tarafından Türkçe'ye adapte edilen Performans Ölçeği kullanılmıştır. Ölçek 11 maddeden oluşmakta; bu 11 maddenin altı maddesi görev

performansını, beş maddesi bağlamsal performansı ölçmektedir. Maddeler beş-basamaklı Likert-tipi ölçek üzerinden puanlanmıştır. Görev performansı, bağlamsal performans ve toplam iş performansının iç tutarlılık katsayıları sırası ile .81, .80 ve .85'tir (Karakurum, 2005). Çalışmanın örneklemine uygun olmaması sebebiyle iki madde bu çalışmada çıkarılarak ölçek dokuz madde (EK- E) olarak kullanılmıştır. İç tutarlılık katsayıları yönetici tarafından rapor edilen iş performansı için .92, öz bildirime dayalı iş performansı için .80 şeklinde bulunmuştur.

2.2.7. Demografik Bilgi Formu

Hem maden işçileri hem de onların ilk amirlerine ait demografik bilgi formları EK-G' de yer almaktadır. Bu formlar, insan faktörünün, güvenlik performansına etkilerini anlamayı kolaylaştırmak amacıyla yaş, eğitim seviyesi, medeni durum, kaza geçmişi, mevcut kurumda çalışma süresi ve toplam çalışma süresi gibi soruları içermektedir.

2.3. Prosedür

Veri toplama süreci, Orta Doğu Teknik Üniversitesi İnsan Araştırmaları Etik Kurulu'ndan onay alındıktan sonra Mart 2018'de başlayıp Haziran 2018'in sonunda tamamlanmıştır. Maden işçilerinden ve onların ilk amirlerinden gelen ölçek paketlerinin eşleştirilebilmesi için ölçek paketlerine numaralar atanmıştır. Veri toplama sürecinde özdisiplin, kontrol odağı, risk alma eğilimi, güvenlik motivasyonu, güvenlik performansı, iş performansı ölçeklerini ve demografik bilgiler formunu içeren ölçek paketi, 300 maden işçisine vardiyalarının başında veya sonunda dağıtılmıştır. Maden işçileri çalışmaya gönüllülük esasına dayalı olarak katılmışlardır. Katılımcılar, toplanan bilgilerin yüksek lisans tezinin bir gereği olarak sadece bilimsel amaçlarla kullanılacağı konusunda bilgilendirilmişlerdir. Gönüllü katılım formunda, çalışan katılımcılara, amirlerinden veri toplanmasına izin verip vermedikleri sorulmuş; veri toplanmasına izin veren çalışanların amirlerine ölçek paketleri ve gönüllü katılım formları kapalı zarf içinde verilmiştir.

3. BULGULAR

Araştırmanın verileri, Sosyal Bilimler İstatistik Paketi (SPSS), versiyon 25.0 (IBM Corp, 2017) kullanılarak analiz edilmiştir. Çalışmanın aracılık analizlerini yapmak için, Hayes (2017) tarafından geliştirilen SPSS için PROCESS sürüm 3.3 kullanılmıştır.

Bu çalışmanın temel amacı, güvenlik motivasyonu ve güvenlik performansının güvenlik performansı belirleyicileri (özdisiplin, kontrol odağı, risk alma eğilimi) ile iş performansı arasındaki ilişkiye aracılık edip etmediğini araştırmaktır. Bu amaç doğrultusunda güvenlik performansı ve iş performansı verileri hem maden işçilerinden hem onların ilk amirlerinden toplanmış ve analiz edilmiştir. Çalışmanın hipotezlerini test etmek amacıyla; özdisiplin, kontrol odağı ve risk alma eğilimi değişkenlerinin her biriyle, hem çalışanların kendisinden alınan performans verileri hem de amirlerden alınan performans verileri ayrı ayrı kullanılarak toplam altışar farklı Hayes Makro Model 6 ve Model 4 analizleri yapılmıştır. Aracılık modelleri, önerilen hipotezlerin doğrudan ve dolaylı etkilerini test etmek için kullanılmıştır. Dolaylı etkileri test etmek için doğru ve güçlü tahminler yapması nedeniyle en çok tercih edilen ve önerilen yöntemlerden biri olan Bootstrapping kullanılmıştır (Preacher ve Hayes, 2004).

