Accident Analysis and Prevention 125 (2019) 217–223

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Organization is also a "life form": Organizational-level personality, job satisfaction, and safety performance of high-speed rail operators

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ARTICLE INFO

Keywords:
Organizational-level personality
Safety performance
Job satisfaction
High-speed railway

ABSTRACT

Although studies have suggested that personality can forecast safety performance at the individual level, the link between organizational-level personality and safety performance is rarely considered. On the basis of the Attraction-Selection-Attrition (ASA) theory, the present study investigated the direct and indirect effects of the organizational emergence of personality (Five-Factor Model) on individual-level outcomes (safety performance) in the high-speed rail industry. The sample consisted of 1035 high-speed rail operators in China. The results indicated that the effects of organizational-level personality on safety performance are similar to or stronger than the effects of individual-level personality. Specifically, organizational-level extraversion, agreeableness, and conscientiousness have significantly positive relationships with individual-level safety compliance and safety participation, while neuroticism has a significantly negative relationship with safety compliance and safety participation; the effect of openness to experience was not significant. Moreover, in terms of indirect effects, job satisfaction mediated the links of the four personality constructs (extraversion, agreeableness, neuroticism, and conscientiousness) with safety compliance and safety participation. These findings highlight the importance of organizational personality to improving employees' safety performance in safety-critical organizations.

1. Introduction

High-speed railway (HSR), along with its features of being fast, punctual, comfortable and green, has emerged as a new mode of transportation in recent years. Many countries have developed HSR to connect major cities, and different countries or eras have different definitions of high-speed rail (Campos and Rus, 2009). In China, high-speed rail (HSR) is the network of passenger-dedicated railways designed for speeds of 250–350 km/h (155–217 mph)[1] . For HSR organizations, safety is a persistent and critical issue. Previous studies suggest that injuries and accidents owing to technical failures have been reduced worldwide, while unsafe human behaviors have become one of the leading causes (Christian et al., 2009; Guo et al., 2016). Given that personality affects how individuals' feel, think, and behave (Costa and McCrae, 1992), there has been scholarly research on how to comprehend and apply personality in the field of safety management (e.g., Clarke and Robertson, 2005; Guo et al., 2016; Jornet-Gibert et al., 2013). However, the existing research is focused mainly on the individual level personality, with little research having been conducted at the organizational level personality or character. As Bridges (1995) wrote, "An organization's character is like the grain in a piece of wood. There is no good or bad, but some is more resistant to pressure, some is more flexible." For example, with the rapid development of HSR, many railway companies have established safety management standards. However, the effects of the implementation are different; some companies have high safety performance, while others sometimes have accidents.

Scholars recommend that to understand this phenomenon, we should regard the organization as a "life form" and attempt to predict its behaviors (Barry and Stewart, 1997). Traditional research regards the organization as an external environment factor, which influences people in the organization and even restricts them (Finkelstein and Hambrick, 1989). However, organizational personality provides a new paradigm for analyzing organizational problems. On the basis of the Attraction-Selection-Attrition (ASA) model (Schneider, 1987), the organization is defined by people and their behaviors, which determine the differences between organizations, and this may help explain why some organizations outperform others (in safety, for example) (Oh

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[1] Ministry of Railways Order No. 34 Primary Railway Technology Policy (in Chinese). People's Republic of China Ministry of Railways. Retrieved, 2017-07-30.

https://doi.org/10.1016/j.aap.2019.01.027
Received 7 October 2018; Received in revised form 20 January 2019; Accepted 22 January 2019
0001-4575/

et al., 2015). Previous studies have demonstrated the influence of organizational personality on employee loyalty and organizational commitment (Wright and Goodstein, 2007), task performance (Schmidt et al., 2012), and team performance (Prewett et al., 2018). However, there has been little empirical research to date into the effects of organizational-level personality (LePine et al., 2011), especially in safety-critical organizations.

Although studies have investigated whether personality can forecast safety performance at the individual level (e.g., Hogan and Foster, 2013), the link between organizational-level personality and safety performance is rarely considered. Moreover, the magnitude of this link may be different from that at the individual level (Oh et al., 2015; Ployhart and Schneider, 2012; Prewett et al., 2018). Therefore, to address this key gap, we draw upon the ASA model to establish a framework to analyze the direct effects of organizational personality on safety performance in China's HSR industry. In addition, we also examine the indirect effects of job satisfaction.

