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Returning to the roots of culture: A review and re-conceptualisation of safety culture

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Abstract

Despite significant research, there is still little agreement over how to define safety culture or of what it is comprised. Due to this lack of agreement, much of the safety culture research has little more than safety management strategies in common. There is, however, a degree of acceptance of the close relationship between safety culture and organisational culture.

Organisational culture can be described using traditional views of culture drawn from the anthropology and cultural psychology literature. However, the safety culture literature rarely ventures beyond organisational culture into discussions of these more traditional concepts of culture. There is a need to discuss how these concepts of culture can be applied to safety culture to provide greater understanding of safety culture and additional means by which to approach safety in the workplace. This review explores how three traditional conceptualisations of culture; the normative, anthropological and pragmatist conceptualisations, can and have been be applied to safety culture. Finally the review proposes a synthesised conceptualisation of safety culture which can be used to provide greater depth and practical applicability of safety culture, by increasing our understanding of the interactions between cultural and contextual variables in a given workplace and the effect they have on safety.

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1. Introduction

‘Safety culture’ is a term with many different definitions in the academic and professional literature (see reviews by Choudhry et al. (2007) and Guldenmund (2000)). The phrase ‘safety culture’ was first used by the International Nuclear Safety Advisory Group (INSAG) in a report following the 1986 disaster at the Chernobyl Nuclear Power Plant. Amongst other causal factors, it was reported that a lack of safety culture, both within the Chernobyl plant and at a national level, contributed to the incident (INSAG-1, 1986, as updated in INSAG-7, International Nuclear Safety Advisory Group, 1992). This report subsequently sparked significant academic interest in this new concept. Five years following the disaster INSAG gave the following definition of safety culture:

“Safety Culture is that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.” (p. 1; INSAG-4, 1991)

Safety culture research has been conducted by individuals originating from a number of different disciplines (social and organisational psychology, business and management, etc.), leading to differences in the way safety culture is conceptualised. A number of authors have noted that despite much research in the field there is a lack of widely-accepted definitions of safety culture (Guldenmund, 2000; Hopkins, 2006). Guldenmund (2000) highlighted that, this had led many researchers to re-define safety culture in relation to their specific area of interest. Due in part to the number of different definitions of safety culture, and to the nature of the specific problem under investigation, research in this field has focussed on a varying number of factors and influences, such as organisational management systems, policies and procedures, job design, work pressures, training, employee involvement in decision making and perceptions and attitudes regarding the work environment (Arboleda et al., 2003;

Choudhry et al., 2007; Cox and Cheyne, 2000; Grote, 2008; Havold, 2010; O'Toole, 2002; Parker et al., 2006).

The lack of agreement regarding the nature and content of safety culture presents a barrier to the continued advancement of the field beyond being simply a loose collection of organisational safety research. Whilst the nature of safety, and the specific associated risks and hazards, may differ between organisational settings, there are a number of key factors common to most organisational settings. By definition safety is "*the condition of being protected from or unlikely to cause danger, risk, or injury*" (Oxford Dictionaries, 2010). Thus, safety can be understood as a state of being in which individuals are protected from the likelihood of harm. In the context of organisational safety culture, however, it is necessary to identify a manner in which to objectively describe safety. For the purpose of this paper safety is viewed as the combination of those behaviours which either increase or decrease the risk of harm, with safe denoting protected from harm, and unsafe at high risk of harm. The behaviours which may increase or decrease the risk of harm may include the development and implementation of safe technologies, the implementation of safety-related policies and procedures, the extent to which workers correctly utilise technology and adhere to policies and procedures, and finally, behaviours conducted by workers which fall outside of these parameters but have an impact on the risk of harm (for example, the safe or unsafe use of a ladder by a worker employed by an organisation without a policy covering the use of ladders). Further, this harm could be physical or psychological in nature.

The exact nature of safe and unsafe behaviours may differ between organisations and industries, and the targeted level of an organisation (e.g. management, supervisors or workers), thereby permitting different focuses between researchers. However, it is questionable whether culture and, therefore, safety culture, is so differentiated. Distinct from the broader field of safety science, is the specific use of the word 'culture' in safety culture,

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thus the exploration of the meaning of culture may provide a framework for the further development of safety culture. Despite the lack of consensus in definitions and models of safety culture, there is some agreement that a strong safety culture is an organisational culture that places a high priority on safety-related beliefs, values and attitudes (Cooper, 2000; Guldenmund, 2000; Short et al., 2007). Whilst the literature often presents safety culture as a specific issue, it can be argued that it is a result of the overarching organisational culture, and is perhaps better viewed as a sub-component or effect of organisational culture, and not a culture in itself (Antonsen, 2009; Choudhry et al., 2007; Guldenmund, 2000; Haukelid, 2008; Hopkins, 2006). Due to the close relationship between these concepts, organisational culture would appear to provide a useful avenue to explore the meaning of culture in safety culture.

2. Organisational culture and safety culture

Organisational culture has received significant attention in the literature and many definitions have been presented. According to Fisher and Alford (2000), there are over 164 definitions of organisational culture. Despite a broad variety of definitions, Guldenmund (2000) identified seven commonly referenced characteristics of organisational culture; (1) it is an abstraction rather than a ‘concrete phenomenon’ and is, therefore, difficult to define and operationalise; (2) it is relatively stable over time; (3) it is multi-dimensional; (4) it is shared by groups of people; (5) it may contain several aspects which co-exist within an organisation (e.g. a ‘service climate’ or a safety culture); (6) it leads to overt practices; and that (7) it serves a functional purpose, as seen in the common saying that culture is “*the way we do things around here*”.

One of the more commonly referenced definitions of organisational culture found in the literature is, “shared values and beliefs that interact with a company’s people, organizational structures and control systems to produce behavioural norms” (Uttal, 1983). Another

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common definition of organisation culture seen in the literature is provided by Schein (1990). Rather than directly define organisational culture, Schein argued that any group with a significant shared history may have developed a culture and as such, organisational culture is simply the culture held by members of a given organisation. This culture was defined as:

“(a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems” (p. 111, Schein, 1990).

If organisational culture is merely the culture held by members of an organisation, then given the relationship between organisational and safety culture, it can be seen that safety culture also has theoretical ties to more traditional concepts of culture. It is, therefore, somewhat peculiar that the safety culture literature rarely ventures beyond brief discussions of the organisational culture literature in establishing its own parameters and theoretical basis. Whilst these concepts can be gleaned from the literature surrounding organisational culture there is a risk inherent to this approach. Due to difficulties in conveying culture to the business world, a number of organisational culture authors have attempted to translate culture into concepts more easily understood in this arena (Fisher and Alford, 2000). Whilst it is important to present organisational and safety culture in a manner which will be accepted by the business community, thereby increasing its application, it is important to ensure the highest fidelity of these translations to the original concepts. By basing safety culture purely upon translated concepts of culture gleaned from the organisational culture literature, there is an increased risk of cumulative error, which may lead to a loss of original content from the culture literature. Thus, in order to explore the meaning of culture in safety culture, it is beneficial to briefly return to some of the traditional definitions and conceptualisations of

culture, found in the anthropological and cultural psychology literature, in order to adequately translate these concepts to the safety setting.

