

Workers' Perceptions of Workplace Safety and Job Satisfaction

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A lot of attention has been focused on workers' perceptions of workplace safety but relatively little or no research has been done on the impact of job satisfaction on safety climate. This study investigated this relationship. It also examined the relationships between job satisfaction and workers' compliance with safety management policies and accident frequency. A positive association was found between job satisfaction and safety climate. Workers who expressed more satisfaction at their posts had positive perceptions of safety climate. Correspondingly, they were more committed to safety management policies and consequently registered a lower rate of accident involvement. The results were thus consistent with the notion that workers' positive perceptions of organisational climate influence their perceptions of safety at the workplace. The findings, which have implications in the work environment, are discussed.

perception organisational safety climate job satisfaction safety management
safety perception accident frequency

1. INTRODUCTION

1.1. Organisational Climate

In the literature organisational climate refers to the shared perceptions about organisational values, norms, beliefs, practices and procedures [1, 2, 3, 4, 5]. It denotes the social and organisational circumstances in which workers perform their assignments. The climate of an organisation has been known to be an important antecedent of workplace performance as workers' perceptions of the state of affairs and structures in place in their organisations have affected their perceptions of safety [4, 5] and work behaviour [6]. According to research reports, perceptions of organisational climate tend to influence interactions among workers [7, 8], shape their affective responses to the work environment [Hart, Wearing, Griffin, as cited in 4, 9], affect their levels of motivation [10] and their skill training activities [Morrison, Upton, Cordery, as cited in 11]. Regarding the relationship

between safety climate and safety perception, safety experts, e.g., Neal et al. [4] and Silva et al. [5], who have investigated this relationship have confirmed that "organisational climate predicts safety climate, which in turn is related to safety performance" (p. 206) [5]. Essentially, what these studies have revealed is that the general organisational climate in a work environment imparts significant influence on safety climate, which in turn affects workers' safety behaviour, and subsequently, their accident involvement.

1.2. Safety Climate

The safety literature defines safety climate as a coherent set of perceptions and expectations that workers have regarding safety in their organisation [4, 8, 12, 13]. It is considered as a subset of organisational climate [8]. Workers' perceptions of safety climate have been regarded as a principal guide to safety performance, which provides a potent proactive management tool. Consistent with this observation, researchers have noted that

workers with a negative perception of safety climate (e.g., a high workload, work pressure) tend to engage in unsafe acts, which in turn increase their susceptibility to accidents [14, 15]. Similarly, workers who perceive job insecurity, anxiety and stress have exhibited a drop in safety motivation and compliance [16, 17] and recorded a higher accident rate [18, 19, 20]. On the other hand, workers with a positive perception of their workplace safety have registered fewer accidents [14, 21, Smith, Kruger, Silverman, Haff, Hayes, Silverman, et al., as cited in 22]. One aspect of organisational behaviour which is likely to affect workers' perceptions of organisational safety climate, and in turn influence safe work behaviours, and accident frequency is the extent to which workers perceive their organisations as being supportive, concerned and caring about their general well-being and satisfaction. In the literature this has been technically referred to as job satisfaction.

1.3. Job Satisfaction

Job satisfaction is defined as the degree to which a worker experiences positive affection towards his or her job [23]. Locke [24] in his well-cited definition considers job satisfaction to be "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences and as a function of the perceived relationship between what one wants from one's job and what one perceives it as offering" (p. 1300). Though recent theorising on job satisfaction describes it as a multifaceted construct, and a function of two major factors, dispositional (worker personality traits) and situational (workplace factors) [25, 26, 27], the general indication, however, is that job satisfaction is more of an affective reaction to one's job, an evaluative measure and consequently an indicator of working conditions [Hart et al., as cited in 4, 23]. Occupational injuries and industrial accidents are therefore likely to be mediated by organisational climate and job satisfaction.

The explanation for the proposed link between job satisfaction and organisational safety climate relates to the fact that the degree of an employee's job satisfaction derives from meaningful organisational and social organisational values,

norms, beliefs, practices and procedures operational at the workplace. In effect, the perceived level of support provided by an organisation will turn out to be closely associated with safety climate and other organisational and social factors which are important for safety. If workers perceive that their organisations are supportive and are satisfied with the organisational structures in place, they are more likely to recognise that the organisations value their safety and general well-being as well. This assessment in turn reflects positively on their perceptions of the prevailing safety climate and influences organisational behaviour. Thus, it is on record that when workers' basic needs are met consistently and the workers express job satisfaction, they display greater emotional attachment, involvement and express stronger feelings of allegiance and loyalty to their organisations [28, 29]. In line with this, a number of studies have consistently found strong and positive relationships between job satisfaction and productive organisational behaviours such as perceived organisational support [28, 30], organisational citizenship behaviours [31, 32, 33] and fairness perception [28, 34]. Additionally, research reports on the job satisfaction-safety link have indicated that satisfied workers, more than their dissatisfied counterparts, are motivated into safe work behaviours [17, 35] and register relatively lower accident rates [17, 36, 37].

