

Trust: Missing Piece(s) in the Safety Puzzle

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ABSTRACT

While trust is increasingly recognised as a factor that impacts on safety behaviour, the exact nature of trust and its role in shaping organizational safety is poorly understood. This special issue contains 6 papers that examine the relationship between trust and safety behaviour in a range of high risk work contexts. The issue begins with two papers that introduce the complex nature of trust and the positive and negative roles that trust can play in shaping an organization's safety culture. This background is then developed by two empirical papers that explore the role of trust and distrust in safety performance, and uncover a range of significant but often counterintuitive relationships between forms of trust and safe behaviour. Finally, the issue concludes with two papers that examine the role that leadership may play in developing trust. These papers examine the conditions important for the development of trust in leaders, and the trust-promoting actions that leaders can employ to influence employees' engagement in safety participation.

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1 INTRODUCTION

In their search for ways to improve safety within high-risk work contexts, researchers and practitioners have started to examine the impact of interpersonal processes on employees' safety related behaviour. One of the more recent processes to receive attention is trust—an individual's willingness to rely on another person based on expectations that they will act safely or intend to act safely. The importance of trust to safety has long been recognised by practitioners, having been implicated in disasters such as the North Sea Piper Alpha explosion. In his enquiry into the disaster, Lord Cullen called for a need to develop trust between offshore stakeholders in order to establish an effective safety culture (also heavily implicated in the Chernobyl disaster, ASCNI, 1986). He argued that an effective safety culture develops from the systematic monitoring of safety and by updating the system in accordance with the experiences of both the operator and the industry. However, this updating process is dependent on the open reporting on safety incidents, which Cullen argued is facilitated by trust.

Far from being unique to the Piper Alpha disaster, the role of trust in safety critical work contexts is an international issue that spans multiple industries. Carroll (2002), for example, suggested that trust was central to the promotion of open communication and a subsequent improved safety record at a major US nuclear power plant. Similarly, a review of papers in *Risk Analysis* indicates that trust may play an important safety-related role in high-risk settings such as nuclear power (Carroll, 2002), chemical (ref), and the health services (ref). The relative stability of the nature and consequences of trust across cultures (Tan & Chee, 2005) and organizations (REF) has also served to fuel interest in trust, suggesting that programmes to improve

trust may be successfully employed worldwide rather than just nationally. For example, at least one large internationally operated oil company have developed a stage model of safety culture that features trust at the level of optimal safety. This model is used in the Americas, Europe and the Middle East to shape the offshore safety culture of this company.

However, despite continued recognition of its importance to safety, trust remains a neglected area of empirical investigation. A number of authors (e.g., O’Dea & Flin, 2001) have suggested that trust promotes open communication and safe behaviour, and that by doing so it reduces the number of accidents within the workplace. But there is little empirical evidence to support such propositions. In the absence of systematic analysis, there continues to be a debate about both the nature of trust (e.g., is it a single or multiple construct?), and the impact of trust on employees’ safety-related behaviour. As the articles in this issue show, neglect of trust may not simply limit the effectiveness with which organizations engender trust in the workplace, but in a high-risk context it may also create dynamics that lead to risky and unsafe behaviour. The papers in this special issue represent new and important efforts to overcome this neglect and tackle the trust-safety puzzle. They are designed to provide safety professionals with a basis on which to build their understanding of trust, as well as provide researchers with some possible directions for future research.

2 THE TRUST-SAFETY PUZZLE IN HIGH-RISK WORK CONTEXTS

‘The importance of trust is often acknowledged but seldom examined, and scholars tend to mention it in passing, to allude to it as a fundamental ingredient or lubricant, an unavoidable dimension of social interaction, only to move on to deal with less intractable matters.’ (Gambetta, 1988, p.1).

While trust is increasingly recognised to be important for good safety, little direct attention has been given to understanding its nature and function in high-risk work contexts. Studies have tended to measure other factors such as safety culture or leadership (e.g., Donald & Young, 1996; Reason, 1997), and then implicated trust as a process through which these factors influence safety. Such studies typically do not examine trust directly, in the sense of measuring employees' trust and examining the relationship of this measure with a measure of safe behaviour. This absence of direct empirical attention means that the relationship of trust with safety is poorly understood. This has left it necessary for current models of safety in high-risk contexts to rely on as yet untested predictions about the impact of trust on organizational safety. For example, Reason's (1997) model of safety culture (shared attitudes and beliefs about the importance of safety) places trust at the core of its success. He argues that trust promotes the reporting of incidents by instilling into workers confidence that they will not be unfairly "blamed" for the safety event. This, he suggests, generates a reporting culture that allows an organization to learn from past mistakes and take actions to prevent future recurrences. However, prior to the research reported in this special issue (see Jeffcott et al. and Cox et al., this issue), the validity of these assumptions had not been tested against empirical data. This absence of support continues to be the case for most other links between trust and organizational safety factors.

