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Implications of turnover and trust for safety attitudes and behaviour in work teams

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ABSTRACT

Turnover potentially leads to a new individual being selected into a work team. This study investigated the safety-specific trust which team members place in their organisation's selection and induction processes, and related this to the perceived risk from new employees. The research was conducted with teams working in forest harvesting, an occupation which has high-turnover, high risk and a high accident rate. Results indicate that trust in induction processes was negatively correlated with perceived risk from a new employee. Team members also engaged in a number of safety ensuring behaviours when a new individual joined the team, and these were related to the level of perceived risk, and how much they cared about their team members' safety. It is argued that trust in the safety-specific characteristics of an organisation's selection and induction process may have negative consequences for safety.

1. Introduction

A number of studies have reported a relationship between accidents and employee turnover (e.g., Bell and Grushecky, 2006; Kincaid, 1996). Furthermore, team instability from absenteeism has been associated with occupational accidents (Goodman and Garber, 1988). A possible interpretation of these relationships is that new employees (those replacing turned-over staff or filling in for absentees) pose a safety risk. Team members' perceptions of this risk could be decreased if team members trust that their organisation will deal with turnover and absenteeism by selecting a new worker that will work safely. The safety-specific trust issues associated with organisational selection and induction, and team members' perceptions of, and safety behaviour towards, new team members are the focus of this paper.

The research was conducted in the forestry industry where individuals work in small teams harvesting trees. Turnover is often very high in the forestry industry (Kirk et al., 1997), and forestry work is internationally recognised as risky (Chapman and Husberg, 2008; Driscoll et al., 1995; Lilley et al., 2002; Östberg, 1980; Slappendel et al., 1993). In a review of factors affecting forestry worker safety, Slappendel et al. (1993) cited a number of studies that have reported that the inexperienced may be more at risk of an injury. We were unable to find any studies which have proposed a theoretical explanation for the relationship between turnover and accidents. However, the theoretical relationship between absenteeism and accidents proposed by Goodman and Garber (1988) in their study of coal miners appears to be applicable to the turnover situation. They argued that new workers are likely to have a lack of *familiarity* with the unique characteristic of particular machinery, specific work environments, work methods and people which could increase accidents, particularly if existing workers do not make compensatory changes. Bentley et al. (2005) have also argued that changes in team personnel can put team safety at risk because the new team member may not be familiar with the team's practices, procedures or equipment. Furthermore, Bentley et al. (2002) reported that 44% of injuries on logging skid sites occur within the workers' first year on the job, with 32% within the first 6 months of employment.

The 'compensatory change' component of Goodman and Garber's (1988) premise appears to have received little research attention. We argue that an issue associated with the level of 'compensatory change' is the degree of trust that team members place in their organisation's selection and induction processes. The selection process can include measures that attempt to predict applicants' safety potential. Furthermore, once an individual has been offered the job, pre-start induction processes should introduce the new employee to the organisation's safety processes and policy. How much team members trust these processes to have a positive 'safety ensuring' outcome, may determine how they respond when a new employee joins the team.

More specifically, and in line with recent arguments put forward by Conchie and Donald (2008), we argue that in the case of turnover (and indeed absenteeism) a degree of *distrust* is advantageous for safety. McEvily et al. (2003) have also argued that trust

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can reduce individuals' inclination to monitor and safeguard. While there is a developing literature outlining the safety benefits of trust (e.g., Jeffcott et al., 2006; Reason, 1997; Watson et al., 2005; Zacharatoes et al., 2005), very little has been written on the value of distrust (but see Burns et al., 2006). Furthermore, there is some debate as to whether trust and distrust are opposite ends of the same continuum (e.g., Hosmer, 1995; Meyer et al., 1995; Rotter, 1971), or are separate constructs (e.g., Deutsch, 1960; Lewicki et al., 1998; Sitkin and Roth, 1993). Because our research is not addressing this debate, we will simply argue that trust in the context of employee turnover is negative for safety. In relation to turnover, employees should show a degree of caution in working with a new team member, and not trust their organisation's ability (via selection and pre-start induction processes) to ensure the new employee will work safely, has the attitudes to act safely in general, and has the relevant job context knowledge (familiarity).