The central theories used in explaining the motivational basis behind job satisfaction and these positive organisational behaviours are the Social Exchange Theory [38] and Reciprocity Theory [39]. Basically, according to these theories, expressions of positive affect and concern for others create a feeling of indebtedness and a corresponding sense of obligation to respond positively in return. Workers who perceive a high level of organisational concern and support, and are satisfied with workplace conditions, feel a sense of indebtedness and a need to reciprocate in terms that will benefit their organisations/management [40, 41]. Complementary research findings along this line of argument in both social psychology [42, 43] and the organisational literature [41] have confirmed that one type of prosocial behaviour facilitates other types of prosocial behaviours due to the personal

values acquired through the socialisation process. Organisational researchers have therefore found satisfied workers to be more actively engaged in activities that are considered as facilitative to organisational goals than their dissatisfied work colleagues [44]. Thus relative to their dissatisfied colleagues, satisfied workers are more likely to comply with safety-related practices.

1.4. The Current Study

The current study is part of a larger explorative study that examined safety perceptions among Ghanaian industrial workers. Even though job satisfaction has been extensively researched, and its relationship with accident frequency well documented, surprisingly, no systematic attempt has been made to explore the empirical relations between job satisfaction and workers' perceptions of workplace safety. This study was designed to address this oversight. Specifically, it compares the degree of workers' job satisfaction with their perceptions of safety on Hayes et al.'s [45] Work Safety Scale (WSS). Follow-up analyses compare satisfied and dissatisfied workers on compliance with safe work, and finally, on their accident involvement rate.

Two major instruments are used here. The first is Hayes et al.'s [45] WSS. This scale effectively captures all the dimensions identified by safety experts to influence workers' perceptions of workplace safety. These are management values, management and organisational practices, communication, workers' involvement in workplace health and safety, workers' concern or indifference about safety, and the level of safety precautions in the company. The other major instrument is Porter and Lawler's [46] one-item global measure of job satisfaction: an instrument that has been extensively used in measuring job satisfaction in the organisational literature [47, 48].

1.5. Hypotheses

Based on the current organisational safety literature, and the literature review in section 1, the following hypotheses were formulated:

Hypothesis 1. I anticipate a positive relationship between job satisfaction and safety climate.

Workers with a high degree of job satisfaction will correspondingly have positive perceptions regarding safety climate and vice versa.

Hypothesis 2. It is anticipated that workers who express job satisfaction will be more committed to safe work policies than their dissatisfied counterparts.

Hypothesis 3. It is anticipated that workers who express job satisfaction will register relatively fewer accidents than their dissatisfied counterparts.

2. METHODOLOGY

2.1. Selection and Description of Participants

The participants—320 Ghanaian industrial workers—had the following characteristics: 65% were male and 35% female. Subordinate workers comprised of 75% and supervisors, 25%. Forty percent were single and 60% were married. In terms of educational levels, 23% of the respondents reported having only basic education, 36% reported secondary or technical education, 38% reported having some professional or commercial education and 3% university education. Regarding tenure, 13% of the respondents had been at the workplace for less than a year, 22% between 1 and 4 years, 21% between 5 and 10 years, 25% between 11 and 14 years and 19% over 15 years.

The interviews were administered during lunch breaks. Their duration varied from 15 to 20 min, depending on the context in which they were conducted and on the participants' level of education. The questionnaire was presented in English. Where participants were illiterates or semi-illiterates and had problems understanding the English language, the services of an interpreter were sought and the local dialect was used. The supervisors were educationally sound and filled in the questionnaire on their own. To ensure accuracy of responses, particularly regarding issues that related to noncompliant job behaviours and worker counterproductive behaviours, it was emphasised that the study was part of an academic study and that no person affiliated with the

workers' organisation was involved in any way. Participants were also assured that all responses were completely confidential and that their organisations/management would have no access to any information provided.

2.2. Measures, Questionnaire Scoring and Reliability

2.2.1. Perceptions of safety climate were measured with the 50-item WSS [45]. This instrument assesses employees' perceptions of work safety and measures five factorially distinct constructs: (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management's commitment to safety and (e) satisfaction with safety programme. Past research has shown this scale to have good psychometric properties [49]. Sample items were "Safety programmes are effective", "Supervisors enforce safety rules", "Management provides safe work conditions". The authors reported a coefficient alpha of .91 for job safety; .91 for co-worker safety; .95 for supervisors' safety; .95 for management safety practices; and .93 for satisfaction with safety programme. Responses to this scale in the current study produced satisfactory reliability of .96 for job safety; .80 for co-worker safety, .97 for supervisors' safety; .94 for management safety practices; and .86 for satisfaction with safety programme. The total coefficient alpha score was .87. Participants responded on a 5-point scale ranging from 1—*not at all* to 5—*very much*.

2.2.2. Job satisfaction was measured with Porter and Lawler's [46] one-item global measure of job satisfaction. This scale was chosen because single-item measures of overall job satisfaction have been considered to be more robust than scale measures [50]. Besides, it has been used extensively in the organisational behaviour literature [47, 48]. The measure has five response categories ranging from *extremely dissatisfied* to *extremely satisfied*, corresponding to the 5-point response format 1—*not at all* to 5—*very much*. Thus, the scores were coded so that higher scores (4—*quite much* and 5—*very much*) reflected higher levels of job satisfaction, and lower scores (1—*not at all* and

2—*very little*), lower levels of job satisfaction or job dissatisfaction.

