

Preventing occupational injury among police officers: Does motivation matter?

Derwin K. C. Chan^{1,2,3}, David Webb⁴, Richard M. Ryan⁵, Tracy C. W. Tang¹,

Sophie X. Yang^{2,6}, Nikos Ntoumanis², & Martin S. Hagger^{2,7}

University of Hong Kong¹

Curtin University, Australia²

University of Nottingham, UK³

University of Western Australia, Australia⁴

Australian Catholic University, Australia⁵

Sichuan University, China⁶

University of Jyväskylä, Finland⁷

Correspondence concerning this article should be addressed to:

Derwin K. C. Chan, School of Public Health, Li Ka Shing Faculty of Medicine, The
University of Hong Kong.

Email: derwin.chan@hku.hk.

Abstract

Background: Injury prevention is an important issue for police officers, but the effectiveness of prevention initiatives is dependent on officers' motivation toward, and adherence to, recommended health and safety guidelines.

Aims: To understand effects of police officers' motivation to prevent occupational injury on beliefs about safety and adherence to injury-prevention behaviours.

Methods: Full-time police officers completed a survey comprising validated psychometric scales to assess autonomous, controlled, and amotivated forms of motivation (Treatment Self-Regulation Questionnaire), behavioural adherence (Self-reported Treatment Adherence Scale), and beliefs (Safety Attitude Questionnaire) with respect to injury-prevention behaviours.

Results: There were 207 participants; response rate 87%. Hierarchical multiple regression analyses demonstrated that autonomous motivation was positively related to behavioural adherence, commitment to safety, and prioritizing injury prevention. Controlled motivation was a positive predictor of safety communication barriers. Amotivation was positively associated with fatalism regarding injury prevention, safety violation, and worry.

Conclusions: These findings are consistent with the tenets of self-determination theory in that autonomous motivation was a positive predictor of adaptive safety beliefs and adherence to injury-prevention behaviours.

Key words: Self-determined motivation; self-regulation; health behaviour; safety; policing; behavioural compliance.

Introduction

Occupational injury is a major global public health issue that could lead to disability, reduced quality of life and well-being, or even fatality [1]. It is regarded as a particularly important health problem in the military as it contributes substantially to increased medical expenses and loss of workdays [2]. Considering these consequences, it is important that organizations engage in preventive initiatives to reduce the risk of occupational injury. The introduction of occupational safety resources and regulations notwithstanding, the effectiveness of injury prevention is likely to be highly dependent on individuals' self-regulatory effort, perseverance, and awareness of environmental hazards [3-5]. Non-compliance with injury-prevention behaviours may lead to heightened risk of injury, re-injury or impaired/extended recovery. Therefore, it is important to address the psychological factors that may contribute to an individual's participation in injury prevention behaviours which requires from them a great deal of self-discipline, effort, and personal awareness [6]. Motivation is an important psychological factor that has been central to many social psychological models applied to explain participation in, and compliance with, volitional, self-initiated behaviours in the domain of occupational health [7-11]. The present study applied self-determination theory (SDT) [12], a prominent theory that examines the motivational and psychological factors that underpin human action, to identify the forms of motivation that may relate to beliefs toward, and actual participation in, injury-prevention behaviors by police officers.

According to self-determination theory (SDT), behaviour is determined by the reasons or motives individuals give for performing the behaviour [12]. The theory makes a distinction between two broad categories of motives, *autonomous* or self-determined, and *controlled* or non-self-determined. According to SDT, autonomous motivation reflects engagement in behaviour for internal reasons that originate from the self (e.g., acting to prevent injury