3.1. Özbildirim Performans Ölçümleri ile Hipotez Testleri

Özbildirim performans ölçümleri kullanılarak yapılan analizlerde güvenlik motivasyonunun güvenlik perfomansına doğrudan etkisinin anlamlı olduğu bulunmuştur. Yani, daha yüksek güvenlik motivasyonu olan katılımcılar, daha yüksek güvenlik performansına sahiptir ve böylece H1 desteklenmiştir. Benzer şekilde, özdisiplini daha yüksek katılımcılar daha yüksek güvenlik performansı rapor etmişlerdir. Bu sonuç H2'yi desteklemektedir. Güvenlik motivasyonunun, özdisiplin ile güvenlik performansı arasındaki ilişkiye aracılık ettiği bulunmuştur. Bu sonuç H3'ü desteklemektedir. Çalışmanın bir diğer bulgusu, daha yüksek güvenlik performansı rapor eden katılımcıların aynı zamanda daha yüksek bir iş performansına sahip olmasıdır. Böylece H8 desteklenmiştir. Dahası, güvenlik motivasyonu ve güvenlik

performansının, özdisiplin ile iş performansı arasındaki ilişkiye sıralı olarak aracılık ettiği bulunmuştur. Bu sonuç H9a'yı desteklemektedir.

Ancak, içsel kontrol odağının güvenlik performansını yordadığı hipotezi (H4) doğrulanamamıştır. Ayrıca, Güvenlik motivasyonunun kontrol odağı ile güvenlik performansı arasındaki ilişkiye aracılık etmesi de doğrulanamayan bir hipotezdir (H5). Bu çalışmada risk alma eğiliminin güvenlik performansını yordamasına ilişkin anlamlı bir ilişki bulunamamıştır. Böylece H6 desteklenmemiştir. Bu hipotez desteklenmediğinden herhangi bir aracılık etkisinden bahsedilememektedir. Böylece H7 de desteklenmemiştir. Son olarak, kontrol odağı ve risk alma eğiliminin güvenlik performansı üzerinde doğrudan etkisi bulunamadığı gibi, dolaylı etkiye ilişkin anlamlı bir sonuca ulaşılmamıştır. Bu nedenlerle, H9b ve H9c desteklenmemiştir.

3.2. Amir Değerlendirmesi Performans Ölçümleri ile Hipotez Testleri

Amir değerlendirmesi performans ölçümleriyle yapılan analizlerde yalnızca güvenlik performansının iş performansı üzerindeki doğrudan etkisi anlamlı bulunmuştur. Böylece H8 doğrulanmıştır. Hipotez 2'de beklenenin tersine, özdisiplini daha düşük katılımcılar için amirler daha yüksek güvenlik performansı rapor etmişlerdir.

3.3. Ek Analizler

İş yaşamı düşünüldüğünde her amir çalışanlarının iş performanslarını bir şekilde izleyip ölçümleme şansı bulurken, bu durum güvenlik performansı için söz konusu olmayabilir. Bu sebeple, çalışmanın hipotezleri işçiden alınan güvenlik performansı verileri ve amirden alınan iş performansı verileri birlikte kullanılarak bir kez daha test edilmiştir. İlgili analizler sonucunda ilk üç hipotezin desteklendiği, diğer hipotezlerin ise desteklenmediği bulgusuna ulaşılmıştır. Bunun yanı sıra, ek analizler ile hipotez edilmediği halde anlamlı sonuç veren 2 bulguya ulaşılmıştır. Bunlardan birincisi, güvenlik motivasyonunun iş performansı üzerinde doğrudan etkisinin olduğudur. İkincisi ve daha önemlisi ise, güvenlik motivasyonunun özdisiplin ile amir değerlendirmesi olan iş performansı arasındaki ilişkiye aracılık etmesidir.