The need for systematic analysis of the role of trust in safety critical work environments may be illustrated with an example of the unexpected relationships that emerge between trust and safety. One such example is the belief that trust generates good safety attitudes (Mearns et al., 1997). On the one hand, this prediction is consistent with general organizational research in which trust has been associated

with enhanced cooperation (Morgan & Hunt, 1994), organizational citizenship behaviour (McAllister, 1995), and improved communication through openness and knowledge sharing (Bonacich & Schneider, 1992; Dirks & Ferrin, 2001). Since this type of communication facilitates learning at an organizational (McEvily, Perrone, & Zaheer, 2003) and individual level (Boisot, 1995; Bijlsma, Prins, & Weber, 1999), it is reasonable to associate trust with good safety.

However, on the other hand, there are potential problems for organizations that rely excessively on trust. Erdem (2003) has shown that trusting workforces are susceptible to the problem of groupthink (Janis, 1972), and that trust prevents workers from engaging in effective decision making (Manz & Neck, 1997). In a high risk work context this can have detrimental effects as prescribed safety behaviours prevent workers from dealing with unusual events or incidents that require immediate changes in the way that jobs are carried out. Paradoxically, high levels of trust have the potential to reduce personal responsibility for safety and create an over-reliance on others (Conchie & Donald, under review; see also Jeffcott et al., this issue). This suggests that the current conceptualisation of trust as “good” for safety might be misleading and should be modified to state at what “level” trust has its beneficial effects.

The potential for trust to have positive and negative effects on organizational safety provides an example of a broader difficulty with current understandings of trust. A number of authors believe that trust should not be viewed as a single construct, but as an interpersonal process that may come in different forms or pieces, and whose roles in different contexts need to be understood (Lewicki, McAllister, & Bies, 1998). For example, studies of risk regulation suggest that regulation is successful only when employees adopt a “critical trust”, defined by practical reliance

on another person combined with healthy scepticism (Pidgeon, Walls, Weyman & Horlick-Jones, 2003). Similarly, Hale (2000) introduces a second type of trust, “creative mistrust”, which he argues is necessary to promote a workforce that challenges unsafe behaviour. However, despite these observations, safety professionals maintain their focus on the benefits of a single construct that they refer to as “trust” (Zacharatos, Barling, & Iverson, 2005). The current special issue provides evidence to show why this simple conceptualisation should be abandoned.

3 THE SPECIAL ISSUE

This special issue of *Risk Analysis* originated from a British Psychology Society symposium on “Trust in high-risk work contexts”, held at The University of Liverpool, UK in September 2004. The symposium brought together organizational/industrial psychologists, management scholars and safety practitioners to discuss the development and function of trust in safety critical work environments. A number of issues were discussed that centred on the composition of trust attitudes towards multiple organizational groups, and the influence of different types of trust on safety behaviour and perceptions of social risk. Following the symposium, authors were invited to submit a manuscript of their talk for potential inclusion in a special issue. This invitation was extended to UK and International safety groups with the objective of producing a collection of papers that represented some of the first empirical investigations of trust in high-risk work contexts.

The six papers that make up this special issue broadly define trust as an individual’s positive expectations of another’s safe behaviour and intention to act safely. They present trust as a multi-dimensional construct that plays a number of distinct roles within safety critical environments. The papers may be seen as loosely grouped into three pairs that consider a different aspect of the trust and safety puzzle.

Briefly, the first paper by Shelly Jeffcott, Nick Pidgeon, Andrew Weyman, and John Walls, and the second paper by Sue Cox, Bethan Jones and David Collinson, introduce in different ways the complex relationship between trust and safety by identifying the various ways in which trust can shape an organization's safety culture. Their contributions are followed by two papers that explore trust and distrust—two central, yet poorly understood pieces in the safety puzzle. Calvin Burns, Kathryn Mearns and Peter McGeorge show that employees may trust and distrust the same referent (e.g., manager, co-worker) in different contexts, while Stacey Conchie and Ian Donald show that trust and distrust have disproportional influences on safety performance. The final two articles focus on possible solutions to the trust and safety puzzle by examining the role of leadership in improving trust within organizations and in turn organizational safety. Murray Clark and Roy Payne identify the conditions important for the development of trust in leaders, while Sharon Clarke and Katie Ward show how leaders may use trust to influence employees' level of safety participation. Together the papers cover a range of industries and introduce the readers of *Risk Analysis* to novel methodologies for studying trust in high-risk work contexts.

