



MEDIATING EFFECT OF JOB SATISFACTION
BETWEEN ORGANIZATIONAL CLIMATE AND SAFETY CLIMATE
IN A GROUP OF DIFFERENT WORKERS

di

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1. Introduction

The effects of organizational context on employee «welfare» is a major theme of occupational health psychology¹.

Scientific interest related to worker's health is relatively recent. The first studies were designed to detect the relationship between work and welfare, so they were focused on physical, chemical and biological risk factors. Only recently, the other variables that may affect the psychological well-being of the employee have been highlighted².

The first studies that related to organization with employee psychological well-being and behavior were conducted for the first time in the thirties by Mayo in 1933³.

But it was not until the end of the second half of the last century, to get a change of the worker image. He changes from «appendage of a machine»⁴, ie tax payer with the same interests and needs of the company where he works, to an active player that interacts with its own working environment through his needs, motivations, values and personal interests. So, attention has been focused not only on the physical health of the employee, but also on his psychic health, stressing that his dissatisfaction may have some repercussions on his work and also on the organization⁵.

¹ P. Argentero, C.G. Cortese, C. Piccardo, *Psicologia del Lavoro*, Milano, Raffaele Cortina Editore, 2008.

² P. Warr, *Work, well-being, and mental health*, in *Handbook of Work stress*, ed. by J. Barling, E.K. Kelloway, M.R. Frone, London, Sage, 2005, p. 547.

³ E. Mayo, *The Human Problems of an Industrial Civilization*, New York, Viking, 1933.

⁴ S. Di Nuovo, S. Zanchi, *Benessere lavorativo: una ricerca sulla soddisfazione e le emozioni positive nella mansione*, in «Giornale di Psicologia», 2, 1-2 (2008), pp. 7-18.

⁵ *Ibidem*.

At the same time the general concept of health takes on a new meaning: no more the absence of disease but a state of complete physical, mental and social well-being⁶.

This new approach has led to a perspective change so that 70s and 80s studies were focused on different aspects of work, such as: psychosocial, safety of workplace, health and all other factors than may influence the relationship between organization and employers behaviors.

Some authors state that the worker's psychological well-being is connected with the organisational climate emphasizing the close relationship between organization wellness and employee welfare⁷.

1.1. *Safety Climate*

Over the past 30 years the construct of safety has aroused great interest among scholars, and was addressed by different approaches in different historical eras⁸; some of them have focused on engineering and technical aspects of safety climate, others on human resource, while others have questioned on issues related to organizational culture. At the end, the ultimate goal of such approaches is a reduction of workplace accidents in order to ensure the worker welfare⁹.

Since the 90s onwards, there was an increased interest in the security field. The previous assumption that the cause of accidents and incidents was exclusive-

⁶ World Health Organization. *Constitution of the World Health Organization. Basic Documents*, Forty-fifth edition, Supplement, October 2006.

⁷ C. Ostroff, *The effects of climate and personal influence on individual behaviour and attitudes in organization*, in «Organizational Behaviour and Human Decision Processes», 56 (1993), pp. 56-90; R. Cropanzano, T.A. Wright, *When a happy worker is really a "productive" worker: a review and further refinement of the happy-productive worker thesis*, in «Consulting Psychology Journal: Practice & Research», 53 (2001), pp. 182-199; V. Majer, A. Marcato, A. D'Amato, *La dimensione psico-sociale del clima organizzativo*, Milano, Franco Angeli, 2002; J. Carr, J. Schmidt, J.K. Ford, R.P. DeShon, *Climate perceptions matter: a meta-analytic path analysis relating molar climate, cognitive and affective states, and individual level work outcomes*, in «Journal of Applied Psychology», 88, 4 (2003), pp. 605-619.

⁸ A.R. Hale, J. Hovden, *Management and culture: the third age of safety. A review of approaches to organizational aspects of safety, health and environment*, in *Occupational Injury: Risk, Prevention and Intervention*, ed. by A.M. Feyer, A. Williamson, London, Taylor & Francis Ltd, 1998, pp. 129-165; A.I. Glendon, S. Clarke, E.F. McKenna, *Human Safety and Risk Management*, Boca Raton, FL, Taylor and Francis, 2006²; P. Hudson, *Implementing a safety culture in a major multi-national*, in «Safety Science», 45, 6 (2007), pp. 697-722; D. Birys, D. Else, S. Legget, *The fifth age of safety: the adaptive age?*, in «Journal of health & Safety Research e Practice», 1, 1 (2009), pp. 19-27.