3. Applying traditional conceptions of culture to safety culture

According to Tharp (2007), efforts to define culture have invariably led to exasperation, and many definitions have arisen. A number of authors have stated that definitions of culture number over 100, and that these definitions range from the very broad (so much so that the concept loses all predictive validity) to the very specific (Cohen, 2009; Triandis, 1996). In a review of the culture literature, Brinkmann (2007) identified three conceptualisations of culture, namely the normative, anthropological and pragmatist conceptualisations. These conceptualisations provide three broad categories within which much of the research regarding culture lies. Due to the unique perspectives of these conceptualisations, they provide a useful starting point for discussions regarding the nature of culture in safety culture. Prior to exploring these conceptualisations of culture, however, it is important to note that there are a number of different views within these conceptualisations, and many issues of contention. Whilst this is the case, this paper seeks to provide a general overview of the core components of these conceptualisations and explore how they can be, or have been, applied to safety culture.

The normative conception of culture holds that culture is the knowledge of “the best that has been said and thought” (Arnold, 1993). In this conceptualisation, culture is seen as a substance which can and ought to be possessed by an individual, resulting in the person being ‘cultured’ (Brinkmann, 2007). When applied to a group setting this conceptualisation can similarly be used to describe a group as cultured or uncultured, or more commonly uncivilised. Brinkmann (2007) argued that this conceptualisation can be used to describe the ‘normative differences’ between individuals and groups.

The anthropological conceptualisation of culture is the view that culture is possessed by all, being comprised of a number of factors which ensure that conduct is repeated (Brinkmann, 2007). In contrast to the normative conception, this view of culture focuses on the shared, or common, factors, rather than the evaluation of those characteristics which are either present or absent in an individual or group. This conceptualisation is dominant within the anthropological and cultural psychology literature, and thus many of the myriad of definitions of culture represent this conceptualisation. Whilst a full analysis of the social anthropology literature is beyond the scope of this article a few point bear discussion.

Due to the difficulties inherent in defining culture many authors rely on examples drawn from other fields to describe it. For example, Triandis (1989) likened culture in a society to memory for an individual, in that it provides “*designs for living that have proven effective in the past*” (p. 511). Similarly, in a review by Rohner (1984), two examples were given where culture was seen as a set of rules such as those which govern the use of language, or the rules of a football match. Triandis (1989) stated that the domains to which culture pertains include language, economic, political and religious systems, along with religious and aesthetic patterns, and social structures to name a few. Later, Triandis (1996) stated that, within the broad range of definitions of culture, the common ground appears to be that culture consists of a number of “*shared factors... (that) provide the standards for perceiving, believing, evaluating, communicating, and acting*” (p. 408) among a group of individuals who share a common language, history and location.

Ultimately, due to the need for safety culture to be linked directly to behavioural outcomes, approaches utilised in cross-cultural psychology provide a useful starting point for discussing the anthropological conceptualisation of culture as it relates to safety culture. This is predominantly due to the fact that psychology has traditionally focussed on predicting behaviour to a greater degree than the field of anthropology. Further, the field of cross-

cultural psychology has sought to understand differences in behaviour between individuals and groups caused by culture. Chiu and Hong (2006) stated that there are many parts of a culture, including a material culture, relating to methods used by members of the culture to achieve certain goals, a subjective culture, consisting of shared knowledge and ideas, and a social culture, consisting of rules and norms. Cooper and Denner (1998) provided a review of a number of categories of psychological theories relating to culture. Of the categories of theories reviewed, one in particular strongly relates to the anthropological conceptualisation of culture, which was labelled as “*culture as core societal values*”. It was stated that these theories define culture as a set of shared beliefs or values, which are reflected in the systems and practices of a group, and the thoughts, emotions and motivations of individuals (Cooper and Denner, 1998). Thus the shared factors of the anthropological conceptualisation of culture are commonly viewed in terms of shared beliefs and attitudes.

The final conceptualisation provided by Brinkmann (2007) was the pragmatist conceptualisation. In contrast to the previous views, the pragmatist conceptualisation, based strongly upon practice theory, holds that culture is essentially about practices. Social models have generally sought to understand behaviour and social order in terms of cognitions regarding either the consequences to individuals or the norms of groups. However, practice theory (Reckwitz, 2002) states that the social order is not about mental qualities and interactions, but is about tangible practices. In this theory, practices are described as the routine handling of objects, treatment of individuals and approaches to understanding the world around us. Despite practice theory’s emphasis on behaviour rather than cognitive factors, it was argued that behaviour only classifies as cultural ‘practices’ when attributions can be made regarding the values and reasons which the behaviour relates to. This conceptualisation is, therefore, inextricably linked to the anthropological conception of culture, which focuses more specifically on these underlying values and beliefs.

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As can be seen by the above discussion, the concept of culture can be interpreted in a number of ways resulting in largely different understandings of the purpose of investigating culture and the core components which form culture. The three conceptualisations presented above do not necessarily cover the entire vast array of possibilities of culture, yet serve as fundamental building blocks which can be utilised in exploring safety culture. For this reason the remainder of this paper will focus on applying these conceptualisations to safety culture, providing specific examples, where relevant, of these conceptualisations as they have been applied to safety culture. Finally, due to the unique strengths and weaknesses of each conceptualisation, this paper provides a synthesised conceptualisation of safety culture.

Prior to exploring these conceptualisations in depth, however, a brief note should be made regarding some of the contentions that have arisen in safety culture research. Whilst presenting a full discussion of all of these contentions is beyond the scope of this paper, there are two which are important to consider when exploring the application of traditional conceptualisations of culture to safety culture. Antonsen (2009) noted that definitions and research of safety culture rarely take into account the effect of power in organisations, nor the possibility of sub-cultures within an organisation. It is often stated within organisational culture research that organisations can be comprised of a number of subcultures rather than a single homogenous whole (Frost et al., 1991; Martin, 1992). These issues are important to consider if safety culture research is to have broad applicability and adaptability. As such, a brief description of how they relate to each conceptualisation is included. Through discussing these issues a greater understanding of the practical applicability of the explored conceptualisations can be obtained.

