With a little help from my friends: The positive contribution of teams to safety behaviour in public hospitals

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The positive contribution of teams to safety behaviour in public hospitals

Against the backdrop of decreased organizational slack in public sector organizations, we investigate the direct and indirect effect of teams on safety behaviour in an Italian acute care hospital. Quantitative findings confirm the positive contribution of teams to individuals' safety behaviour. Qualitative findings then offer further insights into the context of safety as well as how deficient teamwork manifests itself and what it means for clinical staff. The study contributes to the limited empirical research on safety behaviour in high-reliability settings as part of a wider conversation about public sector professionals under crisis. Specifically, it enhances our understanding of the role played by teamwork in supporting clinicians with their individual positive resources and safety behaviour towards patients. The findings can assist managers of public sector hospitals to facilitate conditions for effective team communication in the interest of patient safety, and can, conceivably, be extended to other public sector high-reliability settings.

Keywords: safety behaviour, teamwork, positive organizational behaviour, psychological capital, hospitals

Introduction

The wide adoption of neoliberal work practices in organizations has brought about decisive changes in the workplace that, in spite of their rhetoric for optimizing performance, threaten sustainable organizational success (e.g. Crowley and Hodson 2014). The single most decisive impetus for such practices in the public sector are the New Public Management (NPM) reforms in most OECD

countries (Lapsley 2008; Diefenbach 2009). Admittedly, NPM reforms have not been implemented to the same extent in all OECD countries (Pollitt and Bouckaert 2004. Many European countries, including Italy (Ongaro 2008; Kuhlmann 2010), experienced a delay in the implementation of these reforms. Nevertheless, in the last thirty years, Italy has undergone numerous public management reforms (Ongaro et al. 2013) leading to their healthcare sector becoming 'managerialized' (Bellè and Ongaro, 2014; Trinchero, Borgonovi, and Farr-Wharton 2014).

Tasked with the objective of improving the efficiency and overall performance of the public sector, NPM reforms led to accountability pressures and excessively high workloads (Diefenbach 2009) which often resulted in negative employee outcomes, including workplace harassment (Xerri et al. 2016), lower levels of employee wellbeing (Brunetto et al. 2014) and reduced workplace engagement (Nguyen et al. 2018). Safety science theorists link such issues with reduced organizational slack, which squeezes employees in the middle of highly efficient and tightly coupled work systems and processes. Organizational slack is '*the pool of resources in an organisation that is in excess of the minimum necessary to produce a given level of organisational output*' (Lawson 2001, 126). By depleting organizations of slack in pursuit of efficiency, managers create pathways of vulnerability (Smith 2005), with people more likely to make errors and minor incidents more likely to escalate into major accidents (Fischbacher-Smith 2014), in the organizational equivalent of a domino effect. This process has also been explained by tight coupling, defined as the degree of interdependence among people, equipment and procedures (Perrow 1984). The quest for efficiency makes organizations tightly coupled, enabling failures to cascade faster than anyone can cope with, which can ultimately result in crises (*idem*).

It has been argued that NPM has been the cause of unprecedented complexity and tight coupledness (Brookfield and Smith 2006; Dudau 2010; Dudau, Fischbacher-Smith, and McAllister 2016) in the public sector. Some organizations, however, cannot afford to have their operations tightly

coupled at the expense of client safety, such as organizations working with human life and health (e.g. acute hospitals) or operations routinely incubating risks to human life (e.g. nuclear power stations). Such organizations, referred to as high-reliability organizations (HROs), should have the '*ability to maintain and execute error-free operations*' (Shrivastava, Sonpar, and Pazzaglia 2009, 1362) when operating in complex, high-risk environments. But to do so, they require organizational slack, according to theorists such as Smith (2005) and Perrow (1984).

As NPM reforms are here to stay and may deepen further under austerity policies promoted in some countries (Willis et al. 2017), it becomes increasingly important to offset the effects of ever-reducing organizational slack on public sector professionals with initiatives aimed at restoring positive associations with work (Wrzesniewski 2003). Important progress in this direction is seen with the emergence of the Positive Organizational Behaviour (POB) movement in organizational studies (e.g. Luthans 2002), which aims to investigate the contribution of positive individual resources to coping with work demands. POB is an appropriate theoretical anchor for our study as it emerged as a reaction to efficiency-seeking work practices, drawing attention to the positive support of individuals (e.g. through psychological capital [PsyCap]) for the achievement of personal and organizational goals (Luthans et al. 2007).