2. Theoretical background and conceptual model

2.1. Organizational-level personality

Personality is a stable, unique psychological trait, reflecting an individual's characteristic patterns and psychological mechanisms of thought, emotion, and behavior (Caspi et al., 2005; Funder, 2001). Like individuals, groups also have a personality (Kardiner, 1945). In contrast to an individual's personality, a group's personality has cross-level characteristics; that is, it not only reflects individual differences between groups, but also individual similarities within the group (Bois, 1944). Organizational-level personality (also is known as organizational character in some studies, Bridges, 1995) is a special case of group personality, reflecting the common experiences of different individuals in the organization, which impact and shape the individuals in the organization (Schneider, 1987). With regard to the measures of organizational-level personality, the common methods are Five-Factor Model (Costa and McCrae, 1992) and MBTI (Myers–Briggs Type Indicator, Bridges, 1995). For example, Ployhart et al. (2006) and Oh et al. (2015) used FFM and computed mean and variance in personality to operationalize organization -level personality. Bridges (1995) applied MBTI to the organizational level and divided the organizational-level personality into the following 8 types: Extraversion or Introversion, Sensing or Intuition, Thinking or Feeling, Judging or Perceiving. The Five-Factor Model, which includes five factors, Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience, was used in this study, for the emergence of the Five-Factor model has been widely accepted as a valid and reasonably generalizable taxonomy for personality structure (Digman, 1989; Goldberg, 1992), and has been used by numerous researchers as a framework to explore the criterion-related validity of personality in relation to job performance (e.g. Barrick and Mount, 1991) and safety performance (e.g. Guo et al., 2016).

2.2. Organizational-level personality and safety performance in HSR context

On the basis of the human performance framework, safety performance is defined as the direct antecedents of safety-oriented tasks (Griffin and Neal, 2000). It includes two components: safety compliance and safety participation. The former describes in-role behaviors required to maintain workplace safety, such as adhering to work rules. The latter refers to extra-role proactive behaviors that employees utilize to help colleagues or the entire organization to improve workplace safety, such as providing safety suggestions to managers or helping new employees to understand and follow safety rules.

The ASA model (Schneider, 1987) provides a critical foundation and theoretical framework for the relationship of organizational-level and safety performance. Based on the ASA model (Schneider, 1987), organizations are prone to attract, hire, and retain employees whose personality matches the "personality" of the organization, achieved through the process of Attraction-Selection-Attrition. Specifically, an organization is composed of individuals with different personalities, but these different personalities will gradually homogenize over time, in such a way that the organization becomes distinct from other organizations (Satterwhite et al., 2009; Schneider et al., 1998). Moreover, the homogenization of individuals' personalities directly affects their behaviors in the organization (Schneider et al., 1998). For example, Ployhart et al. (2006) used FFM and described how organizational-level factors of extraversion, conscientiousness, agreeableness, and emotional stability all have a positive relationship with individuals' performance.

With regard to high-speed rail organizations, according to ASA framework (Schneider, 1987), organizational-level personality profiles are not formed randomly and spontaneously but follow and represent the organization's vision, mission, values, and goals, on the basis of which the organization attracts, selects, and retains individuals who identify with the organization (Giberson et al., 2005; Schneider et al., 1995). In high-risk industries such as HSR, safety is one of the most important goals, which requires employees to engage in more safety performance (Guo et al., 2016; Wei et al., 2016). That is, the sensing of organizational-level personality based on safety goals will help high-speed rail operators to interpret policies and instructions, co-ordinate their activities, and deal with new problems in order to improve their safety performance. Therefore, we suggest that during the process of ASA, individuals in HSR organizations will be more effective in their daily activities when they appreciate and are in tune with the organizational-level personality of their company, and thus they will adjust their safety performance (safety compliance and safety participation) in order to adapt better to their organization. Specifically, when organizations have high levels of extraversion, conscientiousness, agreeableness, emotional stability, and openness to experience, employees in the organizations will be motivated to work harder toward the achievement of collective goals, thereby resulting in higher levels of safety performance (safety compliance and safety participation). Therefore, we put forward the first research hypotheses:

Hypothesis 1. (H1): Organizational-level personality (a) Extraversion, (b) Conscientiousness, (c) Agreeableness, (d) Emotional Stability, and (e) Openness to Experience will be positively related to individual safety compliance.