2.2.3. Items for compliance with safety behaviour were pooled from the extant literature. They comprised of four questions and assessed workers' compliance with safety behaviour. Sample items were "Keep my workplace clean", "Follow safety procedures regardless of the situation". Participants responded on a 5-point scale ranging from 1—*not at all* to 5—*very much*.

2.2.4. Accident frequency was measured by participants' responses to the question that asked them to indicate the number of times they had been involved in accidents in the past 12 months. All cases studied were accidents classified as serious by the safety inspection authorities.

2.3. Data Analyses

Statistical analyses of the data were done with SAS v. 8-2001. Using job satisfaction as an independent variable, differences among the perceptions were identified by a one-tailed ANOVA analysis. This provided an item-by-item score for the workers on all 50 items of the safety perception scale. To examine further the relationship between the categories of satisfied and dissatisfied workers, the sum variables of the subsets scales were calculated and subjected to further ANOVA analyses. This provided the statistical differences on the workers' perceptions. Participants' responses on compliance with safety behaviours and accident involvement were subjected to a similar procedure. Items that were not completed by the respondents were coded as missing values and excluded from the analyses.

3. RESULTS

The means, standard deviations and intercorrelations for the five subsets of "workplace safety perception" and "job satisfaction" are reported in Table 1.

Examination of the correlation pattern in Table 1 reveals interesting insights. The subsets on the safety scale were all highly significantly correlated with each other. The correlation between "work

TABLE 1. Descriptive Statistics and Correlations Between Job Satisfaction, Accident Frequency and Work Safety Scale (WSS)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Job satisfaction	3.29	1.42						
2. Accident frequency	1.84	1.09	-.65***					
3. WSSA	25.09	10.62	-.63***	.81***				
4. WSSB	30.38	6.24	.61***	-.71***	-.69***			
5. WSSC	32.88	11.56	.69***	-.84***	-.80***	.77***		
6. WSSD	27.71	9.78	.56***	-.70***	-.66***	.61***	.82***	
7. WSSE	29.49	10.66	.69***	-.84***	-.81***	.76***	.90***	.80***

Notes. WSSA—work safety, WSSB—co-worker safety, WSSC—supervisor safety, WSSD—management practices, WSSE—safety programmes; *N* = 244–306; ****p* < .001.

safety” and all except “accident involvement” was negative. The lower the “accident frequency”, the higher the perceptions were of “co-worker safety”, “supervisor safety”, “management practices” and “safety programmes”. The correlations for the four other subsets with “job satisfaction” were positive. The strongest correlation on the matrix was between “supervisor safety” and “safety programmes”, and the weakest was between “management practices” and “job satisfaction”.

The findings supported the hypotheses. A distinctive pattern of perception associated with the level of job satisfaction was noted. As anticipated, dissatisfied workers had a rather pessimistic and unconstructive view of the safety climate in their workplaces. Meanwhile their counterparts, who expressed job satisfaction, had a noticeably positive and constructive perception. Results on the five subscales are presented first. They are then followed by item-by-item analyses within their domain.

3.1. Hypothesis 1

The ANOVA scores indicated differences of highly statistical significance on all five constructs of the WSSA scale: Regarding workers’ perceptions of “job safety”, workers with *no* job satisfaction *at all* were the least enthusiastic with the safety level in their work assignments ($f(4, 300) = 56.76$, $p < .0001$). They significantly perceived their job assignments to be *dangerous* ($f(4, 303) = 136.38$, $p < .0001$), *hazardous* ($f(4, 302) = 35.23$, $p < .0001$), *risky* ($f(4, 302) = 36.83$, $p < .0001$), *unhealthy* ($f(4, 302) = 37.41$, $p < .0001$), *unsafe* ($f(4, 302) = 47.76$, $p < .0001$) and *scary* ($f(4, 300) = 51.96$, $p < .0001$). Not surprisingly, they felt they

could get hurt ($f(4, 302) = 44.22$, $p < .0001$), and gave thought to *chance of death* ($f(4, 302) = 40.24$, $p < .0001$) and *fear of death* ($f(4, 302) = 35.35$, $p < .0001$). Interestingly, workers who expressed *very much* job satisfaction highly significantly considered their job assignments to be *safe* ($f(4, 303) = 139.29$, $p < .0001$), which happened to be the only positive item on that subscale.

On the “co-worker safety” subscale, workers with *very much* job satisfaction highly significantly perceived their co-workers’ contribution to safety as constructive and valuable ($f(4, 290) = 44.18$, $p < .0001$). They noted that their co-workers *pay attention to safety rules* ($f(4, 300) = 14.55$, $p < .0001$), *follow safety rules* ($f(4, 300) = 43.47$, $p < .0001$), *look out for others’ safety* ($f(4, 299) = 67.61$, $p < .0001$), *encourage others to behave safely* ($f(4, 297) = 52.56$, $p < .0001$), *keep workplace clean* ($f(4, 296) = 34.23$, $p < .0001$) and tend to be *safety oriented* ($f(4, 297) = 51.24$, $p < .0001$). On the other hand, dissatisfied workers (with *no* job satisfaction *at all*) had a different perspective. They significantly perceived their co-workers to *ignore safety rules* ($f(4, 301) = 19.62$, $p < .0001$), *take chances with safety* ($f(4, 296) = 13.84$, $p < .0001$) and *not to care about safety* ($f(4, 300) = 40.29$, $p < .0001$). Differences on *do not pay attention* were not statistically significant ($f(4, 293) = 0.91$, *ns*).