There are very few studies of the determinants of positive resources and their influence on individual or organizational outcomes in the public sector (see Trinchero, Farr-Wharton, and Brunetto 2019a). Our study adds to this scarce body of research by identifying the role played by teamwork in professionals' PsyCap and safety behaviours in a public sector high-reliability setting. We propose that teamwork has a direct effect on safety behaviours and an indirect effect through PsyCap. Gaining more empirical insight into the contribution of teams to safety behaviours in HROs is particularly critical, as teams are recognized as outperforming individuals in organizations (Smith 2000). We not only contribute to the empirical research of these relationships but also offer insight on organizational

slack in public sector high-reliability settings and how front-line professionals face these challenges in ways that increase their PsyCap and, ultimately, the safety of their clients. If professionals are said to be 'in crisis', these insights offer valuable ways forward in overcoming vulnerability.

Our arguments start with a review of relevant literature on POB, teamwork, safety behaviour and the development of the hypotheses. Next, we explain the methodology and provide a description of our findings from both quantitative and qualitative data. Finally, we discuss these findings in the light of the extant literature and conclude with a reflection on our contribution, limitations and avenues for future research.

Literature review

Positive organizational behaviour

POB research developed from positive organizational psychology (Bakker and Schaufeli 2008) that tries '*to catalyse a change in the focus of psychology from pre-occupation only with repairing the worst things in life to also building positive qualities*' (Seligman and Csikszentmihalyi 2000, 5). The POB framework was initially inspired by Auguste Comte, the positivist philosopher, who believed that '*faith in science was not as a viable livelihood, intellectual pursuit or amusing endeavour, but as the best way toward knowledge that would improve the human condition*' (Bailey and Eastman 1994, 515). The key assumptions expected of all constructs within the POB framework are that they must be based on theory, research and valid measurement; they are open to development; and they have performance impact. In particular, POB focuses on those variables that can be taught within organizations; hence, even employees with low levels of positive characteristics can be upskilled with resultant improvement in outcomes (Luthans and Avolio 2009).

In contemporary organizations, Luthans et al. (2007) drew attention to the relevance of a positive managerial attitude to human resources management, and authors such as Bakker and Schaufeli (2008) proposed that positive organizational experiences can affect organizational outcomes more than negative ones. Ramlall (2008) further identified a direct relationship between positive employee characteristics (e.g. kindness, creativity and optimism, among others) and employee performance. Moreover, there are studies to suggest that POB may also influence safety perceptions among HROs' employees. Eid et al. (2012), for example, proposed that POB is positively related to safety outcomes in high-risk industries. Whereas Hystad, Bartone, and Eid (2014) brought further empirical evidence to show that authentic leadership exerts a positive effect on safety climate, both directly and indirectly, through the mediating role of PsyCap.

Individual psychological characteristics affecting safety culture

PsyCap is an important variable within POB, given that the latter is tasked with the 'application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement' (Luthans 2002, 59). There are four psychological capacities that appear suitable for treatment under the POB framework: hope, optimism, resilience and self-efficacy (Luthans, Youssef, and Avolio 2007). Hope indicates willingness and engagement to achieve defined targets; optimism suggests anticipation of a positive consequence from one's own actions; resilience implies aptitude to counteract major problems; and, lastly, self-efficacy indicates confidence and has been shown to predict performance (Bean and Eaton 2002; Luthans, Youssef, and Avolio 2007; Eid et al. 2012). Together, they make up a person's PsyCap, a positive psychological state of development that individuals can count on to reach their goals (Luthans, Youssef, and Avolio 2007; Eid et al. 2012).

PsyCap is pertinent to HROs because it is posited to positively affect safety-focused behaviours, promoting greater safety awareness (Eid et al. 2012). Eid et al. (2012) reviewed the usefulness of the four psychological characteristics of PsyCap for safety in high-risk organizations and proposed that all four play an important role. 'Hope', for example, was viewed as important for staff implementing innovative technical strategies to increase safety levels within processes: unless they believe the goal is achievable, they cannot be expected to implement it. 'Optimism' was argued to be relevant, as staff need to believe in their ability to affect processes and outcomes according to the organization's safety goals. 'Self-efficacy' was regarded as equally important as employees need to feel they possess not only the right competencies to recognize potential areas of clinical risk but also the required professionalism and self-confidence to report adverse events. Finally, 'resilience' was considered central for staff to be able to challenge each other in adverse situations, which are inevitable in high-risk environments.

That PsyCap is a useful construct for managers to use to influence employees' safety behaviour is consistent with previous findings (Avey, Wernsing, and Luthans 2008; Bergheim et al. 2013; Brunetto et al. 2016b). For example, Avey, Wernsing, and Luthans (2008) found a positive relationship between individuals' PsyCap and their positive emotions, which in turn impacted work attitudes and behaviours relevant for positive organizational change. Bergheim et al. (2013) brought further evidence in the form of the positive role of PsyCap in the safety climate among Norwegian air traffic controllers. Likewise, Brunetto et al. (2016b) substantiated the critical role of PsyCap in enhancing professionals' compliance with safety standards, behaviours and tasks in the public service healthcare sector. Specifically, in their study of nurses' safety behaviours in Australian hospitals, Brunetto et al. (2016b) found that PsyCap, together with satisfaction with safety training and managerial support for safety priorities, was able to predict approximately a third of nurses' in-role safety performance.

