

## Making Sense of Industrial Accidents: The Role of Job Satisfaction

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**Abstract:** The study examined causality attributions made for workplace accidents and how these attributions may be influenced by job satisfaction. It was part of an extensive exploratory work on causal attributions for industrial accidents in Ghana's work environment. It was carried out in a field setting where the participants were actual accident victims (n=121), co-workers (n=117) and supervisors (n=82) at their various workplaces. The results indicated an association between job satisfaction and causality attributions for the accident occurrence. Dissatisfied workers, more than their satisfied colleagues, tend to employ more external attributions in their causal analyses for accident occurrences. This confirmed postulations from job models in which dissatisfied workers have a propensity to attribute to workplace and environmental factors as agents of their dissatisfaction. The findings thus have implications for safety management policies.

**Key words:** Industrial accidents, job satisfaction, safety management, attribution theory

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### INTRODUCTION

Attribution theory basically suggests that people generally make causal attributions for their own and other peoples' behaviour to facilitate understanding and to shape future behaviour. They do this by assessing the co-variation between the cause and effect variables<sup>[1,2]</sup>. The importance of causal attributions in both the social psychology and accident literature is well documented. In the social psychology literature, the attribution model is considered as one of the most appropriate analytical tools for exploratory and descriptive studies<sup>[3,4]</sup> and has been employed extensively in work environment studies<sup>[5-9]</sup>. For example, workplace attributional analyses have been used to predict behaviour in hazardous work environments<sup>[10]</sup> and have served as explanatory frameworks for management's decisions to reprimand and or terminate employees<sup>[11-13]</sup>. Besides, they have provided models for the analysis of behaviour in the face of danger<sup>[14]</sup>, and for ergonomic perceptions of workplace accidents<sup>[15]</sup>. Attributional analyses have provided a useful framework for the clarification and exposition of the causes of industrial accidents and has been regarded as the backbone of safety management policies<sup>[10,16]</sup>.

**Job Satisfaction in the Organizational Literature:** Empirical research on industrial accidents in the past

three decades has demonstrated that accident causality is attributed to two major causes: internal (*dispositional characteristics of the worker*) and external causal factors (*characteristics of the work environment*)<sup>[17]</sup>. Models of industrial accident process have included such variables as workers' social work environment, organizational climate, behaviour at work and personality variables as contributory factors in the accident process. One very important organizational variable which has impacted enormously on work life and therefore receives considerable attention in the literature is job satisfaction<sup>[18-20]</sup>. Locke<sup>[21]</sup> 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). It is consequently often considered as an affective reaction to one's job and an indicator of working conditions<sup>[18,23]</sup>. Measurement of job satisfaction has been done with a simple single-item scale<sup>[19]</sup>, or multi-item scales<sup>[24]</sup>.

Recent theorizing on job satisfaction, as noted above, describes it as a multifaceted construct and a function of two major factors: worker personality traits, and workplace factors<sup>[18,25]</sup>. Implicit in these definitions is the importance of both internal and external factors as determinants of job satisfaction. The role of these

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two factors as determinants of job satisfaction has been examined rather extensively<sup>[24,26,27]</sup>. While some of studies have shown job satisfaction to be related more to various personality traits with a dispositional source<sup>[24,27,28]</sup>, other reports have shown job satisfaction to be related more to situational factors<sup>[26,29]</sup>. The suggestion has thus been made in the literature that it is by integrating these two perspectives that the impact of job satisfaction on organizational behaviour can be accurately assessed<sup>[30,31]</sup>.

Relevant research data has demonstrated the importance of job satisfaction in organizations, especially in terms of efficiency, productivity, employee relations, absenteeism and turnover. Workers who perform at high levels in their jobs, have more commitment to their organizations, have job security and are satisfied with their income, have reported higher levels of job satisfaction<sup>[32]</sup>. In contrast to their dissatisfied colleagues, they have displayed a relatively lower rate of absenteeism<sup>[20,22]</sup> and voluntary turnover<sup>[33]</sup>. They have actively participated in extra-role organizational activities such as organizational citizenship behaviours<sup>[34-37]</sup> and less in counterproductive organizational behaviours<sup>[38,39]</sup>. They have complied with safety management policies<sup>[19,40]</sup> and subsequently registered relatively lower accident involvement rates than their dissatisfied colleagues<sup>[19,41-43]</sup>. Credence to these observations comes from recent empirical studies by Barling *et al.*<sup>[44]</sup> in which the mediating role of job satisfaction on occupational injuries was established. After controlling for job satisfaction, their results supported a significant effect of job quality on occupational injuries.

