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Accidents by job tenure: Example Stats

Not first job – but new to a job!

- Bentley et al, (2002) **NZ** – 32% of logging skid accidents occurred within first 6 months of employment.
- McCall & Horwitz, (2005) **USA** - 51% of 1168 trucking accident occurred in first year on the job.
- Chi et al. (2005) **Taiwan** - 80.5% of 621 fatal falls in construction industry occurred in first year on the job.
- Jeong (1998) – **South Korea** (1991-94) 95.6% of 120,417 non-fatal, and 92.5% of 2803 deaths occurred in first year on the job.
Outcome by exposure duration


<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Injuries</td>
<td>20435 (24%)</td>
<td>7078 (8%)</td>
<td>5633 (6%)</td>
<td>5376 (6%)</td>
<td>4280 (5%)</td>
<td>2384 (3%)</td>
<td>2841 (3%)</td>
<td>86398 (100%)</td>
</tr>
<tr>
<td>≤1 yr</td>
<td>6724 (33%)</td>
<td>2123 (30%)</td>
<td>2053 (36%)</td>
<td>1562 (29%)</td>
<td>1551 (36%)</td>
<td>549 (23%)</td>
<td>915 (32%)</td>
<td>24476 (28%)</td>
</tr>
<tr>
<td>1–5 yr</td>
<td>6150 (30%)</td>
<td>2260 (32%)</td>
<td>1608 (28%)</td>
<td>1580 (29%)</td>
<td>1282 (30%)</td>
<td>675 (28%)</td>
<td>842 (30%)</td>
<td>28804 (33%)</td>
</tr>
<tr>
<td>5 – 10 yr</td>
<td>3152 (15%)</td>
<td>1315 (19%)</td>
<td>804 (14%)</td>
<td>887 (16%)</td>
<td>637 (15%)</td>
<td>460 (19%)</td>
<td>424 (15%)</td>
<td>13552 (16%)</td>
</tr>
<tr>
<td>10 – 15 yr</td>
<td>1665 (8%)</td>
<td>659 (9%)</td>
<td>448 (8%)</td>
<td>480 (9%)</td>
<td>340 (8%)</td>
<td>305 (13%)</td>
<td>222 (8%)</td>
<td>7444 (9%)</td>
</tr>
<tr>
<td>15 – 20 yr</td>
<td>1321 (6%)</td>
<td>457 (6%)</td>
<td>317 (6%)</td>
<td>380 (7%)</td>
<td>246 (6%)</td>
<td>243 (10%)</td>
<td>195 (7%)</td>
<td>5924 (7%)</td>
</tr>
<tr>
<td>20 – 25 yr</td>
<td>822 (4%)</td>
<td>188 (3%)</td>
<td>222 (4%)</td>
<td>263 (5%)</td>
<td>138 (3%)</td>
<td>102 (4%)</td>
<td>124 (4%)</td>
<td>3553 (4%)</td>
</tr>
<tr>
<td>25 – 30 yr</td>
<td>417 (2%)</td>
<td>62 (1%)</td>
<td>118 (2%)</td>
<td>144 (3%)</td>
<td>63 (2%)</td>
<td>41 (2%)</td>
<td>79 (3%)</td>
<td>1807 (2%)</td>
</tr>
<tr>
<td>&gt;30 yr</td>
<td>184 (1%)</td>
<td>14 (0.2%)</td>
<td>63 (1%)</td>
<td>80 (2%)</td>
<td>23 (0.5%)</td>
<td>9 (0.4%)</td>
<td>40 (1%)</td>
<td>838 (1%)</td>
</tr>
<tr>
<td>Fatalities</td>
<td>17 (3%)</td>
<td>18 (3%)</td>
<td>95 (16%)</td>
<td>54 (9%)</td>
<td>38 (6%)</td>
<td>47 (8%)</td>
<td>38 (6%)</td>
<td>597 (100%)</td>
</tr>
<tr>
<td>≤1 yr</td>
<td>7 (41%)</td>
<td>2 (11%)</td>
<td>37 (39%)</td>
<td>21 (39%)</td>
<td>14 (37%)</td>
<td>13 (28%)</td>
<td>19 (50%)</td>
<td>183 (31%)</td>
</tr>
<tr>
<td>1–5 yr</td>
<td>5 (29%)</td>
<td>4 (22%)</td>
<td>20 (21%)</td>
<td>11 (20%)</td>
<td>14 (37%)</td>
<td>11 (23%)</td>
<td>5 (13%)</td>
<td>147 (25%)</td>
</tr>
<tr>
<td>5 – 10 yr</td>
<td>4 (24%)</td>
<td>3 (17%)</td>
<td>12 (13%)</td>
<td>2 (4%)</td>
<td>4 (10%)</td>
<td>9 (19%)</td>
<td>5 (13%)</td>
<td>94 (16%)</td>
</tr>
<tr>
<td>10 – 15 yr</td>
<td>–</td>
<td>3 (17%)</td>
<td>9 (10%)</td>
<td>4 (7%)</td>
<td>3 (8%)</td>
<td>4 (8%)</td>
<td>1 (3%)</td>
<td>60 (10%)</td>
</tr>
<tr>
<td>15 – 20 yr</td>
<td>–</td>
<td>4 (22%)</td>
<td>5 (5%)</td>
<td>6 (11%)</td>
<td>1 (3%)</td>
<td>7 (15%)</td>
<td>5 (13%)</td>
<td>49 (8%)</td>
</tr>
<tr>
<td>20 – 25 yr</td>
<td>–</td>
<td>2 (11%)</td>
<td>6 (6%)</td>
<td>5 (9%)</td>
<td>1 (3%)</td>
<td>1 (2%)</td>
<td>2 (5%)</td>
<td>31 (5%)</td>
</tr>
<tr>
<td>25 – 30 yr</td>
<td>1 (6%)</td>
<td>–</td>
<td>5 (5%)</td>
<td>3 (6%)</td>
<td>1 (3%)</td>
<td>2 (4%)</td>
<td>1 (3%)</td>
<td>18 (3%)</td>
</tr>
<tr>
<td>&gt;30 yr</td>
<td>–</td>
<td>–</td>
<td>1 (1%)</td>
<td>2 (4%)</td>
<td>–</td>
<td>–</td>
<td>15 (2%)</td>
<td>–</td>
</tr>
</tbody>
</table>
Outcome by exposure duration: 86,398 injuries & 597 deaths – mining equipment 1995-2004