Hypothesis 2. (H2): Organizational-level personality (a) Extraversion, (b) Conscientiousness, (c) Agreeableness, (d) Emotional Stability, and (e) Openness to Experience will be positively related to individual safety participation.

2.3. Interactive effects of job satisfaction

Job satisfaction is a kind of positive or cheerful emotional state that employees show in their work resulting from an evaluation of their jobs (Locke, 1969). According to the ASA process (Schneider, 1987), the formation of organizational-level personality depends on the shared experience of individuals in the organization, and thus on employees in the same organization having more similarities in personality, while employees in other organizations may have more differences in personality (Schneider, 1987). Moreover, the similarity attraction hypothesis (Byrne, 1971) suggests that these similarities in personality and shared experience will lead to employees' high levels of job satisfaction (Oh et al., 2015). For example, attraction is high among individuals who share similarities in socioeconomic background, personality, attitudes, or social activities (Tsui and Ashford, 1991), and employees who possess similar personality traits will be likely to "communicate and share common aspects of cognitive processing and

common ways of interpreting events that help them reduce stimulus overload, uncertainty, conflict, and other negative features of work interaction" (Ostroff et al., 2005); thus, their job satisfaction will increase in the organization (Meglino and Ravlin, 1998).

Furthermore, the existing literature has provided evidence that organizations with employees who are more satisfied are likely to have high levels of employee job performance, productivity, and profitability (e.g., Oh et al., 2015; Ostroff, 1992). We believe that, given the relationship between organizational-level personality and job satisfaction, as well as the link between job satisfaction and job performance, job satisfaction may function as a mediator in the relationship between the organizational emergence of personality (extraversion, agreeableness, conscientiousness, emotional stability, openness to experience) and safety performance (safety compliance and safety participation).Thus, we put forward the second research hypotheses:

Hypothesis 3. (H3): Job satisfaction will mediate the relationship between organizational-level personality (a) Extraversion, (b) Conscientiousness, (c) Agreeableness, (d) Emotional Stability, (e) Openness to Experience and individuals' safety compliance.

Hypothesis 4. (H4): Job satisfaction will mediate the relationship between organizational-level personality (a) Extraversion, (b) Conscientiousness, (c) Agreeableness, (d) Emotional Stability, (e) Openness to Experience and individuals' safety participation.

3. Method

3.1. Participants and procedure

The sample was recruited from an HSR training program in China. Different railway bureaus send the main HSR driving operators (such as HSR drivers, HSR dispatchers, and HSR machinists) to an internal training institution to study and practice in order to update their knowledge of HSR technologies and theories. All respondents were informed of the purpose of the investigation in detail, and that their data would be used only for research purposes, not for any human resource decisions. With the help of training institution managers, a total of 1200 operators from 9 railway bureaus took the online survey (We entered the items of the questionnaires into the "Questionnaire Star", which is a kind of network platform, participants can answer questionnaires directly according to our web link) in two months. After deleting questionnaires with a significant amount or type of missing data, we obtained 1035 effective items, a response rate of 86.3%. More than half of the participants (58%) are under 35 years old, and 23.4% are above 45 years old; 38.5% of the participants are married. Most of the participants (50.9%) have a junior college degree, and 23.2% have an undergraduate degree.

3.2. Measures

3.2.1. Organizational personality

On the basis of the FFM (Costa and McCrae, 1992), we used the Chinese version of the NEO-Five-Factor Inventory (NEO-FFI), which includes 60 items (12 items per scale) for measuring the five personality constructs. Participants rated all items on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Using a multilevel perspective, we followed previous research, which suggested that organizational personality can be represented and computed by the group-level mean (Morgeson and Hofmann, 1999; Ployhart et al., 2006). In line with Ployhart et al. (2006), we calculated the means and SDs of scores on each personality trait for the organizational-level mean. Cronbach's alphas were 0.72 for extraversion, 0.77 for agreeableness, 0.76 for openness to experience, 0.79 for conscientiousness, and 0.73 for neuroticism, showing acceptable reliability (above 0.7, Nunnally, 1978).