Despite the extensive attention given to both causal attributions and job satisfaction in the organizational literature, there is no evidence on the empirical relationship between these two important organizational variables, even though existing theoretical evidence suggests some form of link. The current study was designed to address this paucity. It investigates causal attributions made for workplace accidents and how these attributions were influenced by job satisfaction. Specifically, it examines the link between the attribution process on industrial accidents and job satisfaction.

**Hypotheses:** Due to the exploratory nature of the study and the absence of ample evidence that bears directly on the relationship between causal attributions and job satisfaction, this relation is tested but no formal hypothesis is offered regarding its direction.

## METHODS

**Participants:** The current study is part of a larger explorative study that examined causal and responsibility attributions for accident occurrence in Ghana's work environment<sup>[6]</sup>. The participants were actual victims, co-workers and supervisors who attributed causality to accidents in which they had been involved or witnessed. They comprised 320 Ghanaian industrial workers from mines and factories: 121 accident victims, 117 co-workers and 82 supervisors. Their average ages were as follows: accident victims 37 years (std = 9.71), co-workers 35 years (std = 8.22) and supervisors 44 years (std = 6.80). All accident victims and supervisors were men, 14% of the co-workers were women. In terms of organizational tenure, 13% of the respondents had been at the workplace for less than a year, 22% for 1 - 4 years, 21% for 5 - 10 years, 25% for 11 - 14 years and 19% over 15 years.

A structured questionnaire with both close- and open-ended questions was used to examine their causal explanations for the accident process. The questionnaire was presented in English and the interviews lasted between 15-20 minutes. Respondents who were illiterate or semi-illiterate and had problems understanding English were provided with the services of an interpreter and the local dialect was used. The educational level of the supervisors was sufficient to enable them fill out the questionnaire on their own. To elicit a fair recall of the accident process, industrial workers who had been involved in or witnessed accidents within the year or the previous year were selected as respondents. To ensure the accident severity dimension that is crucial in self-defensive attributions<sup>[45-47]</sup>, all reported cases were classified as serious by the Inspectorates of Factories and Mines. Temporary injuries in which the victims were absent from work for less than three days were thus excluded from the data. To ensure anonymity and confidentiality, it was emphasised that the study was for an academic purpose and that no person affiliated with the organizations was involved in any way.

### **Measures, Questionnaire scoring and reliability:**

**Causal attributions:** The participants responded to a standardized questionnaire with 30 questions that employed a 5-point response format (1=Very little to 5=Very much). These items were causal explanations generated for the accident occurrence and classified as factors reflecting the internal factors of the accident victims, or those of the situational and environmental factors. In effect, all attributions for the accident

causality were coded as being either internal or external. Sample items on the Internal Causal Scale were: Misconduct, failure to use the proper tools, equipment; unsafe risky working habits; inexperience, mistaken priorities; ignorance, lack of awareness of hazards. Sample items on the External Causal Scale were: Wages; time and trouble saving; work overload; unsafe and defective equipment; and inadequate training and supervision. The internal coherence and reliability for the External and Internal Causal Scales was tested with Cronbach's alpha coefficient. Acceptable coefficients of .89 and .79 were obtained for the External and Internal causal factors respectively, indicating high inter-item consistency.

**Job satisfaction:** Job satisfaction was measured with Porter and Lawler's<sup>[48]</sup> one-item global measure of job satisfaction. This scale was chosen because single-item measures of overall job satisfaction are considered to be more robust than scale measures<sup>[49]</sup>. Besides, they have been used extensively in the organizational behaviour literature<sup>[18,19]</sup>. The measure has five response categories ranging from "extremely dissatisfied" to "extremely satisfied", corresponding to the 5-point response format (1=Very little to 5=Very much). The scores were coded so that higher scores reflected higher levels of job satisfaction (positive) and lower scores, lower levels of job satisfaction (negative). The score of 3 on the scale indicated neutral responses.