Job Tenure and Accident Relationships

- Accident Rate
- Protective period?
- Zero Sum
- Job Tenure
  - 12 months

Job Tenure and Accident Relationships

- Accident Rate
- Protective period?
- Zero Sum
- Job Tenure
  - 12 months
Overall Aim: Stop Accidents

What appear to be very different accidents can have exactly the same cause

- Drowned
- Suffocated
- Impaled
- Blinded
- Burnt
- Fell
- Slipped
- Heat stroke
- Trapped
- Hooked
- Punctured
- Exploded
- Electrocuted
- Struck
- Choked
- Crushed
- Cut
- Squashed
- Penetrated
- Poisoned
New Employee Safety Risks Model*:

- Maps onto the processes which occur when a job vacancy is filled - recruitment, selection, induction/pre-start training and the initial period in a job

- Safety Risk factors at each stage are considered and suggestions of how they can be managed are made

*To be used in conjunction with other models

Pre model research fragments:
The problem is an *application difficulty*.

Fig. 2. HFACS taxonomies overlaid on Reason's Swiss cheese model.
The New Employee Safety Risks Model: Maps the research onto an organizational process

**Recruitment and Selection**

**Induction and Pre-start training**

**Supervision and Support**

**Trust Development, Familiarization, Adaptation**

**Task Assignment**

**Helping Behaviours**

**First day on the job**

**3 months on the job**

**Job Applicants: Experience and Expectations**

**Job: Safety Risk Profile**

Part 1a: Recruitment –
Understanding Safety Expectations

Consider:

- Who is going to apply?
- What experience do they have?
- What are their safety expectations?
- What are their safety risks?
Four Types of Job Applicant and their Safety Expectations

**School Leaver**: has little or no workplace experience

**Career Transition**: has some work experience, but in a different job or industry to that which they are applying

**Occupational Focused**: previous experience in same job – but in a different industry

**Career Focused**: has worked in the job and industry before, but for a different organization

**Expectations**: May have unrealistic expectations about job risks, and the degree to which organizations and co-workers will ensure their safety

**Expectations**: May have slightly more realistic expectations about risks and safety

**Expectations**: Should have realistic job related safety expectation – but limited industry related safety expectations

**Expectations**: Should have the most realistic expectations about job risks and industry safety
**Similarity** is the foundation of Expectations:
How similar is the past to the future?
Greater similarity promotes more realistic expectations