because “I *want* to”). In contrast, controlled motivation describes engaging in a behaviour for external reasons (e.g., acting to prevent injury “because I *have* to”); whereas amotivation refers to the lack of intention and motivation (e.g., I do not know why I prevent injury). The motives can be further classified into different types of *behavioural regulations*. Autonomous forms of regulation include intrinsic motivation (i.e., performing behaviours for its inherent enjoyment, pleasure, and satisfaction), identified regulation (i.e., acting for personally important goals or values), and integrated regulation (i.e., acting because the behaviour is consistent with life goals or a genuine sense of self). In contrast, controlled forms of regulation include external regulation (i.e., acting out of external demands, pressure, or contingencies) and introjected regulation (i.e. behaving to satisfy or protect one’s ego or to prevent feelings of guilt or shame). In addition, SDT identifies a third category of regulation, amotivation, which reflects acting for no clear reason at all. Amotivated individuals are often characterized as “just going through the motions” [12, 13]. According to the theory, individuals acting out of autonomous motives tend to have a greater sense of personal agency, long-term persistence, skills and knowledge, behavioural adherence (maintenance) and positive experiences relative to those acting out of controlled motives [13, 14]. SDT may, therefore, provide means to understand the initiation and maintenance of injury prevention behaviours [15].

Current evidence indicates that autonomous motivation is a positive predictor of long-term intentions toward, and actual engagement in health behaviour because it reflects self-endorsed reasons for acting [3, 16, 17]. In contrast, controlled motivation motivates behaviour only as long as the controlling contingencies (i.e., extrinsic rewards, significant others, social pressure) are present [12, 18]. A recent meta-analysis [19] of studies adopting SDT in health behaviours found that autonomous motivation was the strongest positive predictor of behavioural consistency compared to controlled motivation and amotivation.

In the injury prevention domain, SDT has been adopted to identify the motivational antecedents of sports injury prevention behaviours [5]. Results indicated that individuals with greater autonomous motivation and low controlled motivation were more likely to report higher behaviour adherence, commitment, and prioritisation with respect to sport injury prevention, as well as lower injury prevention fatalism (i.e., the belief that injury is inevitable regardless of preventive effort), injury worry, and communication barriers for safety [5]. Similarly, elite athletes' autonomous motivation toward sport injury prevention was found to be positively related to attitude, subjective norms, perceived behavioural control, and intentions to engage in sport injury prevention behaviours. On the other hand, controlled motivation only predicted subjective norm and perceived behavioural control with a slightly smaller magnitude than those with autonomous motivation [20]. These studies suggest that autonomous motivation was a stronger positive predictor of injury preventive beliefs, intention, and behavioural adherence among athletes compared to controlled motivation or amotivation [5, 7, 20].

In an occupational health context, research has demonstrated that autonomous motivation for injury prevention positively predicted police officers' intention and decision-making factors (e.g., attitude, subjective norm, and perceived behavioural control) in regards to injury prevention [4]. However, the research focused on relative autonomous motivation alone and did not differentiate between the different forms of motivation from SDT. In addition, the study did not measure other motivation-related outcomes such salient injury and safety beliefs, and, most critically, behavioural adherence, which could have further improved understanding of the role of motivation of injury prevention among police officers. It is also important to note that, this study aside, there is very little research on the motivational factors that related to police officers' injury preventive behaviour and it is an area that is in need of further research [4].

The present study aimed to fill this gap in the literature by examining effects of the different forms of motivation from SDT on injury-preventive outcomes in police officers. We expect this study to extend understanding of the types of motivation linked to health and safety beliefs, adherence and behaviours of police officers in an occupational setting. In terms of specific hypotheses, based on the tenets of SDT and previous studies, we predicted that (H1) autonomous motivation would be positively related to adherence to injury-prevention behaviours and the adaptive safety beliefs (i.e., *commitment* to safety and *priority* of injury prevention). In addition, we also expected (H2) a negative link between autonomous motivation and maladaptive safety beliefs (i.e., *fatalism* about injury prevention, safety violation, safety communication barriers) and number of injuries. We also hypothesized that the effect of controlled motivation on these outcome variables would be opposite to those expressed in H1 and H2, that is (H3) negative effects on injury prevention behaviours and safety beliefs and (H4) positive effects on maladaptive safety beliefs and number of injuries.

Methods

With approval from the local police authority, we approached full-time police officers from three local police stations in the city of Zigong, the third largest city in the Sichuan province of China. Employing a convenience sampling approach, we made contact with police officers who responded to the advertisement of our study. Participants signed consent forms to indicate that they understood the study purposes, their rights as participants, and that they agreed to take part in the study voluntarily by completing the survey about motivational and behavioural variables. The survey was presented in Chinese, the first-spoken language of the participants. The study was approved by the Human Research Ethics Committee at the University of Nottingham.

