



Mediating Effect of Psychological Safety Climate in the Relationship between Psychological Factors and Individual Safety Performance in the Malaysian Manufacturing Small Enterprises

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Abstract

SME is a backbone of Malaysian economic development, however high number of occupational accident and injuries are major financial issues. Many meta-analysis of the safety climate and safety performance consistently indicated that associate with the reduction in the number of accident occurrence in the organization. Therefore, the purpose of this study is to explore the mediating effects of on psychological safety climate in the relationship between psychological factors and individual safety performance in the Malaysian manufacturing small enterprise. Quantitative research using self-administrative questionnaires have been conducted on 377 employees from 11 small manufacturing enterprise firms based on stratified random sampling. The response rate was at 65 % from 240 returned questionnaires. The results of a preliminary validation showed that the scale is a reliable and valid instrument to measure the essential elements of psychological safety climate for Malaysian manufacturing small enterprise. The result confirmed that here were strong positive correlations between psychological safety climate and individual safety performance. As predicted, psychological safety climate found to be directly influenced by psychological factor but psychological factor not directly correlated with individual safety performance. Besides that, the findings of this study revealed that psychological safety climate significantly mediated the relationship between psychological factor and individual safety performance. Finally, the implications and suggestions for future studies and practice are discussed.

INTRODUCTION

Small Medium Enterprises (SMEs) have been recognized as a backbone of Malaysian economic development (MITI, 2011). According to National accounts small and medium enterprise 2005- 2013, SME account for 31% of the national GDP (Department of Statistic Malaysia, 2014). Number of SMEs establishment is 645,000

representation 97.3% of the total number of establishment and SMEs offering 86.01% of employment (Department of Statistic Malaysia, 2012). Instead of significant contribution to the national economy, their contribution to the total occupational accident was substantially high. According to the data published in the SOCSO Annual Report, on average 15 thousand occupational accidents reported in Malaysia annually within eight years (Mohtar, 2013). SMEs recorded high occupational accident compared to the large company (Cagno, Micheli, Masi, & Jacinto, 2013; Floyde, Lawson, Shalloe, Eastgate, & D'Cruz, 2013; Ma & Yuan, 2009), 30% to 50% higher than big companies (Surienty, 2012). It is further supported by the National Institute of Occupational Safety and Health (NIOSH), as 80% to 90% of occupational accident identified from Multinational Company (MNC) vendor were categorized under SMEs (Thye, 2010) due to lack of safety culture among middle to lower group employees (Johari, 2013). Consequently, Malaysia had a substantially higher amount of compensation claims from the Social Security Organization (SOCSO). In addition, the financial issues related occupational accident increase with the increasing year (Johari, 2013; Mohammed Azman, 2013).

Many meta-analysis has proven that safety climate (SC) and safety performance are consistently associated with the reduction in the number of accident occurrence in the organization (Christian, Bradley, Wallace, & Burke, 2009; Clarke, 2006b, 2010a; Nahrgang, Morgeson, & Hofmann, 2011; Neal & Griffin, 2006). It was suggested that the implementation integrative approach of the culture-based and behavior-based safety in small enterprise needs crucial management commitment along with culture change (Nielsen et al., 2013), a good initiative for improving safety of front line employees (Choudhry, 2014). In one article review, it was pointed out that the employee perception to SC from psychological aspect is a crucial aspect of the organization behavior (Griffin & Curcuruto, 2016). Consequently, psychological factor from individual has been suggested as antecedents to individual effort and behavior safety performance (Griffin & Curcuruto, 2016). However, several researchers clarified that there is lack of studies testing mechanisms specifically in terms of its personal implications for employees in safety related studies (Zohar, Huang, Lee, & Robertson, 2015).

Generally, safety practices in SME might differ from other size of business (Legg, Olsen, Laird, & Hasle, 2015) due to limited resources for safety (Lamm, 1997), more hazardous (Hasle & Limborg, 2006), poor physical and chemical work environments (Sørensen, Hasle, & Bach, 2007), and a number of inherent weaknesses characteristics that are typical attached with SMEs (Legg et al., 2015). In respect of these evidences, the relationship between Psychological safety climate (PSC) and Individual safety performance (ISP) in manufacturing small enterprise is assumed to be different from others industrial setting. Therefore, the purpose of this is to explore the effects of psychological factor (PFs) and PSC on ISP in Malaysian manufacturing small enterprise. In order to achieve the above aim it needs to reach following specific objectives:

1. To validate PSC and ISP instrument.
2. To examine the relationship between PSC and ISP
3. To explore the direct effect of psychological factors on PSC and ISP.
4. To investigate the mediating role of PSC the relationship in the relationship between PF and ISP.