Teamwork

While individuals' psychological characteristics are clearly linked with safety behaviour in high-risk environments, individuals rarely work on their own but more often in teams. Teams are means of organizing work, based on the assumption that the groups' decision-making abilities outperform those of individual members, particularly in emergencies (Smith 2000). The presumption behind this argument is, however, that there is sufficient organizational slack to foster reflexive teamwork (Opie 1997), e.g. resources are in place for clinicians to engage in joint thinking and exchange of 'spoken collegial discourse' (Atkinson 1994, 118) through which they can create a shared understanding of client needs and best courses of action. Intra-team communication is therefore at the heart of effective teamwork.

Katzenbach and Smith (1993) define teams in organizations as groups of interdependent employees, frequently with complementary abilities, who share a common target and have the potential for high performance if they are able to facilitate trust and share information and support. According to Lingard et al. (2002, 2004), socialization processes in teamwork have a strong influence on staff learning and team communication patterns. In healthcare settings in particular, an organizational culture that encourages collaborative learning is argued to be of paramount importance for patient safety (Kilner and Sheppard, 2010; Goh, Chan and Kuziemsky, 2013), especially 'in highly dynamic domains of healthcare such as operating rooms, intensive care, emergency medicine, or trauma and resuscitation' (Makary et al. 2006; Manser 2009, 143). Because of the high level of specialization and interdependence of healthcare professionals working together to achieve patient safety (Collin, Paloniemi, and Mecklin 2010), teamwork is argued to be strongly related to trust (Baker, Day, and Salas 2006) and so salient to employees that it impacts on job satisfaction (Kalisch, Lee, and Rochman 2010), sick leave (Kivimäki et al. 2001) and turnover intentions (Brunetto et al.

2013). In terms of antecedents, within the public service healthcare sector, teamwork was seen as facilitated by 'the emergent practices of team members rather than any formalized systems' (Finn, Currie, and Martin 2010, 1090).

A particularly important issue affecting patient outcomes is the quality of communication between healthcare professionals: when the transfer of information is poor, the likelihood of adverse outcomes increases significantly (Elbright et al. 2004). Manser's review of the literature (2009) clearly highlighted the key role of communication and teamwork in the prediction of adverse events in healthcare settings, indicating that it counts more than staff's clinical skills. Furthermore, there is evidence to suggest that effective teamwork is related to members' abilities to deal with conflict and the presence of helpful behaviours, empathy and emotional support within the team. Moreau and Mageau (2012), for example, found that autonomy support from colleagues in a sample of Canadian healthcare professionals was positively related to work satisfaction and psychological health. More recently, Adamson et al. (2018) explored the concept of inter-professional empathy as a precursor of high-quality collaboration in inter-professional healthcare teams, identifying several stages to developing empathy: from sharing an inherent respect for each other to contributing to the overall wellbeing of the team. In addition, Hojat et al. (2015) identified an overlap between measures of empathy, teamwork and an integrative approach to patient care, suggesting that empathy is needed for both inter-professional collaboration and integrative patient care. Taken together, these separate threads of research suggest that promoting inter-professional teamwork between, for instance, doctors and nurses is a step towards enhancing patient safety within healthcare organizations (Wilson et al. 2005; Manser 2009; Collin, Paloniemi, and Mecklin 2010).

Safety behaviour as part of organizations' safety culture

We define organizational safety culture as '*the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management*' (ACSNI 1993, 23). To measure and analyse safety culture, Cooper (2000, 2002) developed a theoretical and practical framework including three dimensions of safety culture: situational (organizational safety structure including policies), psychological (staff perceptions about safety) and behavioural (staff safety behaviours). This offers a clear managerial model that has already been operationalized for assessing safety cultures within healthcare organizations (Trinchero, Farr-Wharton, and Brunetto 2019a, 2019b). The last of the three dimensions, safety behaviour, is of interest to our arguments.

Safety compliance behaviour and in-role safety performance are two key factors outlining staff behaviours around safety within the working environment (Trinchero, Farr-Wharton, and Brunetto 2019a, 2019b). Safety compliance is defined as staff following safety rules and regulations in their core activities to provide a safe workplace (DeJoy et al. 2004; Neal and Griffin 2006). In-role safety performance, on the other hand, assesses the extent to which staff adopt safety tasks and behaviours expected by the organization (Williams and Anderson 1991; Brunetto et al. 2016b). Factors such as training, supervisors' commitment to safety, and organizational policy and procedures have all been argued to affect employees' perceptions of in-role safety performance (Clarke 2013; Katz and Kahn 1978), while management commitment to safety practice has been found to affect employees' safety behaviour (Katz-Navon, Naveh, and Stern 2005). Furthermore, the 'simultaneous occurrence of two or more role expectations such that compliance with one would make compliance with the other more difficult' (Katz and Kahn 1978, 204) causes role conflict, which decreases employees' performance and enhances the likelihood of errors (Brunetto et al. 2016b).

