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Problems with safety observation reporting: A construction industry case study

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ABSTRACT

Many large construction organisations use safety observation reporting (SOR) as part of their safety management system on sites, although research around their effectiveness in practice is limited. During an ethnographically-informed research project, the lead author spent three years working with the health and safety team on a large (+£500 m) construction project in the United Kingdom with such a system in place. The SOR system encouraged everyone on site to report unsafe acts or conditions, either via computer or handwritten cards, for subsequent action by the health and safety team. Despite good intentions, problems with the SOR system emerged. These included: significantly increased administration to deliver predictable data; poor data quality; an unwelcome focus on the number rather than content of the reports; their use as a tool to ascribe individual or organisational blame; and the perception that the SOR forms were being censored before they reached the health and safety team, which ultimately eroded trust between the workforce and management. Overall, the system as implemented on this site had the potential to cause more harm than good, and both disengage the workforce and frustrate the health and safety team. Although presented as a case study, it is suggested that the research methods used here have been able to expose and illuminate issues that would otherwise go unreported. It is recommended that these issues be considered within the design and implementation of such SOR systems in the future.

1. Introduction

This paper presents findings relevant to Safety Observation Reporting (SOR) from a longitudinal study that placed the lead researcher on a large construction site in the UK for three years. They became a member of the site health and safety (H&S) management team, employing ethnographically-informed research methods (Oswald et al., 2017) for data collection and analysis. During the fieldwork, findings emerged that revealed significant problems with what is termed here as SOR. This involved the collection of observational data relating to safety from the workforce, similar to that which occurs as part of near-miss management systems (NMS), or other feedback reports that frequently form part of safety programmes with elements of worker engagement, such as Behaviour-Based Safety (BBS).

It is arguable that such findings could not have been so well illuminated, explored or even perhaps revealed through more 'traditional' research approaches; simply 'being there' revealing issues and problems that could remain hidden to more structured methods of enquiry. Consequentially, this paper does not present an empirical evaluation of the effectiveness of the SOR system as operated on this site by seeking correlations with accident statistics or other quantitative data, and indeed such work with regards to SOR as an integral part of behavioural safety has been carried out much more comprehensively elsewhere (see for example Mullan et al., 2015). Instead, this paper retains focus on the *consequences* of the SOR system, as designed, implemented and operated on *this* site, for wider H&S management on the project. In doing so it is able to expose and explore the problems and unintended consequences faced by the H&S management team that, in part, resulted from the adoption of an SOR system without due care and consideration.

These findings are therefore presented as a case study, however it is suggested that the relevance of this empirical work is readily able to extend well beyond such limited boundaries, and can make a valid contribution to both the theoretical foundations that underpin many safety management systems, as well as the designs of worker safety engagement and feedback systems in practice.

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2. Context

2.1. Safety in construction

The construction industry is dangerous. It is considered by some to be a unique working environment; the competitive processes in work-winning, the use of subcontractors and long supply chains, the ever-changing work environment built in-situ, and harsh working conditions can all pose challenges to managing safety (Sherratt, 2016). Precise statistics are hard to obtain as under-reporting is common, however it has been estimated that around 60,000 people die on construction sites worldwide each year (Smallwood and Lingard, 2009) and levels of injury are equally high. Within the United Kingdom (UK), often considered advanced in terms of its occupational H&S management, rates of construction worker accidents and ill health are still significantly higher than those for other industries. For example, the worker fatal injury rate in the Construction Sector is over three times the average rate across all other UK industries (Health and Safety Executive, 2017). Consequentially many different approaches and initiatives for construction safety management have emerged, either adopted and adapted from other industries or created specifically to fit the complex and dynamic construction site environment, with varying levels of success (Alarcón et al., 2016).

2.2. Safety observation reporting

As with many industries, people are critical to safe construction work. Unsafe behaviours by workers have long been seen as a key safety management 'problem', a notion grounded in the work of Heinrich (1931) and his claim that '88 percent of all industrial accidents were primarily caused by unsafe acts of persons' (Seo, 2005: 188). This statistic has frequently been used as the basis for various interventions, although it must be acknowledged that many other percentages have been put to this claim since (Choudhry, 2014) and there have also been strong calls to refute it entirely, not least because it places focus on the control of frontline workers and their unsafe acts (Manuele, 2011) rather than any latent, systemic problems within the system (Reason, 1997; Whittingham, 2004).