Study variables were measured using adapted versions of previously-validated psychometric measures. Participants also reported their demographic details and their injury experience within the past six months. Appendix A presents details of the study including questionnaire items, dimensions and scale anchors. Cronbach's alphas and composite reliability statistics for the scales are presented in Table 1.

Participants' SDT motivational types with respect to the prevention of occupational injury, was assessed using the Treatment Self-Regulation Questionnaire (TSRQ) [14]. The TSRQ is a 15-item scale comprising three dimensions in the health domain: autonomous motivation (6 items), controlled motivation (6 items) and amotivation (3 items). The TSRQ has been validated in various health contexts such as physical activity, medication, dieting, smoking cessation, and sport injury prevention [4, 5, 14, 21]. The present study used the translated Chinese injury prevention version of the TSRQ developed in previous studies [4, 5].

Participant's behavioural adherence to occupation injury prevention was measured using the Self-reported Treatment Adherence Scale [8]. The initial version of the scale was developed for assessing adherence to home-based rehabilitation exercises following sport injury [8], but was later adapted to measure athletes' adherence to sport injury prevention [5], occupational injury rehabilitation [4], the avoidance of doping [22], and learning [23]. In the present study, we adapted the existing Chinese version for sport injury prevention for use in an occupational injury prevention context by substituting key target constructs (i.e., sport and coaches) for context-relevant targets (i.e., work and supervisors).

Participants' safety beliefs were measured using the Manager Safety Attitude Questionnaire [24]. This questionnaire has multiple dimensions: commitment (3 items), priority (2 items), fatalism (5 items), violation (5 items), communication barrier (2 items), and worry (4 items). The scale has been shown to be a useful tool in measuring safety beliefs and has good reliability and validity statistics [5, 24]. In the present study, we used the translated

Chinese version from a previous study on sport safety to an injury prevention context for police officers by substituting the key terms (e.g., sport) for context specific terms (e.g., work).

Study hypotheses were tested using hierarchical linear multiple regression. Regression models were conducted independently for each dependent variable. In each analysis, demographic variables (age, gender, years of work, hours of work), occupational hazards (intense work, heavy work, dangerous work, enduring work), and history of injury (i.e., severe injury that required medical attention) were included as predictors in Step 1. The three forms of motivation from SDT (autonomous motivation, controlled motivation, and amotivation) were included as predictors in Step 2. A list of independent variables, control variables, and dependent variables in the study with their factor correlations and descriptive statistics is presented in Table 1.

Results

We made contact with 239 police officers who responded to the advertisement of our study. Of these, 207 (83% male, M age = 37.24 years, SD = 9.93) agreed to participate in the study (response rate = 87%). Participants reported an average of 14.56 years (SD = 16.12) years in the police service and reported working approximately 50 hours per week (SD = 16.12). Occupational duties involved a number of potential work-related stressors or hazardous situations, such as highly intense or vigorous activities (intense work; 38%), lifting heavy objects (heavy work; 28%), dangerous duties (dangerous work; 24%), and endurance physical activity (enduring work; 24%). The majority of participants (66%) reported having suffered from some form of occupational injury including head injuries, swelling or contusions, cuts, tears or ligament ruptures, joint sprain or dislocation, skeletal fractures and even gunshot wounds.

Details of the regression analyses are presented in Table 2. Across the different dependent variables, the control variables entered in Step 1 and motivational factors entered in Step 2, explained between 22% and 41% of the variance, which was statistically significant in all models. As expected, autonomous motivation significantly and positively predicted behavioural adherence, commitment, and priority. Autonomous and controlled motivation was found to be negative and positive statistically significant predictors of communication barriers. Amotivation was a statistically significant, positive predictor of fatalism, violation, worry, and, unexpectedly, behavioural adherence. Total number of injuries was not related to any forms of motivation in the regression model.