**Data analysis:** Scores for the 30 questions were computed to result in total scores for external and internal causes for each participant. This procedure resulted in responses to each item being placed into one of the five categories. As a result, each individual had item by item scores as well as the two total scores. To assess the impact of job satisfaction, the mean scores were computed and subjected to a one-way analysis of variance (ANOVA). This was followed by item-by-item analyses for all three subgroups of workers.

**RESULTS**

The correlations between external and internal attributions and job satisfaction are presented in Table 1. The highest correlation was found between job satisfaction and external attributions of supervisors. As indicated, satisfied supervisors made more external attributions. A negative association between internal attributions and job satisfaction was indicated by co-workers: satisfied co-workers used less internal attributions to explain the accident process.

Table 1: Correlations between external and internal attributions and job satisfaction

Victims (n = 121)	M	Std	1	2	3
External Attributions	49.88	7.62			
Internal Attributions	34.01	5.99	.19		
Job Satisfaction	1.17	0.82	.03	-.12	
<b>Co-workers (n = 117)</b>					
External Attributions	47.03	6.57			
Internal Attributions	36.87	7.45	-.27*		
Job Satisfaction	0.97	0.70	-.10	-.05	
<b>Supervisors (n = 82)</b>					
External Attributions	38.35	6.39			
Internal Attributions	47.81	9.52	-.06		
Job Satisfaction	1.41	0.57	.32**	-.05	

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

Descriptive statistics on the causal analyses for the three subgroups of workers indicate that the subordinate workers (victims and co-workers) attributed more to external causal factors and less to internal factors. Dissatisfied workers employed more external causal attributions and less of internal causal attributions for explaining the accident process. Meanwhile, the supervisors attributed more to internal and less to external causal factors. According to the ANOVA results, the impact of job satisfaction effected more on the external causal factors than on internal factors, as it was consistently related to external attributions for both accident victims ( $F(2,78)=15.74, p<0.001$ ) and supervisors ( $F(1,62)=4.94, p<0.05$ ). The follow-up analyses on item-by-item basis indicated the following:

**Accident victims:** Seven causality factors indicated differences of statistical significance. Of these, 6 were external and 1 internal. Dissatisfied workers significantly attributed to the following external causal factors as causal factors for the accident occurrence: *low wages* ( $F(2,118)=35.63, p<0.001$ ), *lack of right protective gear* ( $F(2,118)=10.52, p<0.001$ ), *work overload* ( $F(2,117)=1.15, p<0.05$ ), *operational procedures* ( $F(2, 118)=5.39, p<0.05$ ), and *curses / spells/ witchcraft* ( $F(2,93)=5.02, p<0.05$ ). Accident victims who were neither satisfied nor dissatisfied with work conditions attributed more to *defective equipment* ( $F(2, 112)=18.36, p<0.001$ ). Interestingly, victims who expressed job satisfaction made the only internal attributions: *mood, just had a bad day* ( $F(2, 118)=6.99, p<0.05$ ).

**Co-workers:** Nine causality factors showed differences of statistical significance. Six of these were external and 3, internal. The attributional pattern was identical with those of the accident victims. Dissatisfied co-workers attributed more to external causal factors: *low wages* ( $F(2,111)=16.09, p<0.001$ ), *time and trouble saving* ( $F(2,111)=6.13, p<0.05$ ), *mechanical failure* ( $F(2, 111)=7.43, p<0.05$ ), *operational procedures* ( $F(2,$

111)=5.72,  $p < 0.05$ ), *poor housekeeping* ( $F(2, 111)=3.75, p < 0.05$ ), *lack of protective gear* ( $F(2, 111)=8.76, p < 0.001$ ) and *loss of concentration* ( $F(2, 111)=3.20, p < 0.05$ ). Satisfied co-workers attributed to internal causal factors: *victims' inexperience* ( $F(2, 111)=3.30, p < 0.05$ ) and *carelessness* ( $F(2, 111)=3.91, p < 0.05$ ).