As discussed previously, studies by Eid et al. (2012) and Bergheim et al. (2013) have corroborated the positive impact of PsyCap on safety climate and safety behaviours in industrial settings. Moreover, in the healthcare sector, safety behaviours were also found to be positively influenced by nurses' (Brunetto et al. 2016b) as well as doctors' (Trinchero, Farr-Wharton, and Brunetto 2019a) PsyCap. Regarding the antecedents of safety behaviours, it has been argued that teamwork plays a crucial role as it can enhance the effectiveness of safety improvements among healthcare staff and, in particular, within surgical teams (e.g. McCulloch et al. 2017; Borchard et al. 2012). Nevertheless, there is still a gap in the literature regarding the predicted impact of teamwork on PsyCap and, through that, on safety behaviour.

Hypotheses

Our study essentially tests a number of hypotheses in the context of acute care hospitals, regarding the direct effect of teamwork on the behavioural dimension of safety culture and the mediating effect of PsyCap on the relationship between teamwork and this behavioural dimension. The available evidence about the relationship between teamwork and individual PsyCap is mixed, with Avey et al. (2011) concluding in their meta-analysis that team performance and individual PsyCap are positively related, while other studies failed to substantiate this relationship (Brunetto et al. 2016a). In addition, while Walumbwa et al. (2011) assessed the positive impact of collective PsyCap on group/team attitude and performance, there is still a need for further empirical research to test the relationship between individual PsyCap and teamwork (Luthans and Youssef-Morgan 2017). Hypothesis 1 (h1) therefore posits:

> *Healthcare professionals who perceive a high level of teamwork in their work environment will experience a higher level of PsyCap than those who perceive a low level of teamwork.*

Regarding the relationship between PsyCap and safety behaviour, individuals with higher levels of PsyCap are more likely to push through organizational challenges, such as those relating to safety culture, due to their high levels of self-efficacy and resilience (Avey, Wernsing, and Luthans 2008; Eid et al. 2012). Moreover, Brunetto et al.'s (2016b) and Trinchero, Farr-Wharton, and Brunetto's (2019a) research within the healthcare sector substantiates previous findings that safety behaviours are positively influenced by PsyCap. Hypothesis 2 (h2) therefore predicts:

Healthcare professionals who experience a high level of PsyCap will exhibit a higher level of safety behaviour than those who experience a low level of PsyCap.

Finally, we postulate a positive relationship between perceptions of teamwork and safety behaviour. A strong safety culture (and subsequent safety behaviour) presupposes '... communication founded on mutual trust, shared perceptions of the importance of safety and confidence in the efficacy of preventative methods' (ACSNI 1993, 23), all of which are indicative of high levels of teamwork. Moreover, previous research found teamwork to be essential for achieving a high level of compliance among surgical staff with regard to effectively implementing new safety procedures (e.g. Borchard et al. 2012; McCulloch et al. 2017). Hypothesis 3 (h3) therefore puts forward the following proposition:

Healthcare professionals who perceive a high level of teamwork in their work environment will exhibit a higher level of safety behaviour than those who perceive a low level of teamwork.

Method

This project was prompted by the request of an acute hospital in Italy for assistance with safety processes and understanding the role of teamwork in the safety behaviour of clinical staff. This request was provoked by a critical incident where a surgical instrument was misplaced during surgery as a result of miscommunication between nurses from different shifts. While the instrument was later found, the issue highlighted to the hospital director the importance of teamwork for patient safety. The need to understand this link is further corroborated by the fact that, in the hospitals' critical incident reports, staff communication (both direct and through clinical records) features as the second most prevalent cause of incidents, preceded only by failure to follow established best practices and processes. While adherence to procedures is to some degree a matter of choice, teamwork and communication seem significantly harder for staff to conceptualize and problematize. Therefore, the lead author was invited to carry out an investigation, which was done through a mixed method approach driven by a survey research design.

The study was designed to identify relationships between given variables (PsyCap, teamwork and safety behaviour), while the qualitative data emerging from the open-ended survey questions was designed to aid interpretation of the relationships (Lewis-Beck, Bryman, and Futing Liao 2004) and offer examples to illustrate the process underpinning them (Creswell 2009). The combination of quantitative and qualitative data in a concurrent embedded research design (Creswell 2009; Creswell and Plano Clark 2017) allowed us to evaluate the extent to which inferences could be made on the basis of our quantitative findings (Tashakkori and Teddlie 2003).