Discussion

The findings of this study supported its key hypotheses regarding the adaptive effects of autonomous motivation (H1, H2) and maladaptive effects of controlled motivation and amotivation (H3, H4) on police officers' injury prevention outcomes. Autonomous motivation was positively related to all adaptive behavioural outcomes (behavioural adherence, commitment, priority), and controlled motivation or amotivation were positively related to maladaptive outcomes (fatalism, violation, and communication barriers). These results are generally consistent with SDT [15] and previous studies that have examined the role of motivation on injury-prevention intentions, behaviours, and beliefs [4, 5, 7, 20].

The results suggest that police officers who reported autonomous motivation for injury prevention were more likely to adhere and commit to injury-prevention behaviours at work. In contrast, those who endorsed controlled motivation for injury prevention were more likely to have difficulties communicating and discussing occupational injury prevention. Despite preventive efforts, police officers who were amotivated with respect to injury prevention were more likely to believe that injury is inevitable, and that it was sometimes necessary to ignore

safety regulations. The pattern results are consistent with a previous study of police officers in that autonomous motivation with respect to injury prevention was related to adaptive decision-making factors and the intentions to prevent injuries [4]. Our findings are also similar to other studies that have examined and compared effects of autonomous, controlled, and amotivated forms of motivation on health-related outcomes in other contexts [3, 16, 25].

The positive effect of amotivation on self-reported behavioural adherence was contrary to our hypothesis and the predictions of SDT [13-15] or with previous findings in the context of physical activity, weight management, smoking cessation, and other health behaviours [14, 19]. A possible explanation for this unexpected effect was that amotivated police officers tend to participate in injury prevention behaviours out of normative or habitual factors, but have given little thought to the rationale or reasons for doing so. Given that police officers' amotivation was also unrelated to commitment and priority, and was positively related to the number of injuries and worries about injuries, it may indicate that such adherence tends to be more passive and related to automatic or habitual compliance with protocol rather than through pro-active motivation engage in the behaviours willingly. The effects of habitual, non-conscious effects on behaviour have been shown in other studies demonstrating that health-related actions may be more than a function of explicit motivational tendencies [26]. Future studies may use a person-centred approach [27] to test the combined or synergistic effects of these three types of motivation outcomes in health contexts [8, 28]. Such an approach will examine whether the potential adaptive role of autonomous motivation would be nullified or exacerbated by controlled motivation and amotivation [28]. Overall, the current findings illustrate that occupational injury is a complex issue which could plausibly be caused and maintained by numerous external factors (e.g., environmental hazards, safety resources and organizational policies) [29].

Despite the unique observations and perspectives offered by the present study, a few limitations exist. The cross-sectional design with correlational analyses limited the level of evidence of the study in terms of the inference of causal effects. Retrospective assessment of injury and the use of self-reported measures could be subject to problems with recall, social desirability, and consistency tendency [30]. These limitations should be addressed in future studies by including both objective measures and longitudinal and experimental designs that could better empirically test and capture causal relations. Numerous interventions using SDT as the framework have been conducted to promote autonomous motivation for better behavioural patterns and well-being. On the other hand, the current study only examined the study variables at the individual-level and not at the organisational-(or higher) level, so the effect of the hierarchical structure of the police stations and department could not be ascertained. Future interventions or longitudinal studies should also adopt a multilevel approach to examine the effects of motivation of injury prevention at higher levels (e.g., team, department, police stations, and region), and also in different countries to investigate the generalisability of study findings.

These limitations aside, results of the present study reveal that the different forms of motivation discussed in SDT play an important role in explaining police officers adherence to and beliefs regarding injury prevention. This is particularly important given that motivation is an important target in behaviour change interventions, and interventions designed to affect a change in these constructs are likely to have efficacy in changing behaviour. Future research should seek to manipulate the motivational factors related to injury prevention outcomes and conduct a longitudinal follow-up of occupational injury outcomes using objective measures.

In conclusion, police officers who report better behavioural adherence, commitment, and beliefs with respect to injury prevention and safety are more likely to be driven by autonomous motivation rather than controlled motivation or amotivation. From a police

policy perspective, the study findings suggest that it would be valuable for police agencies to consider ways to support autonomous motivation toward injury prevention in police officers, which would facilitate greater internalisation of injury-preventive practices.