4. TARTIŞMA

4.1. Özbildirim Performans Ölçümleri Analiz Sonuçlarını Tartışma

Literatürde güvenlik motivasyonu ile güvenlik performansı arasında anlamlı bir ilişki olduğunu bildiren önceki çalışmalara paralel olarak (Christian ve ark., 2009; Neal ve Griffin, 2006), bu çalışmada da güvenlik motivasyonunun güvenlik performansını yordadığı sonucuna ulaşılmıştır. Bu literatürle tutarlı bulgu, katılımcıların güvenlik motivasyonları yüksek olduğunda güvenlik politikalarına uyma olasılıkları daha yüksek olacağından şaşırtıcı değildir (Probst, 2004). Bu çalışmadaki özdisiplinin güvenlik performansının yordayıcısı olduğu bulgusuna benzer şekilde, Neal ve Griffin (2004), özdisiplinin güvenlik davranışı (güvenlik performansı) üzerinde doğrudan etkisinin önemli olduğunu belirtmiştir. Bu bulgu, işyerinde güvenlik davranışında bireysel bir farklılık değişkeni olarak özdisiplinin önemine dair literatürdeki bilgilere ek kanıt sağlamıştır. Güvenlik motivasyonunun özdisiplin ve güvenlik performansı arasındaki ilişkiye aracılık ettiğine ilişkin bulgu yine mevcut ampirik kanıtlarla tutarlıdır. Daha önceki çalışmalardan farklı olarak, bu çalışmanın, güvenlik motivasyonunun aracılık rolünü inceleyen nadir bir örnek olduğu söylenebilir. Dahası, özdisiplin ile iş performansı arasındaki ilişkide güvenlik motivasyonu ve güvenlik performansının seri olarak aracılık ettiği bulgusu, bu çalışmanın ilgili literatüre yaptığı özgün bir katkıdır.

Güvenlik performansının iş performansını yordadığı hipotezin desteklenmesi, Drew (2014) tarafından yapılan çalışmanın bulgularıyla paraleldir çünkü Drew (2014) güvenli çalışanların gerçekten daha yüksek iş performansına sahip olduğunu bulmuştur. Ancak güvenlik performansı ve iş performansı ilişkisinin temelini oluşturan mekanizmayı daha iyi anlamak için daha fazla araştırmaya ihtiyaç vardır.

Kontrol odağının güvenlik performansını yordadığı hipotezin desteklenmemesinin nedeni, bu çalışmada kullanılan ölçeğin geliştirme / adaptasyon çalışmalarının üniversite öğrencileriyle yapılmış olması ve mavi yaka çalışanları için uygun olmaması olabilir. Bir diğer muhtemel açıklama, dışsal kontrol odağının ve içsel kontrol odağının birbirinin tamamen zıddı olmaması olabilir. Örneğin, içsel kontrol

odağı yüksek olan bir kişi de kadere ya da şansa inanabilir. Bu açıklamalar ayrıca güvenlik motivasyonunun kontrol odağı ile güvenlik performansı arasındaki ilişkiye aracılık ettiğini belirten hipotezin desteklenmemesinin de nedeni olabilir. Ayrıca, bu hipotezler desteklenmediğinden, herhangi bir seri aracılık etkisinin de bulunamaması istatistiksel olarak normaldir.

Risk alma eğilimi ile ilişkili hipotezlerin desteklenmemesine neredeyse benzer şekilde, Christian ve arkadaşları (2009) güçlü bir olumsuz ilişki beklemelerine rağmen, risk alma eğilimi ile güvenlik performansı arasında yalnızca zayıf bir ilişki bulmuşlardır. Bu beklenmeyen sonucun makul bir açıklaması olarak, bireylerin tutum ve davranışları farklı bağlamlarda farklılık gösterebilir. Öte yandan, bu çalışmada kullanılan ölçek madencilere özgü olmadığından, sonuçlar katılımcıların iş üstündeki risk alma eğilimlerini temsil etmeyebilir. Yani, bu çalışmada genel risk alma eğiliminin yüksek olduğunu bildiren kişiler işyerinde risk almıyor olabilirler. Bir başka açıklama Arnett'in (1992) geniş ve dar sosyalleşme kuramına dayandırılabilir. Bu kurama göre, geniş sosyalleşme ile karakterize edilen kültürlerde, bağımsızlık ve bireysellik teşvik edilir ve bireylerin davranışları üzerinde çok az kısıt vardır. Öte yandan, dar sosyalleşmeye sahip kültürler itaat ve uygunluğu teşvik etmektedir. Bu açıdan bakıldığında, belirsizliğe daha az toleransı olan, nispeten kolektif, yüksek güç mesafeli bir kültür olan Türkiye, (bkz. Hoftstede, 1980, 2019) dar bir kültür olarak nitelendirilebilir Bu nedenle, dar bir kültürden bekleneceği gibi, bu çalışmanın katılımcıları anketlere sosyal olarak arzulanan şekilde yanıt vererek, gerçek risk alma eğilimlerini, güvenlik motivasyonlarını ve güvenlik performanslarını yansıtmaktan kaçınmış olabilir.