Sample. The data for this study came from self-reported evidence in a 2018 survey of doctors and nurses (n. 225) working in the surgical area of one of the largest acute care public hospitals in Italy. The survey was sent to the hospital risk manager with a cover note explaining the research and confirming research ethics canons such as participants' agency and anonymity. Subsequently, the

survey was administered online by the lead author to 695 clinical staff, requesting its return within six weeks. The response rate was of 32% and, out of the 225 surveys returned, none were deleted.

Instruments. PsyCap, teamwork and the behavioural component of safety culture were measured using instruments from the extant literature, previously validated for the Italian context (Brunetto et al. 2012), on a 6-point Likert-type scale, from 1 = strongly disagree to 6 = strongly agree. To measure PsyCap the shortened 12-item scale of Luthans et al. (2007) was utilized (with a composite reliability coefficient of 0.89 and an average variance extracted score of 0.51). The behavioural component of safety culture was captured using a high-order factor that combined safety compliance scale (Neal and Griffin 2006) and in-role (safety) performance (Brunetto et al. 2016b). The scale has a reasonable internal reliability as indicated by the composite reliability coefficient of 0.93 and an average variance estimate of 0.58. Healthcare professionals' satisfaction with teamwork was measured using the 5-item scale developed by Rubin, Palmgreen, and Sypher (1994) starting from Glaser, Zamanou, and Hacker's (1987) research. This scale has a composite reliability of 0.94, and an average variance extracted score of 0.79). Team communication is an important element of the teamwork construct as evidenced by its early use in influential communication research (Rubin, Palmgreen, and Sypher 1994). As such, the team communication scales (see Appendix) have been adapted and used for teamwork in some human resource management work (e.g. Brunetto 2011, 2012; Xerri and Reid 2018).

Qualitative data. Our respondents had the opportunity to add some personal reflections on their, and their colleagues, safety behaviours in a field placed at the end of the survey. The two questions prompting open reflections were: 'In your experience, which good practice requirements for patient safety tend to be followed in your workplace?' and 'In your experience, which good practice requirements for patient safety are often neglected?' The qualitative data elicited through these questions was meant to enhance the contextual realism of our study by providing 'rich

examples' alongside (and perhaps elaborating on) quantitative research findings. The data were analysed using the Gioia method (e.g. Corley and Gioia 2004) to yield first-order codes, second-order themes, and aggregate dimensions (as illustrated by sample data in Figure 2). There are numerous variations of this method – a popular one is Creswell and Plano Clark (2017) who suggest staring from categorical aggregations (a collection of instances from the data), patterns and naturalistic generalizations.

Findings

Findings from quantitative analysis

Descriptive statistics for the overall sample and all the variables measured in the study are reported in Table 1.

Insert Table 1 here

Reliability and validity protocol

Several measures were taken to ensure reliability and validity of the data before proceeding with the testing of the structural model for the two groups. Initially, the dataset was screened by case and by variable for missing data, unengaged responses and outliers, so as to ensure that only usable and complete responses were used in the analysis. Next, an exploratory factor analysis (EFA) of all the reflective latent measures in the study (that is, teamwork, PsyCap and safety behaviour) was conducted. After first deleting variable items that either cross-loaded on more than one factor (to

increase discriminant validity) or loaded below the 0.500 threshold (to ensure convergent validity), a promax rotation of all remaining variable items identified a three-factor model for the dataset, which was found to explain 60.4% of the total variance, with less than 0.5% non-redundant residuals, for the overall sample. The Kaiser-Meyer-Olkin (KMO) measure provides evidence of sampling adequacy (0.919, p<001), with all communalities being above the 0.4 level; whereas, the examination of the factor correlation matrix revealed no non-diagonal values over 0.7, thereby providing additional evidence of discriminant validity for the identified three-factor model. Last but not least, Cronbach's (1951) alphas were run for teamwork, PsyCap and safety behaviour scales and exceeded the 0.90 threshold in all cases (teamwork 0.94, PsyCap 0.90 and safety behaviour 0.93), comfortably satisfying Nunnally and Bernstein's (1994) standards for internal consistency and acceptable survey inter-item reliability.

Furthermore, confirmatory factor analysis (CFA) was conducted to test the study's measurement model. This analysis indicated that, after minor modifications pertaining to the deletion of one item from the PsyCap variable and the addition of the covariance between error terms in the structures of PsyCap and safety behaviour, the fit of the three-factor model produced through the EFA was adequate in accordance with all usual conventions (χ^2/df = 1.62; GFI = 0.90; CFI = 0.96; PCFI = 0.83; RMSEA = 0.05).

Finally, the potential threat of common method variance was assessed through Harman's (1976) single-factor test and the common latent factor method. This analysis revealed that when all variable items were loaded on one factor, this factor explained a relatively small percentage of the total variance (42% for the overall sample). These results were corroborated through the common latent factor method, which essentially showed that the introduction of a common latent factor in the measurement model did not materially change the magnitude of the regression weights for any of the

variable items. Together, these results provide sufficient assurance about the effect of common method variance in the study.