While Reason (1997) argues that trust at the organisational level is likely to promote open communication about safety, complete trust in the organisation's ability to manage safety via selection and induction process could have negative consequences. Similarly, trust at the interpersonal (team) level has been linked with positive safety outcomes (e.g., Donald and Young, 1996; Hofmann and Stetzer, 1998; Watson et al., 2005), but we would argue that it is essential that this trust be earned by new team members rather than given as a consequence of a set of assumptions about selection and induction processes which may be incorrect. Safety may well be enhanced by adopting what Hale (2000) referred to as "creative mistrust": being positively wary about safety systems and safety management.

Why might team members trust an organisation's safety-specific selection processes? Several researchers have found significant correlations between personality and safety behaviours (e.g., Hansen, 1989; Tiffin and McCormick, 1962), while others have found that companies with low accident rates had more elaborate selection systems (e.g., Cohen, 1977; Smith et al., 1978). However, while many researchers would agree that it is hard to accurately predict safety attitudes and behaviour, this may not be the view held by members of a work team. Team members may recall being asked questions about safety when they were interviewed for their job, and not realise that interview data may show very little relationship with post employment behaviour. Similarly, workers may hold incorrect assumptions about the effectiveness of pre-start induction processes. While training has been shown to improve safety attitudes (e.g., DeJoy et al., 2000; Harvey et al., 2001) and decrease lost-time accidents (e.g., Harshbarger and Rose, 1991), inadequate or inappropriate safety training has been given as a reason for accidents in the forestry industry (Crowe, 1985; Holman et al., 1987; MacFarlane, 1979). Furthermore, Bell and Grushecky (2006) have noted that safety training programs in the forestry industry are rarely evaluated for effectiveness. If team members trust their organisation's selection processes and/or their safety induction/pre-start training processes to have a positive impact, and this trust is misplaced, they may face risks from the behaviour of the new employee which they are not anticipating. Thus *Hypothesis 1* is that trust in the safety-specific aspects of selection and induction will be negatively correlated with perceived risk from new employees: as trust increases perceived risk decreases.

Trust in selection and trust in induction effectively place the responsibility for safety with the organisation. Team members that do not trust these processes may attempt to mitigate their own (and their co-workers) risk by engaging in *safety ensuring behaviours* when a new member joins the team. Safety ensuring behaviours could include informally attempting to assess the employee's attitudes to safety, watching out for their safety, offering them assistance and information, familiarising them with the specifics of the team's operation, and being wary of their actions. Thus *Hypothesis 2* predicted that safety ensuring behaviours would be positively associated with perceived risk from new team members: as the perceived risk increased safety ensuring behaviours would increase. Another factor which may influence an employees' reaction to a new team member, is the level of concern the individual holds for their existing team members' safety. Thus *Hypothesis 3* predicted that employees that have a high level of concern for their existing co-workers safety are likely to be particularly careful with a new team member and engage in more *safety ensuring behaviours* when a new member joins the team.

2. Method

2.1. Industry description

The participants for this study were forestry workers employed by fifteen independent contractors working for a large New Zealand forestry company across three regions in New Zealand. The forestry company has overall responsibility for operational planning, and as landowner retains responsibility for the oversight of health and safety of all operations. However, the independent contractors have operational and day-to-day responsibility for their teams. This means they recruit, select, train and manage the performance of their teams.

2.2. Participants

Two hundred and thirty-five forestry workers employed in the New Zealand forestry industry were approached to participate in the study. Two hundred and thirty-two completed the questionnaire, thus the response rate was 98.7%. Eleven of the 232 participants responses were incomplete to the point that their data was excluded case wise from the analysis. A further 27 cases were excluded from this analysis because the participant identified themselves as a team supervisor and we wanted to focus exclusively on team members. Examination of the remaining 194 cases indicated that 66 (34%) were working in forest growing activities (i.e. establishment and siliviculture), whilst 128 (66%) were working in harvesting (i.e. tree felling, machinery operators, skid-work). Because we wanted to focus on very high risk work, which requires a compliment of team members working together to achieve operational objectives we excluded the forest establishment and silvicultural workers from further analysis in this paper. A small amount of missing data (1 or 2 item ratings) was evident for seven of the 128 forest harvesting participants. Rather than replace these with the variable's mean, we used the available data and note the relevant sample size for each analysis. The average age of the 128 harvesting workers was 35.6 years, with a mean period of 33.2 months in their team (range 3 days to 20 years), and 162.9 months in the forest industry (range 1 month to 48 years). Seven of the participants were female. The participants worked in 21 different teams which ranged in *sampled* size from 3 to 10 members.

