

Chapter 4. Safety Culture Theory

The term ‘**safety culture**’ was introduced by International Atomic Energy Agency in their report on the Chernobyl nuclear power plant disaster in 1986. The errors and violations of operating procedures which contributed to the Chernobyl disaster were seen by some as being evidence of a poor safety culture at the plant. The identification of a poor safety culture as a factor contributing to the accident led to a large number of studies investigating and attempting to measure safety culture in a variety of different high-risk, high-hazard industries. Although the importance of safety culture is widely accepted, there is still little agreement about what is meant by the term.

To an extent, safety culture has been a victim of its own success, because the explosion of interest in safety culture has led to a range of conceptualisations, nearly one for each research team working in the area. A recent review of the research literature identified 16 separate safety culture definitions. The issue is further confused by the related concept of safety climate. It appears that those who introduced the term safety culture ignored the earlier concept of safety climate described by Zohar (1980). Once the concept of safety culture became popular in the early 1990’s the question of its relationship with safety climate arose. Over the last decade several attempts have been made to distinguish between the two terms, but safety climate is still often used interchangeably with safety culture. The following section presents the most accepted definition of safety culture and a model that describes a safety culture.

Safety culture & climate Definitions:

The Advisory Committee on the Safety of Nuclear Installations (ACSNI) arguably produced the most widely accepted and comprehensive safety culture definition. They defined safety culture as **“The product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety and by the efficacy of preventive measures”**.

Safety culture consists of values, attitudes, perceptions, competencies and behaviour of the people that make up the organisation. In an organisation with a positive safety culture there are high levels of trust; people agree that safety is important and that safety management systems are effective. This definition implies that a poor safety culture would be one where people do not trust each other, and do not share the perception that safety is important and that preventative measures are effective.

Safety climate has been defined as “The workforce's attitudes and perceptions at a given place and time. It is a snapshot of the state of safety providing an indicator of the underlying safety culture of an organisation”.

Safety climate also consists of attitudes and perceptions but does not contain values, competencies and behaviour. It differs from safety culture since it is specific to one time and location. It can be used as an indicator of the underlying safety culture. These definitions indicate that safety climate is a sub-set of safety culture, which is a broader, more enduring organisational feature.

Safety culture influences workers’ (or group of workers) view of the world (i.e. what is important and how they interpret new information), and is relatively stable over time. It can be likened to the personality of the organisation. Safety culture transcends the organisational members that share the culture, is passed on to new members, and endures. In essence, safety culture is independent of people who are currently part of the organisation. The culture will exist after all these people have left. New members of the organisation informally ‘learn’ the safety culture, through observation, social feedback and trial and error.

Model of Safety Culture:

In review of the safety culture research literature it was concluded “All in all, the models of safety culture are unsatisfactory to the extent that they do not embody a causal chain but rather specify some broad categories of interest and tentative relationships between those”. Usefully, a model of safety culture based on organisational culture theories and attitude models was developed.

Safety culture consists of three levels, similar to the layers of an onion (see Figure 1). The core consists of ‘basic beliefs’ that are implicit, taken for granted, unconscious and shared by the entire organisation. These assumptions are not specific to safety, but are more general. For example, if written rules are regarded as critical then safety rules will also be considered as critical. The next layer is labelled ‘espoused values’ which in practice refers to the varying natures of organisational members. These are specific to safety, as opposed to general organisational factors. The outer layer consists of attitudes or the outward expression of the safety culture. These would include equipment (e.g. personal protective equipment), behaviours, (e.g. using appropriate safety equipment or managers conducting safety tours), physical signs (e.g. posting number of days since last accident publicly) and safety performance (number of incidents).

