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## **The Focus of Safety Research: A Brief Review**

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### **Abstract**

In the area of safety climate, research has mostly focused on safety performance and its antecedents while improving safety performance has been the aim of practitioners in the area. Variables that are examined in safety research as a result of this shift mainly include safety culture, safety climate, safety knowledge, risk perception, management safety systems, and safety practices. Safety climate and safety culture are sometimes used interchangeably by researchers and professionals; these constructs are different though both are predictive measures of safety performance. Also, previous studies have mostly focused on establishing a safe climate and how the safety climate will influence measures of safety performance. This is because researchers often assume that since a relationship exists between safety performance and safety climate, any influence on the safety climate will directly affect safety performance. The problem is that very few of these studies examine the actual antecedents of safety performance. Hopefully, future studies can explore the relationships between safety climate and its established antecedents; safety knowledge, unsafe practice, and employee risk perception.

**Keywords:** review, safety climate, safety knowledge, safety research.

### **Introduction**

The concept of safety and safety systems for a long time had been the preserve of engineers, with the idea of making the workplace safer. Several engineering fetes and ergonomic accomplishments have improved safety standards in the workplace. However, in the industry, the aim has been to have a few accidents as possible given advancements in the way of doing things. Unfortunately, accidents may not necessarily be the result of inferior equipment or poor work environments but a great number of accidents are the result of human factors (Heinrich et al., 1980).

Heinrich et al. (1980) stated that 88 % of accidents which resulted in injury were caused by employee risk behaviour and 10 % originated from the hazardous mechanical or physical conditions of the workplace. Engineering modifications have made an impact on 10 % of the hazards in the workplace according to them. However, the remaining 88 % of the problem is still not being well addressed as most safety officers seemingly do not have an appreciable understanding of human behaviour modification and attitude change (Pettinger, 2012). Ostensibly, the psychologist may be better placed to solve this problem. Without prejudice, it is safe to say that if accidents are caused by human attitudes and behaviour then the issue becomes the prerogative of the behaviour and attitude modification science.

Yule (2003) makes the argument that safety practitioners have over the years tried so many strategies aimed at different aspects of the workplace to attain the goal of a safe working environment. Efforts have evolved and the psychological climate of the organisation has now been

put on the spot. Safety climate is a concept researchers developed to explain perceptions of employees of the organisational environment (Auzoult, Ngueutsa, 2019; Deng et al., 2019). It is a construct described as part of the psychological climate of the organisation. It has grown to be used as both a reactive and a proactive measure; the former as a way to determine lapses which may have led to accidents and the latter as a blueprint for improvements to safety systems (Jiang et al., 2019; Lee, 1998).

Safety Culture embodies values, beliefs, and underlying assumptions of the organisation including the day to day interactions, records, accident history, and company policy all over some time (Flin et al., 2000). Safety culture research has come to the fore in safety research. The idea is that the environment in the workplace should be one that prevents accidents from occurring. The priority of management would be to provide training, facilities, and place measures that were all aimed at preventing accidents before they occur. Employees would eventually imbibe this culture and adhere closely to its dictates. Such organisations would be characterized by employees adhering to proper house-keeping, making proper use of safety equipment, and avoiding shortcuts and other unsafe practices. Thus, if safety is an attitude then the culture that would eventually be created would form this attitude among employees. The point is that a high safety culture predicts to an extent of reliability, a high safety performance (Auzoult, Ngueutsa, 2019; Deng et al., 2019).

### **History of Safety Culture Research**

Safety culture research was fuelled by events in history; most notably, the Chernobyl Nuclear Disaster. Yule (2003) however asserts that this was the focus of research until the concept of safety climate was introduced in 1980 by Dov Zohar. Safety culture in a practical sense is more of an abstract measure that reflected not only descriptive measures but also attitudes, safety records, hazard analysis, content analysis of performance reports within an organizational culture (Cooper, 2000). Up until this point studies that assessed the concept of safety culture were sometimes descriptive and employed quantitative measures (Carroll, 1998). Although researchers claimed to be measuring culture, their quantitative methods of study and general methodology questioned the validity of the cultural measure.

The papers then shifted focus to safety climate which then became adopted as a reflective measure of the safety culture. Safety climate became a more convenient measure as it lends itself to quantitative methods and does not require time-based research designs or intensive research (Yule, 2003). Previous studies were not quite extensive enough to assess any form of culture as a measure. The paper by Zohar (1980) which is described by Yule (2003) as seminal shifted the focus of studies to the relatively unknown concept of safety climate. Safety climate refers to the priority and/or value that the organisation places on safety and actions and issues of safety as perceived and shared by employees within the organisation (Zohar, 2008). The important thing to note is that though both constructs are used interchangeably, either safety climate or safety culture measurement has one aim, which is the prediction of safety performance. It is essentially a proactive step towards the establishment of accident-free organizations. Safety climate thus did not come to undermine the aim of research in the area. Safety climate is a compliment measure of safety culture.

### **Safety Climate As An Independent Concept**

Safety climate represents shared views within the organisation of the organisation's policies and actions that prioritise safety (Yule, 2003). According to Zohar (2008), safety climate refers to the priority and/or the value that the organisation places on safety and actions and issues of safety as perceived and shared by employees within the organisation. Simply, it reflects what employees believe is the level of priority that the leadership/management ascribes to safety. It is a reflection then of the leaderships' commitment to safety. Safety climate is still a major indicator of workplace safety which workers derive from their working environment (McGhan et al., 2020). The concept of safety climate became a key concept in safety research after the work of Zohar (1980) in Israel which is often described as the most seminal study as far as safety climate issues are concerned (Yule, 2003). Schneider (1990) contends safety climate could be an indication of the underlying culture of the organisation. Zohar (2008) further claims that a safety climate is important because employees have been known to behave per the safety climate.

The current study considers the concept as an apt measure of safety within the organisation. It lends itself much easier to measurement as compared to safety culture. Being able to assess safety climate as a measure with various scales at a particular point in time makes the measure particularly useful in a time-bound study such as this. However, it is a very reliable measure of the safety situation within the organisation (Adutwum, 2010; Zohar, 2008; Yule, 2003). As its effects are expected directly on the employees, the focus of such studies then stays on the employees and the factors that “their own evaluation of safety priority in the organisation” is supposed to create. Nevertheless, even though safety climate is also now used as a fair predictor of performance and a reflection of safety culture the studies have focused mostly on the safety climate – safety performance relationship (Rundmo, 2000).

The path of safety climate to the achievement of the predicted performance has been neglected by most studies in the area. Essentially, the studies focus on the relationship and fail to establish how safety climate comes to establish performance. For instance, in reality, it is expected that safety knowledge informs safety attitudes such as risk perception which may in turn affect safety practices and ultimately performance. Few studies have explored these relationships and those that have done so have mostly failed to establish a strong relationship between these variables (Clarke, 2006). Less emphasis is placed on the path that having a high safety climate travels to achieve its corresponding safety performance.

### Implications for Organisational Safety Research

To organisations, it may be speculated that the priority has always been to have high safety performance measures. Thus, the motivation to explore the said path is virtually absent. However strong the safety performance - safety climate relationship, it may be slightly erroneous to identify safety knowledge, employees' risk perception and safety behaviour as direct products of the climate. Perhaps, this is because this relationship has not been established as strongly by researchers as the safety performance - safety climate relationship.

In the future, researchers can focus solely on these variables to establish a possible predictive relationship that will eventually lead to safety performance. This will help explore convincing relationships that have practical relevance.

### Conflicts of interest

The author declares no financial conflicts of interest.

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