⁹ S. Silva, M.L. Lima, C. Baptista, *Osci: an organisational and safety climate inventory*, in «Safety Science», 42 (2004), pp. 205-220.

ly attributable to individual aspects, such as personal errors or lack of compliance with security procedures was abandoned in favor of organizational variables¹⁰.

This finding raises the need to determine the relationship between organizational and climate security, and its impact on worker's behaviour in terms of safety and job satisfaction. The organizational climate is a multidimensional construct that includes a series of assessments of the working environment¹¹. These ratings may refer to: general dimensions of the environment such as leadership, roles, communication¹², or specific dimensions such as climate security and customer service climate¹³. The general perception of the organization and its context can affect the interactions between individuals¹⁴, attitudes toward organizational rewards¹⁵.

Perceptions of organizational climate are subjective and refer to the organizational context. This is based on the meaning of individual values developed in the working environment¹⁶.

The organizational climate has a strong impact on individual motivation in the achievement of business objectives¹⁷.

Additionally it was found that the overall organizational climate affects cognitive skills through increased participation in activities such as training¹⁸.

¹⁰ J. Reason, *HumanError*, Cambridge, Cambridge University Press, 1990.

¹¹ L.A. James, L.R. James, *Integrating work environment perceptions: Explorations into the measurement of meaning*, in «Journal of Applied Psychology», 74 (1989), pp. 739-751.

¹² L.R. James, M.D. McIntyre, *Perceptions of organizational climate*, in *Individual Differences and Behavior in Organizations*, ed. by K. Murphy, San Francisco, CA, Jossey-Bass, 1996, pp. 416-450.

¹³ A. Neal, M.A. Griffin, P. Hart, *The impact of organizational climate on safety climate and individual behavior*, in «Safety Science», 34, 1 (2000), pp. 99-109.

¹⁴ M.A. Griffin, J.E. Mathieu, *Modeling organizational processes across hierarchical levels: climate, leadership, and group process in work groups*, in «Journal of Organizational Behavior», 18 (1997), pp. 731-744.

¹⁵ M.A. Griffin, P.E. Tesluk, R.R. Jacobs, *The effect of bargaining cycles on work-related attitudes: evidence for threat-rigidity effects*, in «Academy of Management Journal», 38 (1995), pp. 1709-1724; M.A. Griffin, *Extra-role Behaviors in Organisations: The Mediation of Work and Individual Factors by Organisational Commitment*. Paper presented at the 11th Annual Conference of the Society for Industrial and Organisational Psychology, San Diego, CA (1996).

¹⁶ L.A. James, L.R. James, D.K. Ashe, *The meaning of organization: the role of cognition and values*, in *Organizational Climate and Culture*, ed. by B. Schneider, San Francisco, Jossey-Bass, 1990, pp. 40-84.

¹⁷ R.L. Brown, T.W. Leigh, *A new look at psychological climate and its relationship to job involvement, effort, and performance*, in «Journal of Applied Psychology», 81 (1996), pp. 351-368.

¹⁸ D.L. Morrison, D.M Upton, J. Cordery, *Organizational Climate and Skill Utilization*. Paper presented to the 12th Annual Conference of the Society for Industrial and Organizational Psychology, St. Louis, MI, 1997.

According to these findings the «*safety climate it is a specific form of organizational climate, which describes the perceptions that employees have on the safety value in the workplace*»¹⁹.

Neal, Griffin and Hart believe that «*the relationship between the safety climate and the system security is at least partially mediated by the individual safety behavior*». They also identify the safety climate in the «*management values* (e.g. welfare employees management) *and organizational and management practices* (e.g. training adequacy, security equipment supply, management of quality safety systems)».

Moreover they believe that communication and employees involvement in the safety field are vital components in security environment²⁰.

To date, Safety climate is defined as a multidimensional construct able to influence the behavior of workers, groups and organizations. It is a set of shared beliefs by the organization and workers about safety²¹. The first definition of safety climate was made in 80's by Zohar as a set of *molars perceptions* that workers have and share of their own work environment as guide in outputting adaptive and appropriate behaviors to accomplish task. The author emphasizes the role of leadership and safety officers as process determining factors for defining and transforming the climate, and also the variables that govern the relationship between climate and safety performance²².