- **Past Experience**
  - Similarity Between Past & present
- **Safety Expectations**
  - Speeds up Familiarization: job, environment, co-worker behaviour
  - Frees up time to Perform & engage in OCBs
- **Increased Safety**
- **Enhanced Situational Awareness**
# Understanding Job Applicant Expectation Variance

<table>
<thead>
<tr>
<th>New Employee Category</th>
<th>Relevant Entry Experience</th>
<th>Similarity of Previous Experience</th>
<th>Safety Specific Expectations</th>
<th>Expectation Driven Risk Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Leaver</td>
<td>Nil</td>
<td>-</td>
<td>Unrealistic</td>
<td>High</td>
</tr>
<tr>
<td>Career Transition</td>
<td>Nil</td>
<td>-</td>
<td>Unrealistic</td>
<td>High</td>
</tr>
<tr>
<td>Occupational Focused</td>
<td>Some</td>
<td>Yes</td>
<td>More realistic</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>Less realistic</td>
<td>High</td>
</tr>
<tr>
<td>Career Focused</td>
<td>Most</td>
<td>Yes</td>
<td>Most realistic</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>Less realistic</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Equipment similarity?
Environment similarity?
Load similarity?
New employees with unrealistic safety expectations may take risks or expose themselves to hazards because they are:

- Not expecting hazards
- Are expecting others to protect them

Results show optimistic, and perhaps unrealistic expectations: Safer to be Pessimistic!

- 142 final year high school students – rated how much management and co-workers would ensure their safety
Matched data: 40 new employees (school leavers) entering their very first job in 40 different organizations

<table>
<thead>
<tr>
<th>Expectation Scales</th>
<th>New Recruit Mean (SD)</th>
<th>Manager Mean (SD)</th>
<th>T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected co-worker safety behaviour</td>
<td>4.58 (.45)</td>
<td>4.30 (.46)</td>
<td>3.009**</td>
</tr>
<tr>
<td>Expected worker safety reactions to new recruits</td>
<td>4.22 (.70)</td>
<td>3.78 (.64)</td>
<td>3.203**</td>
</tr>
<tr>
<td>Job risk rating</td>
<td>37.8 (23.46)</td>
<td>50.0 (28.72)</td>
<td>-2.934**</td>
</tr>
</tbody>
</table>

**P >.01, * P>.05
Take home message 1: 4 Stage Safety Expectation Setting Process

- **Applicant Classification** – understanding the risk potential
- **Provide Safety/risk Information** – via recruitment ad, job description and person specification
- **Safety Expectation Assessment** - at the time of selection
- **Safety Expectation reality feedback** – at Induction
Part 1b: Recruitment - Understanding Experience

Past Experience

Safety Expectations

Similarity Between Past & present

Speeds up Familiarization: job, environment, co-worker behaviour

Frees up time to Perform & engage in OCBs

Increased Safety

Enhanced Situational Awareness
## Classification based on Experience

<table>
<thead>
<tr>
<th>New Employee Category</th>
<th>Relevant Entry Experience</th>
<th>Similarity of Previous Experience</th>
<th>Transfer of previous experience</th>
<th>Time to familiarize and Adapt</th>
<th>Safety risk level</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Leaver</td>
<td>Nil</td>
<td>-</td>
<td>-</td>
<td>Considerable</td>
<td>Extreme</td>
</tr>
<tr>
<td>Career Transition</td>
<td>Nil</td>
<td>-</td>
<td>-</td>
<td>Considerable</td>
<td>Extreme</td>
</tr>
<tr>
<td>Occupational Focused</td>
<td>Some</td>
<td>Yes</td>
<td>Yes</td>
<td>Some time required</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td>More time required</td>
<td>High</td>
</tr>
<tr>
<td>Career Focused</td>
<td>Most</td>
<td>Yes</td>
<td>Yes</td>
<td>Quickest</td>
<td>Moderate/low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td>More time required</td>
<td>High</td>
</tr>
</tbody>
</table>
# How to measure Experience: Study Sample