Regarding “supervisor safety”, satisfied workers (especially those with *very much* job satisfaction) significantly perceived supervisors’ roles and support as crucial to their work safety ($f(4, 302) = 78.37$, $p < .0001$). They noted how their supervisors *praise safe work* ($f(4, 303) = 41.67$, $p < .0001$), *encourage safe behaviours* ($f(4, 303) = 54.12$, $p < .0001$), *keep workers informed of*

TABLE 2. Means and Standard Deviations of Job Satisfaction and Work Safety Scale (WSS)

WSS	Dissatisfied Workers						Satisfied Workers				ANOVA	
	Not at All		Very Little		Neutral		Quite Much		Very Much			
	M	SD	M	SD	M	SD	M	SD	M	SD		
A. Work safety	F(4, 300) = 56.76, p < .0001											
1. Dangerous	4.65	0.81	3.84	1.09	3.15	0.88	1.62	0.94	1.48	1.02	***	
2. Safe	1.24	0.66	1.81	1.02	2.31	0.78	4.00	0.92	4.31	1.23	***	
3. Hazardous	3.68	1.50	3.62	1.53	2.68	0.82	1.61	0.93	1.82	1.48	***	
4. Risky	3.63	1.53	3.46	1.26	2.56	0.91	1.78	0.96	1.72	1.20	***	
5. Unhealthy	3.66	1.44	3.51	1.30	2.65	1.00	1.84	1.05	1.67	1.09	***	
6. Could get hurt	3.84	1.33	3.78	1.25	2.63	1.07	1.73	1.03	1.71	1.24	***	
7. Unsafe	3.84	1.45	3.46	1.23	3.03	1.14	1.87	0.96	1.73	1.12	***	
8. Fear for health	3.74	1.57	3.46	1.39	2.81	1.14	1.79	0.97	1.82	1.26	***	
9. Chance of death	3.51	1.54	3.58	1.18	2.78	1.15	1.57	0.92	1.65	1.29	***	
10. Scary	3.68	1.27	3.10	1.13	2.84	1.03	1.62	0.91	1.64	1.12	***	
B. Co-worker safety	F(4, 290) = 44.18, p < .0001											
1. Ignore safety rules	3.28	1.38	3.27	1.24	2.68	0.89	2.13	0.90	1.83	1.16	***	
2. Don't care about other's safety	3.66	1.32	2.59	1.17	2.63	0.83	1.87	0.90	1.65	1.12	***	
3. Pay attention to safety rules	2.57	1.33	2.43	1.11	3.09	1.15	3.41	0.98	3.93	1.16	***	
4. Follow safety rules	2.27	1.29	2.38	1.11	3.28	1.05	4.02	0.97	4.31	1.03	***	
5. Look out for others' safety	2.14	1.36	2.35	0.92	3.25	0.88	4.27	0.81	4.47	0.96	***	
6. Encourage others to behave safely	2.14	1.13	2.37	1.11	2.72	0.92	3.76	0.68	4.09	1.08	***	
7. Take chances with safety	3.25	1.33	2.44	1.02	2.75	0.98	3.24	1.14	2.01	1.07	***	
8. Keep work area clean	2.12	1.23	2.37	1.98	3.12	0.94	3.67	0.88	3.82	1.13	***	
9. Safety-oriented	2.10	1.34	2.24	1.01	3.00	0.95	4.13	0.89	4.14	1.24	***	
10. Don't pay attention	2.33	1.08	2.34	0.99	2.38	0.66	2.25	1.17	2.66	1.28	ns	
C. Supervisor safety	F(4,302) = 78.37, p < .0001											
1. Praises safe work behaviours	2.65	0.88	2.51	0.80	3.16	0.76	3.69	0.66	4.78	0.88	***	
2. Encourages safe behaviours	2.29	1.07	2.08	0.72	3.21	0.97	3.75	0.86	4.21	1.10	***	
3. Keep workers informed of safety rules	2.21	1.13	2.14	0.75	3.03	1.06	3.69	0.88	4.11	1.17	***	
4. Rewards safe behaviours	1.81	1.23	1.83	0.87	2.78	0.97	3.44	1.00	3.96	1.00	***	
5. Involves workers in setting safety goals	2.00	1.21	1.86	0.82	2.68	0.99	3.70	1.00	3.96	1.16	***	
6. Discusses safety issues	2.15	1.13	1.76	0.95	2.87	1.03	3.90	0.89	4.03	1.11	***	
7. Updates safety rules	2.24	1.25	2.05	0.78	3.18	1.23	3.87	0.97	4.11	1.14	***	
8. Trains workers to be safe	2.19	1.28	1.95	0.99	3.00	1.16	4.01	0.82	4.18	1.39	***	
9. Enforces safety rules	2.26	1.21	1.91	0.95	3.16	0.80	4.12	0.96	4.22	1.24	***	
10. Acts on safety suggestions	2.28	1.33	2.21	1.13	3.22	0.83	4.25	0.96	4.43	1.09	***	
D. Management safety practices	F(4, 302) = 44.86, p < .0001											
1. Provides enough safety programmes	2.28	1.16	2.29	0.97	2.65	0.87	3.31	0.97	3.36	0.95	***	
2. Conducts frequent safety inspections	1.82	0.83	1.81	0.70	2.47	1.14	2.87	1.13	2.67	1.12	***	
3. Investigates safety problems	1.84	0.87	1.64	0.79	2.62	0.91	2.87	1.09	2.53	1.00	***	
4. Rewards safe workers	1.93	0.97	1.83	0.83	2.44	0.98	2.63	1.18	2.49	0.96	***	
5. Provides safe equipment	1.86	0.97	1.70	0.74	2.78	0.91	3.26	0.99	3.03	1.05	***	
6. Provides safe working conditions	1.86	0.95	1.70	0.70	2.81	0.99	3.32	0.98	3.41	0.98	***	
7. Responds quickly to safety concerns	2.00	1.11	2.00	0.70	2.88	1.13	3.41	1.11	3.35	1.18	***	
8. Helps maintain clean area	2.00	1.06	1.78	0.88	2.69	1.20	3.61	1.11	3.42	1.31	***	