Psychological safety climate

In 1980, SC concept appears as an effect of a universal approach for the safety management evaluation, management system and understanding accident causation. SC refers to of employees' perceptions of the policies, procedures, and practices relating to safety in their work environment (Zohar, 1980). SC is defined as individual perceptions of macro element from work environment such as national, industry, organization, department, and or unit variables can directly or indirectly influence individual performance related to safety at work (Karsh, Waterson, & Holden, 2014; Rasmussen, 1997). Several researchers claimed that SC is a measurable facet of safety culture (Clarke, 2010b; Guldenmund, 2000). After a few decade SC has been studied, no standardized definitions and scope are found (Alhemood, Genaidy, Shell, Gunn, & Shoaf, 2004; Fleming & Larder, 2002; Landstrom, 2015; Palmieri, Peterson, Pesta, Flit, & Saettone, 2010; Wu, Lin, & Shiau, 2010), even the terms of safety culture, SC and perhaps safety management used interchangeably (Choudhry, Fang, & Mohamed, 2007).

Many researchers used the term PSC to define the individual level of SC (Dollard, Tuckey, & Dormann, 2012; Huang et al., 2013; Lee et al., 2014; Mohd Awang, Dollard, Coward, & Dormann, 2012). While some other researcher used the term individual difference to explain SC at the individual level (Collins, 2008; Hogan & Foster, 2013; Khdaier, 2013). Empirically, unidimensional of PSC has been successfully validated (Lee et al., 2014; Zohar, Huang, Jin, & Robertson, 2014), electrical and utility industry-specific (Huang et al., 2013) and

across different industries and companies (Lee et al., 2014). In Malaysia, behavioral based safety studies has been conducted in manufacturing (Saad, Zairihan, & Fatimah, 2011; Surienty, 2012), wood manufacturing (J. Ratnasingam, 2010), automotive manufacturing (Nor Azma, Omar, & Endut, 2013), construction (Ismail, Ahmad, Janipha, & Ismail, 2012; Ismail, Harun, & Zaimi, 2010), electronic manufacturing (Abdullah, Othman, Osman, & Salahudin, 2016; Siti Fatimah & Clarke, 2013), and heal care (Mohd Awang et al., 2012). Interestingly, previous studies found 12 items PSC significantly explained 10 to 14 % and 6 to 12%, of the amount of safety behavior variance (Huang et al., 2013; Huang et al., 2013). Criterion related validity of the PSC scale adopted from Lee et al. (2014) well supported.

Despite the extensive evidence relating to predictive validity of PSC, there are only a small number of published studies addressing safety issues among Malaysian manufacturing small enterprise. The contributors to the PSC (i.e. SC at the individual level) have been rarely investigated, a curious loophole in current SC research (Shen, Tuuli, Xia, Koh, & Rowlinson, 2014). Thus, this study attempts to replicate the PSC of non-manufacturing in the Malaysian manufacturing small enterprise. The tools for examining the psychometric properties of a PSC measure such as construct validity or measurement equivalence (e.g. Cigularov, Lancaster, Chen, Gittleman, & Haile, 2013; Huang et al., 2015; Lee et al., 2014) were utilized. In this study PSC would be operationalized as a product of employee based attitudes perception of the work environment (safety practices, procedure and policies) towards ISP in the Malaysian manufacturing small enterprise.

Individual safety performance

Burke et al. (2002) defined ISP 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”. Lately, there has been a trend towards defining ISP based on multi-dimensional conceptual of ISP measurement (Brondino, Silva, & Pasini, 2012; Hogan & Foster, 2013; Jiang, Yu, Li, & Li, 2010; Olson, Grosshuesch, Schmidt, Gray, & Wipfli, 2009; Starren, Hornikx, & Luijters, 2013; Wahlström & Rollenhagen, 2013; Zohar & Luria, 2005). Nevertheless, a multidimensional conceptual of ISP emphasis that psychological factor, is an essential of the proximal result in the ISP measurement (Zohar, 2000). For example, ISP has been quantified as safety specific performance and safety involvement, whereas safety specific performance refers to the individual performance directly related to safety (Neal, Griffin, & Hart, 2000). According to Griffin and Neal (2000), ISP is employees’ compliance and participant in demonstrating individual responsibility. In addition, a meta-analysis study conducted by Christian et al. (2009) also supported the role of ISP as a part of SP. On the other hand, a perfect contemporary ISP instrument score is one of the most advantageous practical indicators of ISP in the workplace (Cooper & Phillips, 2004).