**Supervisors:** Six causality factors showed differences of statistical significance. Three of these were external and the other 3, internal. As all the supervisors expressed contentment and satisfaction with job conditions, there were no causal attributions from dissatisfied supervisors. Interestingly, a pattern closely similar to their subordinate counterparts was revealed: supervisors who were a *little satisfied* attributed more to external causal factors: *low wages* ( $F(1, 80)=32.63, p < 0.001$ ), *work overload* ( $F(1, 80)=10.15, p < 0.05$ ), *pressure from the management* ( $F(1, 80)=13.80, p < 0.05$ ), and *tiredness / fatigue and reduces alertness* ( $F(1, 80)=24.47, p < 0.001$ ). Meanwhile their *very satisfied* counterparts attributed more to internal causal factors: *lack of adequate comprehension and ability* ( $F(1, 80)=3.96, p < 0.05$ ) and *victims' inexperience* ( $F(1, 80)=7.06, p < 0.05$ ). All in all, dissatisfied employees attributed accident causality more to workplace factors and less to internal factors.

## DISCUSSION

The study sought to explore the influence of job satisfaction on causal attributions for industrial accidents. Job dissatisfaction seemed to be linked to the external causal factors responsible for the accident occurrence. It was noted that workers (particularly, accident victims and co-workers) who expressed higher levels of job dissatisfaction significantly attributed accident causality more to work environment factors than to their personal characteristics. This high statistical significance level of external attributions might reflect a causal link between job dissatisfaction, work environment factors and causal attributions. It appears from this study that low wages (the common denominator for all three subgroups), high demands in terms of work overload, lack of right protective gear, operational procedures, in conjunction with feelings of inadequate control at work, may be contributory factors for high the levels of job dissatisfaction and accident involvement. Apparently, job dissatisfaction seems to be predicated by an organizational situation that provides low wages, work overload, poor housekeeping and unproductive operational procedures<sup>[50,51]</sup>.

Plausible explanations for the current observation could be gleaned from the organizational literature on job satisfaction, self-esteem<sup>[24,52]</sup> and The Self-Consistency Theory<sup>[53]</sup>. Researchers have found a strong relationship between job satisfaction and self-esteem. Dissatisfied workers tend to have lower self-esteem and have displayed more negative work-related attitudes and behaviours. For example, they have displayed weaker sense of self-efficacy, external locus of control and avoided personal responsibility for their failures by externalising their causal attributions. Given that people tend to preserve their self-views by thinking and behaving in ways that perpetuate their self-concept (Self-consistency Theory), the dissatisfied workers' highly significant attributions to external causal factors could reflect this denial, avoidance and disengagement that people with lower self-esteem tend to display. In contrast, satisfied workers have been empirically identified with higher self-esteem and positive work-related attitudes<sup>[25,54]</sup>. They are reported to be more self-confident, efficacious, have internal locus of control and ready to assume personal responsibility for their failures. Hence, their greater attributions to internal causality factors and less to external causality factors.

Compared with their subordinates, the causal attributions of the supervisors were relatively more internal, which might indicate some self-serving or -defensive ambitions. The link between self-esteem protection and defensive attributions<sup>[55]</sup> gives rise to this possibility. Such motivational attributions are rather common in workplace accident analyses, where causal attributions are often distorted to minimize the attributers' role and responsibility in the accident process for ego-protection purposes<sup>[6,7,56]</sup>. This observation is evidenced by the way in which supervisors highlighted worker personal and dispositional factors while discounting the impact of organizational and environmental factors, and how subordinate workers accentuated the impact of environmental factors while downplaying dispositional causal factors in the accident process.