3.1. The normative conceptualisation of safety culture

Since the definition of safety culture, provided by INSAG report 4 (1991), safety culture has utilised a normative-like conceptualisation of culture. When discussing safety culture, Pidgeon (1991) stated that “*a normative element is implicit in the original use of the term*” (p. 130). Similarly, Guldenmund (2000) noted that the INSAG report “*follows a normative approach*” (p. 245). The definition implied that safety culture leads specifically to safety as the overriding priority (a predetermined ‘best’), rather than merely determining the level of commitment to safety. This view was highlighted by Hopkins (2006) who stated that for some authors, “*only an organisation which has an over-riding commitment to safety can be said to have a safety culture*” (p. 876). Over time however, this conceptualisation of safety culture has evolved somewhat, with some acknowledging that safety culture is not truly ‘all or nothing’, rather safety culture can exist to a greater or lesser extent within an organisation. For example, Parker et al. (2006) provided a list of defining characteristics for five types of safety cultures, Pathological, Reactive, Calculative, Proactive and Generative. Despite this shift, however, the core evaluative or normative component of this conceptualisation remains.

When utilising a normative-like conceptualisation of culture in the application of safety culture, safety professionals are first faced with the task of evaluating the presence and strength of safety culture within an organisation. If the safety professional determines that the organisation lacks safety culture, or has a weak safety culture, the professional should then begin to create or strengthen the safety culture. If, however, the safety professional determines that their organisation has a strong safety culture, the professional would then seek to ensure that processes are in place which will maintain this culture. This is because the conceptualisation holds that culture can and ought to be held by an individual or group. In both of these examples safety culture can be viewed as a tool or solution to be applied to an organisation, through creation and maintenance, in order to improve or maintain safety performance. Haukelid (2008) noted that this approach, which he referred to as an

instrumental approach, is common, particularly within the management literature regarding safety culture.

This emphasis of safety culture as a solution for poor safety performance has been present since the first uses of the term. INSAG stated that “*safety culture had not been properly instilled in nuclear power plants in the USSR prior to the Chernobyl accident*” and that “*INSAG concluded that the need to create and maintain a ‘safety culture’ is a precondition for ensuring nuclear power plant safety*” (p. 22, International Nuclear Safety Advisory Group, 1992). Despite repeatedly emphasising the need to create and maintain a safety culture, the INSAG reports failed to provide a clear definition and description of the content of safety culture. The tendency to emphasise the creation and maintenance of safety culture without a clear concept of what safety culture is was reinforced in INSAG report 4 (International Nuclear Safety Advisory Group, 1991), which expressly sought to clarify the meaning of safety culture and provide theoretical depth to the topic. In this report, INSAG presented a model of safety culture which focussed on how ‘policy level’, ‘managerial’ and ‘individual’ commitment can lead to safety culture.

At the extreme end of this outcome-orientated approach, Cooper (2000) suggested the use of a Goal Theory approach, whereby “*the creation of a safety culture simply becomes a super-ordinate goal, that is achieved by dividing the task into a series of sub-goals that are intended to direct people’s attention and actions towards the management of safety*” (p. 116). Cooper proposed a model, which has also been adapted for use in specific settings such as the construction industry (Choudhry et al., 2007), in which safety culture was the product of the interaction of psychological, behavioural, and situational factors. Specifically, these factors were identified as beliefs and values, behavioural norms, and organisational structures and processes. Drawing on social cognitive theory, these factors were said to exhibit reciprocal determination, meaning that each factor both influences and is influenced by the remaining

factors. Interestingly, despite the model being labelled as a model of safety culture, all of the factors mentioned in this model were recognised by Cooper to be distinct from safety culture, in that safety culture was merely determined by the interactions between these factors (Cooper, 2000). Thus, Cooper again placed the emphasis on creating a safety culture without providing a clear explanation of what safety culture is.

Placing the emphasis on creating or developing a safety culture has a direct effect on the scope of research utilising this conceptualisation. Whilst many have argued that managers should have the goal to develop or create a 'positive' or 'good' culture in order to reduce the number and severity of incidents (e.g. Choudhry et al., 2007; Cooper, 2000; Crum and Morrow, 2002; International Nuclear Safety Advisory Group, 1991, 1992; Sully, 2001), others have argued that culture cannot be managed or controlled in a top-down approach, rather it emerges from within even the lowest levels of an organisation (Haukelid, 2008). Additionally, Naevestad (2009) stated that, as some of the deeper levels of culture may not be changeable, reversion to previously acquired behaviour are likely to occur. Without prematurely adventuring into other conceptualisations of safety culture, it is clear from this debate that there are aspects of culture which are not amenable to manipulation. As the normative conceptualisation holds that culture can and ought to be possessed by groups, researchers are forced to focus on those aspects of an organisation which are possible to alter. It is for this reason that much of the research has focussed on organisational policies, procedures and structures. In many ways this has also led to a blurring distinction between safety culture and the broader safety management research, with safety culture serving primarily as a scale by which to measure an organisation's safety policies and procedures relative to what is considered the best at a given point in time.

Due to the fact that this conceptualisation is dominant within the field of safety culture it is not surprising that criticisms have been raised about the lack of discussion in the

literature relating to power and cultural differentiation. In many ways neither of these issues fit well within the normative conceptualisation of safety culture. When safety culture is typically viewed in terms of changeable organisational systems and structures power becomes irrelevant. The issue of power, as outlined by Antonsen (2009), suggests that viewing safety culture as aggregate beliefs and values fails to take into account the fact that managers and other personnel have the ability to coerce individuals to behave in a given way. This can occur through organisational punishments or through applying pressure to an individual to meet the productivity needs of the organisation. Due to the fact that the normative conceptualisation of safety culture is predominantly about the systems and structures of an organisation, rather than social dynamics, this conceptualisation leaves little room for the issue of power. Nonetheless, organisational leadership structures and the systems that are in place through which power can be exerted should be considered.

Similarly, within this conceptualisation there is little room for cultural differentiation. As previously stated, it is commonly held that organisations may consist of a number of subcultures rather than a single overarching culture (Frost et al., 1991; Martin, 1992). In the normative conceptualisation of safety culture however, the concept of sub-cultures is difficult to account for. When emphasising safety culture as organisational structures and systems the only possibility to explain subcultures is the presence of differences between the structure and systems of branches or groups of an organisation, which could then be considered sub-cultures. The existence of such differences could lead to significant differences in safety outcomes, however, the reason for such differences, and how they can be avoided, may not be able to be accounted for this conceptualisation.

The emphasis on the creation of safety culture as a solution for poor safety performance is, however, not without shortcomings. Firstly, focussing on management and organisational approaches is not appropriate for all industries and settings. Whilst much of the safety culture

research has focussed on highly controlled and tightly supervised industries, there are other industries which do not have such tight control. For example, in many industries which relate to the transport of people and freight the organisation has significantly less control over the day to day behaviour of their staff. The current emphasis on management practices, policies and procedures may be less amenable to such industries, and thus the intrinsic commitment to safety of workers, outside of external motivations may be of greater relevance.