Structural model

Amos 23.0 was used to test the study's hypotheses in the context of the structural model presented in Figure 1, as this resulted from the CFA. The estimations of the parameters and the overall fit index of the measurement model were based on the default maximum likelihood (ML) estimation method; whereas all tests are directional t-tests of the critical ratios (CR) of the regression weight estimates over the estimates of their standard errors (SE) provided in the Amos output.

Insert Figure 1 here

Table 2 presents maximum likelihood estimates for the proposed model.

Insert Table 2 here

The results provide evidence to support all hypotheses in the study; it appears that teamwork has a positive effect on both PsyCap and safety behaviour, as predicted by hypotheses one and three respectively. Furthermore, consistent with hypothesis two, PsyCap is found to have a positive effect on safety behaviour. Together, these findings provide support to the proposition that PsyCap acts as a mediating factor in the relationship between teamwork and safety behaviour. They also offer evidence on the importance of teamwork for safety behaviour, given its direct effect on it, as well as its indirect effect through PsyCap.[1]

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[1] The effect of three exogenous (demographic) variables (age, gender and position) was examined in the study. To do this, a multi-group analysis was conducted for each of these exogenous variables, which in all cases revealed no significant differences in the level of fit of the model between the different age, gender and position groups examined. This provided sufficient evidence to suggest that age, gender and position had no effect on the hypotheses tested in the study.

Findings from qualitative analysis

Most respondents answered the open-ended questions in the survey, but some of the responses were along the lines of 'I don't know', 'all' or 'none', reducing the number of valid qualitative data entries to 134 for the first question and 102 for the second. The data generated through the second question was particularly useful, as many professionals simply stated 'preoperative checklist' or listed regulations in response to the first question. Therefore, it is the second question that generated real insight beyond the safety procedures. The coding generated two main themes: *teamwork for safety* and *context of safety*. The former offered additional insights on the importance of teamwork to safety behaviours, beyond those offered by the quantitative findings. Whereas, the *context of safety* offered a window to the background for this focal issue.

Teamwork for safety

While most professionals thought safety checks and procedures were there to be followed, as they are in most cases, they identified some that required additional attention as they could lead to adverse events in the future.

According to the respondents, the most important issue jeopardizing patient safety in the acute hospital was 'collaboration defects' (P 66, Figure 2). Figure 2 presents a sample of the quotes around teamwork deficiencies and the coding process leading to aggregate theoretical dimensions.

Insert Figure 2 here

The lack of collaborative work or its problematic nature could be due to unease between professional groups (anaesthetists and surgeons, doctors and nurses, and clinicians and operational staff). Indeed, teamwork is bound to be difficult where there are (perhaps historical) divides between

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professional groups. Moreover, fractures are bound to accumulate during the course of teamwork, both inside and outside the operating theatre. In terms of particular interactions, the issues that seem to be affecting teamwork among healthcare professionals are to do with interpersonal issues such as trust and assertiveness. Whereas those affecting collaboration between clinicians and operational staff are around harmonization or structural issues, where conflicts arise over safety procedures, for example, which may be different and, at times, difficult to implement at the same time. Arguably, these difficulties in teamwork could be overcome through development of positive communication and trust, but these processes are likely to be compromised by efficiency-oriented work practices that are seen to put quantitative targets above patient well-being. Our respondents did refer to such issues in our open-ended questions.

Context of safety

Participants' open comments offered a window into the quantification and fragmentation of care, suggesting reduced organizational slack and the effect this has on people, as evidenced by the quotes in Figure 3:

Insert Figure 3 here

Some healthcare professionals feel uneasy about this quantitative approach to patient care, but nevertheless feel as if they must engage with it despite believing it could to lead to unsafe practices. All these reflections on collaboration and communication suggest broad awareness of the issues at an organizational level, but some also convey individual resistance to the issues affecting patient safety. For example, participants 14 and 77 (in Figures 2 and 3) appear to make statements expressing resilience and hope that, as long as they do so, the overall wellbeing of the patient will not be entirely overlooked. Participant 66 (Figure 3) adds his perspective:

The coordinator invites me to call the patient by bed number…

but I call them by name as in the procedure it is not forbidden.

If participants 14, 66 and 77 set themselves apart as part of the 'resistance', participant 82 (Figure 2) speaks of nurses' lack of assertiveness with doctors (which is arguably linked to the idea of self-confidence relative to colleagues perceived to be superior in some way). This statement (see Appendix) is important as it points to gaps in the PsyCap of some of the staff which may have something to do with lack of collaboration, although it is unclear, from the qualitative data, which triggers which.