The current observation in which work environment factors, more than personal factors, tend to influence job dissatisfaction is consistent with earlier studies. It supports Adler's<sup>[29]</sup> findings in which high job satisfaction was found to associate closely with making internal attributions for work success and job dissatisfaction for external stable attributions for work failure. More importantly, it corroborates the well-documented views of Gerhart<sup>[26]</sup>, Locke<sup>[52]</sup> and Schneider and Locke<sup>[57]</sup> where employees have

considered workplace factors to be primarily responsible for their job dissatisfaction. Additionally, it provides further validity for Hackman and Oldham's<sup>[58,59]</sup> models of job design and to Bogg and Cooper's<sup>[60]</sup> meta-analytical examination in which organizational climate was found to have a dominating impact on levels of job dissatisfaction.

The current findings reinforce the observation that the degree of an employee's job satisfaction derives more from meaningful organizational values, norms, beliefs, practices and procedures operational at the workplace. They are particularly revealing and supportive of recent findings that have demonstrated a clear link between job satisfaction and organizational climate<sup>[19,61]</sup>. In his recent explorative study between job satisfaction and organizational safety climate, Gyekye<sup>[19]</sup> observed that dissatisfied workers, in contrast to their satisfied counterparts, expressed negative perceptions regarding organizational safety climate (a subset of organizational climate), were less compliant with safety management policies and had a relatively higher accident involvement rate.

#### **Implications of the Findings for Safety Management Policies:**

The current findings have implications for safety management policies. Interventions to reduce workplace accidents should take into consideration employees' job expectations and endeavour to increase their satisfaction with work. As job satisfaction has both affective and cognitive components<sup>[62]</sup>, intervention programmes designed to increase employee job satisfaction should be focused at both dispositional and situational factors, but with more emphasis on rectifying the hazards and inconveniences in the work environment. Management could proactively and visibly demonstrate commitment and concern by providing support to workers beyond what is formally stated in the contractual agreement<sup>[63-66]</sup>, instituting job enrichment programmes,<sup>[41,42]</sup> safety-skills acquisition, and job enrichment programmes<sup>[44]</sup>. Additionally, they could provide incentives and bonuses to boost workers' income. This will increase workers' perception on managements' concern for their well-being<sup>[67,68]</sup>.

**Limitations:** The research is limited in two ways: first is the reliance on self-reported instruments. The possibility thus exists for the findings to be distorted by participants' desire to respond in a consistent manner. However, recent meta-analytic research by Crampton and Wagner<sup>[69]</sup> indicates that while this problem continues to be cited regularly, the magnitude of distortions may be overestimated. Self-reported

measures have been effectively used in accident and safety analyses<sup>[6,19,61]</sup>. Besides, while epidemiologic reports have been found to be faulty, biased and deficient because of poor documentation<sup>[70,71]</sup>, self-reported accident rates have been found to be closely related to documented accident rates<sup>[72]</sup>. The second limitation relates to the sample. Due to the high percentage of men in hazardous occupations, the current sample is predominantly male. This might limit the extension of the findings to women. However, this threat is minimal as men and women have been noted to display the same pattern of causal explanations and attributions<sup>[73]</sup>. Despite these limitations, the current research provides additional insight into the important role that workplace factors have on job satisfaction, accident occurrence and safety management policies. It adds to the literature on the importance of job satisfaction in predicting occupational safety.

#### **REFERENCES**

1. Heider, F., 1958. *The Psychology of Interpersonal Relations*. New York: Wiley.
2. Kelley, H., 1973. The process of causal attribution. *Am. Psychologist*, 28: 107-128.
3. Weiner, B., 1996. *Judgement of Responsibility: A Foundation For a Theory of Social Conduct*. New York: Guilford.
4. Wong, M., 2000. The relations among causality orientations, academic experience, academic performance and academic commitment. *Person. Soc. Psychol. Bull.*, 3: 315-326.
5. Green, G. and R. Mitchell, 1979. Attributional processes of leaders in leader-member interactions. *Organ. Behav. and Human Perform.*, 23: 429-458.
6. Gyekye, A.S., 2001. The self defensive attribution revisited: A culture comparative analysis between Finland and Ghana in the work environment. Helsinki, Yliopistopaino.
7. Gyekye, A.S. and S. Salminen, 2004. Causal attributions of Ghanaian industrial workers for accident occurrence. *J. Appl. Soc. Psychol.*, 34: 2324-2342.
8. Martinko, M.J., 1995. The Nature and Function of Attribution Theory within Organizational Sciences. In M. J. Martinko (Ed.), *Attribution Theory: An Organisational Perspective*. Delray Beach, FL: St. Lucie Press.
9. Weiner, B. and K. Allred, 1998. Effects of causal attributions on personnel decisions: A social motivation perspective. *Basic and Appl. Soc. Psychol.*, 20: 155-166.