4 CENTRAL THEMES

4.1 Mapping out the Trust-Safety Puzzle: Trust and Safety Culture

The first two papers in this special issue consider the nature of trust in high-risk work contexts and the role that trust plays in shaping an organization's safety culture. In doing so, the papers examine and provide support for two assumptions that underpin this special issue. First, they support the assumption that trust plays an important role in determining employees' perceptions and attitudes towards safety. This link between trust and organizational safety culture confirms that trust may have

a direct and significant effect on the extent to which employees engage in safe behaviour. Second, and more importantly, the papers demonstrate that it is insufficient to conceptualise trust as a single construct that varies in strength across organizations. As the latter papers show, the role of trust in high-risk work contexts is a function of the behavioural outcome being considered, the type of trust that exists and the focus of this trust.

The paper by Jeffcott et al. uses interviews and focus groups to uncover the role played by trust in the safety culture of the UK Railway industry post-privatisation. Despite workers' dissatisfaction with certain issues, the authors report the existence of "rule-based" trust within the industry. This type of trust allows workers to operate together in a high risk work context, but its taken-for-granted nature has the potential to reduce personal responsibility for safety. Paradoxically, because it engenders overconfidence in others safety, rule-based trust appears to prevent the development of an informed culture in which workers remain cautious and "afraid" of the potential for an accident or disaster (Reason, 1998). Specifically, rule-based trust appears to reduce railway workers' alertness to breaches in safety system defences. In contrast to rule-based trust, Jeffcott et al. suggest that 'trust-rich environments', which are partly defined by open communication, have a positive function in safety in terms of encouraging workers to report on abnormal events or errors. Unfortunately for the Railway industry, the authors found that the development of these environments is prevented by performance audits, blame and accountability for safety, which serve to promote feelings of distrust.

The second paper by Cox et al. continues with the theme that multiple types of trust operate in an organization's safety culture. Using two case studies from the nuclear and offshore industry, the authors illustrate the role of trust, distrust, and

mistrust relations within a safety context. The authors show that high trust facilitates open communication and enhances the effectiveness of behaviour-based safety programmes by encouraging workers to confront others about their safety. This contrasts with low levels of trust or ‘distrust’ found in the offshore industry where communication was blunted due to a fear of being blamed for poor safety, or more accurately, a loss in production. These findings suggest that trust influences an organization’s safety through the process of ‘psychological safety’ (Edmondson, 1999). More specifically, the presence of trust signals to workers that they can report on safety without being chastised by workers or punished by management. The absence of trust removes this sense of security and consequently reduces open communication. As well as trust and distrust, Cox et al. support the importance of ‘creative mistrust’. Their analysis showed that creative mistrust allowed workers to challenge existing safety practices and avoid the problems associated with groupthink.

4.2 Exploring Pieces of the Trust-Safety Puzzle: Trust and Distrust

The third and fourth papers in this special issue report on efforts to explore, in detail, the multi-dimensional nature of trust in high-risk contexts. The papers focus on one of the most important trust dynamics in a safety critical environment: the relationship between trust and distrust. This relationship has received increasing attention from organizational researchers. One school of thought views trust and distrust as operating on a single dimension, such that a greater level of trust (and hence lower levels of distrust) is associated with improved organizational performance (Flynn, Burns, Mertz & Slovic, 1993; Jones & George, 1998). However, a second, increasingly popular school of thought argues that trust and distrust are independent attitudes, such that an individual’s distrust of an organizational factor may impact on their performance in a way that is quite different to the impact of trust

(Sitkin & Roth, 1993; Sonnenwald, 2004). These competing conceptualisations open up two questions for the trust-safety puzzle. First, in the absence of any consensus, it is important to address the relationship between trust and distrust so that researchers and practitioners can better understand how such dynamics are emerging within high-risk work contexts. Second, it is necessary to provide insights into the ways in which trust and distrust influence safety performance, so that efforts to improve safety through these constructs may be targeted at organizational factors that have the most impact on safety incidents. These two questions are addressed by the third and fourth paper in this issue, respectively.