The work done by Neal *et al.* connects, for the first time, the model organizational climate to security climate. The research results show that the organizational climate shaping the climate of security, which is linked to the safety performance²³.

According to Silva, Lima and Baptista the conclusions of Neal *et al.* had some limitations. Neal's analysis is reduced to a balance of power between organizational climate and climate security²⁴. Moreover, the instruments used do not allow the exploration of the relationship between the two constructs (item 35

¹⁹ A. Neal, M.A. Griffin, P. Hart, *The impact of organizational climate on safety climate and individual behavior* cit., p. 100.

²⁰ *Ibidem*.

²¹ G.S. Smith, H. Huangy, M. Ho, P.Y. Chen, *The relationship between safety climate and injury rates across industries: The need to adjust for injury hazards*, in «Accident Analysis and Prevention», 3 (2006), pp. 556-563.

²² D. Zohar, *Safety climate in industrial organizations: theoretical and applied implication*, in «Journal of Applied Psychology», 12 (1980a), pp. 78-85.

²³ A. Neal, M.A. Griffin, P. Hart, *The impact of organizational climate on safety climate and individual behavior* cit., pp. 99 sgg.

²⁴ S. Silva, M.L. Lima, C. Baptista, *Osci: an organisational and safety climate inventory* cit., pp. 206 sgg.

of the Organizational Climate Scale²⁵ to measure the organizational climate; 16 items to evaluate the safety perceptions in a hospital). Lastly the sample studied is limited to a single and specific organization (a hospital), these findings point out some doubts about the external validity of the study.

To overcome the limitations of Neal's research, Silva *et al.* have created a OSCI (Organizational and Safety Climate Inventory) questionnaire to address the Characterization of Both Organizational climate and safety climate²⁶.

1.2. Theoretical model

The theoretical model used in this study takes the fundamental concepts that led Silva *et al.* to the development of the OSCI questionnaire²⁷.

Specifically, the characterization of the two dimensions that allow the survival of the organization in spite of the inherent tensions within it:

- the first dimension focuses the inside towards the outside;
- the second one, the flexibility versus control.

The comparative analysis of these dimensions allows the identification and objectification of the values and norms perceptions of organizational climate together with the ones of safety climate²⁸.

The majority of job satisfaction studies are conducted on line employees. The concept of job satisfaction is based on the physical and mental wellbeing, which can affect their productivity and organizational citizenship²⁹. Therefore, we propose the following hypothesis.

- H1: A positive organizational climate predict high levels of psychological safety climate.
- H2: job satisfaction as a mediating variable on the relationship between organizational climate and psychological safety climate.

²⁵ P.M. Hart, M.A. Griffin, A.J. Wearing, C.L. Cooper, QPASS: *Manual for the Queensland Public Agency Staff Survey*, Brisbane, Public Sector Management Commission, 1996 b.

²⁶ S. Silva, M.L. Lima, C. Baptista, *Osci: an organisational and safety climate inventory cit.*, pp. 204 sgg.

²⁷ *Ibidem.*

²⁸ *Ibidem.*

²⁹ J.G. Proudfoot, P.J. Corr, D.E. Guest, G. Dunn, *Cognitive-behavioural training to change attributional style improves employee well-being, job satisfaction, productivity, and turnover*, in «Personality and Individual Differences», 46, 2 (2009), pp. 147-153.

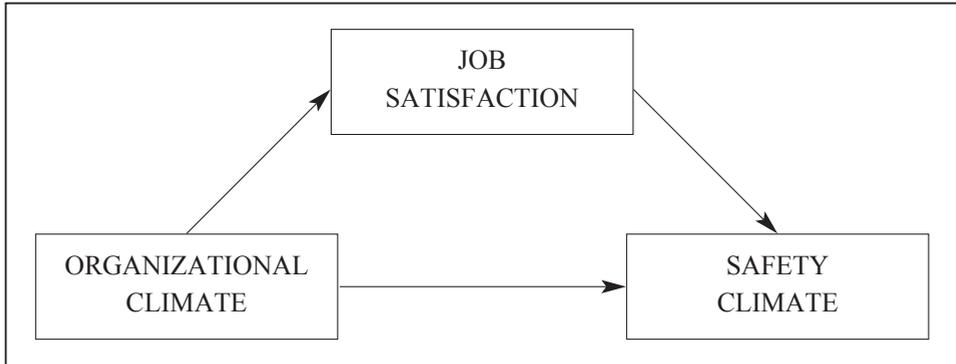


Fig. 1 - Theoretical Path model.