Secondly, given the debate about the extent to which it is possible to change a culture, it is apparent that the strong emphasis on creating a safety culture may lead to the neglect of other cultural factors. Health education research has shown that, due to the effect of cultural norms and values, ‘off the shelf’ or global intervention strategies, that are applied to audiences for which they were not specifically designed, can have differing levels of effectiveness (McLeroy et al., 1994). Similarly within the safety culture literature it has been suggested that “*without a positive safety culture and climate it could be said that there is already resistance in the environment into which safety schemes and programmes are being implemented, possibly dooming any programme to failure at the outset*” (p. 40; Russell, 2000). Thus it is clear that there are aspects of culture, separate from adaptable systems and procedures, which can counteract safety initiatives designed to create or strengthen an organisations safety culture. As such, it is important to explore alternative conceptualisations of safety culture, which emphasise developing an understanding of the effect of culture on safety, to help highlight potential strategies to reduce safety incidents.

3.2. The anthropological conceptualisation of safety culture

Whilst the anthropological conceptualisation of culture is dominant in the social anthropology, cultural psychology and organisational culture literature, it is often overlooked within safety culture research. Nonetheless, the conceptualisation is present to greater or

lesser extents within many definitions of safety culture. Antonsen (2009) stated that most literature reviews of safety culture conclude that it is “*a set of safety related attitudes, values or assumptions that are shared between the members of an organisation*” (p. 183).

Interestingly this definition is a perfect example of an anthropological conceptualisation of safety culture; nonetheless, as has been stated on multiple occasions, the majority of safety culture research focuses on organisational structures and practices.

In a review of safety culture, Naevestad (2009) discussed two common approaches in the field. One of these approaches was labelled as the interpretive approach, which understands safety culture as shared patterns of meaning. Strongly based on social anthropology, this approach tends to advocate the use of ethnographic and qualitative research. Despite the presence of this approach, there are few studies which actually use a qualitative approach to studying safety culture (Glendon, 2008). Many of those authors who take an interpretive standpoint tend to position their research as the effect of organisational culture on safety, rather than purely as safety culture. Hopkins (2006) noted, however, that even within organisational culture there is a divide between authors who view values and attitudes as the core components of culture and those who emphasise behaviour. Thus despite the tendency of ‘interpretive’ authors to utilise organisational culture as the basis of research, organisational culture is not solely in the realm of the anthropological conceptualisation.

Examples of this stream of thought can be found in the writings of Karl Weick, Andrew Hopkins and Nick Pidgeon. Weick has published a number of articles which have focussed on organisational cultures and their effect on safety, generally viewing culture as shared beliefs and expectations, which can be utilised by organisational members to assist in the simplification of complex tasks, typically for the worse (Weick and Sutcliffe, 2007; Weick et al., 1999). Similarly, Pidgeon (1997) discussed the concept of institutional vulnerability arising from cultural patterns and assumptions. Finally, Hopkins (1999) also discussed the

effect of two shared values which formed part of an organisational culture during a disaster in an Australian Coal Mine. Interestingly, each of these two shared values were suggested to be negatively associated with safety. Whilst it is possible for shared beliefs and values to be positive, for example, the tendency of high reliability organisations to have a preoccupation with failure (Weick et al., 1999), the exploration of negative traits emphasises a key difference between the normative and anthropological conceptualisation. As the normative conceptualisation of safety culture presupposes that safety culture is something which only organisations with safety as an overriding priority have, there is no ability of the conceptualisation to predict incidents, only a reduced number of incidents in organisations with a safety culture relative to those without. Conversely, as the anthropological conceptualisation places no prerequisite on the valence of values and attitudes it is able to discuss both positive and negative effects of culture.

Despite the strong presence of the anthropological conceptualisation of culture in theoretical discussion of safety culture, it is often overlooked in safety culture research. There are a number of potential reasons for this. Firstly, it may be that this occurs because attitudes are typically placed in the realm of safety climate (the aggregate of employees perceptions and evaluations of the priority of safety in their organisation) rather than safety culture (Guldenmund, 2000). However, the key difference between safety climate and an anthropological conceptualisation of safety culture lies in the target of these beliefs and values. Safety climate research typically focuses on employee attitudes and perceptions relating to the structures, processes and procedures used by an organisation which bear on safety, and the perceived priority the organisation's leadership places on safety (Jiang et al., 2010; Johnson, 2007; Neal and Griffin, 2002; Zohar, 2010). Conversely, in an anthropological conceptualisation of safety culture, the target of shared beliefs, attitudes and values may be much broader, encompassing all those which can be found to relate directly to

safety, or have a bearing on safety related behaviours. Thus, where safety climate is essentially about the organisation around the individual, an anthropological conceptualisation of safety culture is not limited to environmental factors. Whilst there are very few examples in the literature, one can be seen in Havold's (2010) study on safety culture in Norwegian tankers, which utilised a factor labelled 'fatalism'. Two additional examples can also be seen in Hopkins (1999) discussion of an Australian coal mine disaster, where an organisational culture of denial (the belief that disasters would not occur for them) and an emphasis on knowledge gained from personal experience over reported truths were stated to be contributing factors to the disaster. Thus where safety climate research yields useful information regarding to the organisations structure and systems, anthropological safety culture research can reveal key underlying assumptions about the nature of safety and incidents.

Another reason this approach has received little attention in the published research appears to be the difficulties associated with qualitative research in the organisational setting. As stated by Fisher and Alford (2000), it is difficult to convince managers that time consuming ethnographical research is worth the required investment of time and effort, when there is little evidence to support a direct link between the findings of such research and the organisations bottom line. This is particularly the case when utilising this conceptualisation, as highlighted by Reiman and Oedewald (2007) who argued that the purpose of such research is to explore and provide insight into an organisation's culture, rather than to evaluate or assess the culture. Similarly, Hopkins (2006) even stated that "*in the absence of an accident, the ethnographic method can only speculate or hypothesise about the impact of organisational culture on safety*". Whilst this may be the case the anthropological conceptualisation is by no means limited to only the use of ethnography, as the findings of an ethnographic exploration of an organisation may be amenable to quantitative validation and,

therefore, directly linked to safety related behaviours. However, as of yet this approach has not seen significant application in the literature. There is clearly a need to identify a means by which this conceptualisation can be more readily applied in the organisational setting and linked to safety related outcomes.