Because we are interested in safety-specific trust issues associated with team member change, it was important to establish that team member change was a feature of the teams we sampled. The participants' indication of how long they had worked in their team was used to develop a tenure percentage score which indicated how long a participant had worked in their team as a percentage of the time served in the team by the longest serving team member that was sampled. First we identified the member/s of each team that had indicated the longest team tenure (this individual or individuals was/were nominally given a tenure percentage score of 100). We then divided the team tenure for each other member of the team by the team tenure of the longest serving member, and

multiplied the product by 100. The overall mean tenure percentage score was 45.5 (SD = 35.1, $n = 128$). A mean tenure percentage score was also calculated for each of the 21 teams, and these ranged from 23.8 to 67.4. Overall these results clearly suggest a considerable amount of variation in the time that individual participants had been part of their team. Furthermore, given that the forest harvesting operation relies on a compliment of team members, the variation in team tenure percentage scores implies a lot of team member change/turnover.

2.3. Materials

The data reported in this paper were collected with a questionnaire which contained a total of 172 items. Only the scales and questions pertaining to the hypotheses in this paper are reported here.

The questionnaire cover page introduced the participant to the study, and provided an informed consent statement. The first section of the questionnaire collected demographic information: age, sex, job type, time in their team and time in the forestry industry. A single item assessing the perceived risk associated with a new employee joining their team was included (*the risk of an accident/incident increases when a new employee joins my crew*), as was a single item measuring trust in new employees (*a new crew member can be immediately trusted to comply with safety procedures and policy*). Participants responded to these items, the considerate and responsible employee (CARE) scale items, the trust in selection items, trust in induction items, and safety reactions to new team members items using a five-point scale (1 = strongly disagree to 5 = strongly agree). The order of the remaining sections of the questionnaire was counterbalanced to help control for common method variance (Kline et al., 2000).

2.4. Considerate and responsible employee (CARE) scale

A shortened version of Burt et al.'s (1998) considerate and responsible employee (CARE) scale was used to measure participants' caring towards their co-workers' safety. From the scales original 21 items, the 15 items with the highest factor loadings were selected to form a shortened scale. Examples of items include "Workers should point out hazards to co-workers", and "A worker should never be too busy to help a co-worker". Item ratings were summed and divided by 15 to give a possible score range of 1–5 where a larger score indicates a greater level of caring towards co-workers. The coefficient alpha for the shortened scale was 0.92.

2.5. Trust in selection, trust in induction, and safety reactions to new team members

The Appendix shows the items used to measure participants' trust in their organisation's selection processes ($n = 4$), trust in induction processes ($n = 3$), and safety reactions to new team members ($n = 6$). Item ratings were summed and divided by the number of relevant items to give a possible score range of 1–5. Coefficient alphas were: 0.76 for trust in selection, 0.72 for trust in induction, and 0.70 for safety reactions to new team members.

2.6. Procedure

A researcher visited forest development and harvesting crews at forest worksites during 2006. The timing of the visit was organised to coincide with a break thereby providing the opportunity for the crew members to participate in the study. In some cases, a crew member may have either been required to work through their break (e.g., loading a logging truck), or were working some distance from the rest of the crew (e.g., tree felling) and therefore may not have been available to complete the questionnaire. While this participant recruitment method does not obtain a random sample, it does help avoid volunteer bias.

After a brief introduction from the forestry management, the researcher either in groups or individually, provided participants with a brief overview of the study and the questionnaire. The researcher emphasized the anonymity of participation and that collected information would remain confidential. Participants typically took approximately 30 min to complete the questionnaire.

2.7. Results

The first issue we examined was the team members' perception of the risk of an accident/incident increasing when a new employee joins their team. The overall mean value for our single item measure of this was 3.1 (SD = 1.1, $n = 124$), with 45.1% of the sample giving a rating of *agree* or *strongly agree*. Participants gave an overall mean rating of 2.8, (SD = 1.1, $n = 125$) for the item *A new crew member can be immediately trusted to comply with safety procedures and policy*, with only 45.6% of the participants giving a rating of *disagree* or *strongly disagree*. Given research has shown that accidents are more likely in new employees, these results are less than ideal.