Key Points

- Self-determination theory is a useful framework in understanding motivational antecedents of police officers' occupational injury-prevention behaviours.
- Police officers endorsing autonomous motivation tended to report better adherence to, commitment to, and prioritisation of injury-prevention behaviours at work.
- These findings pave the way for future injury-prevention interventions in police officers targeting autonomous motivation.

Acknowledgements This research was supported by an International Research Scholarship from the University of Nottingham and Seed Funding for Basic Research from the University of Hong Kong.

References

1. Lim SS, Vos T, Flaxman AD. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010 (vol 380, pg 2224, 2012) *Lancet* 2013;**381**:1276.
2. Smith GS, Dannenberg AL, Amoroso PJ. Hospitalization due to injuries in the military - Evaluation of current data and recommendations on their use for injury prevention *Am J Prev Med* 2000;**18**:41-53.
3. Chan DKC, Yang SX, Mullan B, *et al.* Preventing the spread of H1N1 influenza infection during a pandemic: Autonomy-supportive advice versus controlling instruction *J Behav Med* 2015;**38**:416-426.
4. Chan DKC, Hagger MS. Autonomous forms of motivation underpinning injury prevention and rehabilitation among police officers: An application of the trans-contextual model *Motiv Emotion* 2012;**36**:349-364.
5. Chan DKC, Hagger MS. Trans-contextual development of motivation in sport injury prevention among elite athletes *J Sport Exerc Psy* 2012;**34**:661-682.
6. Gielen AC, Sleet D. Application of behavior-change theories and methods to injury prevention *Epidemiol Rev* 2003;**25**:65-76.
7. Chan DKC, Hagger MS. Theoretical integration and the psychology of sport injury prevention *Sports Med* 2012;**42**:725-732.
8. Chan DKC, Lonsdale C, Ho PY, Yung PSH, Chan KM. Patient motivation and adherence to post-surgery rehabilitation exercise recommendations: The influence of physiotherapists' autonomy supportive behaviors *Arch Phys Med Rehabil* 2009;**90**:1977-1982.
9. Ryan RM, Patrick H, Deci EL, Williams GC. Facilitating health behaviour change and its maintenance: Interventions based on self-determination theory *The European Health Psychologist* 2008;**10**:2-5.
10. Conner M, Norman P. Predicting health behaviour: Research and practice with social cognition models. Buckingham, UK: Open University Press, 2005.
11. Orbell S. Motivational models and volitional processes in the promotion of health behaviors. In: Park DC, Liu LL, eds. *Medical adherence and aging*. Washington, DC: American Psychological Association, 2007.
12. Deci EL, Ryan RM. The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior *Psychol Inq* 2000;**11**:227-268.

13. Deci EL, Ryan RM. Facilitating optimal motivation and psychological well-being across life's domains *Can Psychol* 2008;**49**:14-23.
14. Levesque CS, Williams GC, Elliot D, Pickering MA, Bodenhamer B, Finley PJ. Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors *Health Educ Res* 2007;**22**:691-702.
15. Deci EL, Ryan RM. Intrinsic motivation and self-determination in human behavior. New York: Plenum, 1985.
16. Chan DKC, Fung YK, Xing S, Hagger MS. Myopia prevention, near work, and visual acuity of college students: Integrating the theory of planned behavior and self-determination theory *J Behav Med* 2014;**73**:369-380.
17. Standage M, Gillison FB, Ntoumanis N, Treasure DC. Predicting students' physical activity and health-related well-being: A prospective cross-domain investigation of motivation across school physical education and exercise settings *J Sport Exerc Psy* 2012;**34**:37-60.
18. Ryan RM, Deci EL. The darker and brighter sides of human existence: Basic psychological needs as a unifying concept *Psychol Inq* 2000;**11**:319-338.
19. Ng JYY, Ntoumanis N, Thøgersen-Ntoumani C, *et al.* Self-determination theory applied to health contexts: A meta analysis *Perspect Psychol Sci* 2012;**7**:325-340.
20. Chan DKC, Hagger MS. Self-determined forms of motivation predict sport injury prevention and rehabilitation intentions *J Sci Med Sport* 2012;**15**:398-406.
21. Williams GC, McGregor HA, Sharp D, *et al.* Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial *Health Psychol* 2006;**25**:91-101.
22. Chan DKC, Lentillon-Kaestner V, Dimmock JA, *et al.* Self-control, self-regulation, and doping in sport: A test of the strength-energy model *J Sport Exerc Psy* 2015;**37**:199-206.
23. Chan DKC, Yang SX, Hamamura T, *et al.* In-lecture learning motivation predicts students' motivation, intention, and behaviour for after-lecture learning: Examining the trans-contextual model across universities from UK, China, and Pakistan *Motiv Emotion* 2015;**39**:908-925.
24. Rundmo T, Hale AR. Managers' attitudes towards safety and accident prevention *Saf Sci* 2003;**41**:557-574.