Yet as Hollnagel (2014:30) states, 'the idea that human error could be used to explain the occurrence of adverse events was eagerly adopted', and so it is perhaps unsurprising that despite such debates, unsafe acts and behaviours remain a core consideration for safety management professionals. Consequently, SOR by some means – the way in which such acts and behaviours can be determined, reported and monitored – also has a long history as part of organisational safety management practice (van der Schaaf and Kanse, 2004). It is certainly found in some form on most large construction sites in the UK. However, SOR is a process that has developed over time and from a number of different foundations, which in turn has at times led to misunderstandings of SOR within wider safety management systems (SMS), and even resulted in misapplication in practice. One fundamental consideration of SOR is the acknowledgement that it is not a standalone method of safety management in and of itself, and should be integrated into a wider process (Cambraia et al., 2010) such as BBS, NMR or SMS.

2.2.1. Behaviour based safety (BBS)

SOR forms a key part of BBS, itself an approach to safety management that seeks to gather accurate and relevant data which can then be analysed and utilised to inform appropriate interventionist actions. In BBS systems, five fundamental steps are followed: (1) identification of unsafe behaviours within the workforce from accident data or near-miss records, (2) development of appropriate observation checklists, (3) educate and train all involved, (4) observe workers in the workplace, (5) provide feedback, both positive and negative, through verbal, written and graphical means (Cooper, 2009). It is worthy of note that SOR itself is only one step (number 4) within this comprehensively proscribed process, and one which should be utilising a focused observation checklist (as developed in step 2) for each BBS intervention.

Results from observation reporting can be used to compute percent safe scores, which can in turn be used in a variety of ways to direct interventions, but are primarily intended to provide on-going safety feedback to the workforce (Cooper et al., 1994). However, the effectiveness of this process is reliant on a number of factors. For example, the SOR aspect of BBS should also involve the consideration of contact rate, the number of observations made over a fixed period of time, as research has shown that the more frequently managers and supervisors pro-actively undertake observations, the higher the number of workers that also voluntarily engage in the process (Cook and McSween, 2000). Training of those carrying out the SOR within the BBS process is also necessary, be they observers from outside the organisation or direct-line supervisors and managers. In the latter case, management commitment to the process has been found to be essential to achieve significant improvements in safety performance (Robertson et al., 1999). The way in which feedback is provided to workers and at what frequency is also influential, and the setting of targets for improvements can provide motivation for the workforce to comply with safe behaviours (Cameron and Duff, 2007). If worker training and feedback are not continuously and consistently provided throughout the process, the effectiveness of BBS in instigating improvements is significantly challenged (Duff et al., 1993).

Overall, the design of the BBS system as a whole is critical for its success, as Cooper (2009) notes that simply to measure behaviour, through observations, is not enough to sustain incident reduction. A structured approach in terms of regular observations, in static settings, with participative goals is most effective in practice. By adopting such a rigorous and holistic method, BBS has been both theoretically and empirically proven to achieve a reduction in accidents (Li et al., 2015, and see also Krause et al., 1999 for a 5-year longitudinal study, Sulzer-Azaroff and Austin, 2000 for multiple cases, and Choudhry, 2014 for an international construction site case study).

Yet BBS has not been without its critics, and there has been little firm evidence of the success of these types of programmes on large UK construction sites (Health and Safety Executive, 2008). BBS has been also challenged by arguments that they tend to 'blame the worker' rather than focus on potential hazards and unsafe conditions within the work environment (see Howe, 2000; Frederick and Lessin, 2000; Cooper, 2003; Dejoy, 2005) whilst more significant problems with management and leadership, as noted by Fleming and Lardner (2002), often go unexposed. Hopkins (2006) argues that BBS struggles to be effective in situations in which the workforce mistrusts the management, as they are readily seen as another way to hold workers responsible and accountable, and so can also be influenced by the safety culture of the organisation, which is explored in more detail in Section 2.2.3.

2.2.2. Near miss reporting (NMR)

Heinrich (1931) also had considerable influence within the processes of NMR, another safety management approach that also involves SOR and his 'Accident Pyramid' arguably made a significant contribution to safety management practices. Despite Heinrich's own caveats around using his work in this way, causality has become embedded within the pyramid, and a variety of numbers have been allocated to the quantity of near misses/unsafe acts at the base, up through minor and major accidents, that eventually 'produce' one fatality at the top. The pyramid has however been strongly critiqued, for example whilst Townsend (2013) states that 'Safety Can't be Measured' and therefore the 300-29-1 ratios are nonsensical, Manuele (2011:52) simply describes the notion that reducing accident frequency will equivalently reduce serious injuries as a 'myth'. Yet despite such debates, the use of the pyramid remains common practice in safety management, with managers actively seeking to eliminate near misses at the pyramid base to 'prevent' incidents occurring at the higher levels (Choudhry, 2014).