Table 1 shows the descriptive statistics for the trust in selection processes, trust in induction processes, CARE scale and safety reactions to new team members scores. We hypothesised that safety-specific trust in the organisation's selection and induction processes might reduce employees' perceived risk of an accident/incident increasing when a new employee joins their crew. To examine this prediction we correlated perceived risk with the trust in selection scores ($r = 0.00$, $n = 121$), and with the trust in induction scores ($r = -0.23$, $P < 0.01$, $n = 124$). While the correlation for trust in selection did not support our hypothesis, the significant negative correlation for trust in induction processes is consistent with our prediction. Examination of the scatter plot indicates that perceived risk of an accident/incident from a new employee decreased as trust in safety induction processes increased. Comparison of the trust in selection and trust in induction scores indicated a significant difference ($(1,120) = 33.55$, $P < 0.01$, Eta = 0.21). The participants trusted the safety aspect of their organisation's induction processes more than the safety aspects of their selection processes, and this trust in induction seems to be associated with a lowering in their perception of risk from new team members.

The ratings for the item we used to measure trust in new employees (*a new crew member can be immediately trusted to comply with safety procedures and policy*) was positively correlated with the trust in selection ($r = 0.21$, $P < 0.01$, $n = 121$) and with trust in induction ($r = 0.26$, $P < 0.01$, $n = 123$) scores. Furthermore, rated trust in employees was negatively correlated with the rating of perceived risk from new team members ($r = -.20$, $P < 0.05$, $n = 124$).

As a counter measure to the perceived increase in risk associated with a new employee, the team members could engage in the type of behaviours measured with the six items which made

Table 1
Descriptive statistics for the trust in selection processes, trust in induction processes, considerate and responsible employee (CARE) scale, and reactions to new team members scores.

	Available *N*	Mean	Standard deviation	Range
Trust in selection processes	121	3.9	.61	2–5
Trust in induction processes	124	4.2	.59	2–5
CARE scale	123	4.4	.46	3–5
Reactions to new team members score	124	3.9	.51	2–5

up the safety reactions to new team members score. A significant positive correlation ($r = 0.33$, $P < 0.01$, $n = 123$) was found between the perceived risk rating and the safety reactions to new team members score. Furthermore, we hypothesised that engaging is these types of behaviours may not only be associated with perceived risk, but also with concern for the safety of all co-workers (measured by the CARE scale). The significant positive correlation found between care scale scores and the safety reactions to new team members score ($r = 0.54$, $P < 0.01$, $n = 120$) supports this prediction. To determine the unique contribution of perceived risk and CARE scores to the prediction of safety reactions to new team members we ran a regression analysis. The overall model was significant ($F(2,166) = 38.447$, $P < 0.01$), adjusted R squared = 0.38. Both CARE scores (beta = 0.51, $P < 0.01$) and perceived risk (beta = 0.33, $P < 0.01$) added significantly to the model.

2.8. General discussion

The results tend to support our general argument that trust can be negative for safety. Our data partly supported hypothesis 1 in that trust in the safety-specific characteristics of induction processes was associated with a reduction in perceived risk from new employees. Arguably, the accidents statistics which show that new workers are more likely to have an accident identifies new workers as a risk, and any psychological process, such as trust development, which leads to a reduction in the perception of this risk can not be good for safety.

Of course a new team member may not pose a risk to the team. In fact they may bring a very positive safety attitude and best practice behaviours into the team environment. In this way, turnover might improve the overall safety performance of the team. However, every new team member is going to be different and while the last new team member may have produced a real gain in team safety, the next could be a potential risk. Future research might well investigate how the safety outcomes of a new team member are related to the team's future reactions to new team members. Interestingly, a new team member that adds to the safety environment because of their positive safety attitude and behaviour, could potentially reduce the perceived risk associated with future new team members, and in effect reduce team safety.

In this research we did not examine the *development* of safety-specific trust in either selection or induction processes. Furthermore, we did assume that there were reasonable grounds to be somewhat sceptical about the safety-specific outcomes of both selection and induction processes. Of course in some circumstances an organisation may be very successful in their selection efforts and have an extremely good safety induction programme, both of which might contribute positively to safety. However, the issue of job specific familiarity is very hard to address with either selection or induction, and familiarity can really only be achieved by working with the team. Thus no matter how good the safety-specific characteristics of selection and induction processes appear to be, new employees are potentially still a risk.