The approaches utilised by Hofstede (1980) and Triandis (1996) to explore the effect of national culture on work behaviour provide a useful starting point for how this conceptualisation could be more readily applied to safety culture research and practice. Hofstede's (1980) research explored the differences in work-related behaviours between different cultures (defined by the nation within which the organisation was located). It was found that differences between these cultures could be explained in terms of four cultural dimensions, which Hofstede likened to dimensions of personality. These dimensions were Individualism–Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity. Triandis (1996) later reconceptualised these dimensions (and a number of new dimensions) as cultural syndromes, which he defined as "*a pattern of shared attitudes, beliefs, categorizations, self-definitions, norms, role definitions, and values that is organized around a theme*" (p. 408). Examples of cultural syndromes included by Triandis were Collectivism, Individualism, Vertical and Horizontal Relationships (akin to Hofstede's Power Distance), Tightness (akin to Hofstede's Uncertainty Avoidance), Cultural Complexity, and Active-Passive. Whilst neither Hofstede nor Triandis claims to have encapsulated entire cultures in these dimensions or syndromes, the use of dimensions or syndromes present a useful approach to summarising key aspects of a culture which impact upon behaviour. Whilst these specific dimensions may not apply to safety culture, dimensions or syndromes which are found to relate to un/safe behaviour could be used to form the basis of safety culture exploration. Further research is needed however, to determine what these syndromes or

dimensions may be, whether they are common throughout different organisations and industries, and how they influence un/safe behaviours.

The anthropological conceptualisation differs from the normative conceptualisation in that, rather than focus on the presence and absence of specific organisational practices, it emphasises exploring the shared values, beliefs and assumptions of members of an organisation. Further, it seeks to understand the culture of an organisation rather than shape or change a culture to meet a predetermined benchmark. Due to its emphasis on shared psychological factors it can be applied to a broader range of organisations (whether tightly controlled or fairly autonomous) than the normative conceptualisation, which tends to focus on organisational policies and practices. Additionally, this conceptualisation can be used to inform intervention design and implementation through developing an understanding of the effect that an existing safety culture may have. For example, Weick suggests that high reliability organisations make the effect of culture less problematic by attempting to reduce the expectation that things incidents will not occur (Weick et al., 1999). Similarly, if an organisation is to find specific assumptions or beliefs which impact upon safety, these can become the target of intervention through training or through policies which bypass the problematic cultural dimension. Thus it can be seen that the anthropological conceptualisation of safety culture overcomes each of the weaknesses identified in the normative conceptualisation.

Unlike the normative conceptualisation, the anthropological conceptualisation may be greatly affected by the issue of power and the presence of subcultures. If culture is viewed solely in terms of shared psychological factors, there is a risk of failing to recognise the role of power that organisational personnel have over their subordinates. However, as was noted above, both Hofstede (1980) and Triandis (1996) identify a factor which relates to the perceived distance between individuals and their superiors. In an organisational setting, if

there is a tendency to place a high level of respect on leaders and obey their wishes, it is likely that individuals will respond to any coercive behaviour by complying with the demands placed on them. Similarly, given the nature of leaders in an organisational setting and their ability to sack or punish workers, it could be beneficial to explore the value placed on money relative to that of safety. Thus rather than focus directly on power, it is necessary when utilising an anthropological conceptualisation to focus on the psychological factors held by subordinates which influence their likelihood of compliance.

When utilising an anthropological view of safety culture, the issue of subcultures is in many ways at home. When discussing national and regional cultures, Cohen (2009) argued that there can be many forms of culture, stemming from the many social settings and roles individuals have. Similarly, in an organisation there can be any number of subcultures. These subcultures could relate to the role that an individual fulfils within a company, the specific depot or branch at which they work, or even peer groups within the same depot. Subcultures can be identified as groups of individuals with shared beliefs, attitudes and values that differ from the broader organisation or other subcultures. This can be problematic, however, as cultural values are often identified by the extent to which they are shared. Thus it is difficult to determine the presence of subcultures, as the competing views of subcultures may be mistaken for a lack of agreement on an issue. Thus rather than acknowledging strong subcultural differences, a researcher or practitioner may mistakenly believe that the topic of contention is simply not part of the culture. It is, therefore necessary for the researcher or practitioner to be aware of this issue from the outset of exploring a safety culture.

Despite the benefits of the anthropological conceptualisation there is one key limitation to its applicability to safety culture. Schein (1992) stated that behaviour is not solely the product of culture but is also the result of contextual variables. Thus, when the purpose of safety culture is ultimately to serve the broader aims of safety science, by providing a means

to improve safety performance, focussing solely on psychological variables, without developing an understanding of the organisational context within which behaviour occurs, limits the predictive validity of the concept.

3.3. A pragmatist conception of safety culture

As discussed at the outset of this review, safety is ultimately a collection of behaviours, of the results thereof, conducted by individuals. Therefore, in many ways, when applying the pragmatist conceptualisation of culture, which views culture in terms of shared practices, to safety culture, safety culture can be interpreted as merely representing safe behaviour and safety outcomes. Thus it could be argued that the pragmatist conceptualisation has limited applicability to safety culture, in that safety practices are generally seen as the outcome of safety culture, rather than the focus of investigation. However, as stated above, practices can only be labelled as such when attributions can be made about the underlying cognitive causes. This conceptualisation of culture was described by Hopkins (2006), who suggested that many organisational culture authors focussed on behaviours as the key component of culture, yet that the concept of “*the way we do things around here*” suggests an evaluation of this way as being the correct way, thus not ignoring the importance of values and attitudes.

Naevestad (2009) described an approach similar to this conceptualisation within the safety culture literature, which he entitled the functionalist approach. It was argued that the functionalists approach understands culture as a pattern of shared behaviour, and that it was the preferred approach of managers and practitioners. Naevestad further suggested that this approach was the predominant approach within safety culture research. Despite the emphasis on safety culture as behaviour, the functionalist approach differs considerably from the pragmatist conceptualisation of culture in one key way. Whilst the pragmatist conceptualisation of culture holds that practices must be based in underlying beliefs and

values, much of the functionalist research has instead searched for shared behaviours and then utilised theories from social and organisational psychology to identify factors which are linked to this behaviour (Guldenmund, 2000; Naevestad, 2009). As stated by Naevestad (2009) and Guldenmund (2007) safety climate questionnaires are the primary measuring instrument utilised in this stream of research (for a detailed review of safety climate see Zohar, 2010). As discussed earlier (Sections 1 and 3.1), in the absence of widely accepted definitions and models of safety culture, much of the research has been conducted relatively independent of the wider field of safety culture research, leading to safety as the only factor in common within this research. In attempting to predict safety behaviour through safety climate questionnaires, there has been little success in producing replicable findings in either the content of safety climate or the relationship it has to behaviour (Guldenmund, 2007).

As the pragmatic conceptualisation of safety culture focuses on the causes of behaviour, it is very amenable to including power as a contributing factor. This can be achieved without limiting the explanation of power to cultural definitions. However, whilst the issue of power is relevant to the pragmatic conceptualisation of safety culture, cultural differentiation may not be. As was discussed above, much of the research which utilises a pragmatic conceptualisation of safety culture has been conducted in relative isolation from the remainder of the field. Thus there is little consensus within this conceptualisation as to the nature of culture. Nonetheless as this conceptualisation interprets culture as shared practices, it is important to note that there may be subgroups within an organisation that regularly behave differently. Thus in this conceptualisation, it is important to explore whether there are different approaches that can be taken with these groups to achieve the desired behaviour.