25. Hagger MS, Chatzisarantis NLD. Integrating the theory of planned behaviour and self-determination theory in health behaviour: A meta-analysis *Br J Health Psychol* 2009;**14**:275-302.
26. Hagger MS, Chan DKC, Protogerou C, Chatzisarantis NLD. Using meta-analytic path analysis to test theoretical predictions in health behavior: An illustration based on meta-analyses of the theory of planned behavior *Prev Med* 2016;**89**:154-161.
27. Ekehammar B, Akrami N. The relation between personality and prejudice: A variable- and a person-centred approach *European Journal of Personality* 2003;**17**:449-464.
28. Chan DKC, Donovan RJ, Lentillon-Kaestner V, *et al.* Young athletes' awareness and monitoring of anti-doping in daily life: Does motivation matter? *Scand J Med Sci Sports* 2014;**25**:e655-663.
29. Lynch JMF, Plant RW, Ryan RM. Psychological needs and threat to safety: Implications for staff and patients in a psychiatric hospital for youth *Professional Psychology: Research and Practice* 2005;**36**:415-425.
30. Chan DKC, Ivarsson A, Stenling A, Yang XS, Chatzisarantis NLD, Hagger MS. Response-order effects in survey methods: A randomized controlled crossover study in the context of sport injury prevention *J Sport Exerc Psy* 2015;**37**:666-673.

Table 1

Factor correlations and descriptive statistics

Correlations											
	1	2	3	4	5	6	7	8	9	10	11
<u>Independent Variables</u>											
1. Autonomous Motivation	1										
2. Controlled Motivation	0.40**	1									
3. Amotivation	0.06	0.67**	1								
<u>Dependent Variables</u>											
4. Behavioural Adherence	0.35**	0.51**	0.46**	1							
5. Commitment	0.37**	0.28**	0.14	0.57**	1						
6. Priority	0.41**	0.06	-0.11	0.20**	0.33**	1					
7. Fatalism	0.04	0.28**	0.46**	0.27**	0.06	-0.02	1				
8. Violation	-0.02	0.27**	0.44**	0.27**	0.05	-0.04	0.46**	1			
9. Communication Barrier	-0.12	0.29**	0.40**	0.20**	-0.05	-0.03	0.39**	0.52**	1		
10. Worry	0.14	0.45**	0.48**	0.33**	0.20**	0.20**	0.40**	0.57**	0.48**	1	
11. Number of Injuries	0.02	0.10	0.20**	0.10	0.06	0.02	0.10	0.19**	0.15*	0.24**	1
<u>Control Variables</u>											
1. Age	-0.01	-0.07	0.01	-0.05	0.15*	0.10	0.06	-0.08	-0.07	-0.03	-0.19**
2. Gender	-0.06	-0.05	-0.10	-0.12	-0.01	0.11	-0.14	0.02	-0.06	-0.05	-0.15
3. Years of Work	-0.05	-0.05	-0.02	-0.09	0.11	0.04	0.04	-0.10	-0.07	-0.07	-0.20**
4. Hours of Work	0.14	0.06	0.10	0.12	0.03	-0.07	0.12	0.13	0.04	0.12	0.27**
5. Intense Work	-0.13	0.03	0.13	0.10	-0.12	-0.19**	0.04	0.14*	0.16*	0.03	0.32**
6. Heavy Work	-0.12	0.10	0.16*	0.12	-0.08	-0.06	0.09	0.09	0.16*	0.16*	0.24**
7. Dangerous Work	-0.06	0.20*	0.12	0.16*	-0.02	0.02	0.03	0.16*	0.16*	0.12	0.20**
8. Enduring work	0.08	0.21**	0.22**	0.20**	0.10	-0.04	0.05	0.13	0.04	0.12	0.24**
9. History of Injury	0.00	0.15	0.18*	0.02	-0.04	-0.13	0.12	0.21**	0.13	0.20**	0.32**
Mean	4.70	3.44	3.00	3.75	4.40	5.47	3.20	3.46	3.18	3.60	0.58
SD	1.23	1.28	1.43	1.29	1.47	1.55	1.28	1.49	1.73	1.42	1.32
α	0.82	0.77	0.73	0.82	0.73	0.66	0.77	0.79	0.72	0.82	N/A
Composite Reliability	0.87	0.84	0.85	0.87	0.85	0.85	0.85	0.85	0.82	0.87	N/A