TABLE 2. (continued)

WSS	Dissatisfied Workers						Satisfied Workers					
	Not at All		Very Little		Neutral		Quite Much		Very Much		ANOVA	
	M	SD	M	SD	M	SD	M	SD	M	SD	p	
9. Provides safety information	2.00	1.21	2.08	0.89	3.00	0.98	3.84	1.11	3.58	1.29	***	
10. Keep workers informed of hazards	2.00	1.11	1.95	0.94	2.81	1.12	3.88	1.08	3.59	1.38	***	
E. Safety programmes (policies)	$F(4, 255) = 73.38, p < .0001$											
1. Worthwhile	2.21	1.17	2.08	0.86	3.16	0.81	4.08	0.88	4.21	1.09	***	
2. Helps prevent accidents	2.09	1.15	1.78	0.82	3.09	0.92	3.89	1.00	4.09	1.16	***	
3. Useful	1.84	1.26	1.67	0.91	2.91	0.99	4.08	1.04	4.23	1.19	***	
4. Good	1.84	1.32	1.54	0.93	2.93	1.16	4.10	1.13	4.18	1.15	***	
5. First-rate	1.89	1.29	1.70	0.93	2.68	1.06	3.76	1.04	4.17	1.00	***	
6. Unclear	2.32	1.19	3.21	1.29	2.50	0.84	2.96	1.20	2.27	1.21	***	
7. Important	1.95	1.21	1.76	0.79	2.96	1.03	3.74	1.10	3.90	1.15	***	
8. Effective in reducing injuries	2.03	1.28	1.56	0.69	2.84	1.22	3.88	1.06	4.07	1.02	***	
9. Do not apply to my workplace	2.06	1.26	1.82	1.02	2.41	1.05	2.64	1.33	2.84	1.37	ns	
10. Do not work	2.44	1.12	2.20	1.07	2.00	0.81	2.63	1.35	2.67	1.37	ns	

Notes. *** $p < .001$.

safety rules ($f(4, 303) = 44.35, p < .0001$), reward safe behaviours ($f(4, 303) = 50.40, p < .0001$), involve workers in setting safety goals ($f(4, 302) = 48.75, p < .0001$), discuss safety issues with others ($f(4, 303) = 59.32, p < .0001$), update safety rules ($f(4, 303) = 43.43, p < .0001$), train workers to be safe ($f(4, 303) = 56.98, p < .0001$), enforce safety rules ($f(4, 303) = 57.41, p < .0001$) and act on safety suggestions ($f(4, 303) = 57.48, p < .0001$).

Regarding "management safety practices", satisfied workers (particularly those who expressed *quite much* satisfaction), significantly perceived management's role and contributions as imperative to work safety ($f(4, 300) = 44.86, p < .0001$). They had taken note of how management frequently conducts safety inspections ($f(4, 302) = 14.22, p < .0001$), investigates safety problems ($f(4, 302) = 17.30, p < .0001$), rewards safe work ($f(4, 300) = 6.90, p < .0001$), provides safe equipment ($f(4, 301) = 31.65, p < .0001$), helps maintain clean area ($f(4, 301) = 32.42, p < .0001$), provides safety information ($f(4, 301) = 35.37, p < .0001$) and keeps workers informed on safety issues ($f(4, 301) = 38.81, p < .0001$). Similarly, their colleagues who expressed *very much* job satisfaction had observed how management provides enough safety programmes ($f(4, 302) = 17.69, p < .0001$), safe working conditions ($f(4, 301) = 41.37, p < .0001$)

and responds quickly to safety concerns ($f(4, 301) = 24.96, p < .0001$).

Regarding perceptions on the "safety programmes" subscale, again, it was the satisfied workers who had a positive and upbeat view. Satisfied workers (particularly those with *very much* job satisfaction) were significantly satisfied with the safety policies in place at the worksite ($f(4, 255) = 73.88, p < .0001$). They perceived the safety programmes to be *worthwhile* ($f(4, 301) = 62.82, p < .0001$), *useful* ($f(4, 300) = 71.49, p < .0001$), *good* ($f(4, 300) = 72.03, p < .0001$), *first rate* ($f(4, 300) = 61.27, p < .0001$), *important* ($f(4, 299) = 47.71, p < .0001$), *help prevent accidents* ($f(4, 300) = 56.96, p < .0001$) and, accordingly, *effective in reducing accidents* ($f(4, 297) = 59.64, p < .0001$). Not surprisingly, their dissatisfied counterparts (those with *very little* satisfaction) significantly found the safety programmes to be *unclear* ($f(4, 294) = 6.80, p < .0001$). There were no differences in statistical significance on *do not apply to my workplace* ($f(4, 273) = 5.11, ns$) and *do not work* ($f(4, 267) = 2.22, ns$).