<table>
<thead>
<tr>
<th>Possible Source</th>
<th>Experience Measure</th>
<th>N=</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV or AB</td>
<td>Cumulative job tenure (years)</td>
<td>58</td>
<td>20.67 years</td>
<td>11.78</td>
</tr>
<tr>
<td>CV or AB</td>
<td>Total number of jobs held</td>
<td>57</td>
<td>7.12</td>
<td>4.91</td>
</tr>
<tr>
<td>CV or AB</td>
<td>Total number of organizations worked for</td>
<td>58</td>
<td>5.87</td>
<td>2.85</td>
</tr>
<tr>
<td>Interview Question</td>
<td>Number of organization performed the target job in</td>
<td>56</td>
<td>2.78</td>
<td>2.27</td>
</tr>
<tr>
<td>Interview Question</td>
<td>Number of work groups performed the target job with</td>
<td>55</td>
<td>5.45</td>
<td>11.06</td>
</tr>
<tr>
<td>Interview Question</td>
<td>Number of different work environments performed the target job in</td>
<td>52</td>
<td>4.98</td>
<td>13.80</td>
</tr>
</tbody>
</table>

Three questions to predict similarity
### Experience measures: Relationships with similarity (past-present)

<table>
<thead>
<tr>
<th>Experience Measure</th>
<th>Similarity of present work environment to previous work environments: 10 point scale</th>
<th>Similarity of present work tasks to tasks performed in the past: 10 point scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative job tenure</td>
<td>.08</td>
<td>.14</td>
</tr>
<tr>
<td>Total Number of jobs held</td>
<td>.09</td>
<td>.14</td>
</tr>
<tr>
<td>Total Number of Organizations worked for</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>Number of organization performed target job in</td>
<td>.38**</td>
<td>.44*</td>
</tr>
<tr>
<td>Number of work groups performed target job with</td>
<td>.22</td>
<td>.27*</td>
</tr>
<tr>
<td>Number of different work environments performed target job in</td>
<td>-.19</td>
<td>.13</td>
</tr>
</tbody>
</table>
ANOVA comparison between participants reporting an accident (minor injury requiring medical treatment or lost time injury) in their current job (n= 29) and those reporting no accident (n= 29).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Accident Group Mean N= 29</th>
<th>Safe Group Mean N=29</th>
<th>F-ratio</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative job tenure</td>
<td>247.0</td>
<td>253.0</td>
<td>.026</td>
<td>ns</td>
</tr>
<tr>
<td>Total number of jobs held</td>
<td>6.34</td>
<td>7.92</td>
<td>1.493</td>
<td>ns</td>
</tr>
<tr>
<td>Total number of organizations worked for</td>
<td>5.79</td>
<td>5.96</td>
<td>.052</td>
<td>ns</td>
</tr>
<tr>
<td>Environment similarity</td>
<td>5.10</td>
<td>6.82</td>
<td>4.258</td>
<td>.05*</td>
</tr>
<tr>
<td>Task similarity</td>
<td>5.2</td>
<td>7.0</td>
<td>5.097</td>
<td>.05*</td>
</tr>
</tbody>
</table>
Take home message 2:

Understanding Experience - 3 Step process

- Measure experience appropriately
- Classify applicants
- Adjust training, induction, and familiarization to address identified experience related risks
Part 2: Job Safety Risk Profile

Recruitment and Selection

Induction and Pre-start training

Trust Development, Familiarization, Adaption

Helping Behaviours

Supervision and Support

First day on the job

3 months on the job

Job Applicants: Experience and Expectations

Job: Safety Risk Profile
Safety risk can be a vacancy generator

People leave jobs which have unacceptable safety risks (Bell & Grushecky, 2006; Cree & Kelloway, 1997; Kincaid, 1996; Ring, 2010, Viscusi, 1979)

Enters Job with Unexpected Safety Risks

Perceives and/or Experiences Job Safety Risks

Dissatisfaction and Resigns from Job due to Safety Risks

Accident

Dead

Alive

New Employee Selected

Enters Job with Unexpected Safety Risks

Perceives and/or Experiences Job Safety Risks

Numerous barriers to voicing

Voice Concerns?
# Understanding Job Risks:

## Job Safety Risk Profile - Additive Components

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Degree of Safety Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal &amp; Known Safety Risks</td>
<td>High</td>
</tr>
<tr>
<td>Poor Equipment</td>
<td>High</td>
</tr>
<tr>
<td>Task Assignment</td>
<td>High</td>
</tr>
<tr>
<td>Workload / fatigue</td>
<td>High</td>
</tr>
<tr>
<td>Performance expectations</td>
<td>High</td>
</tr>
<tr>
<td>Work hours / scheduling</td>
<td>High</td>
</tr>
<tr>
<td>Environmental variance</td>
<td>High</td>
</tr>
<tr>
<td>Team/co-worker characteristics</td>
<td>High</td>
</tr>
<tr>
<td>Poor Supervision</td>
<td>High</td>
</tr>
</tbody>
</table>
Table 4. Reactions to the hazards used in Study 3.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Hazard Rating Pilot</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Hazard Rating &amp; (SD)</td>
<td>Percentage that neutralised hazard</td>
<td>Percentage that immediately voiced about hazard</td>
</tr>
<tr>
<td>Electrocut: Multi-board in water</td>
<td>7.57 (1.93)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fire Hazard: Faulty appliance</td>
<td>7.17 (2.09)</td>
<td>3.7</td>
<td>7.4 a</td>
</tr>
<tr>
<td>Exposed wiring: Desk lamp wiring</td>
<td>6.50 (2.43)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Falling Object: Chemical bottle</td>
<td>6.42 (2.09)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cut: Glass shards on floor</td>
<td>5.55 (2.15)</td>
<td>7.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Trip: Extension cord</td>
<td>3.62 (2.19)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

a the one participant that neutralised the hazard also voiced about it to experimenter
Breaking the Cycle: Safety-Specific Exit Survey


Job Vacancy: Fix Safety Issues

Safety-Specific Exit Survey

Dissatisfaction and Resign from Job due to Safety Risk

Accident

New Recruit Selected

Enters Job with NORMAL Safety Risk

Perceives and/or Experiences Job Safety Risk
• Haphazard sampling of 101 individuals that had exited within the last 36 months (mean 12.3 months) a job which they considered had a degree of safety risk

• For exited job:
  • Mean job tenure = 38.9 months
  • Mean number of co-workers = 27.0
  • Mean Job Safety Risk Scale score = 3.0
  • Mean Team Member Interaction Scale score = 4.0
Measures all completed in relation to exited job

- Safety concerns’ prompted you to leave your previous job?
  (0 = ‘Not at all’ to 7 = ‘Very much’)

- At the time you left your previous job did you feel there were safety issues/concerns which you wanted to tell someone about?
  (0 = ‘No’ to 7 = ‘Yes there were a lot of issues’)

- If participants responded with a rating greater than 0 to the latter question they were asked:

  - If you now had an opportunity to sit down with management from your previous job and voice your safety concerns how willing would you be to do that?
    (0 = ‘Not willing at all’ to 7 = ‘Would be very keen to do that’)

  - If you now had an opportunity to sit down with co-workers from your previous job and voice your safety concerns how willing would you be to do that?
    (0 = ‘Not willing at all’ to 7 = ‘Would be very keen to do that’)

Results: Safety, Exit and Voicing

Take home message 3 – use a safety specific exit survey and remove extra safety risks

<table>
<thead>
<tr>
<th></th>
<th>No Safety Concerns at Exit</th>
<th>Safety Concerns at Exit</th>
<th>ANOVA Comparison F[1,99] =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>N=51</td>
<td>N=50</td>
<td></td>
</tr>
<tr>
<td>Safety Concerns Prompted Exit Rating Mean</td>
<td>0</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Job Risk Scale Score Mean</td>
<td>2.8</td>
<td>3.3</td>
<td>17.647, P &lt;.01</td>
</tr>
<tr>
<td>Need to Voice at Exit Rating Mean</td>
<td>1.3</td>
<td>2.8</td>
<td>13.062, P &lt;.01</td>
</tr>
<tr>
<td>Willingness to <em>Now Voice</em> to Management</td>
<td>N= 34</td>
<td>Mean = 3.82</td>
<td></td>
</tr>
<tr>
<td>Willingness to <em>Now Voice</em> to Co-workers</td>
<td>N= 34</td>
<td>Mean = 4.29</td>
<td></td>
</tr>
</tbody>
</table>
Part 3: Selection and Induction Processes

Recruitment and Selection

Trust Development, Familiarization, Adaption

Induction and Pre-start training

Task Assignment

Helping Behaviours

Supervision and Support

First day on the job

3 months on the job

Job Applicants: Experience and Expectations

Job: Safety Risk Profile
Is there an influence of employees’ perceptions of organizational processes on safety?


Selection: Measure and prediction?

Do you trust this process to work?

Applying for a job at IKEA

Make a chair and take a seat.
Induction and pre-start Training:

Do you trust this process to work?