10. DeJoy, D.M., 1994. Managing safety in the workplace: An attributional theory analysis and model. *J. Saf. Res.*, 25: 3-17.
11. Ashkanasy, N.M., 1995. Supervisory Attributions and Evaluative Judgements of Subordinate Performance: A Further Test of the Green and Mitchell Model. In M.J. Martinko (Ed.), *Attribution Theory: An Organisational Perspective*, pp: 3-6. Delray Beach, FL: St Lucie Press.
12. Mitchell, T. and R. Wood, 1980. Supervisors' responses to subordinate poor performance: A test of an attribution model. *Organ. Behav. and Human Perform.*, 25: 123-138.
13. Struthers, W. N., Colwill, L. and Perry, P. R. 1992. An attributional analysis of decision making in a personnel selection interview. *J. Appl. Soc. Psychol.*, 22: 801-818.
14. Hale, A.R. and A.I. Glendon, 1987. *Individual Behaviour in the Control of Danger*. Elsevier Industrial Safety Series, Vol. 2, Amsterdam, The Netherlands.
15. Woodcock, K., 1991. Factors Affecting the Classes of Causal Explanations by Industrial Safety Specialists. In B. Das and W. Karwowski (Eds.), *Advances in Industrial Ergonomics and Safety*, pp: 69-72. Amsterdam: IOS Press/Omaha.
16. Hofmann, D. and A. Stetzer, 1996. A cross-level investigation of factors influencing unsafe behaviours and accidents. *Person. Psychol.*, 49: 307-339.
17. Sherry, P., 1991. Person environment fit and accident prediction. *J. Business and Psychol.*, 5: 411-416.
18. Dormann, C. and D. Zapf, 2001. Job satisfaction: A meta-analysis of stabilities. *J. Organ. Behav.*, 22: 483-504.
19. Gyekye, A.S., 2005. Workers-perceptions of workplace safety and job satisfaction. *Intl. J. Occup. Safety and Ergonomics*, 11: 289-300.
20. Hardy, G., D. Woods and D.R. Wall, 2003. The impact of psychological distress on absence from work. *J. Appl. Psychol.*, 88: 306-311.
21. Locke, E., 1976. The Nature and Causes of Job Satisfaction. In M.D. Dunnette (Ed.), *Handbook of Industrial and Organisational Psychology*. Chicago: Rand McNally.
22. Vroom, V., 1964. *Work and Motivation*. New York: Wiley.
23. Lund, B., 2003. Organisational culture and job satisfaction. *J. Business and Indust. Market.*, 18: 219-227.
24. Judge, T., A. Reez, J. E. Bono, and C. Thoresen, 2003. The core self-evaluations scale: Development of a measure. *Person. Psychol.*, 56: 303-309.
25. Judge, T., J. E. Bono, and E. Locke, 2000. Personality and job satisfaction: The mediating role of job characteristics. *J. Appl. Psychol.*, 85: 17-34.
26. Gerhart, B., 1987. How important are dispositional factors as determinants of job satisfaction? Implications for job design and other personnel programs. *J. Appl. Psychol.*, 72: 366-373.
27. Judge, T.A., 1992. The dispositional perspective in human resources research. *Research in Personal and Human Res. Manag.*, 10: 31-72.
28. Judge, T.A. and C.L. Hulin, 1993. Job satisfaction as a reflection of disposition: A multi-source causal analysis. *Organ. Beh. and Human Dec. Processes*, 56: 388-421.
29. Adler, S., 1980. Self-esteem and causal attributions for job satisfaction and dissatisfaction. *J. Appl. Psychol.*, 65: 327-332.
30. Sutherland, V. and C. Cooper, 1991. Personality, stress and accident involvement in the offshore oil and gas industry. *Person and Ind. Diff.*, 12: 195-204.
31. Iverson, R.D. and P.J. Erwin, 1994. Predicting occupational injury: The role of affectivity. *J. Occup and Organ Psychol.*, 70: 113-128.
32. Harter, K., F. Schmidt and T. Hayes, 2002. Business unit-level relationship between employee satisfaction, employee engagement and business outcomes: A meta-analysis. *J. Appl. Psychol.*, 87: 268-279.
33. Tett, R. and J. Meyer, 1993. Job satisfaction, organizational commitment, turnover intention and turnover: Path analyses based on meta-analytic findings. *Person. Psychol.*, 46: 259-294.
34. Bateman, T.S. and D.W. Organ, 1983. Job satisfaction and the good soldier: The relationship between affect and citizenship. *Acad. Manag. J.*, 26: 587-596.
35. Gyekye, A.S. and S. Salminen, 2005. Are good citizens safety conscious? An examination of the relationship between organizational citizenship behaviours and safety perceptions. *Soc. Behav. Person.*, 33: 805-820.
36. Organ, D. and A. Lingl, 1995. Personality, satisfaction and organisational citizenship behaviour. *J. Soc. Psychol.*, 135: 339-350.
37. Williams, L.J. and S.E. Anderson, 1991. Job satisfaction and organisational commitment as predictors of organisational citizenship. *J. Manag.*, 17: 601-617.
38. Chen, P. and P. Spector, 1992. Relationships of work stressors with aggression, withdrawal, theft and substance abuse: An exploratory study. *J. Occup. and Organ. Psychol.*, 65: 177-184.