Zohar (2002) also advised that conceptualizing SP at individual level offers a measurable criterion as appropriately more relevance and accurate, which often have a low base rate and a skewed distribution. In most of the cases, the SP measurement cannot be utilized for specific employee due to several issues (DeArmond, Smith, Wilson, Chen, & Cigularov, 2011). Many researchers insisted that little was known or understood the substantial role of employees in the implementation of variations organizational policies and procedures in the organization (Zohar et al., 2015). Given such complexity, emergence climate perceptions is a key aspect of the SP, it was a useful tool to describe about individual employee as a sub-unit of the organization and personal implications of employee. The evidence presented at the above collectively suggests that there is the need for study on individual level of SP. This present study is one of the first initiatives targeting the individual level of ISP in a manufacturing small enterprise scale and to drive a change in the SC in the unique atmosphere of Malaysian Manufacturing SME.

The relationship of psychological safety climate on individual safety performance

A meta-analysis of 90 studies supported that PSC underlying management commitment factor was a core predictor of SP (Christian et al., 2009). The results of this meta-analysis indicated that the mean correlated correlation ($r = 0.49$, $p < 0.05$) between PSC (management commitment) significantly predicts the SP (injuries). Some other related studies found that management commitment was the greatest antecedent of safety compliance, indicate by coefficient regression ($b = 0.169$, $p < 0.001$) (Liu et al., 2015), ($b=0.19$, $p < 0.01$) (Vinodkumar & Bhasi, 2010) and had an indirect effect on occupational injury ($b=0.049$, $p < 0.0001$) (Liu et al., 2015). A study in hospital setting found that generic PSC was found significantly effect on employee’s safety compliance ($b=21\%$) and negatively correlated with injuries, but fails to achieve direct statistical connection to

safety participant and (Agnew, Flin, & Mearns, 2013). In contrast, the latest meta-analytic study clarified that there has been no statistical link established between PSC (management commitment) and injuries (SP) (Beus, Payne, Bergman, & Arthur, 2010). Similarly, researchers argued that SC and SP (accident) not significant correlated (Cooper & Phillips, 2004; Glendon & Litherland, 2001; Siu, Phillips, & Leung, 2004).

Moreover, it is practically utilized psychological level responses to examine the psychometric properties of a PSC measure such as construct validity or measurement equivalence (e.g., (Cigularov, Adams, Gittleman, Haile, & Chen, 2013; DeArmond et al., 2011). Recent evidence suggests that testing, absence of common aspects of SC is more easily accesses in non-lone working situations (Lee et al., 2014). A short scale PSC from Lee et al. (J. Lee et al., 2014) was adapted for this present study. Determination of the underlying structure of SC is generic or context-specific on critical theoretical or practical issues not much been argued (Ginsburg et al., 2009). Considering discussed the results of previous studies, it can be summarized that the finding on SC and SP is consistent. This evidence would suggest that psychological aspect of SC has a significant positive relationship with behavior based (ISP) among employee. Specifically, it is hypothesized as follows:

Hypothesis 1: There will be a significant positive relationship between PSC and ISP

The interaction effect of psychological factor in psychological safety climate

Psychological factors identified as an incredible effected on the PSC drive by internal and external factors. Internal factor of employees refers to PFs also define as demographic characteristics consist of age, gender, ethnicity, level of education, and income (Ajzen, 2006). Numerous researchers stress on individual differences in attitudes towards organizational safety as it was pointed out by Henning et al. (2009). The needs of supplementary research particularly on employees' PF (Clarke, 2006b) in order to promote PSC generally accepted across business settings (Wallace & Chen, 2006). In addition, PSC in organization influenced collaborative interaction of PFs among the employees in order to comply with organizational safety policies and procedure. Conversely, Lee and Harrison (2000) claimed accident experience did not increase or reduce safety related attitudes. Interestingly, the lack of study explores the relationship between accident experience and PSC was highlighted (Fang, Chen, Louisa Wong, & Wong, 2006). An empirical study shows PF such as qualification, age, job category and experience of respondents from employees (Vinodkumar & Bhasi, 2009) give significant impact on PSC in the organization (Wu, Li, Chen, & Shu, 2008; Wu, Liu, & Lu, 2007). Together, this study expected that, PFs is positively predict PSC. The next hypothesis is as follows:

Hypothesis 2: PFs positively predict PSC

The effect of psychological factors on individual safety performance

The PFs play an important role in the organization, due to the implication on employee perception of the immediate work environment, management system support, and improve safety policy and procedures (Cox & Cox, 1991). Employees perceived their work environment based on their PFs subsequently translated to safety at work in relation to their safety behavior (Clarke, 2006a). Vinodkumar and Bhasi (Vinodkumar & Bhasi, 2009) revealed that age and experience predicted similar behavior.

Moreover, Sónia et al. (2008) showed the experience of work accidents is an important variable to be considered as a predictor of employees' perceptions toward safety behavior. However, study of safety in the trucking industry clarified that individual characteristics have less impact on safety (Monaco & Williams, 2000). Besides that, a study of work experience (PF) on PSC and behaviors even lack of study and the results are not clear (Sónia et al., 2008). A recent study on the concept of 'safety intelligence' as related to senior managers' ability related SP suggested this PF have an impact on the safety (Fruhen, Mearns, Flin, & Kirwan, 2013). Zhou et al. (Zhou, Fang, & Wang, 2008) suggested that a joint control of both PSC factors and personal experience factors worked would be most effective predictor, but Bamber and Castka (Bamber & Castka, 2006) justified PFs like personal traits less likely reflected individual behavior. Several studies assumed that certain PFs such as education have a direct effect towards safety related outcome (Glazer & Laurel, 2002), and it may influence PSC factors to determine individual level of the safety behavior (Fang et al., 2006; Zhou et al., 2008). However, relatively limited studies have been made to formally evaluate the mediating role of SC (DeJoy, Schaffer, Wilson, Vandenberg, & Butts, 2004). To summarize, based on theoretical arguments and existing empirical evidence, there are strong reasons to hypothesize a relationship between PFS, PSC, and ISP, it can be assumed that PFs will affect PSC and ISP. Thus, this study aims to test the following hypotheses:

Hypothesis 3: PF positively predicts ISP

Hypothesis 4: PSC mediated the relationship between PF and ISP

METHOD

Population and sample

377 employees from 11 manufacturing small enterprise firms in three states of the East Coast Region of Malaysia was chosen using stratified random sampling technique. Employee was selected according to states (state a, state b and state c) proportionate to the total number of employee in the population. This study focused only on small enterprise manufacturing because the nature of work which exposes the workers and visitors to many dangerous compare to other industry sectors (Ibrahim, Noor, Nasirun, & Ahmad, 2012). The number of samples in this study is sufficient enough as according to Sekaran (Sekaran & Bougie, 2009). A self-administered questionnaire survey was mailed to selected firms with supplementary document such as a letter indicating the purpose of the survey, return postage, and token are provided for respondent.

Research instrument

A structured questionnaire comprises of three section questionnaires consist of the PF, PSC and ISP has been used to collect data. PF in Section 1 was measured using nominal scale. Section 2 was measured using nondiscriminatory responses 10 Likert scale, 1 = strongly disagree to 10 = strongly agree. Section 3 will be measured using a seven point Likert scale; 1 = almost never to 7 = always.

Psychological factors comprise of six elementary factors; 1) age: 0-25, 26-30, 31-35, 36-40, 41-45, 46-50, and 51-60, 2) gender: 1=male, 2=female, 3) job designation: 1=operator and equivalence and 2= supervisor /above than operator and equivalence; 4) accident experience: 1=no accident, and 2= have accident, 5) length of services: 0-5, 6-10, 11-15, 16-20, 21-30, more than 30 and, 6) education level: PMR (below O level), SPM (O level), DIP/ Matriculation/STPM/(A level), Degree, and Higher than Degree.