"This is where you'll be working. Don't worry if it's a little confusing at first. We'll have a few training sessions."
### Selection and Pre-start Training Influences on Trust

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Correlation between trust in selection processes and trust in new recruits to work safely</th>
<th>Correlation between trust in pre-start training processes and trust in new recruits to work safely</th>
<th>Trust in New recruits and perceived safety risk</th>
<th>Perceived Risk from new recruits and Compensatory Behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burt et al., 2009</td>
<td>128 forestry workers</td>
<td>.23**</td>
<td>.22*</td>
<td>-.20*</td>
<td>.33**</td>
</tr>
<tr>
<td>Burt &amp; Stevenson (2009)</td>
<td>154 professional fire-fighters</td>
<td>.29**</td>
<td>.50**</td>
<td>-.24*</td>
<td>.43**</td>
</tr>
<tr>
<td>Burt &amp; Hislop (2013)</td>
<td>118 employee in high risk work from 5 organizations</td>
<td>.29**</td>
<td>.28**</td>
<td>-.13</td>
<td>.43**</td>
</tr>
</tbody>
</table>
The Key Associations

Risk Homoeostasis Theory: *As safety features are added to a system individuals will increase their risk-taking*

- As trust in selection and pre-start training increases
- Trust in new employees to work safely increases
- Perceived safety risk from new employees decreases
- Compensatory behaviours towards new employees decrease
- Accident potential decreases
- Compensatory behaviour's provide familiarization and adaption
The problem: Are assumptions about selection and pre-start training valid?

1. Tools to predict safety at selection (e.g., Clusters of interview questions, personality profiles) are very limited and open to bias.

2. Pre-start training and induction are often not evaluated for effectiveness.

Solution - Development of the Hazard Awareness Test (HAT)

- Objective test

- Requires no language skills

- Can not be faked

- Has criterion related validity across 4 studies
**HAT Validation Results**

Table 26. Comparison between groups who have and have NOT received any training in health and safety.

<table>
<thead>
<tr>
<th></th>
<th>Health and safety training both at work and outside of work</th>
<th>No health and safety training at all</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N= 32</td>
<td>N= 22</td>
<td>F(1, 53)</td>
</tr>
<tr>
<td>Number of Safety Differences Found</td>
<td>46.18 (2.23)</td>
<td>43.54 (2.23)</td>
<td>6.895*</td>
</tr>
</tbody>
</table>

**P <.01, * P <.05**
HAT Profile

HAT Performance Summary

ChrisS demonstrated excellent HAT performance, and completed the test extremely quickly. He showed very strong evidence of hazard awareness. An individual performing at this level is likely to understand the safety hazards that can be present in a range of environments and respond appropriately to ensure safety performance.

Overall HAT Score

ChrisS’s overall HAT score is the most important predictor of risk. HAT research has shown that only 15% of participants scoring in the Low Risk category reported workplace accidents requiring medical treatment. In contrast, at least 70% of people in the High Risk category reported suffering from such accidents.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Raw Score</th>
<th>Overall Risk Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>50</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>

Domain HAT Scores

In addition to the overall score, the HAT Profile also shows ChrisS’s risk rating for each of the five domains that the HAT measures. When interpreting the HAT Profile, scores in the green band are considered good to excellent (low risk), and scores in the red band are considered poor (high risk). An individual who performs good to excellent across all HAT domains is predicted to demonstrate good safety performance in most aspects of life.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
<td>Low Risk</td>
</tr>
</tbody>
</table>

HAT Completion Time

There is no time limit to complete the Hazard Awareness Test. Individuals that score high on the test and achieve this score quickly are predicted to have more extensive and elaborate knowledge of safety hazards than those who achieve the same score but complete it more slowly.

<table>
<thead>
<tr>
<th>Completion Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast</td>
<td>Top 20% of sampled population. (12 minutes or less.)</td>
</tr>
</tbody>
</table>
Additional Interpretation

Interpretation of Chris5’s HAT score and completion time is based on research that has validated their link to safety outcomes. In addition to the summary provided in Chris5’s HAT profile, this report provides an assessment of Chris5’s task capability potential in six hazard-related tasks, and a recommendation of his hazard-related training requirements.