39. Gottfredson, G. and J. Holland, 1990. A longitudinal test of the influence of congruence: Job satisfaction, competence utilization and counterproductive behaviour. *J. Counsel Psychol.*, 37: 119-128.
40. Probst, T., T.L. Brubaker, 2001. The effects of job insecurity on employee safety outcomes: Cross-sectional and longitudinal explorations. *J. Occup. Health Psychol.*, 6: 139-159.
41. Berg, P., 1999. The effects of high performance work practices on job satisfaction in the United States steel industry. *Indust Relat*, 564: 111-134.
42. Godard, J., 2001. High performance and the transformation of work. The implications of alternative work practices for the experience and outcomes of work. *Indust. and Labour Relat.*, 54: 776-805.
43. Probst, T.M., 2004. Safety and insecurity: Exploring the moderating effect of organizational safety climate. *J. Occup. Health Psychol.*, 9: 3-10.
44. Barling, J., E. Kelloway and R. Iverson, 2003. High-quality work, job satisfaction and occupational injuries. *J. Appl. Psychol.*, 88: 276-283.
45. Kouabenan, D., D. Gilibert, M. Medina and F. Bouzon, 2001. Hierarchical position, gender, accident severity and causal attributions. *J. Appl. Soc. Psychol.*, 31: 553-575.
46. Shaver, K.G., 1970. Defensive attribution: Effects of severity and relevance on the responsibility assigned for an accident. *J. Person. Soc. Psychol.*, 14: 101-113.
47. Walster, E., 1966. Assignment of responsibility for an accident. *J. Person. Soc. Psychol.*, 3: 73-79.
48. Porter, L.W. and E. Lawler, 1968. *Managerial Attitudes and Performances*. Homewood, IL: Irwin-Dorsey.
49. Wanous, P., A. Reichers and M. Hody, 1997. Overall job satisfaction. How good are single-item measures? *J. Appl. Psychol.*, 82: 147-252.
50. Herzberg, F., B. Mausner, P. Peterson and F. Capwell, 1957. *Job Attitudes: Review of Research and Opinion*, Psychological Service of Pittsburgh, Pittsburgh, PA.
51. Forsyth, P., 1995. *101 Ways to Become a Better Manager*. Heinemann, Asia. Singapore.
52. Locke, E., 1973. Satisfiers and dissatisfies among white-collar and blue-collar employees. *J. Appl. Psychol.*, 58: 67-76.
53. Swann, W.B.Jr., 1990. To be Adored or to be Known? The Interplay of Self-enhancement and Self-verification. In E.T. Higgins and R.M. Sorrentino (Eds.), *Handbook of Motivation and Cognition: Foundations of Social Behaviour*, 2: 408-448. New York: Guilford Press.
54. Ilies, R. and T. Judge, 2002. Understanding the dynamic relations among personality, mood and job satisfaction: A field experience sampling study. *Organ. Behav. and Human Decision Proc.*, 89: 1119-1139.
55. Zuckerman, M., 1979. Attribution of success and failure revisited: The motivational bias is alive and well in attribution theory. *J. Person.*, 47: 245-287.
56. DeJoy, D.M., 1987. Supervisor attributions and responses for multiple workplace accidents. *J. Occup. Accid*, 9: 213-223.
57. Schneider, J. and E. Locke, 1971. A critique of Herzberg's incident classification system and a suggested revision. *Organisational Behaviour and Human Perform.*, 6: 441-457.
58. Hackman, J. and G. Oldham, 1975. Development of the job diagnostic survey. *J. Appl. Psychol.*, 60: 159-170.
59. Hackman, J. and G. Oldham, 1980. *Work Redesign*. Reading, MA: Addison-Wesley.
60. Bogg, J. and C. Cooper, 1995. Job satisfaction, mental health and occupational stress among senior civil servants. *Hum Relat.*, 48: 327-331.
61. Neal, A., M.A. Griffin and P. Hart, 2000. The impact of organisational climate on safety climate and individual behaviour. *Safety Sci.*, 34: 99-109.
62. Weiss, H.M., 2002. Deconstructing job satisfaction: separating evaluations, beliefs and affective experiences. *Human Res. Manag Review*, 12: 173-194.
63. Eisenberger, R., J. Cummings, S. Armeli and P. Lynch, 1990. Perceived organizational support, discretionary treatment and job satisfaction. *J. Appl. Psychol.*, 82: 812-820.
64. Eisenberger, R., S. Armeli, B. Rexwinkel, P. Lynch and L. Rhodes, 2001. Reciprocation of perceived organizational support. *J. Appl. Psychol.*, 86: 42-51.
65. Janseen, O., 2001. Fairness perceptions as a moderator in the curvilinear relationships between job demands and job performance and job satisfaction. *Acad. Manag. J.*, 44: 1039-1050.