Psychological Safety climate was measured with Zohar *et al.* (2014) measurement was adapted with little adjustment, specific scale of the original 12 items (a detailed description of this scale development and its psychometric) properties can be found in previous researches (Huang *et al.*, 2013; Lee *et al.*, 2014; Zohar & Luria, 2005). Scale items refer to the employee's view of firm policies and procedures and operator practices.

Individual safety performance was measured by scale adapted from Turner and Tucker (2011) and information from literature review associate with small enterprise manufacturing characteristic. The item was designed to enhance the uniqueness characteristic in small enterprise manufacturing refer to potential ignorance of safety practices in Malaysian small enterprise manufacturing.

Analysis

Preliminary analysis consists of the reliability test and exploratory factor analysis (EFA) was conducted. Descriptive analyses comprise of frequency and percentage were performed. Descriptive data consist of frequency and percentage used to simplify and characterize the respondent information based on field survey. Additionally, Pearson correlation was used to identify coefficient correlation for the PF, PSC and ISP. Linear regression tested the series of hypothesized direct effects between PF with PSC and PF with ISP, using IBM SPSS version 20. The hierarchical linear regression analysis was conducted to evaluate the mediating effect of the PSC in the relationship between PF and ISP.

Descriptive information on respondent psychological factors

Results of descriptive analysis of six PFs, namely; education level, gender, length of services, job designation, and accident experience tabulated in Figure 1, and Table 3.

Fig 1 shows information regarding the respondent's age and gender, based on 240 completed questionnaires. About 66% or 159 respondents were come from male and the rest were female respondents. Fig 1 b) shows that

the majority of the respondent was at the age of 25 years and below, who are consider young in the industry. The finding in Figure 1 c) illustrated that more that 50 % of the respondent had low than A Level.

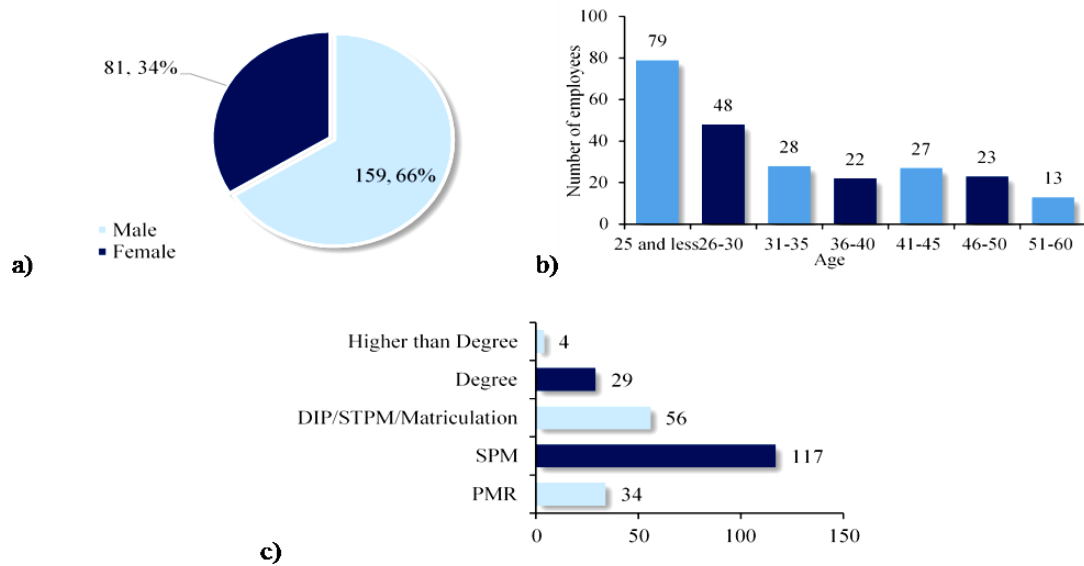


Fig 1
Number of Respondent According to a) Gender (n=240) b) Age and c) Education level, (n=240)

Data from Table 3 illustrated occupational accident experience by the length of service and job designation. It shows that, only a minority of the respondents (48 responses) had occupational accident experience and the rest of 192 respondents never had occupational accident experience. As expected, accident experience decreased with the length of services, where was the highest number of occupational accident record in the group of respondent with length of services between five years and less.