The paper by Burns et al. addresses the composition of trust and distrust within the UK gas industry. By using an innovative indirect measure of trust attitude, Burns et al. examine the character of trust and distrust in a way that avoids the possibility for response bias with traditional direct measures (e.g., survey responses). Their analysis reveals differences between indirect measures of trust and distrust – which are thought to be more objective – and explicit reports. Using implicit measures, Burns et al. find evidence that trust and distrust are separate pieces in the safety puzzle. Specifically, they show that workmate relationships are defined by elements of high trust and high distrust. In contrast, worker-supervisor relationships are defined by a detached relationship of low trust and low distrust. Since trust and distrust would be expected to have an inverse relationship on a trust-distrust continuum, their findings offer the first empirical support to frameworks that view trust and distrust as separate entities (Lewicki et al., 1998). In discussing their findings, Burns et al. show how implicit attitudes of trust and distrust differentially impact on safety behaviour.

The paper by Conchie and Donald examines in more detail the impact of trust and distrust on safety performance in the offshore industry. They utilise accident and near-miss involvement reports as measures of safety performance and examine the relationship of these measures to the trust and distrust reported by workers about different referents (e.g., managers, contractor staff). Consistent with research in the field of risk, they show that distrust attitudes are more predictive of accidents and near-miss events than trust attitudes. Moreover, they show that the impact of trust and distrust on performance is determined by the referent being trusted (or distrusted) and the level at which safety is considered. For example, at an industry level, safety performance is predicted by attitudes towards management, while at an installation level, safety performance is predicted by attitudes towards supervisors and workmates. The authors discuss these findings through a two-tier framework with trust in management at a global safety level and trust in co-workers operating at a local safety level.

4.3 Solutions to the Trust-Safety Puzzle: Trust and Leadership

The final two papers in this special issue focus on the possible ways in which organizations can manage the trust-safety puzzle to improve safety performance. In recognising that managers and supervisors are often the principle instigators of good safety (see Conchie & Donald, this issue), the final two papers focus on the development of trust in leadership and how leaders use trust to facilitate safe behaviour. If trust can be developed through good leadership, then an understanding of the characteristics of well-trusted leaders, and the actions these leaders take to encourage trust, will provide important insights for those looking to develop trust within their organization. The characteristics of trusted leaders and the strategies

these leaders use to promote trust and good safety are considered in the fifth and sixth paper, respectively.

The paper by Clark and Payne focuses on the characteristics that define highly trusted leaders. They provide a framework that maps out the character-based determinants of trust, and then examine the correspondence between this framework and the trust attitudes of medium- and high-risk public service providers. They show that trust towards a leader comprises a number of dimensions that relate to both the modality of trust (e.g., beliefs, feelings) and specific leader qualities (e.g., availability, fairness). Specifically, in line with classic attitude models (e.g., Fishbein & Ajzen, 1975), they show that trust attitudes comprise a cognitive, emotional and behavioural component, and that trust towards leaders is most strongly predicted by the leader's perceived competence and consistency and lesser so by their openness. This framework shows that developing trust in leadership requires a consideration of workers beliefs about safety, in addition to their feelings and concerns over certain safety issues. This finding is important, since most current research is directed towards understanding workers' cognitive attitudes, with relatively less attention given to their affective state. Clark and Payne's work suggests that to successfully manage the trust-safety puzzle, both aspects of trust attitudes should be considered.

The final paper in this special issue, by Clarke and Ward, examines the actions that leaders take to influence their workforce, and considers how the success of these "influence tactics" is mediated by safety climate and trust. By modelling the responses from a UK manufacturing company, the authors show that employee safety participation is positively and significantly correlated with leaders use of rational arguments (transaction-based leadership), efforts to involve workers in decision-making and efforts to generate enthusiasm for safety (transformation-based

leadership). They also found that the effectiveness of these influence tactics was partly mediated by trust. As the authors explain, engaging employees in decision-making not only increases trust in management (Jung & Avolio, 2000), but it also promotes within workers the perceptions that they are trusted by management. In turn, these perceptions increase the personal responsibility that workers take for safety and safe behaviour. This conceptualisation of trust as a facilitator of leaders' influence is consistent with Hofmann and Morgeson's (1999) social exchange model, but it extends beyond this model to identify the specific influence tactics that operate through trust to influence safe behaviour. In doing so, Clarke and Ward uncover some of the actions that may help leaders in their efforts to develop trust in their own work settings.