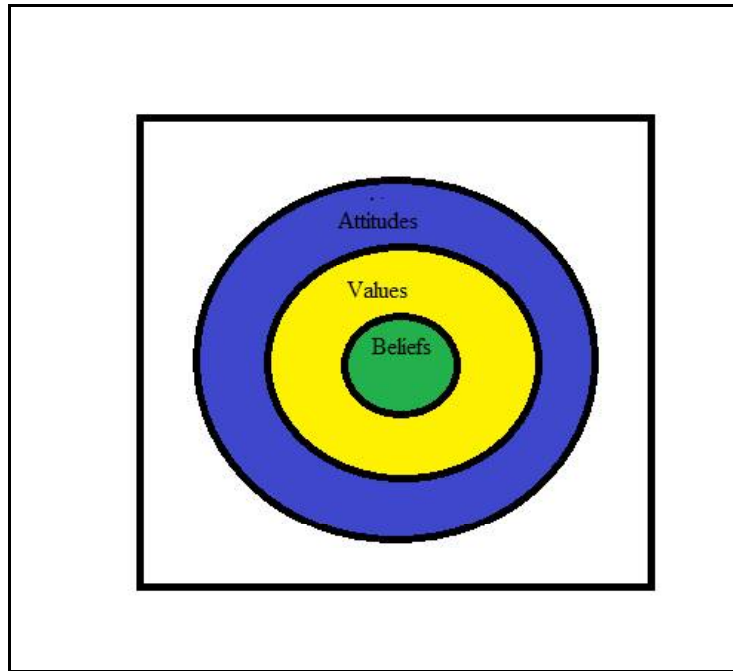


FIGURE 2: Safety Culture Model

This model distinguishes between safety climate and safety culture, with safety climate consisting of the two outer layers of safety culture. Safety climate is a subset of safety culture and consists of espoused values and attitudes, which are specific to safety. These aspects can be measured quantitatively (e.g. via structured questionnaires) and are less stable. Basic beliefs, the inner-most element of safety culture, are more readily assessed by qualitative, non-numerical methods, as basic beliefs are by definition subconscious, taken-for-granted and therefore can only be inferred. For example, via safety culture discussions with a large number of rail transport staff, it became apparent to an external facilitator that they held three different, subconscious definitions of safety: (1) train safety, (2) passenger safety and (3) staff safety. A very high priority was afforded to train and passenger safety, whereas staff safety was implicitly regarded as less important, and attracted less effort and resources. When this aspect of their safety culture was pointed out to the organisation, it was acknowledged that these implicit definitions did exist, and did influence how safety was managed, but had not previously been explicitly recognised. It is difficult to envisage how purely quantitative methods could have unearthed these types of subtleties in an organisation's safety culture. It required qualitative methods and an external observer to notice.

Influence of National & Organizational Culture:

In the safety culture model shown in Figure 1, basic beliefs influence espoused values, which in turn determine attitudes (see Figure 2). This poses the question what influences basic beliefs? Theoretically, basic beliefs are influenced by the national and organisational cultures, although there is limited research evidence to support this proposition. Although the basic beliefs do not have to be specific to safety, organisations that have strong safety cultures will have basic beliefs about the priority of safety, which are shared by organisational members. If organisations do not possess these basic assumptions, this would be an indicator of a poor safety culture.

The national culture is likely to influence the basic beliefs of organisational culture, as some basic beliefs will come from the national culture, for example the importance of rules and the acceptance of hierarchy. There is some evidence that safety culture varies significantly due to differences in national cultures. Known national cultural differences between major countries, such as (a) willingness to accept an unequal distribution of power, wealth and privilege (known as power distance) and (b) individualism were reflected in national responses to a safety climate questionnaire.

In summary, there is limited evidence to support the notion that national culture does influence safety culture; however differences within countries may be larger than between countries. Also, the influence of national or regional culture does not preclude establishing a local site safety culture which differs markedly from other similar local sites. A strong safety culture can over-ride national or regional culture, if this safety culture is actively and consistently promoted.

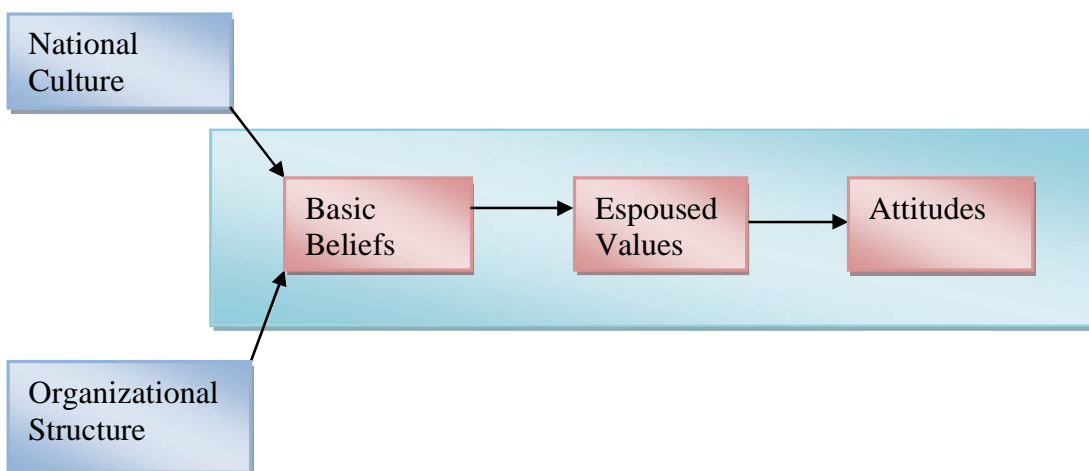


FIGURE 3: Relationship between National & Organisational Structure