Table 3
Number of employees according to job designations, length of services and occupational accident experience, (n=240)

Job designation	Occu. Accident		Frequency (Percentage)
	Yes	No	
Operator and equivalence above than operator and supervisor and equivalence	33	140	173(0.72%)
Manager and equivalence above than supervisor	1	51	65 (0.27%)
Manager and equivalence above than supervisor	1	1	2 (0.01%)
Length of services			
0-5 years	18	114	132 (0.55%)
6-10 years	12	33	45 (19%)
11-15 years	12	26	38 (0.16%)
16-20 years	5	12	17 (0.07%)
21-30 years	1	5	6 (0.03%)
more than 30 years	0	2	2 (0.01%)
Total	48	192	240

RESULTS

The overall response rate of this study was 65%, responses were acquired from 240 employees. This rate was deemed to be medium when compared to the common response rate in SMEs studies. Several researchers identified that low response rate is a common for surveys among Malaysian SMEs. Historically, research on

Malaysian SME recruited low response rate, which is according to 16-40% (Ale Ebrahim, Rashid, Ahmed, & Taha, 2011; Devi & Samujh, 2010; Hanefah, Ariff, & Jeyapalan, 2002; Julienti Abu Bakar & Ahmad, 2010; Saleh, Caputi, & Harvie, 2008).

Reliability and validity result

The Exploratory factor analysis (EFA) using principal factor analysis was conducted concurrent with a reliability test and EFA to examine the factorial validity, increase simplicity and flexibility of the *Bahasa Malaysia* constructs. The results of PSC and ISP obtained from the Principal Component Analysis of SC is greater than 0.4 and above than Hair *et al.* (2010), Field (2009) and Tabachnick and Fidell (2001) recommendation. It was noted that, Bartlett's Test of Sphericity is significant and the Kaiser Normalization of PSC and ISP sample adequacy is 0.992 and 0.830 are greater than 0.88, as it was suggested the value of 0.88 and above are considered a good fit (Hutcheson & Sofroniou, 1999). This result suggests that PSC and ISP are unidimensional factor.

The reliability results of Cronbach alpha value is 0.95, which is parallel with Hair *et al.* (2015) suggestion, the internal-scale reliability (Cronbach Alpha) of the scale above the acceptable limit of 0.6 is considerably good. In sum, the results in this section indicate that the scale is a reliable and valid instrument to measure the essential elements of PSC and ISP for Malaysian manufacturing small enterprise.

Relationship between Psychological Factor, Psychological Safety Climate, and Individual Safety Performance

The Pearson product moment correlation coefficient was used to determine the relationship between PFs, PSC and ISP as presented in Table 4. The results show that gender, age and accident experience have significant correlation with PSC indicated by correlation coefficient, ($r = -.19, p < 0.05$), ($r = 0.13, p < 0.01$) and ($r = 0.14, p < 0.01$) respectively. Except three of PF such as education ($r = -0.068$), length of services ($r = 0.01$), and job designation ($r = 0.07$) found not significant with PSC. Besides that, Table 4 indicates that three out of six PF have a significant relationship with ISP. Age was positively correlated with ISP ($r = 0.177, p < 0.05$), length of services also found to be significant with ISP ($r = 0.137, p < 0.01$) and job designation established the strongest link to ISP ($r = 0.227, p < 0.01$). The correlation result also revealed that, there were strong positive correlations between PSC and ISP ($r = 0.445, p < 0.05$). Hypothesis H1 was accepted that there was a positive relationship between PSC and ISP. This section indicated that some PF that have a significant interaction on PSC and ISP. Next following section investigates the direct effect of PF to the PSC and ISP.

Table 4
Bivariate correlation between PF, PSC and ISP (N=240)

Independent variable	Mean	Stdv.	ISP	PSC	1	2	3	4	5	6
Edu	2.38	0.93	.089	-.068	.	.	.	.	.	.
Gender	1.34	0.47	-.124	-.199**	.000	.	.	.	.	.
Age	2.96	1.95	.177**	.133*	.000	.000	.	.	.	.
Length of services	1.86	1.16	.137*	.011	.000	.107	.000	.	.	.
Job designation	1.28	0.45	.227**	.037	.000	.026	.220	.379	.	.
Accident	1.80	0.40	-.074	-.142*	.134	.038	.020	.027	.283	.
PSC	6.85	1.57	.454**	1.000	.146	.001	.020	.436	.287	.014