Note. Data was collected from 207 full-time police officers in February–April 2010 in China.

Gender = male (0) or female (1); years of work = number of years for being a police officer;

hours of work = number of working hours in a typical week; history of injury = prior

experience of sever injury that required medical attention. ** $p < .01$ at 2-tailed, * $p < .05$ at 2-

tailed.

Table 2

Results of hierarchical multiple linear regression models predicting injury prevention outcomes in Sichuan police officers ($N = 207$)

Variables	Behavioural Adherence		Commitment		Priority		Fatalism		Violation		Communication Barrier		Worry		Number of Injuries	
	β	95% CI of B	β	95% CI of B	β	95% CI of B	β	95% CI of B	β	95% CI of B	β	95% CI of B	β	95% CI of B	β	95% CI of B
Autonomous Motivation	0.31**	0.14 – 0.52	0.42**	0.23 – 0.62	0.52**	0.41 – 0.90	0.01	-0.19 – -0.22)	0.04	-0.19 – 0.27	-0.23*	-0.61 – -0.03	0.05	-0.16 – 0.27	-0.04	-0.25 – 0.17
Controlled Motivation	0.08	-0.17 – 0.32	-0.07	-0.32 – 0.19	-0.19	-0.54 – -0.10	-0.07	-0.34 – -0.20	-0.21	-0.53 – 0.07	0.32*	0.03 – 0.79	0.15	-0.12 – 0.45	-0.23	-0.50 – -0.05
Amotivation	0.36**	0.13 – 0.56	0.21	-0.04 – 0.42	0.10	-0.16 – 0.39	0.47**	0.19– 0.66	0.61**	0.38 – 0.91	0.15	-0.15 – 0.51	0.35* *	0.11– 0.61	0.12	-0.13 – 0.35
F	5.87**		4.15**		3.92**		2.88**		4.14**		2.33*		4.27**		2.45**	
R ²	0.41		0.33		0.32		0.26		0.33		0.22		0.34		0.23	

Note. The table displays the parameter estimates of the independent variables in Step 2. Estimates for the control variables in Step 1 were omitted for clarity. All Step 2 variables did not reach significance except when dependent variable was number of injuries. Full results can be obtained from the first author. CI = confidence interval. * $p < .05$, ** $p < .01$