3.2.2. Job satisfaction

Job satisfaction was measured using the 6-item scale developed by Tsui et al. (1992). Items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater satisfaction. For example, "I am very satisfied with the work I am doing," and "I am very satisfied with the rewards I receive from the organization." The Cronbach's alpha coefficient was 0.88.

3.2.3. Safety performance

Safety performance was assessed using two three-item scales (safety compliance and safety participation) adapted from the instrument developed by Neal and Griffin (2006). Participants used self-reports to measure safety performance on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Items included "I use all the necessary safety equipment to do my job" for safety compliance and "I put in extra effort to improve the safety of the workplace" for safety participation. Cronbach's alpha coefficients were 0.92 and 0.86 for safety compliance and safety participation, respectively.

3.2.4. Demographic variables

Consistent with prior research (Guo et al., 2016), we collected demographic data, such as age, marital status, and education, as the control variables, gender was not recorded as a demographic variable for most respondents (93.8%) were male. Age: 1 = 25–30, 2 = 31–35, 3 = 36–40, 4 = 41–45; Marriage: 0 = unmarried, 1 = married; Education: 1 = Junior college, 2 = College, 3 = Undergraduate.

3.3. Measurement model

We followed the item-to-construct process (Little et al., 2002) and used confirmatory factor analysis (CFA) to examine the fit of this model to the data. Compared with several alternative measurement models (see Table 1), the eight-factor model (extraversion, agreeableness, conscientiousness, neuroticism, openness to experience, job satisfaction, safety compliance, and safety participation, loaded on separate latent variables), has the best data fitting effect, indicating that the eight variables in this study are well discriminated.

Furthermore, the common method bias of the variables was tested by a Harman single factor test (Podsakoff, and Organ, 1986). The data showed that among the factors that were precipitated, the variance of the largest factor was 16.6%; it did not reach half of the total

Table 1
Assessment of alternative measurement models.

Model types	χ^2	*df*	χ^2/df	*TLI*	*CFI*	*GFI*	*AGFI*	*RMSEA*	*SRMR*
One factor model	7808.37	819	9.53	0.46	0.48	0.47	0.44	0.09	0.10
The best two-factor model (E + A + C + N + O; JS + SC + SP)	6139.96	818	7.51	0.59	0.61	0.59	0.56	0.08	0.10
The best three-factor model (E + A + C + N + O; JS; SC + SP)	4396.16	816	5.39	0.72	0.74	0.75	0.72	0.07	0.08
The best four-factor model (E + A + C + N + O; JS; SC; SP)	4362.97	813	5.37	0.72	0.74	0.75	0.72	0.07	0.08
Eight-factor model (expected model)	1853.92	730	2.54	0.90	0.92	0.91	0.89	0.04	0.07

Note: E = Extroversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism (The opposite of Emotional Stability); O = Openness to experience; JS = Job satisfaction; SC = Safety compliance; SP = Safety participation.

explanatory amount (54.9%), indicating that there is no serious common method bias problem in this study. The results of maximum likelihood extraction and promax rotation also showed that all items were properly loaded on expected factors. Therefore, the expected measurement model is acceptable and validated.

Moreover, besides the theoretical justification, within-group homogeneity (R_{wg}) and the Intraclass Correlation Coefficient (ICC), including ICC1 and ICC2, should also be considered to examine whether aggregation of personality is viable (Bliese, 2000). The R_{wg} is used to evaluate within-group homogeneity, ICC1 reflects inter-group variation, and ICC2 refers to the estimate of the reliability of means (Bryk and Raudenbush, 1992). In the present study, the R_{wg} for extraversion (.90), agreeableness (.88), conscientiousness (.90), neuroticism (.89), and openness to experience (.84) were greater than .70, which suggests a sufficient within-group agreement (James et al., 1984). In addition, the ICC1 and ICC2 values for extraversion (.06 and .47), agreeableness (.09 and .48), conscientiousness (.13 and .56), neuroticism (.06 and .49), and openness to experience (.05 and .47) were all up to the common criterion, .05 and .47 (Zhang et al., 2017). At the same time, the inter-group variances all reached a significant level. Thus, these results indicated that conceptualizing personality at the organizational level was highly reliable, providing strong support to test our next research questions.