4.2 Amir Değerlendirmesi Performans Ölçümleri Analiz Sonuçlarını Tartışma

Mevcut çalışmanın hipotezleri amir tarafından değerlendirilen performans ölçütleriyle test edildiğinde, yalnızca güvenlik performansının iş performansını yordadığı hipotez desteklenmiştir. Bu bulgu ilgili sınırlı literatürle uyumludur. Yani, literatürde güvenlik performansının alt faktörleri ile iş performansının alt faktörleri arasındaki ilişkileri destekleyen kanıtlar vardır (örneğin, Casillas ve Ark., 2009). Bu çalışmada, bu ilişkinin etkisi oldukça yüksektir ($\beta = .75$) ve bu bulgunun nedeni yöntem yanlılığı

olabilir. Yani, amirler her iki performans ölçeğini de doldurduğundan, gözlemlenen ilişki şişirilmiş olabilir.

İlginç bir şekilde, bu çalışmada özdisiplin güvenlik performansının yordayıcısı olarak bulunmasına rağmen ilgili ilişki beklenen yönde bulunmamıştır. Bu bulgu Yuan, Li, Xu ve Huang (2018) 'in argümanı ile açıklanabilir. Bu yazarlar, aşırı derecede yüksek özdisiplinin güvenlik performansına zarar verebileceğini belirtmiştir. Mevcut çalışmada, özdisiplin skoru ortalaması (5 puanlık bir ölçekte) oldukça yüksek (M = 4.41, SS = 0.48) olduğundan bu açıklama önemlidir. Ek olarak, yüksek özdisiplin, güvenlik performansının iki faktöründen biri olan güvenlik katılımında bir düşüşe neden olmuş olabilir çünkü özdisiplini yüksek bireyler işlerinde esnek olmadıklarından, tanımlanmış sorumluluklarının ötesine geçmenin uygun olmadığını düşünebilirler. Dolayısıyla, iş arkadaşlarına yardımcı olmak organizasyon için önemli bir davranış olarak görünse de, bu bireylerin bu tür davranışlarda yer alma olasılığı daha düşük olabilir (Le ve ark. 2011).

Diğer hipotezlerin amir tarafından derecelendirilen performans ölçütleri kullanılarak desteklenmemesinin nedeni Tip II hatasının bir sonucu olabilir. Yani, amirler hem farklı madenciler arasında hem de bir madencinin güvenlik performansı ve iş performansı arasında etkili bir şekilde ayrım yapmamış olabilir.

4.3. Ek Analiz Sonuçlarını Tartışma

Mevcut çalışmanın ana analizlerine ek olarak, işçiden alınan güvenlik performansı ve amirden alınan iş performansı verileri kullanılarak ek analizler yapılmıştır. Bu analizleri yapmanın altında yatan sebep, amirlerin bir şekilde çalışanın iş performansını gözlemlemek için daha çok fırsatının olmasıdır. Öte yandan, Heinrich Yasası, bir işyerinde büyük yaralanmalara neden olan her kazadan önce, küçük yaralanmalara neden olan 29 kaza ve herhangi bir yaralanmayla sonuçlanmayan 300 ramak kala olay meydana geldiğini belirtmektedir (Heinrich, 1931). Ancak amirlerin 300 ramak kalayı gözlemlemesi mümkün olmadığından amirler çalışanın güvenlik performansı hakkında yeterli veriye sahip olmayabilir.

Ek analizler, ana analizlerin yanı sıra iki önemli sonuç vermiştir. Bunlardan birincisi güvenlik motivasyonunun amirin değerlendirdiği performansının yordayıcısı olmasıdır. İkincisi ve daha önemlisi ise, özdisiplin ve iş performansı arasındaki ilişkiye güvenlik motivasyonun aracılık etmesidir. Bu bulgu, mevcut literatürle tutarlı olmakla birlikte, güvenlik motivasyonun aracılık etkisinin bulunması mevcut literatüre katkı sağlamıştır.