2. Objective of the study

Identify the variables that mediate the interactions between organizational climate, safety climate, job satisfaction. In order to analyze the perceptions that people have about the general security issues within their company. This arises from the consideration that the literature has recognized the implementation of a security management system is the most efficient way to produce resources that not only affect and improve productivity at work, but also can positively influence the employees attitude about security issues.

3. Method

3.1. Participants and Procedure

Participants were 120 workers employed in a wide range of occupations (e.g. manager an manual labor) were recruited from three organizations in different sectors (e.g. public administration and industries). Representatives hierarchical levels were three (bottom, middle and low). The participants had worked in the organization for at least eighteen months. Forty-four participants (36.7%) were male and seventy-six (63.3%) were women aged between 18 and 55 years of age ($M_{age} = 38.9$, $SD = 8.51$) and levels of education for the majority (80.0%) of high school degree.

The study participation was completely voluntary, data were collected anonymously and the participants could refuse their participation in any moment.

Research procedures have complied with the ethical guidelines and code of conduct of the APA and AIP (Italian Psychological Association).

3.2. Measures

OSCI Inventory

The final version (The initial full version of OSCI included 125 items reduced after a first set of reliability analyses of the scales) of OSCI included 78 items in two questionnaires: OSCI - Organizational Climate Questionnaire and OSCI - Safety Climate Questionnaire.

OSCI - Organizational Climate Questionnaire

The Organizational climate questionnaire consists of 22 items cluster in the four content dimensions (support, goals, rules, and innovation). The answers were given on a seven point Likert-type scale (1 - totally disagree to 7 - totally agree).

OSCI - Safety Climate Questionnaire

The safety climate questionnaire includes four main scales: safety climate content scale, safety as an organizational value scale, Organizational safety practices scale, (and personal involvement with safety scale. The answers were given on a seven point Likert-type scale (1 - totally disagree to 7 - totally agree)³⁰.

Organizational Satisfaction Questionnaire (QSO)

In order to identify the level of satisfaction of the interviewees about their work, it understood as the organizational satisfaction index, you used the QSOs (Organizational Satisfaction Questionnaire) in the standard form of 20 item³¹. The answers were given on a seven point Likert-type scale (1 - totally disagree to 7 - totally agree).

3.3. Data Analysis

The survey data were analyzed with structural equation modeling (SEM). Tests were completed in AMOS 20.0³² applying the maximum-likelihood (ML) method. The SEM approach was then used to test the mediation model shown in Figure 1 Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable³³.

³⁰ S. Silva, M.L. Lima, C. Baptista, *Osci: an organisational and safety climate inventory* cit., p. 5.

³¹ C. Cortese, *Prima standardizzazione del Questionario di Soddisfazione Organizzativa*, in «Risorsa Uomo», 3-4 (2001), pp. 1-19.

³² J.L. Arbuckle, W. Wothke, *AMOS 4.0 user's guide*, Chicago, IL, Small Waters, 1999.

³³ R.M. Baron, D.A. Kenny, *The Moderator-Mediator Variable Distinction in Social Psychological Research - Conceptual, Strategic, and Statistical Considerations*, in «Journal of Personality and Social Psychology», 51, 6 (1986), pp. 1173-1182.

3.4. Preliminary analysis

A confirmatory factor analysis (CFA) was conducted according to Harman's single-factor test in order to diagnose the extent to which common method variance might be a problem. This technique load all of the variables in their study into an exploratory factor analysis and examine the unrotated factor solution to determine the number of factors that are necessary to account for the variance in the variables³⁴.