4. Results

4.1. Preliminary analysis

Bivariate relationships were tested to obtain the initial support for the hypotheses in the present study. As shown in Table 2, job satisfaction has a positive relationship both with safety compliance ($r = 0.33$, $p < 0.01$) and safety participation ($r = 0.43$, $p < 0.01$) at the individual level, which provided a good foundation for further hypothesis testing.

4.2. HLM results

First, null models with safety compliance and safety participation as the dependent variables were set to examine the between-group and within-group variances. The results showed that the between-group variance and the within-group variance of safety compliance were .62 and .43, respectively, and that the between-group variance accounted for 59.1% of the total variance. The between-group variance and the within-group variance of safety participation were .52 and .52, respectively, and the between-group variance accounted for 49.9% of the total variance. Consequently, a multilayer linear regression analysis can be performed next (the ratios of between-group variance both exceeded 6%) (Raudenbush, 2004).

Multilevel linear models were established with safety compliance (level 1) as the dependent variable and personality factors (level 2) as independent variables. The results are shown in Table 3. It can be seen that neuroticism ($r = -.325$, $p < .001$) has a significant negative impact on safety compliance, while extraversion ($r = .304$, $p < .001$), agreeableness ($r = .471$, $p < .001$) and conscientiousness ($r = .590$, $p < .001$) have a significant positive impact on safety compliance after controlling demographic variables, such as age, marital status, and educational background. However, the correlation coefficient of openness to experience to safety compliance was not significant ($r = .08$, ns), indicating that there is no obvious connection between them. Thus H1a, H1b, H1c, H1d were supported while H1e was not supported.

Table 3
Effects of organizational-level personality on safety compliance.

Variables	Safety Compliance					
	M 1	M 2	M3	M4	M5	M6
Level 1 intercept	−.058	−.056	−.059	−.058	−.057	−.062
Age	.069	.075*	.073	.068	.072*	.070*
Marriage	.005	−.008	.002	.008	−.001	.012
Education	−.014	−.013	−.017	−.015	−.014	−.013
Level 2						
Neuroticism		−.325***				
Extraversion			.304***			
Openness				.083		
Agreeableness					.471***	
Conscientiousness						.590***
σ^2	.423	.422	.423	.423	.422	.422
τ_{00}	.617	.530	.528	.614	.403	.265

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

We continued to build multilevel linear models with safety participation (level 1) as the dependent variable and personality factors (level 2) as independent variables. The results are shown in Table 4. As in the results above, we can see that neuroticism ($r = -.315$, $p < .001$) also has a significant negative impact on safety participation, while extraversion ($r = .321$, $p < .001$), agreeableness ($r = .440$, $p < .001$), and conscientiousness ($r = .576$, $p < .001$) have a significant positive impact on safety participation, while openness to experience ($r = .053$, ns) has no positive impact on safety participation after controlling demographic variables, such as age, marital status, and educational background. Therefore, H2a, H2b, H2c, H2d were supported while H2e was not supported.

We used a residual bootstrapping method—the Monte Carlo Method for Assessing Mediation (MCMAM)—to assess the mediated effect in the model (Preacher and Selig, 2012). On the basis of 20,000 repeated Monte Carlo simulations, R software was used to obtain the confidence interval for the indirect effects of job satisfaction. The statistical significance of the mediating effect was confirmed by the 95% confidence interval offered in Table 5. We can see that the confidence intervals of the indirect effects of openness to experience through job satisfaction to safety compliance [−.011, .025] and safety participation [−.016, .035] are 0, which means that the mediating effect of job satisfaction on openness to experience and safety performance is not significant, thus H3e and H4e were not supported. However, the confidence intervals of other indirect effects were not 0, which means that the respective mediating effect of job satisfaction between neuroticism, extraversion,

Table 2
Descriptive statistics and individual-level correlations (N = 1035).