Appendix A Scales information

Variable	Questionnaire	Dimension	Example Item	Anchors of Likert-Scale			
Motivation for occupational injury prevention	Treatment Self-Regulation Questionnaire [4]	Autonomous motivation	1. I want to prevent or avoid injury because I feel that I want to take responsibility for my own health.	1 = not at all true, 7 = very true			
			2. I want to prevent or avoid injury because I personally believe it is the best thing for my health.				
			3. I want to prevent or avoid injury because I have carefully thought about it and believe it is very important for many aspects of my life.				
			4. I want to prevent or avoid injury because it is an important choice I really want to make.				
			5. I want to prevent or avoid injury because it is consistent with my life goals.				
			6. I want to prevent or avoid injury because it is very important for being as healthy as possible.				
		Controlled motivation	1. I want to prevent or avoid injury because I would feel guilty or ashamed of myself if I did not.				
			2. I want to prevent or avoid injury because others would be upset with me if I did not.				
			3. I want to prevent or avoid injury because I would feel bad about myself if I did not.				
			4. I want to prevent or avoid injury because I feel pressure from others to prevent any injury that could happen to me.				
			5. I want to prevent or avoid injury because I want others to approve of me.				
			6. I want to prevent or avoid injury because I want others to see I can do it.				
		Amotivation	1. I really don't think about preventing or avoiding injury.				
			2. I want to prevent or avoid injury because it is easier to do what I am told than think about it.				
			3. I don't really know why I want to prevent or avoid injury.				
		Adherence	Self-reported Injury Prevention Adherence Scale [5]		Frequency	1. How often do you work on achieving safety objectives when you work (e.g., checking dangerous equipment/ machines, inspecting hazards in the workplace, wearing protective kits)?	1 = never, 7 = very often
						2. How often do you put on improving your physical/ mental conditions to avoid injuries (e.g., warm-up, stretching, physical conditioning, resting adequately)?	
						3. How often do you work on avoiding re-injury for your old injuries (e.g., use of ice, banding, taking supplements)?	
			4. How often do you perform unsafe behaviours and safety rule violations? [<i>inverted item</i>]				
			5. How often do you seek injury prevention/ safety advice				

			from others (e.g., colleagues, supervisors, and medical staff)?	
		Effort	<ol style="list-style-type: none"> 1. How much effort do you put on achieving safety objectives when you work (e.g., checking dangerous equipment/ machines, inspecting hazards in working environments, wearing protective kits)? 2. How much effort do you put on improving your physical/ mental conditions to avoid injuries (e.g., warm-up, stretching, physical conditioning, resting adequately)? 3. How much effort do you put on avoiding re-injury for your old injuries (e.g., use of ice, banding, taking supplements)? 4. How much effort do you put in an attempt to seek injury prevention/ safety advice from others (e.g., colleagues, supervisors, and medical staff)? 	1 = minimum effort, 7 = maximum effort
Safety beliefs	Adapted from the Chinese version [5] of Manager Safety Attitude Questionnaire [24]	Commitment	<ol style="list-style-type: none"> 1. I think a lot on how to prevent injuries. 2. I am heavily committed to injury prevention. 3. I am concerned about safety. 	1 = strongly disagree, 7 = strongly agree
		Priority	<ol style="list-style-type: none"> 1. There is nothing more important than safety. 2. If you don't take good care of yourself you have nothing. 	
		Fatalism	<ol style="list-style-type: none"> 1. Injuries just happen, there is little one can do to avoid them 2. What happens at work is a matter of chance. 3. It the odds are against you, it's impossible to avoid injuries 4. The use of machines and technical equipment make injuries unavoidable 5. Injuries seem inevitable despite the efforts of me to prevent them 	
		Violation	<ol style="list-style-type: none"> 1. Sometimes it is necessary to turn the blind eye to safety rule violations 2. Sometimes working outcome/ achievement has to be given priority before injury prevention 3. Sometimes it is necessary to ignore safety regulations to get my job done 4. I have to be more interested in working outcomes/ achievement than injury prevention 5. I cannot always follow safety regulations myself 	
		Communication Barrier	<ol style="list-style-type: none"> 1. Talking to the others (e.g., colleagues, supervisors, and medical staffs) about injury prevention is difficult. 2. I find it a little embarrassing to talk to others (e.g., colleagues, supervisors, and medical staffs) about injury prevention 	
		Injury worry	<ol style="list-style-type: none"> 1. When I think about injury I feel nauseous 2. If several injuries happen my career may be endangered 3. I am a bit afraid when I think about safety 4. The problems I would experience as a result of a serious injury would last 	