A comparison between the hypothesized model and a model with one factor (with all items loading on a unique factor) revealed that the former provided a better fit for the data in all the CFA fit measures, 3 Factor model [$\chi^2(45) = 415.82$, $p < .001$; CFI = .88; GFI = .89; SRMR = .08; RMSEA = .09; AIC = 56.00] vs. 1 Factor Model: [$\chi^2(21) = 204.37$, $p < .001$; CFI = .98; GFI = .98; SRMR = not possible to estimate; RMSEA = .05; AIC = 110.00]. The differences were found to be significant by comparing the chi-square values and the degrees of freedom of both models ($\Delta\chi^2(45) = 211.45$, $p < .001$). According to these results, no evidence for common method bias was found in the data.

4. Results

The means, standard deviations, and intercorrelations between constructs are reported in Table 1. Results showed that Job Satisfaction correlates positively with Safety Climate and Organizational Climate. Furthermore, the Safety Climate correlates positively with Organizational Climate.

Table 1 - Means, Standard Deviations, and Correlations Among Study Variables

Variables	N	Mean	SD	Alpha	1	2	3
Job-Satisfaction	120	5.22	.60	.95	1		
Safety-Climate	120	5.73	.64	.88	.359**	1	
Organizational-Climate	120	5.60	.65	.83	.303**	.435**	1

*Note. $p < .001$ **

In order to test the mediating effects of Job Satisfaction, the bootstrapping procedure proposed by Hayes and Preacher (2014) was used³⁵.

³⁴ P.S. Aulakh, E.F. Gencturk, *International principal-agent relationships-control, governance and performance*, in «Industrial Marketing Management», 29 (2000), pp. 521-538.

³⁵ A.F. Hayes, K.J. Preacher, *Statistical mediation analysis with a multicategorical independent variable*, in «British Journal of Mathematical and Statistical Psychology», 67 (2014), pp. 451-470.

Table 2 - HLM models of mediation using a 3-step procedure derived from Baron and Kenny (1986) Job Satisfaction as mediator of Organizational Climate and Safety Climate

Variable	Dependent	Mediator
Step1	β	β
Organizational Climate – Safety Climate	.36***	
$R^2 = .43$		
Step2		
Organizational Climate – Job Satisfaction	.30***	
$R^2 = .28$		
Step3		
Organizational Climate – Job Satisfaction-Safety Climate	.25*	.15***
$R^2 = .25$		

Sample size $N=120$

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

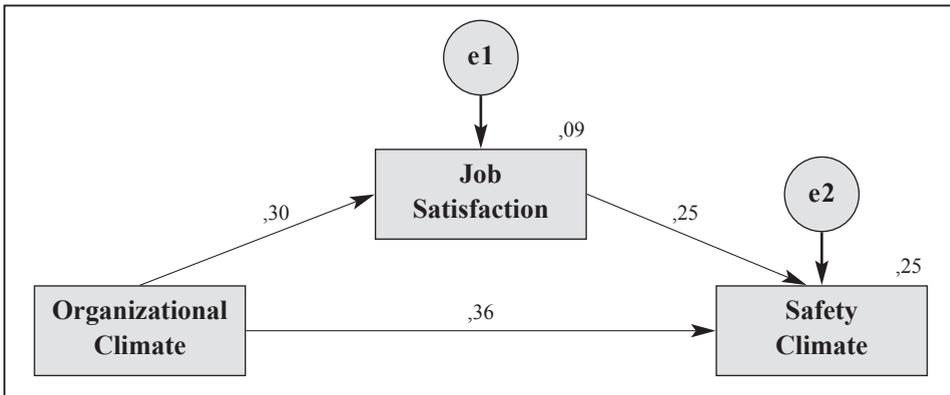


Fig. 2 - Summary of the support found for the research hypotheses (the values are the mixed-models regression estimates).

Results presented in Table 2 and in the graph below (Figure 2) show that: (a) the Organizational Climate predicts the Safety Climate ($\beta = .36$, $R^2 = .43$, $p < .001$); (b) the Organizational Climate predicts Job Satisfaction ($\beta = .30$, $R^2 = .28$, $p < .001$); (c) the effect of Organizational Climate on Safety Climate is reduced after controlling Job Satisfaction ($\beta = .25$, $R^2 = .25$, $p < .05$; indirect effect = .15; $p < .001$), also test bootstrap³⁶ carried out in 2000 bootstrapsamples, with a con-

³⁶ K.J. Preacher, A.F. Hayes, *Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models*, in «Behavior Research Methods», 40 (2008), pp. 879-891.

fidence interval of 95%, indicating that there is a partial mediation (Lower limit = .018; Upper limit = .150; $p < .001$).