Variables	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1.Neuroticism	2.92	.47							
2.Extraversion	3.17	.51	−.35**						
3.Openness	3.02	.29	−.001	−.07*					
4.Agreeableness	3.37	.39	−.44**	.25**	.09**				
5.Conscientiousness	3.71	.55	−.39**	.41**	.01	.48**			
6.Job satisfaction	3.49	.67	−.22**	.44**	−.07*	.24**	.45**		
7.Safety Compliance	3.82	1.056	−.14**	.16**	−.009	.27**	.43**	.33**	
8.Safety Participation	3.63	.99	−.16**	.24**	−.014	.24**	.45**	.43**	.62**

Note: Neuroticism means the opposite of Emotional Stability; *p < 0.05, **p < 0.01.

Table 4
Effects of organizational-level personality on safety participation.

Variables	Safety Participation					
	M 1	M 2	M3	M4	M5	M6
Level 1 intercept	−.054	−.052	−.056	−.054	−.053	−.060
Age	.020	.027	.022	.020	.022	.023
Marriage	.024	.012	.022	.023	.017	.027
Education	.020	.024	.018	.019	.0121	.023
Level 2						
Neuroticism		−.315***				
Extraversion			.321***			
Openness				.053		
Agreeableness					.440***	
Conscientiousness						.576***
σ^2	.504	.503	.505	.505	.505	.502
τ_{00}	.522	.445	.421	.523	.333	.200

Note: *p < 0.05, **p < 0.01,***p < 0.001.

agreeableness, conscientiousness, and safety performance are significant. Therefore, H3a, H3b, H3c, H3d and H4a, H4b, H4c, H4d were supported.

5. Discussion

Using the ASA theory (Schneider, 1987), the current study analyzed the organizational-level emergence of personality (organizational personality) and its direct and indirect effects on individual-level outcomes (safety performance) in high-risk industries (in this case, HSR). The results showed that organizational-level mean extraversion, agreeableness, and conscientiousness have a significantly positive relationship with individual-level safety compliance and safety participation, while neuroticism has a significantly negative relationship with safety compliance and safety participation, and the effect of openness to experience was not significant. Moreover, for the indirect effects, job satisfaction mediated the links of the four personality constructs (extraversion, agreeableness, neuroticism, and conscientiousness) with safety compliance and safety participation.

5.1. Theoretical applications

The findings yield several valuable implications concerning the relationships between organizational-level personality and safety performance, under the ASA framework. First, this study contributes to the literature by extending the personality construct to the organizational level. Traditional selection or other Human Resources practices to improve job performance (including safety performance) have mainly focused on knowledge, skills, abilities, and other characteristics (KSAOs) (Crook et al., 2011; Ployhart et al., 2014), whereas the present study provided evidence that organizational-level personality (homogeneity) should also be considered to increase employees' safety performance. These results further supported Oh and colleagues' (2015) suggestion that it is useful to assess the validity of personality holistically at the organizational level to predict behaviors. The results may also offer a useful perspective for further study to combine multiple levels of personality and safety performance into a coherent framework.

In addition, the present research indicates that the effects of organizational-level personality on safety performance are similar to or stronger than individual personality (e.g., Harris et al., 2014; Taubman-Ben-Ari and Yehiel, 2012). Our results showed that organizational-level personality factors (except openness to experience) have a significant relationship both with safety compliance and safety participation, and the criterion-related validity was above .31. Previous meta-analysis research has suggested little evidence of the effects of personality on workplace safety (Arthur and Doverspike, 2001; Clarke and Robertson, 2005; Salgado, 2002). Specifically, organizational-level conscientiousness has a significantly positive relationship with safety performance, which is consistent with previous research at the individual level. Conscientiousness has been proved to be a valid predictor in the main meta-analysis of safety research. Operators in highly conscientious organizations may be involved in proactive safety activities and have high volitional control, thus be less likely to violate rules (Clarke and Robertson, 2005). Previous meta-analysis research has also indicated mixed results in predicting safety performance for agreeableness at the individual level, with Barrick and Mount (1991) suggesting little influence, while Benfield et al. (2007) found a positive relationship. The present study found that organizational-level agreeableness has significantly positive effects on safety performance, which suggests that organizations with more highly agreeable employees will be more effective in achieving safety-related outcomes. The relationship between organizational-level extraversion and safety performance was significantly positive, which was inconsistent with most previous research at the individual level. Previous research has inferred that there was a significantly negative relationship between extraversion and road traffic safety (Lajunen, 2001). One possible reason may be the type of work undertaken. HSR operators are less influenced by the external environment because of the closed nature of the track, whereas road operators must not only manipulate their vehicles carefully but also pay sustained attention to the external environment, which may be seen as monotonous work (Clarke and Robertson, 2005). With regard to neuroticism, the results in our study were consistent with most existing studies at the individual level, since neuroticism has been found to affect safety behaviors negatively (Dahlen and White, 2006; Matthews et al., 1991). Neurotics will experience more pressure and greater distractibility from safety work. With regard to openness to experience, no significant relationship has been found between organizational-level openness to experience and safety performance, which was consistent with most research at the individual level (Dahlen et al., 2012; Guo et al., 2016; Jovanović et al., 2011). Therefore, this research provides further evidence that organizational-level and individual-level personalities have similar but slightly different effects on safety performance.