Despite the fact that the functionalist approach to safety culture has struggled to prove its validity and relevance to safety outcomes, and that it departs from its closest relative in cultural psychology and anthropology, its emphasis on behaviour is still worth recognising

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and adhering to. Ultimately safety culture is only of practical benefit when it can be directly related to safety behaviours and outcomes.

3.4. Is there a need for a new conceptualisation?

As can be seen in the above discussions there is clearly a place for each of the three discussed conceptualisations of culture in safety culture research and practice. Similarly, however, each conceptualisation has unique weaknesses. The normative conceptualisation views safety culture in relation to a predetermined best pattern of organisational systems and structures. It is thus particularly useful in measuring the strength of organisational safety management systems and structures and utilising these to benchmark an organisation. This information is then useful in identifying weaknesses in an organisation's safety culture, which can be changed within the organisation. However, as was noted in Section 3.1, both health research and safety culture research has indicated that cultural beliefs and values can, at times, be a barrier to health and safety initiatives (McLeroy et al., 1994; Russell, 2000). As the normative conceptualisation fails to take into account such beliefs and values, it is clear that the sole use of this conceptualisation may limit the applicability of safety culture research. Without first understanding the underlying beliefs and values of an organisation's culture, it is not possible to determine whether or not safety initiatives will be accepted or resisted within the organisation. The anthropological conceptualisation of safety culture, however, focuses directly upon these beliefs and values.

The anthropological conceptualisation views safety culture as a series of underlying beliefs, attitudes, values and assumptions shared by members of an organisation. In this respect it encapsulates those aspects of safety culture which were not accounted for within the normative conceptualisation. Conversely to the normative conceptualisation which focuses on changing a safety culture, the anthropological conceptualisation of safety culture advocates

exploration and the gaining of insight into an organisations culture (Reiman and Oedewald, 2007). Thus this conceptualisation has the ability to develop an understanding of whether safety initiatives will be accepted or rejected and how these initiatives can be best implemented to work with the culture of an organisation. However, when utilised alone, this conceptualisation fails to take into account the effect of contextual variables which impact upon behaviour. As stated by Schein (1992), culture (utilising an anthropological conceptualisation) does not lead to behaviour in itself, but rather interacts with the surrounding context to produce behaviour.

The final conceptualisation that was discussed was the pragmatic conceptualisation which viewed safety culture in terms of common practices which lead to positive or negative safety outcomes. Due to its practical focus, this conceptualisation is a common approach for organisational managers and practitioners, who are most interested in reducing incidents. This conceptualisation places a strong emphasis on outcomes and shaping behaviour, however, due to this emphasis, it is common for such work to fail to adhere to existing definitions and models of safety culture. This can then result in research and practices that are better termed organisational safety management rather than safety culture. This conceptualisation fails to take into account deeper cultural beliefs and values, and may fail to acknowledge the range of organisational systems and structures which may interact with new safety initiatives. Thus it could be expected that organisational managers and practitioners utilising this approach may find that their attempts to reduce the occurrence of safety incidents are unsuccessful, due to cultural barriers. This could, therefore, lead to frustration and a perception that safety culture does not hold the benefits that it promises for their organisation. However, it is clearly important to recognise that safety culture research and practice must ensure that it is amenable to the nature of safety in a given organisation, by

maintaining an awareness of the hazards, risks and required actions for staff to remain safe in the target organisation.

Whilst each conceptualisation has a number of strengths, no single conceptualisation appears capable of truly understanding, explaining and shaping safety outcomes. Though possessing such strengths and weaknesses is not a major problem in itself, it is common for the literature to view these conceptualisations as competing ideas. For example, Naevestad (2009) discussed the different approaches of researchers from functionalist (normative/pragmatic) and interpretivist (anthropological) perspectives. There has been a tendency in the literature for researchers to take one perspective at the exclusion of others. For this reason, given the weaknesses of each approach, it is not surprising that the field has had difficulty proving its validity in predicting safety outcomes. In order to increase the applicability of safety culture research and practice to a wide variety of settings and problems, and to improve its predictive validity, it could be beneficial to synthesise the approaches of each conceptualisation into a single overarching conceptualisation of safety culture. By synthesising these conceptualisations, it may be possible for research to continue to focus on one or more of these conceptualisations without completely excluding others. Further, it would be possible to better understand how the existing research in safety culture can be interpreted as different aspects of a wider concept. In order to provide a fundamental basis for the synthesis of such a conceptualisation it is beneficial to briefly explore literature which has attempted to bridge the gaps between these conceptualisations.

3.5. A synthesised conceptualisation of safety culture

Though the safety culture literature has not yet synthesised the discussed conceptualisations, a number of authors have suggested approaches to culture and organisational culture which bridge the gap between the anthropological and pragmatic

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conceptualisations of culture. For example, the notion of practices originating in underlying beliefs and values is also seen in the work of Geertz (1973), who suggested that culture be treated as a hierarchy of meanings and symbols, which is separate from the social systems and interactions that these produce. In this way, Geertz highlights the importance of identifying the underlying meanings which produce practices. Similarly, Tharp (2007) argued that, whilst all humans share most behavioural performance capabilities, “*it is emotional preference that maintain cultural activities and practices... we find our culturally characteristic patterns to be pleasing in emotional aesthetics and thus in meaning*” (p. 229). In this sense, it is the culture with which an individual identifies that causes a preference towards behaviour, leading to behavioural practices that differ between groups. Thus these views tend to place the emphasis of culture on underlying beliefs and values (anthropological culture) which motivate behavioural practices (pragmatic culture).

As the normative conceptualisation of culture has a uniquely individual focus there has been little literature regarding how the normative conceptualisation of culture can be linked with the anthropological and pragmatist conceptualisations. Due to the way in which this conceptualisation has been adapted into organisational and safety culture, organisational and safety scientists have the unique ability to incorporate this conceptualisation into a broader view of culture. As was previously discussed (see Section 3.1), the normative conceptualisation specifically focuses on the idea that culture is something which can and ought to be possessed by an individual or group. Thus it must be comprised of characteristics which can be changed. This has typically led to a research focus on organisational and management practices, policies and procedures and other contextual variables. As stated above, Schein (1992) argued that behaviour is both the result of culture (viewed by Schein in an anthropological sense) and specific situational factors. This concept has also received attention in the safety culture literature, with Pidgeon (1997) arguing that for culture to be a

useful subject it must be considered in light of organisation systems rather than merely psychological factors. Thus the focus of the normative conceptualisation fits well with the anthropological and pragmatic conceptualisations, providing a view of culture which can be better used in the organisational safety setting to predict behaviour.