Interesting observations concerning workers' compliance with safety management policies and accident frequency were made.

3.2. Hypothesis 2

Differences regarding compliance with safety management policies were of statistical significance ($f(4, 296) = 60.00, p < .0001$). Satisfied workers (workers who indicated *very much* and closely followed by *quite much*) were more committed to safe work behaviours than their dissatisfied counterparts. As reflected in Table 3, dissatisfied workers were the least committed to safe work practices. Workers with *no* satisfaction *at all* were the worse culprits, closely followed by their colleagues who had indicated *very little* job satisfaction. This observation had been anticipated.

4. DISCUSSION

The major focus of this study was an analysis of a link between job satisfaction and safety perception. It was hypothesised that job satisfaction would affect workers' perception of safety with subsequent implications for their work behaviours and accident involvement. The major finding was an association between job satisfaction and safety perception. As predicted, workers who expressed higher levels of job satisfaction also had positive perspectives on safety climate. In contrast, dissatisfied workers had negative perspectives. In effect, workers' perceptions of workplace safety seem to reflect the extent to which they perceive their organisations as being supportive and committed to their well-being and

TABLE 3. Descriptive Statistics on Safe Work Behaviour, Accident Involvement Rate and Job Satisfaction

Variable	Dissatisfied Workers						Satisfied Workers				ANOVA <i>p</i>
	<i>Not at All</i>		<i>Very Little</i>		<i>Neutral</i>		<i>Quite Much</i>		<i>Very Much</i>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Safe work behaviours	11.16	5.33	12.13	4.25	15.47	4.07	19.13	3.29	20.65	4.31	***
Accident involvement rate	2.94	1.04	2.86	0.76	1.94	0.76	1.24	0.60	1.29	0.89	***

Notes. *** $p < .001$.

3.3. Hypothesis 3

A difference of high statistical significance in favour of satisfied workers was again indicated on accident frequency ($f(4, 295) = 64.83, p < .0001$). As anticipated, satisfied workers (*quite much* followed by *very much*) recorded lower accident rates. In contrast, dissatisfied workers (those without *any* job satisfaction *at all* followed by those with *very little* satisfaction) recorded higher accident rates. All in all, workers who expressed job satisfaction had a positive perception of safety climate, they were more committed to safe work practices and consequently had a relatively lower rate of accident involvement. In contrast, their dissatisfied work colleagues, who had negative perspectives regarding safety climate, were less committed to the organisations, safety procedures and registered a higher rate of accident involvement.

satisfaction. This observation reinforces previous findings on job satisfaction as a context-related phenomenon influenced by a variety of contextual factors [Hart et al., as cited in 4, 9, 23], in this case safety climate, which is a subset of organisational climate. Apparently, job satisfaction does not happen in a vacuum: workers who are satisfied or dissatisfied in their workplaces are either motivated or discouraged by the prevailing organisational climate.

As anticipated and consistent with previous findings, satisfied workers were more compliant with safety management policies and subsequently registered relatively lower rates of accident involvement than their dissatisfied work counterparts [16, 36, 37, 51]. This observation is consistent with suggestions that employee's perceptions of safety influence their compliance with safety-related practices [44, 52]. Ostensibly, this was an avenue for satisfied workers to

reciprocate the implied obligation resulting from their positive perceptions of management's concern for their well-being. The current observation thus further reinforces the social exchange theory and the norms of reciprocity as bases of workers' safety-related behaviours [40, 53].

4.1 Implication of the Findings in the Work Environment

A significant practical implication of the current study for workplace safety personnel and management is that interventions aimed at demonstrating organisational support and concern for workers' well-being and satisfaction will not only add to organisational efficiency and productivity, but will also decrease accident frequency and thereby reduce the high human and social costs associated with industrial accidents. The organisational literature on job satisfaction is full of organisational structures that positively impact on workers' degree of job satisfaction: providing support and showing commitment to workers beyond what is formally stated in contractual agreements [44, 54], implementing fairness perception measures [34], instituting job enrichment programmes [36, 37] and providing the means for workers to acquire safety skills [35, 55, 56].

4.2 Limitations

The need for the participants to recall industrial mishaps was the major limitation of this research. Retrospective accident analysis always entails the risk of memory error. However, as the studied accidents had occurred less than a year before the interview, it is assumed that recall distortion was minimised. Prospective examinations of accident processes could be viable alternatives to such retrospective studies. The use of self-reported measures was another limitation. Responses are likely to be affected by intentional distortions and misinformation, particularly regarding those on noncompliant job behaviours and counterproductive behaviours. To counter this threat, participants were promised anonymity and confidentiality. Besides, they were guaranteed that

no member of their organisations was involved in the study in any way.