One way which new team members might be conceptualised is that they are potentially a source of latent errors. Ramanujam and Goodman (2003) defined latent errors as "uncorrected deviations from procedures and polices that potentially can contribute to adverse organisational consequences" (p. 815). While the behaviours of a new team member (or lack of appropriate behaviours) may not directly produce adverse outcomes, they may well create conditions that increase the likelihood of such consequences for themselves or for their co-workers.

If new team members are a potential source of latent errors, are essentially a workplace hazard, organisations might consider directly warning others of their presence. Forestry workers routinely wear brightly coloured protective clothing (Isler et al., 1997). A simple system where all new employees are required to wear a specific colour during their initial period of employment could have significant positive safety outcomes. First, the new worker would be immediately identifiable to all co-workers, even at a distance and irrespective of whether their face was cover by a protective visor. Co-workers could use this information to ensure their own safety by being particularly vigilant. Furthermore, directly identifying the new employee may well help other workers target them with the types of behaviours we measured with the safety reactions to new team members score. That is they can be easily identified as workers that need to be familiarized with the safety-specifics of the team's work environment. Our results suggest these procedures may work well, as hypothesis 2 which predicted safety ensuring behaviours would be positively associated with perceived risk was supported.

It is worth noting that our focus on the safety ensuring behaviours of existing team members towards new team members is perhaps just one end of a continuum of possible behaviours. At the other end of the continuum the team might attempt to have a negative influence on a new team member. They might attempt to impose their normative beliefs about safety and operational procedures, which could be different to those held by the organisation. There is perhaps a link here with the team's safety climate: a team with a positive safety climate might engage in the types of safety ensuring behaviours we measured, while a team with a negative safety climate might engage with a new team member in a less safety oriented way.

A further step which organisations might take is to communicate accurate information about the likely outcomes of the safety-specific characteristics of their selection and induction processes. Rather than attempting to build employee trust in these processes, significant safety advantages may come from encouraging workers not to trust such processes. An important issue to communicate to team members is that while safety induction attempts to ensure safety, new team members will lack familiarity with the specific equipment used by the team, their specific work environment, and the specific way members of the team do their job. Familiarity has been found to have positive effects on group performance (e.g., Goodman and Leyden, 1991; Harrison et al., 2003). So encouraging new employees to quickly familiarize themselves with the job, and encouraging existing team members to facilitate this process, may benefit both safety and performance.

Burt et al. (2008) found that the more co-workers know about each other the more they care about each others safety. A new employee is essentially a stranger and as such may not have the extent of co-worker safety support that more established team members enjoy. Hypothesis 3, where existing team members care about their other team members safety, they will more actively engage (have safety ensuring reactions) with the new team member, was supported. This process is likely to help mitigate the risk from the new employee, and it is also likely to encourage the team to begin to care about the new employee's safety.

Finally, trust is an issue which requires careful consideration in relation to safety. Undoubtedly, trust is necessary and advantageous for safety in some circumstances. However, in other circumstances, such as when an individual joins a team, not trusting them or the organisation's selection and induction processes may be the safe option. Initially not trusting a new team member who actually turns out to be a safe worker is likely to have no negative safety outcomes, whereas trusting a new team member who actually turns out to be a risk could be very dangerous.

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Appendix. Items used to measure trust in selection, trust in induction processes, and safety reactions to new team members

Trust in selection

Safety attitudes are considered equally as important as job skills when selecting a new member for my crew.

Safety attitudes are assessed when a new member is selected for my crew.

The organisation knows all the safety issues to assess in applicants who apply to join my crew.

The organisation recruits new crew members who have good safety attitudes.

Trust in Induction

The organisation's safety training ensures a new crew member behaves safely.

Crew supervisors provide safety information for a new crew member.

Management ensure that a new crew member fully understands all safety procedures and policy.

Safety reactions to new team members

It is important for crew safety for me to find out the safety history of a new crew member.

Immediately determining the safety attitudes of a new crew member is important for crew safety.

It is important for safety for me to encourage a new crew member to ask about safety procedures.

Everyone pays more attention to safety when a new member joins the crew.

It is particularly important to watch out for the safety of a new crew member.

It is safer to assume initially that a new crew member will not follow safety procedures.

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