Discussion

The main contribution of the study is that it identifies the strong positive effect of teamwork on individual professionals' safety behaviours. This effect is both direct and indirect (i.e. through PsyCap). These findings extend Manser's (2009) theoretical arguments, and Wilson et al.'s (2005) qualitative findings, about the key role of communication and teamwork in the prediction of adverse events in healthcare settings.

Consistent with previous literature (Trinchero, Farr-Wharton, and Brunetto 2019a), this study provides evidence to support the view that individual positive resources (PsyCap) have a positive effect on safety outcomes. What we have added to this body of work is a focus on safety behaviour, rather than the wider safety culture, and the impact of teamwork on people's safety behaviour. Indeed, the contribution of teamwork to safety behaviour, mostly of interest in a complex organization like an acute hospital where errors can be costly, is remarkable: it has double the effect by correlating with safety on its own as well as through individuals' PsyCap.

In addition, in contrast to Brunetto et al. (2016a) who failed to establish empirically the relationship between PsyCap and team performance, despite theoretical support from Luthans et al. (2008), our findings support the hypothesis that teamwork has a strong, positive effect on PsyCap. This is a particularly interesting finding as it makes our study one of very few identifying organizational antecedents of PsyCap, alongside the work of Hystad, Bartone, and Eid (2014) who showed PsyCap to mediate the relationship between authentic leadership and safety climate, therefore identifying authentic leadership as a precursor to PsyCap.

Finally, through further analysis of clinicians' qualitative narratives, we exposed how reduced organizational slack manifests itself in acute care hospitals as a subset of public sector HROs. These findings, alongside our quantitative ones, add to the limited empirical research on safety behaviour in high-reliability settings. Indeed, HRO scholarship is currently dominated by theoretical research and the retrospective study of infamous adverse events through documentary research. Yet, there is a need to understand the issues that affect safety behaviours during 'business as usual' and not retrospectively through the analysis of known crises (Smith 2005). Our study is a step towards bridging this gap by shedding light on teamwork and PsyCap as determinants of safety behaviours in an acute hospital as a particular HRO type (Tamuz and Harrison 2006).

Conclusion

This study brings an important contribution to, firstly, the study of safety behaviours in high-reliability settings and, secondly, POB theory which we have used to conceptualize the impact of individual attributes as well as workplace relationships on safety-related behaviours in the healthcare sector. While the POB framework has previously been used to analyse the association between

individual attributes and workplace relationships in other industries (e.g. Brunetto et al. 2016a), this is the first study to date to apply POB in the context of the healthcare sector.

We acknowledge the following main limitations to our study. Firstly, there are limits to the generalization of our study. Our data came from one Italian public hospital, so further research is needed to enhance the external validity of our findings. Secondly, our data comes from self-reporting items. Despite self-reporting surveys being a great source of data on employees' perceptions, the data can suffer from common method bias. Nevertheless, following Spector et al. (2004), such surveys can be used if embedded in the literature and if pattern matching is performed to sustain the data's interpretation. The occurrence of common method variance in the data can also be reduced if the measures used have construct validity and there is absence of commonality in items for distinctive variables (Conway and Lance 2010). We have achieved both in our study. Moreover, the surveys and their processes were developed taking into account 'temporal, proximal, psychological, or methodological separation of measurement', 'protecting respondent anonymity and reducing evaluation apprehension', 'counterbalancing question order', and 'improving scale items' (Podsakoff et al. 2003, 878–888). Additionally, as stated earlier, the Harman's ex-post single-factor test has been used, indicating the low chance of a common method bias (Podsakoff and Organ 1986; Podsakoff et al. 2003). Still, future research may be able to investigate these issues using more objective measures, such as those coming from critical incident reports (also known as serious case reviews), and qualitatively analyse the events in each case. A cursory review of these in our own research setting indicates that they are a fruitful source of data for future studies.

There are significant implications of our findings for evidence-based best practice. We provide healthcare managers with empirical evidence of how to enhance employees' safety behaviours in acute care hospitals, although further research in other countries and organizational settings would increase the generalizability of these findings. With regard to patient safety, our results emphasize the role and responsibilities of hospitals' top and middle management. Notably,

hospital leaders are responsible for creating the right organizational climate to allow staff to work across interprofessional boundaries, as well as those between clinical and non-clinical staff. In light of our findings, we argue that poor teamwork affects not only professionals' safety behaviours but also their positive individual resources such as PsyCap, which can make them more likely to behave unsafely. Therefore hospitals may have to take active steps to not only engage in initiatives that increase PsyCap upskilling opportunities for their staff but also increase organisational slack for more effective teamwork through team communication. Such measures are important steps towards enhancing safe practice in hospitals by decreasing the scope for human error (Reason, 1990) that is otherwise inevitable in tightly coupled, slack-free organizations (Perrow, 1984). These avenues may be appropriate for other public sector high-reliability settings and professionals 'in crisis', although corroboration with additional empirical evidence from other organizations and services may be required.