Self-reported measures have been commonly and successfully used in safety analyses [4, 20], and organisational behaviour studies [57, 58]. While epidemiologic reports have been found to be faulty, biased and deficient because of poor documentation [59, 60], research reports have found self-reported accident rates to be closely related to documented accident rates [Smith et al., as cited in 23]. Even though emphasis in this study was laid on the role of situational (workplace) factors in job satisfaction, it must also be stated that dispositional factors and workers' affect still play a part in determining the level of workers' job satisfaction [61, 62].

REFERENCES

1. Guldenmund FW. The nature of safety culture: a review of theory and research. *Saf Sci* 2000;34:215–57.
2. James L, McIntyre D. Perceptions of organizational climate: In: Murphy K, editor. *Individual differences and behaviour in organisations*. San Francisco, CA, USA: Jossey-Bass; 1996. p. 40–84.
3. Flin R, Mearns K, O'Connor P, Bryden, R. Measuring safety climate: identifying the common features. *Saf Sci* 2000;34:177–92.
4. Neal A, Griffin MA, Hart P. The impact of organisational climate on safety climate and individual behaviour. *Saf Sci* 2000;34:99–109.
5. Silva S, Lima LM, Baptista C. OSCI: an organisational and safety climate inventory. *Saf Sci* 2004;42:205–20.
6. Cooper MD, Phillips RA. Exploratory analysis of the safety climate and safety behaviour. *J Saf Res* 2003;35:497–512.
7. Griffin M, Mathieu J. Modelling organisational process across hierarchical levels: climate, leadership, and group process in work groups. *J Organ Beh* 1997;18:731–44.
8. Griffin M, Neal A. Perceptions of safety at work: a framework for linking safety climate to safety performance, knowledge, and motivation. *J Occup Health Psychol* 2000;5:347–58.

9. Michela J, Lukazewski M, Allegrante P. Organizational climate and work stress: a general framework applied to inner-city schoolteachers. In: Sauter S, Murphy S, editors. *Organisational risk factors for job stress*. Washington, DC, USA: American Psychological Association; 1995. p. 61–80.
10. Brown SP, Leigh TW. A new look at psychological climate and its relationship to job involvement, effort, and performance. *J Appl Psychol* 1996;81:358–68.
11. Morrison DL, Upton DM, Cordery J. Trust and skill utilisation as mediators of job characteristics: a three year case study. In: Koubek R, Karwowski W, editors. *Manufacturing agility and hybrid automation*. Santa Monica CA, USA: IEA Press; 1998. p. 170–176.
12. Zohar D. Safety climate in industrial organization: theoretical and applied implications. *J Appl Psychol* 1980;65:96–102.
13. Zohar D. A group-level model of safety climate: testing the effect of group climate on micro accidents in manufacturing jobs. *J Appl Psychol* 2000;85(4):587–59.
14. Hofmann D, Stetzer A. A cross-level investigation of factors influencing unsafe behaviours and accidents. *Pers Psychol* 1996;49:307–39.
15. Salminen S. Does pressure from the work community increase risk taking? *Psychol Rep* 1995;77:1247–50.
16. Probst T. Layoffs and tradeoffs: production, quality, and safety demands under the threat of a job loss. *J Occup Health Psychol* 2002;7:211–20.
17. Probst T, Brubaker T. The effects of job insecurity on employee safety outcomes: cross-sectional and longitudinal explorations. *J Occup Health Psychol* 2001;6:39–159.
18. Guastello S, Gershon R, Murphy L. Catastrophe model for the exposure of blood-borne pathogens and other accidents in health care settings. *Acc Ana Pre* 1999;31:739–50.
19. Murray M, Fitzpatrick D, O'Connell C. Fishermen's blue: factors related to accidents and safety among Newfoundland fishermen. *Wk Str* 1997;11:292–7.
20. Siu Oi-ling, Phillips D, Leuhg T. Safety climate and safety performance among construction workers in Hong Kong: the role of psychological strains as mediators. *Accid Ana Prev* 2004;36(3):359–66.
21. Harrell WA. Perceived risk of occupational injury: control over pace of work and blue collar work. *Percep Mot Skills* 1990;70:1351–8.
22. Smith CS, Silverman, GS, Heckert TM, Brodke M, Hayes B, Silverman MK, et al. A comprehensive method for the assessment of industrial injury events. *Journal of Prevention & Intervention in the Community* 2001;22(1):5–20.
23. Locke E. What is job satisfaction? *Organ Beh Hum Perf* 1969;3:309–36.
24. Locke E. The nature and causes of job satisfaction. In: Dunnette MD, editor. *Handbook of industrial and organisational psychology*. Chicago, IL, USA: Rand McNally; 1976. p. 1297–349.
25. Brief A, Weiss H. Organizational behaviour: affect in the workplace. *Ann Rev Psychol* 2002;53:279–307.
26. Dormann C, Zapf D. Job satisfaction: a meta-analysis of stabilities. *J Organ Beh* 2001;22:483–504.
27. Judge T, Bono J, Locke E. Personality and job satisfaction: the mediating role of job characteristics. *J Appl Psychol* 2000;85:17–34.
28. Rhoades L, Eisenberger R. Perceived organisational support. A review of the literature. *J Appl Psychol* 2002;87:698–714.
29. Shore L, Shore T. Perceived organisational support and organisational justice. In: Cropanzano R, Kacmar K, editors. *Organisational politics, justice, and support*. Westport, CT, USA: Quorum Books; 1995. p. 149–64.
30. Setton RP, Bennett N, Liden RC. Social exchange in organisations: perceived organisational support, leader-member exchange and employee reciprocity. *J Appl Psychol* 1996;81:219–27.
31. Moorman RH. Relationship between organisational justice and organisational citizenship behaviours: do fairness perceptions influence employee citizenship