Finally, this research provides some insights into the influence mechanism of organizational-level personality on safety performance. We found that job satisfaction mediates the relationship between organizational-level personality and safety performance. Previous research has found that job satisfaction is important in predicting HSR drivers' safety participation, for drivers' emotional state affects their

Table 5
Results of the indirect effects of personality on safety performance.

Indirect Effect	Safety Compliance		Safety Participation	
	LLCI	ULCI	LLCI	ULCI
The indirect effects of neuroticism on job satisfaction	−.054	−.017	−.075	−.025
The indirect effects of extraversion on job satisfaction	.054	.096	.079	.132
The indirect effects of openness on job satisfaction	−.011	.025	−.016	.035
The indirect effects of agreeableness on job satisfaction	.026	.064	.037	.088
The indirect effects of conscientiousness on job satisfaction	.043	.082	.066	.117

Note: LLCI = Lower level of the 95% confidence interval; ULCI = Upper level of 95% confidence interval.

safety performance to a large extent (Wei et al., 2016).

5.2. Practical implications

Previous studies have demonstrated that activities such as incorporate feedback, job and work design, and goal setting exercises are effective measures to improve operators' safety beliefs (Newnam et al., 2014, 2017). The findings of this research also suggest that organizations not only need to be focus on the personality of the organization, but also improve their job satisfaction. On the one hand, different HSR operators may have different personality traits, but when these different operators enter an organization and work together, they can form a relatively homogeneous organizational-level personality. It is important to determine which organizational-level personality improves safety performance. Specifically, extraversion, agreeableness, and conscientiousness can be considered important organizational-level personality factors, with HSR operators in such organizations being prone to receiving more consistent signals about organization goals (such as safety), thus improving their safety performance. Therefore, HSR organizations should attract, select, and retain employees with these personality traits. The results also allow for a greater understanding of the mediating mechanism between organizational-level personality and HSR operators' safety performance. It appears evident that job satisfaction is useful for predicting HSR operators' safety performance. After selecting the right HSR employees, organizations should pay attention to improving their job satisfaction; the more positive the emotions they experience, the better the safety performance they will achieve.

6. Limitations and future research

Several potential limitations should be noted. First, the current study adopted HSR operators' self-reports to measure safety performance, which may be biased because of the common method variance and inaccuracy of self-evaluation (Podsakoff et al., 2003). However, much of the previous safety research has shown self-reported safety performance to be a reliable measure (Zhang and Wu, 2014). Second, the present study used a cross-sectional design, which may preclude the inference of a causal relationship between organizational-level personality and safety performance. Future studies should use a longitudinal design. Third, there is a limitation in just using the NEO-FFI as a measure of organizational personality, leaving other personality traits unexamined. Future studies are needed to investigate whether other organizational-level personality traits may influence operators' safety performance. Fourth, this study was conducted in the context of Chinese culture, in which the rapid development of the HSR has made high demands of employees. Existing research has shown that national cultural traits may influence the development of organizational safety culture (Reader et al., 2015), thus influence employees' safety performance (Harvey et al., 2002). Therefore, future studies should replicate the results in other contexts.

Acknowledgements

This work was supported by the National Natural Science Foundation of China (Grant No. 71702115 and No. 71602166); Beijing Talents Project (2017000020124G138) and Beijing Top Young Talents Team Project (2017000026833TD01).

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