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Tables

Table 1. Descriptive Statistics – Overall Sample.

	N	Minimum	Maximum	Mean	Median	Std. Deviation
Teamwork	225	1.00	6.00	3.98	4.00	1.07
Psychological Capital	225	2.13	6.00	4.78	4.88	0.68
Safety Behaviour	225	3.00	6.00	5.47	5.70	0.61
Valid N (listwise)	225					

Table 2. Maximum Likelihood Estimates.

Independent Variable		Dependent Variable	Estimate	Standardized Estimate	CR	P
H1 Teamwork	----->	Psychological Capital	0.229	0.037	6.112	**
H2 Psychological Capital	----->	Safety Behaviour	0.391	0.054	7.268	**
H3 Teamwork	----->	Safety Behaviour	0.116	0.034	3.409	**

** Significant at the $p < 0.001$ level (two-tailed). $\chi^2 = 8.166$ (d.f. = 2); $p = 0.017$.
* Significant at the $p < 0.005$ level (two-tailed). Goodness-of-Fit Index = 0.986.

Independent Variable	Dependent Variable	Estimate	Standardized Estimate	CR	P
		Root Mean Square Error of Approximation = 0.037.			

Figures

Figure 1. Proposed structural model.

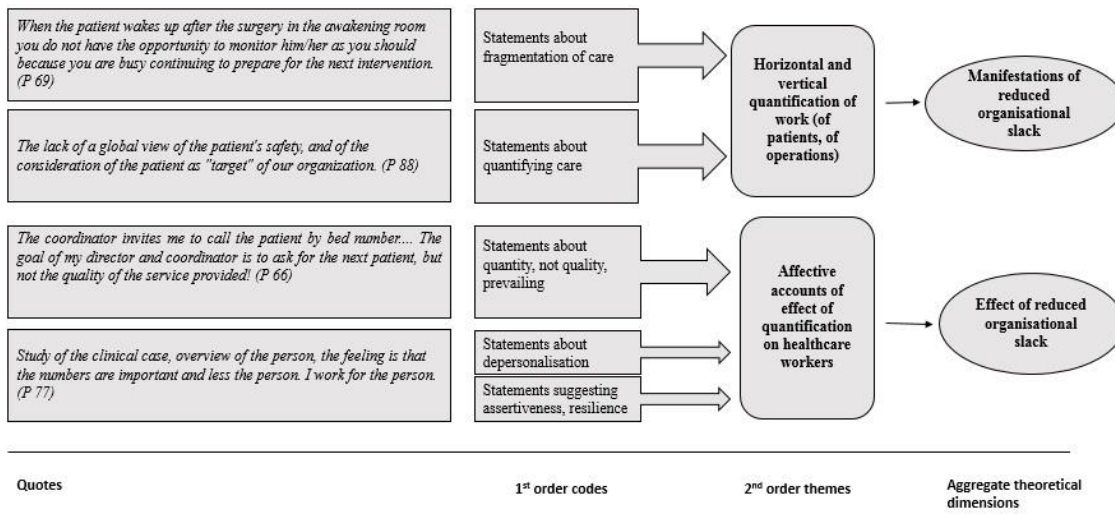Figure 2: Sample quotes and coding process leading to 'teamwork for safety'.

Figure 3: Sample quotes and coding process leading to 'context of safety'.

Appendix

Instruments used to measure safety behaviours, PsyCap and teamwork

Safety Behaviours
I complete my work tasks safely
I fulfil safety responsibilities specified in my job description
I perform safety tasks that are expected
I meet formal safety performance requirement of my job
I undertake safety activities that will directly affect my performance evaluation
I perform safety essential duties
I use all the necessary safety equipment to do my job
I use the correct safety procedures for carrying out my job
I ensure the highest levels of safety when I carry out my job
I promote the safety programme within the organization
I put in extra effort to improve the safety of the workplace
I voluntarily carry out tasks or activities that help to improve workplace safety
PsyCap
I feel confident in representing my work area in meetings with management
I feel confident contributing to discussions about my workplace's strategy
I feel confident helping to set targets/goals in my work area
Right now, I see myself as being pretty successful at work
I can think of many ways to reach my current work goals
At this time, I am meeting the goals that I have set for myself
I usually manage difficulties, one way or another, at work
I can get through difficult times at work because I've experienced difficulty before
I feel I can handle many things at a time in this job
When things are uncertain for me at work, I usually expect the best
I always look on the bright side of things regarding my job
I'm optimistic about what will happen to me in the future as it pertains to work
Teamwork
People I work with resolve disagreements cooperatively
People I work with are cooperative and considerate
People I work with constructively confront problems
People I work with are concerned about each other
When I complete my work tasks, I am happy to help others