5. Discussion

The research work on safety climate and perception of well-being in the working environment was created with the purpose of analyzing the attitudes and assessments of workers in their professional environment. The theoretical reference background shows a clear correlation between the analysis of the subjective-personal data on safety and the level of well-being experienced by employees.

According to Zohar³⁷, safety climate describes workers' perception of the management's commitment to safety.

The latest research emphasizes the relationship between job satisfaction. In particular, a recent meta-analysis by Clarke (2010)³⁸ reveals that individual safety climate perceptions are directly related to employee job satisfaction. The author states that there is an important correlation between the perception of positive safety climate and job satisfaction.

This is in line with the traditional needs theories (e.g., Maslow, 1954)³⁹ who affirm how important the satisfaction of the work needed to predict the perception of the sense of worker safety.

The principal objective of this study was Identify the variables that mediate the interactions between organizational climate, safety climate and job satisfaction.

According to our results obtained from 120 interviewed workers, the average job satisfaction can be partially correlated to the relationship between organizational climate and safety climate. This means that organizational culture is able to predict safety climate, but this relationship is mediated by job satisfaction.

Additionally employees with positive safety climate perceptions are more likely to perceive support from their organization⁴⁰.

The safety management system can be defined as the set of people, resources, policies and procedures that interact in an organized way to reduce damage and losses generated in the operational processes within the workplace.

³⁷ D. Zohar, *Thirty years of safety climate research: reflections and future directions*, in «Accident Analysis & Prevention», 42 (2010), pp. 1517-1522.

³⁸ S. Clarke, *An integrative model of safety climate: Linking psychological climate and work attitudes to individual safety outcomes using meta-analysis*, in «Journal of Occupational and Organizational Psychology», 83 (2010), pp. 553-578.

³⁹ A.H. Maslow, *Motivation and personality*, New York, Harper & Row, 1954.

⁴⁰ T.R. Mitchell, B.C. Holtom, T.W. Lee, C.J. Sablinski, M. Erez, *Why people stay: Using job embeddedness to predict voluntary turnover*, in «Academy of Management Journal», 44 (2001), pp. 1102-1121.

The integration of this system into the daily work of the organisation is essential for its execution. So that an adequate safety management system could lead to a reduction of the accident rate and it can encourage safe of workers behavior⁴¹.

ABSTRACT

For decades, the organizational context dynamics and their effects on workers well-being represent one of the main themes of health psychology in the Workplace. More recently, the scientific interest has turned to the possible relationship between the organizational climate characteristics and worker mental and physical health.

Starting from this premise, the study presented here aims to identify the variables that mediate the interactions between organizational climate, safety climate and job satisfaction.

The methodological theoretical model is the one developed within the OSCI, a standardized questionnaire scientifically validated in some European countries.

It tends to evaluate the relationships between organizational climate and safety climate, with particular reference to relevant characteristics emerging from the typical organizational culture of each organization.

Le dinamiche del contesto organizzativo e gli effetti che queste determinano sul benessere dei lavoratori rappresentano, da decenni, uno dei principali temi della psicologia della salute nei luoghi di lavoro. Si rivela, invece, più recente l'interesse scientifico per le possibili relazioni tra caratteristiche del clima organizzativo e salute psico-fisica del lavoratore. Partendo da questo presupposto, lo studio qui presentato si propone di individuare le variabili che mediano le interazioni tra clima organizzativo, clima di sicurezza e soddisfazione lavorativa. Il modello teorico-metodologico è quello sviluppato all'interno dell'OSCI, un questionario standardizzato e validato scientificamente in alcuni paesi europei e che tende a valutare le relazioni tra clima organizzativo e clima di sicurezza, con particolare riferimento alle caratteristiche salienti che emergono dalla cultura organizzativa tipica di ogni singola organizzazione.

⁴¹ Y.H. Huang, D. Zohar, M.M. Robertson, A. Garabet, J. Lee, L.A. Murphy, *Development and validation of safety climate scales for lone workers using truck drivers as exemplar*, in «Transportation Research Part F: Traffic Psychology and Behavior», 17 (2013), pp. 5-19.