* $p < 0.05$, ** $p < 0.01$, 1=Education, 2=Gender, 3=Age, 4=Length of services, 5=job designation, 7=accident

The direct effect of PF on PSC and PF to ISP

The linear regression analysis results for PF for PSC and ISP are listed in Table 5. It was found that a set of PF was significantly related to both PSC, based on the observations that PF comprised of 6 percent composition variance of PSC, $F(6, 233) = 2.748, p < 0.001$. However, regression result a set of PF was not significantly correlated with ISP, $F(6, 233) = 1.847, p > 0.001$. The test was successful as it was able to identify the significant direct relationship between PF and PSC, nevertheless PF fail to establish the direct effect with ISP. Therefore, hypothesis 2 was accepted that PF has a significant effect on PSC. Nevertheless, Hypothesis 3 was rejected, that there is no direct effect of PF on ISP. Thus, hierarchical analysis conducted in the next section to test mediating effect of PSC between the relationship on PF and ISP.

Table 5
Regression results for PF to PSC and ISP, (N=240)

	Path 1 Dependent variable PSC		Path 2 Dependent variable ISP	
	Unstandardized	Standardized	Unstandardized	Standardized
	Coefficients	Coefficients	Coefficients	Coefficients
Edu	8.154	-.016	-.054	-.039
Gender	-.026	-.167	-.325	-.121
Age	-.552	.106	.066	.100
Length of services	.085	-.078	-.050	-.045
Job designation	-.106	.056	.305	.108
Accident experience	.194	-.115	-.170	-.054
(Constant)	8.154		7.732	
F	2.748		1.847	
Sig.	0.013		0.091	
R Square	0.066		0.045	
Adjusted R Square	0.042		0.021	

The mediating effect of PSC in the relationship of PF and ISP

Hypothesis 4 addressed the mediating role of PSC, using ISP as a dependent variable. As mentioned earlier, two-step hierarchical regression procedure was followed in conducting the mediation test. A results revealed that the overall model was significant, accounting for 28% (25% adjusted) of the variance in ISP, $F(7,232) = 12.963$, $p < 0.001$. As shown in Table 6, six of the PF significantly contributed to the prediction of ISP, $F(1, 238) = 61.75$, $p < .001$. PF comprise of 0.05 percent of total ISP variance ($R^2=5$), while, PSC contributed the most; 20% of the ISP variance. As described in the previous section, relationship between PFs and ISP is not statistically significant. However, Table 6 shows that PFS has a significant relationship with ISP in the second step of hierarchical regression. In addition, standardized coefficients indicated that PSC was the strongest predictor of ISP. Therefore, hypothesis 4 was supported and the findings confirm that PFs were related to ISP through the mediating effect on PSC.

Table 6
Regression PF, SC and ISP

	Steps 1 Dependent variable ISP		Steps 2 Dependent variable ISP	
	Unstandardized	Standardized	Unstandardized	Standardized
	Coefficients	Coefficients	Coefficients	Coefficients
			B	Beta
Edu			.116	.123
Gender			-.123	-.066
Age			.035	.078
ST			.086	.113
JT			.321	.164
Accident			.037	.017
SC	0.255	0.454	.225	0.434
(Constant)	2.927		2.151	
F	61.757		12.963	
Sig.	0.00		.000	
R Square	0.206		.281	
Adjusted R Square	0.203		.259	

Dependent variable is ISP

DISCUSSION

The first objective of this study is to test the validity of PSC (Huang et al., 2013; Lee et al., 2014; Zohar & Luria, 2005) and ISP (Tucker & Turner, 2011) in the context of Malaysian manufacturing small enterprise. The second objective is to examine the relationship between PSC and ISP. The third objective of this study attempts to explore the direct effect of PFs on PSC and ISP. The objective four of this study was to test the mediating role of the PSC in the relationship between PF and ISP. The results revealed a good fit measurement model with high acceptable internal consistency, reliability, content validity and construct validity. This supports previous study by Zohar and colleagues (Huang et al., 2013; Lee et al., 2014; Zohar et al., 2014) and Turner and Tucker (2011). Therefore this application of scale can be extended across Malaysian manufacturing small enterprise.