66. Shore, L. and T. Shore, 1995. Perceived Organisational Support and Organisational Justice. In *Organisational Politics, Justice and Support*, Cropanzano R., Kacmar K, (Eds). Quorum Books: CT; pp: 149-164.
67. Aselage, J. and R. Eisenberger, 2003. Perceived organizational support and psychological contracts: A theoretical integration. *J. Organ. Behav.* 24: 491-509.
68. Simons, T. and U. Robertson, 2003. Why managers should care about fairness: The effects of aggregate justice perceptions on organisational outcomes. *J. Appl. Psychol.*, 88: 432-443.
69. Crampton, S.M. and J.A. Wagner, 1994. Percept-percept inflation in micro organizational research: An investigation of prevalence and effect. *J. Appl. Psychol.*, 79: 67-76.
70. Parker, D., W. Carl, L. French and F. Martin, 1994. Characteristics of adolescent work injuries reported in Minnesota Department of Labour and Industry. *Am. J. Public Health*, 84: 606-611.
71. Veazie, K., D. Landen, T. Bender and H. Amandus, 1994. Epidemiological research on the aetiology of injuries at work. *Ann. Rev. Public Health*, 15: 203-221.
72. Smith, C.S., G.S. Silverman, T.M. Heckert, M. Brodke, B. Hayes, M.K. Silverman and L.K. Mattimore, 2001. A comprehensive method for the assessment of industrial injury events. *J. Prev. & Interv. Comm.*, 22: 5-20.
73. Robins, R., M. Spranca and G. Mendelsohn, 1996. Actor-Observer effect revisited: Effects of individual differences and repeated social interactions on actor and observer attributions. *J. Person. Soc. Psychol.*, 71: 375-389.