Drawing on each of the aforementioned conceptualisations of culture, and the manner in which they have been applied to safety culture, a synthesised conceptualisation of safety culture can be created (see Fig. 1). Safety culture can be viewed as the assembly of underlying assumptions, beliefs, values and attitudes shared by members of an organisation, which interact with an organisation's structures and systems and the broader contextual setting to result in those external, readily-visible, practices that influence safety. Drawing on the anthropological conceptualisation of culture, this approach places emphasis on the shared beliefs and values which lead to safety related outcomes. Drawing on the normative conceptualisation, the approach highlights the importance of organisational and management level structures, systems and policies which have previously been used in an attempt to create a safety culture. This ensures that safety culture has the flexibility to not focus solely on attitudes, beliefs and values to the exclusion of identifying key contextual variables which influence safety. Finally, drawing on the pragmatist conceptualisation, it is recognised that beliefs, attitudes, values and contextual factors in themselves are insignificant unless they can be tied directly to practices which influence safety.

Whilst the above definition is similar to the definition of organisational culture provided by Uttal (1983; see Section 2), this conceptualisation has yet to be applied to safety culture research. The most significant point of difference between this conceptualisation of safety culture and the dominant normative conceptualisation lies in fact that this approach permits that a safety culture, good or bad, may exist within any organisation that has existed for a sufficient time. Where the normative conceptualisation held that safety culture was a

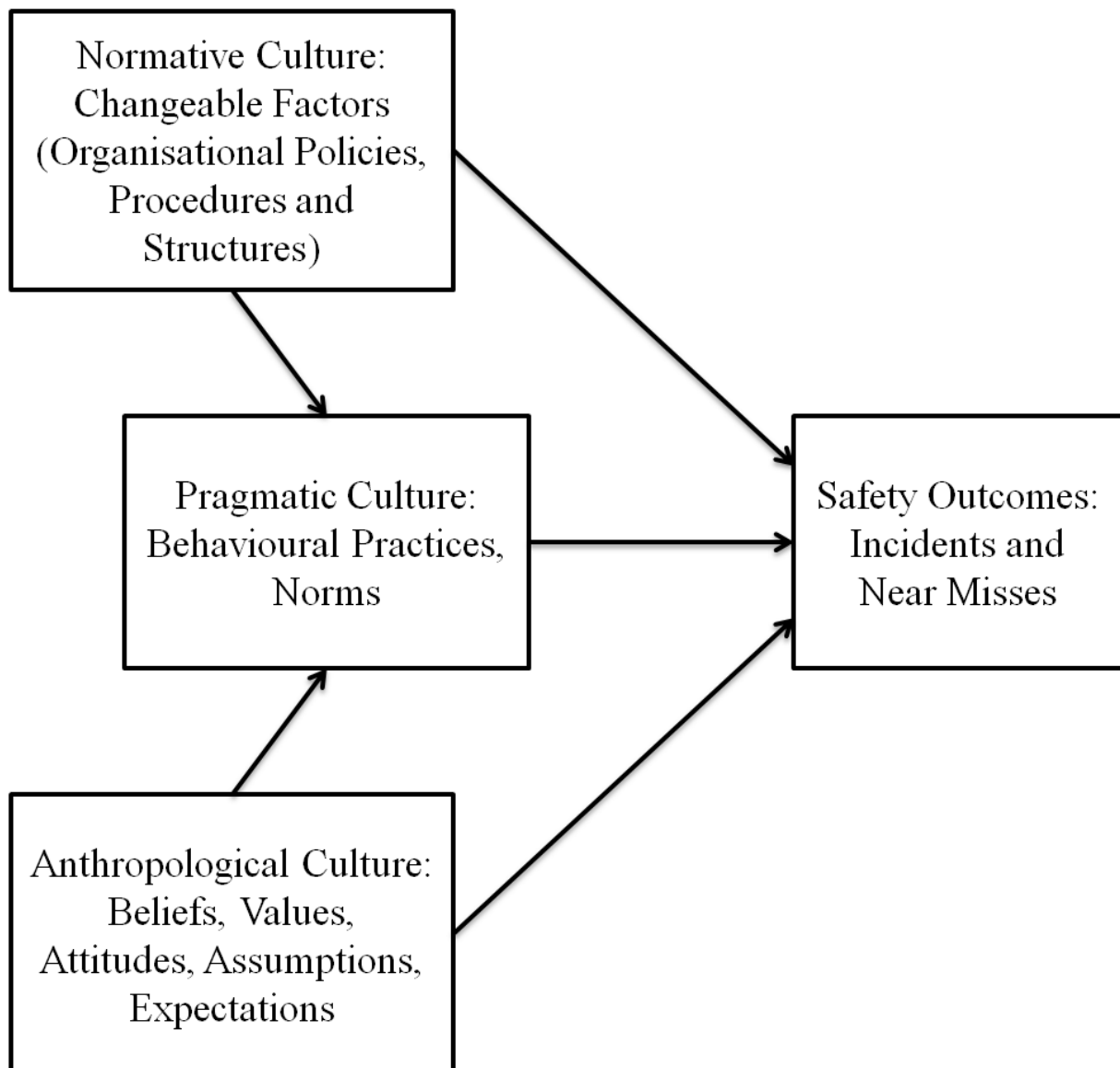


Fig. 1. A synthesised conceptualisation of safety culture

golden standard to which organisations should aspire, this conceptualisation emphasises a series of shared beliefs, values and attitudes held by members of a group which influence safety related behaviours. It should be noted here that there is still the possibility of a lack of culture within an organisation. However, rather than this being due to a lack of organisational systems and policies, it would be identified through a lack of shared beliefs and values within organisations. Nonetheless, unlike previous research which indicated that the presence or strength of an organisations safety culture should be evaluated, this synthesised approach to

safety culture emphasises understanding and exploration more akin to the type used in social anthropology. This understanding can be used to identify the best possible manner in which to change organisational systems and structures to reduce the frequency and severity of safety incidents.

There are a number of practical benefits to utilising a synthesised conceptualisation of safety culture to organisational safety research. Organisational safety research has generally sought to achieve two goals (1) understanding the causes of incidents (particularly seen through accident models); and (2) to identify how best to manage organisations to reduce the risk and severity of incidents. Whilst safety culture research has provided a useful focus on improving organisations in the hopes of reducing incidents, it is often noted that the field has struggled to prove a direct relationship between safety culture and incident occurrences. It is the authors view that this has largely been due to the divide between research focussing on normative and pragmatic views of safety culture and those utilising an anthropological conceptualisation, labelled as the functionalist and interpretive approaches by Naevestad (2009). As has been discussed, behaviour is not solely caused by shared beliefs and values but is also the result of the interaction of these shared factors with contextual factors. The anthropological or interpretive researchers have been unable to account for behaviour, due to a sole focus on shared attitudes, beliefs and values, without understanding the context within which behaviour occurs. Similarly, the normative/pragmatic or functionalist researchers have failed to adequately identify and take into account these underlying beliefs and values, confounding their ability to predict behaviour from a solely organisational perspective.