The finding of this study supported a positive association PSC and safety related behavior, which is PSC accounted for 25% (Wills, Watson, & Biggs, 2006), 18% of the variance in unsafe behavior ($R^2 = 0.18$; $F(3, 396) = 26.7$, $p < 0.01$) (Morrow et al., 2010) and $b = 0.40$ ($SE = .02$, $p < .01$) (Zohar et al., 2014), unstandardized coefficient = 0.36 ($SE = 0.05$, $p < .01$) (Huang et al., 2014), -0.28 (Hofmann & Morgeson, 1999) of safety related behavior. There are three possible explanations. First, the correlations between the different aspects of SP and safety outcomes seem to be stronger than those in earlier studies. Secondly, these relationships may partly be explained by a scale capturing multipurpose of ISP scale, which items may be slightly different with the other short measures of ISP. Thirdly, the discrepancy may be due to the potential unexplored mediator in the connections between the different components of PSC and ISP.

This result confirms that PF significantly correlated with PSC. On the other hand, this result found to be consistent with the magnitude correlation between PF, PSC (Vinodkumar & Bhasi, 2009; Wu et al., 2008, 2007) and ISP (Fang et al., 2006; Zhou et al., 2008) in previous empirical studies. The results revealed PSC with respect to PFs such as age, gender and accident experience, have a significance projection in enhancing PSC. These findings are consistent with data obtained in Vinodkumar and Bhasi (2009), age and accident experience (Zhou et al., 2008) were found to be influenced PSC score in the chemical industry. Young age employee found significantly low in PSC score, this result may be explained by the fact that this group of age is relatively begin their career at minimum working experience even positive note in respect of the safety attitudes/perceptions, and then converge. Besides that, level education does not affected PSC among employee. Similar with Lee and Harrison (2000), claimed that accident experience did not increase or reduce safety related attitudes. These findings suggest that by enhancing PSC, a small manufacturing enterprise firm can reduce unfavorable PF effects, and thus increase benefits for both their employees and employer.

However, the result indicates that the correlation between PFs and ISP is not significant. These results validate the ideas of Vinodkumar and Bhasi (2010), who suggested that accident experience and the length of services are negatively correlated with the safety related performance in the firm. Vinodkumar and Bhasi (2009) argued that the negative results were due to some reasons, for example: 1) the safety measures and 2) management did not work to prevent their accident. In overall, this result fail to support results of previous studies (Inness, Turner, Barling, and Stride 2010; Chang et al., 2012; Gyekye & Salminen, 2009; Curcuruto, Conchie, Mariani, and Violante, 2015).

The results of hypothesis 4 confirmed that PSC significantly mediated the relationship between PFs and ISP. This result seems to be consistent with safety related study conducted by DeJoy et al. (2004). Besides that, prominent study by Zohar (1980), indicated that perceptions of SC have an important role in determining the employee safety related behavior. A number of authors have considered the mediating effects of SC on safety related behavior studies (Barling, Loughlin, & Kelloway, 2002; Zohar & Luria, 2004). Nielsen and colleagues in their series of studies have shown that safety related performance is related to a variety of negative outcomes such as work related attitude and psychological aspect (Nielsen, Rasmussen, Glasscock, & Spangenberg, 2008; Nielsen, Eid, Mearns, & Larsson, 2013; Nielsen, Mearns, Matthiesen, & Eid, 2011). Then, SC, in turn, influences the group because climate perceptions inform the prominence of safety behavior (Zohar, 2002).

CONCLUSION

In overall, reliability and validity the scale is high. These results suggest that practitioner in mainstream should focus on PF factors such as age, gender and accident experience of employee in encouraging positive PSC and improve ISP. This finding is hoping to contribute to Malaysia's effort to improve ISP or reduce occupational accident amongst employees of manufacturing small enterprise in future.

LIMITATION

This study made use of behavior based safety questionnaires attached with certain drawbacks associated with the use of self-administered questionnaires at one point in time, therefore the validity and reliability may varied with sample, time, production category and geographic location. Secondly, the selection method used to collect data might be affect variance of the variable in observed relationship. Thirdly, ISP items of this study may be dissimilar from other the PSC and ISP study due to language, business setting and cultural variations.

FUTURE WORK

This finding indicates that the reliability and validity may vary with several limitations, thus a comparative study suggested for future study. It seems like PFs influences PSC of individual employees, therefore as recommendations, strategic human resources management and proper recruitment would be great to promote a PSC and ISP.

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