4.4. Çalışmanın Potansiyel Katkıları ve Doğurguları

Hipotezlerinin birçoğunun desteklenmemesine rağmen, bu çalışmanın mevcut literatüre katkı sağlama potansiyeli olan bazı önemli bulguları olduğu söylenebilir. Bunlardan birincisi, bu çalışma örneklemin doğası itibariyle özgün bir çalışmadır, çünkü mevcut çalışma Türkiye'de yeraltı kömür madencileri ve onların amirleri ile bu alanda yapılan ilk çalışmadır. Ayrıca, özdisiplin ile iş performansı arasındaki ilişkiyi gösteren birçok çalışma olmasına rağmen (örneğin, Barrick ve Mount, 1991), mevcut çalışma, güvenlik motivasyonunun ve güvenlik performansının seri olarak aracılık rolünü test eden ve destekleyen ilk çalışmadır. Bu nedenle, mevcut bulgular, iş güvenliğinin kritik olduğu işlerde personel alımında özdisiplinin önemine ilişkin literatürdeki bilgi birikimini arttırmaktadır.

Bu çalışmanın aynı zamanda iş güvenliğinde proaktif önlemlerinin önemine dikkat çeken önemli doğurguları vardır. Bu nedenle, yöneticiler kaza olmadan önce proaktif önlemlerin önemini anladıklarında, maddi ve manevi birçok kazanç elde edecektir.

Drew (2014) çalışmasında, “Güvenli çalışanlar daha iyi çalışanlar mı?” sorusunu olumlu yönde yanıtlamıştır. Benzer şekilde, bu çalışma güvenlik davranışlarının zaman alması nedeniyle iş performansını düşürdüğü inancını, güvenlik performansı yüksek olan çalışanların iş performansının da yüksek olduğu bulgusuyla sarsmıştır.

4.5. Çalışmanın Sınırlılıkları ve Öneriler

Mevcut çalışmanın önemli bir sınırlılığı, hem maden işçilerinden hem de onların amirlerinden güvenlik performansı ve iş performansı ölçümleri toplanmış olmasına rağmen, amirin değerlendirdiği performans sonuçlarının neredeyse hiçbir hipotezi

desteklememesidir. Maden işçilerinin öz değerlendirmeleri kullanıldığında, ortak yöntem yanlılığı nedeniyle hipotezler daha fazla desteklenmiş olabilir. Gelecekteki çalışmalarda hem güvenlik performansı hem de iş performansı için nesnel ölçütlerin kullanılması fayda sağlayabilir. Ayrıca, yeraltı maden işçileri için genellenebilir olan bu çalışmanın güvenlik riski yüksek diğer mavi yaka ve beyaz iş gruplarında tekrarlaması fayda sağlayacaktır.

Bu çalışmanın bir başka sınırlılığı da yakınsal yordayıcılar olarak ele alınan değişkenlerden ikisinin (kontrol odağı ve risk alma eğilimi) ölçümüyle ilgilidir. Gelecekteki araştırmalarda psikometrik açıdan daha kuvvetli, hedef kitlelere daha uygun ölçüm araçlarının kullanması faydalı olacaktır.

Son olarak, önerilen ilişkilerin farklı yordayıcıları ve moderatörleri gelecekteki araştırmalarda sorgulanabilir. Örneğin, güvenlik bilgisi değişkeni de, güvenlik motivasyonu, güvenlik performansı ve iş performansının belirleyicileri arasında yer alabilir. Düzenleme odağı ve hedef yönelimi gibi performansla ilişkili olduğu bilinen değişkenler de potansiyel yordayıcılar olarak gelecek çalışmalarda araştırılabilir.

APPENDIX M: TEZ İZİN FORMU/THESIS PERMISSION FORM

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Adı / Name : DENİZ
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TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English) :
PREDICTING JOB PERFORMANCE THROUGH PERSONAL FACTORS: THE MEDIATING ROLE OF SAFETY MOTIVATION AND SAFETY PERFORMANCE

TEZİN TÜRÜ / DEGREE: **Yüksek Lisans** / Master ■ **Doktora** / PhD ☐

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