5 CONCLUSIONS AND IMPLICATIONS

At the outset of this introduction, a number of questions were raised about the composition of trust and its role in organizational safety. The papers in this special issue provide some interesting theoretical and empirical answers to these questions. Theoretically, the papers consider the different ways in which trust may materialize in an organizational context. Rather than consider trust as a single factor, all of the papers argue convincingly that employees' trust manifests itself in many pieces, and that each piece may have a positive and negative affect on safety culture. Empirically, the papers demonstrate consequential relationships between employees' level of trust, safety culture, and safe behaviour. What is striking here is the number of new and significant relationships revealed by the papers as a result of using an alternative, innovative analytical approach. The papers, therefore, not only provide a number of preliminary answers to the trust-safety puzzle, but they also provide an indication of possible future directions for research into this area.

One implication of the papers relates to the nature of trust itself. The papers collectively suggest that trust is a multidimensional construct that comprises at least three dimensions: trust, distrust and creative mistrust. To discuss trust as a unified construct that is beneficial to safety is misleading, and often not reflective of the high-risk contexts examined in this issue. For example, trust and creative mistrust emerge as most important for safety in two of the issue's papers, with each type of trust playing a distinct but important role. Similarly, as Jeffcott et al. (this issue) point out, too much trust can be detrimental for good safety and may have an opposite effect to the one intended by reducing personal responsibility for safety and increasing worker vulnerability to accidents. Such findings suggests that existing safety culture models (e.g., Parker, 2002; Reason, 1997) should be revised to incorporate different types of trust and the functions of these types in creating and sustaining an organization's safety culture. Clark and Payne's (this issue) definitional model of the types of trust that employees may have in their leaders provides a useful example of the multidimensional nature of future trust models.

A second implication relates to the way in which trust is studied. The insights presented in this special issue often emerged because of the novel and innovative methods that the contributors used to tap employees' trust attitudes. For example, priming tasks (see Burns et al., this issue) minimise the problems of social desirability, which are common with questionnaire surveys, and promise to give a more accurate insight into levels of trust within industry. Indeed, without the priming task, the Burns et al. study would have presented a picture of the trust-safety puzzle in which all referents (workmates, supervisors and managers) were trusted on all occasions. However, by using an indirect measure they reveal a more complex pattern of trust relationships, in which employees' level of trust and distrust differs

across referent and context. Similarly, a facet approach with multi-dimensional scaling (MDS; Clark & Payne, this issue) has benefits over exploratory factor analysis because it deals with a small number of meaningful dimensions, whereas factor analysis often over-extracts factors and so can be difficult to interpret. The practical benefit of MDS relate to its ability to offer a reliable test of a construct when samples are small. Factor analysis relies on a sample size criterion that can often be difficult to satisfy with industry samples where response rates are typically low. It is hoped that future studies of trust in safety critical work environments will experiment with novel methodologies and statistical approaches.

Finally, the insights afforded by new methods are not confined to statistical analyses. Clarke and Payne (this issue) demonstrate the value of using a mapping sentence to structure theoretical developments in the field of trust in high-risk work contexts. Building on their previous work in the coal mining industry (Clark & Payne, 1997), they use the mapping sentence to develop their theoretical framework in a cumulative manner, using data to refine and elaborate their understanding rather than simply to reject or accept hypotheses. Moreover, the mapping sentence provides a framework for Clark and Payne's measurement of trust, thereby ensuring that data collection is well suited to testing the many dimensions of trust in leaders. Through a mapping sentence, the abstract nature of trust, which many researchers grapple with (Gambetta, 1988), can be clearly defined and a move can be made towards a single definition of trust.

In conclusion, the papers in this special issue identify multiple forms of trust within high-risk work contexts, where each form impacts differently on the development, maintenance and success of organizational safety. They move away from conceptualising trust as a single construct and show some of the different effects

that trust can have on safety within high-risk contexts. As our understanding of this area develops, so the current trust-promoting programmes used by organizations will need to be modified to incorporate research findings such as those reported in this special issue. In a safety critical work environment, it is important to promote moderate levels of trust and an element of scepticism and healthy wariness. These attitudes should be promoted towards all groups, and in particular supervisors and leaders. To achieve this, programmes might focus on improving beliefs and feelings about another's trustworthiness.

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