Utilising a synthesised approach to safety culture will have a number of benefits to safety culture practice and research. The benefits to safety culture practice come through a stronger understanding of the collective effects of cultural and contextual factors. By accounting for both cultural and contextual variables it is possible to better understand the

causes of behaviour. With this better understanding, when a practitioner or organisational manager is attempting to create or implement a new safety initiative to improve safety performance, they are able to better understand how the existing culture of an organisation is likely to accept the initiative. This eliminates the known problem of health and safety initiatives failing due to cultural resistance stemming from underlying beliefs and values (McLeroy et al., 1994; Russell, 2000). Further, using this synthesised conceptualisation, a practitioner or manager is able to identify where there are interactions between the existing organisational structures and systems and the culture of their organisation. This enables the practitioner to identify changes that should be made to the organisational structures and systems to reduce existing safety issues. Contrary to the normative conceptualisation, which would encourage the practitioner to mirror the systems and structures of high safety performing organisations, the chosen changes can be specifically designed to work within the target organisation. This can be accomplished by identifying organisational approaches to counter negative cultural values, or through identifying how to utilise cultural values to achieve the desired behaviour.

Regarding safety culture research, utilising a synthesised framework also holds a number of benefits. As was identified in Section 3.4, much of the research to date has positioned the existing conceptualisations of safety culture as opposing fields of thought (e.g. Naevestad, 2009). This has in many ways limited the growth of the field through separating the findings of research into two related but contrary groups. The normative/pragmatic or functionalist researchers have identified a large number of systems, structures, policies and procedures which impact upon safety, but have struggled to show that the use of these factors can truly change safety outcomes in organisations. Similarly, the anthropological or interpretive researchers have shown that in specific organisations there can be underlying beliefs, attitudes, values and assumptions which can lead to catastrophic safety incidents, yet

have not conducted sufficient research to truly validate these underlying factors and their direct impact on safety outcomes. Further, they have failed to account for the systems and structures which interact with cultural factors to produce behaviour. By utilising a synthesised approach it is possible for researchers to understand the interactions between both of these factors and therefore, understand the complex manner in which safety culture influences safety outcomes. Further, it is possible to bring together the myriad of published research from each of the pre-existing conceptualisations of safety culture into a single framework, permitting a greater understanding of the research and knowledge that has already been gained in this field.

Finally, in relation to the issues of power and cultural differentiation, utilising a synthesised conceptualisation of safety culture allows both of these issues to be explored and applied to safety culture. In many ways, the issues of power and cultural differentiation can be treated similarly to the manner in which they are approached in the anthropological conceptualisation. Firstly, as discussed by Antonsen (2009), though culture has a large impact upon behaviour, it is often overlooked that organisations are heavily influenced by power. In some cases it is due to this power that individuals may act in an unsafe manner, whether to avoid punishment or to satisfy/impress their superiors. As was discussed in Section 3.2, when conceptualising culture in terms of attitudes, beliefs, values and assumptions it is important to consider cultural tendencies towards compliance and obedience to those in power. Similarly, it is necessary to understand the priority that workers place on financial rewards and losses that can be attained through promotion or punishment within the organisation. Through exploring these cultural factors it is possible to understand what impacts are likely to occur when a worker feels pressure from a superior to behave in a given manner.

Additionally, however, due to the emphasis that is also placed upon contextual factors within a synthesised conceptualisation, there are aspects of the normative conceptualisations

treatment of power which become relevant. Specifically, there is a need to understand the organisational systems and structures which provide a vessel for the use of power. Whilst it is necessary to be aware of cultural factors which may determine the individual's reaction to power, understanding these factors is meaningless to organisational safety without being aware of the tangible aspects of an organisation which involve power. Thus, as a synthesised conceptualisation of safety culture emphasises the interactions between culture and context, it is more adaptable to understanding the role of power than the previous conceptualisations discussed.

In regards to cultural differentiation, a synthesised conceptualisation is also more apt than any single conceptualisation in understanding the role of subcultures within organisations. Organisational cultures are not necessarily homogenous, but may consist of a number of subcultures (e.g. Antonsen, 2009; Frost et al., 1991; Martin, 1992). The anthropological conceptualisation of safety culture, as discussed in Section 3.2, identifies subcultures as groups within a larger culture which have differing shared beliefs, attitudes and values. For example, referring back to the issue of power, whilst the majority of members of a given organisation may place a higher value on safety than monetary gains, there may be a subculture within that organisation which values money above safety. Thus, this subculture may be willing to behave in an unsafe manner to achieve greater productivity and thus receive recognition and reward from their superiors.

As the presented synthesised conceptualisation of safety culture envisions culture in a similar manner to the anthropological conceptualisation, subcultures can be identified through the same means. However, where the anthropological conceptualisation would advocate simply understanding these differences, the reliance on contextual factors interacting with culture allows a synthesised conceptualisation to be more adaptable to managing the differences between subcultures. These differences can be managed through the

development of specific interventions, or through changing the organisational systems and structures which are not suited to existing subcultures. Continuing from the above example, if the organisation is aware of a subculture which behaves in an unsafe manner to increase productivity and receive rewards, they could make alterations to any reward systems in the relevant area of their organisation. For instance, bonuses could be given to members of the organisation who are seen to comply with the relevant safety policies and procedures on a regular basis, rather than to those that meet productivity quotas. Thus, unlike the pre-existing conceptualisations of safety culture, a synthesised conceptualisation allows not only for the identification and understanding of cultural differentiation, but also for the development of safety initiatives which are suitable to improve safety within these different subcultures.

4. Conclusions and moving forward

In recent years safety culture has received significant attention in the literature. Despite much research, there is still little consensus as to how to define safety culture and what it is comprised of. Due to the lack of clarity, many researchers are forced to redefine safety culture in relation to their specific area of interest, leading to further diversity in the field. Without a clear understanding of what is meant by 'culture' in the phrase safety culture there is a risk that safety culture may become little more than a catchy title for safety management.

Whilst significant volumes of literature have related safety culture back to organisational culture, it is rare for discussions to venture beyond organisational culture into the more traditional conceptualisations of culture. The above discussion has explored how three general conceptualisations of culture have been applied to safety culture. Whilst each of these conceptualisations has a number of benefits, they also have a number of weaknesses, and thus taking a sole conceptualisation as the basis of safety culture research limits the overall applicability of any findings. Utilising a synthesised conceptualisation of safety

culture provides all the benefits of each conceptualisation, whilst limiting the weakness of taking too narrow a standpoint. Future research and practice in the field of safety culture could benefit from utilising this synthesised conceptualisation to augment existing approaches to safety culture.

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