- behaviours? *J Appl Psychol* 1991;76:845–55.
32. Podsakoff P, Mackenzie SB, Paine J, Bachrach D. OCB: a critical review of the theoretical and empirical literature and suggestions for future research. *J Manag* 2000;26(3):513–63.
33. Williams L, Anderson S. Job satisfaction and organisational commitment as predictors of organisational citizenship and in-role behaviours. *J Manag* 1991;17:601–17.
34. Simons T, Robertson Q. Why managers should care about fairness: the effect of aggregate justice perception on organisational outcomes. *J Appl Psychol* 2003;88(3):432–43.
35. Baring J, Kelloway KE, Iverson R. High quality work, job satisfaction, and occupational injuries. *J Appl Psychol* 2003;88(2):276–83.
36. Berg P. The effects of high performance work practices on job satisfaction in the United States steel industry. *Ind Relat* 1999;54:111–34.
37. Godard J. High performance and the transformation of work: the implications of alternative work practices for the future of Canadian IR research. *Ind Relat* 2001;56:3–33.
38. Blau P. Exchange and power in social life. New York, NY, USA: Wiley; 1964.
39. Gouldner AW. The norm of reciprocity. *Am Socio Rev* 1960;25:161–78.
40. Hofmann DA, Morgeson FP, Gerrass SJ. Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: safety climate as an exemplar. *J Appl Psychol* 2003;88(1):170–8.
41. Kelley SW, Hoffman KD. An investigation of positive affect, prosocial behaviours and service quality. *J Retail* 1997;73(3):407–27.
42. Grusec JE. The socialization of altruism. In: Clark MS, editor. *Prosocial behaviour*. Newbury Park: CA, USA: Sage; 1991. p. 9–33.
43. Van Maanen M, Schein EH. Towards a theory of organizational socialization. In: Staw BM, editor. *Research in organizational behaviour*. Greenwich, CT, USA: JAI Press; 1979, p. 209–64.
44. Aryee S, Budhwar P, Chen Z. Trust as a mediator of the relationship between organizational justice and work outcomes: test of a social exchange model. *J Organ Beh* 2002;23:267–85.
45. Hayes B, Perander J, Smecko T, Trask J. Measuring perceptions of workplace safety: development and validation of the work safety scale. *J Saf Res* 1998;29(3):145–61.
46. Porter L, Lawler E III. *Managerial attitudes and performance*. Homewood, IL, USA: Irwin-Dorsey; 1968.
47. Baba V, Jamal M. Routinization of job context and job content as related to employees' quality of working life: a study of Canadian nurses. *J Organ Beh* 1991;12:379–86.
48. Harter J, Hayes T, Schmidt F. Business-unit level relationship between employee satisfaction, employee engagement, and business outcomes. A meta-analysis. *J Appl Psychol* 2002;87:268–79.
49. Milczarek M, Najmiec A. The relationship between workers' safety culture and accidents, near accidents and health problem. *International Journal of Occupational Safety and Ergonomics (JOSE)* 2004;10(1):25–33.
50. Wanous P, Reichers A, Hody M. Overall job satisfaction. How good are single-item measures? *J Appl Psychol* 1997;82:147–252.
51. O'Toole M. The relationship between employees' perception of safety and organisational culture. *J Saf Res* 2002; 33(2):231–43.
52. Bailey C. Managerial factors related to safety program effectiveness: an update on the Minnesota perception study. *Prof Saf* 1997;8:33–5.
53. Hofmann D, Morgeson F. Safety-related behaviour as a social exchange: the role of perceived organizational support and leader-member exchange. *J Appl Psychol* 1999;84(2):286–96.
54. Eisenberger R, Armeli S, Rexwinkel B, Lynch P, Rhodes L. Reciprocation of perceived organisational support. *J Appl Psychol* 2001;86:42–51.
55. Biridi K, Allan C, Warr P. Correlates and perceived outcomes of four types of

- employee development activity. *J Appl Psychol* 1997;82:845–57.
56. Trevor C. Interactions among ease-of-movement determinants and job satisfaction in the prediction of voluntary turnover. *Acad Manag J* 2001;44:621–38.
57. Bell SJ, Menguc B. The employee-organization relationship, organizational citizenship behaviours and superior service quality. *J Ret* 2002;78(2):131–46.
58. Turnipseed DL. Are good soldiers good? Exploring the link between organization citizenship behaviour and personal ethics. *J Bus Res* 2002;55(1):1–15.
59. Parker D, Carl W, French L, Martin F. Characteristics of adolescent work injuries reported in Minnesota Department of Labour and Industry. *Am J Pub Health* 1994;84:606–11.
60. Veazie K, Landen D, Bender T, Amandus H. Epidemiological research on the etiology of injuries at work. *Ann Rev Pub Health* 1994;15:203–21.
61. George M, Brief P. Feeling good, doing good: a conceptual analysis of mood at work organisational spontaneity relationship. *Psychol Bull* 1994;112:310–29.
62. Watson D. Mood and temperament. New York, NY, USA: Guilford Press; 2000.