Capability Potential: Hazard-Related Tasks

<table>
<thead>
<tr>
<th>Hazard-Related Task</th>
<th>Task Capability Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of actual and potential workplace hazards: behavioural, task and environmental</td>
<td>High</td>
</tr>
<tr>
<td>Hazard auditing</td>
<td>High</td>
</tr>
<tr>
<td>Pre-task hazard assessment</td>
<td>High</td>
</tr>
<tr>
<td>Completion of hazard register</td>
<td>High</td>
</tr>
<tr>
<td>Initiation of hazard response sequence: identification-elimination-isolation-minimize</td>
<td>High</td>
</tr>
<tr>
<td>Hazard communication</td>
<td>High</td>
</tr>
</tbody>
</table>

Hazard Identification Training Recommendations

<table>
<thead>
<tr>
<th>Hazard Identification Training Area/Requirement</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard-risk relationship</td>
<td>Probably Not Required</td>
</tr>
<tr>
<td>Hazard types</td>
<td>Probably Not Required</td>
</tr>
<tr>
<td>Basic hazard identification processes</td>
<td>Probably Not Required</td>
</tr>
<tr>
<td>Integrating hazard assessment in task sequence</td>
<td>Low Need</td>
</tr>
<tr>
<td>Organisation-specific hazard control systems, processes, and forms</td>
<td>Always Advisable</td>
</tr>
<tr>
<td>Legal requirements relating to hazards and control</td>
<td>Always Advisable</td>
</tr>
</tbody>
</table>
Take home messages 4:
1. Have valid selection and pre-start training processes

2. Develop a trust building process

- Use valid selection predictors for safety
- Evaluate induction and pre-start training

Adopt a 3 stage trust building process:

**Identify** new employees – safety vest colour

Have team members **rate their safety performance** weekly

Once the **target safety rating** is achieved provide a team vest
Part 4: Day 1 – Task Assignment

Recruitment and Selection

Induction and Pre-start training

Trust Development, Familiarization, Adaption

Helping Behaviours

Supervision and Support

First day on the job

3 months on the job

Job Applicants: Experience and Expectations

Job: Safety Risk Profile

Task Assignment
Group norms can result in the new employee being assigned the:

- The least desirable job!
- The dirty job!
- The risky job!
Dirty/risky jobs are part of many occupations
Task assignment can be seen as Joking Around!

**Take Home message 5:** Manage task assignment
Part 5: Familiarization, Adaption and Support

Recruitment and Selection

Induction and Pre-start training

Trust Development, Familiarization, Adaption

Helping Behaviours

Supervision and Support

First day on the job

3 months on the job

Job Applicants: Experience and Expectations

Job: Safety Risk Profile

Task Assignment
Sufficient Supervisor Support: Lengthening the protective period

Work in progress!
Co-worker Provided Support

**Take home message 6:** Induction should build social relationship – but there is a risk!

*C.D.B. Burt et al. / Safety Science 46 (2008) 79–91*

Fig. 1. A model of the development of a caring attitude.
Help, Gratitude & Reciprocity:

- Being helped can generate gratitude and this can prompt reciprocity

---

Pearson product moment correlations between the mean responses for the item ‘feel gratitude’ with each of the mean responses of the helping reciprocity and indebtedness items.

<table>
<thead>
<tr>
<th>Average item ratings</th>
<th>Average rating of ‘feel gratitude’ across the 4 conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would help them if you had a chance to</td>
<td>.77**</td>
</tr>
<tr>
<td>Express your gratitude</td>
<td>.88**</td>
</tr>
<tr>
<td>Compliment them on their helpfulness</td>
<td>.75**</td>
</tr>
<tr>
<td>Tell others how helpful they were</td>
<td>.76**</td>
</tr>
<tr>
<td>Try to find a way to help them</td>
<td>.62**</td>
</tr>
<tr>
<td>Be motivated to help other co-workers</td>
<td>.74**</td>
</tr>
<tr>
<td>Feel indebted</td>
<td>.50**</td>
</tr>
</tbody>
</table>

*p < 0.05 level, two-tailed. **p < 0.01 level, two-tailed.
Part 7: Helping Behaviours

Recruitment and Selection

Induction and Pre-start training

Task Assignment

Trust Development, Familiarization, Adaption

Job Applicants: Experience and Expectations

Job: Safety Risk Profile

First day on the job

Supervision and Support

3 months on the job

Helping Behaviours
Helping: Context Matters


**Fig. 1.** A model of the relationship between job context, helping behavior, and helping outcomes.
Helping Risk Factors: Combination of task risk, employee ability, and level of acknowledgement

**Figure 8.0.** A model of the relationship between task risks, employee abilities, helping acknowledgement and the overall safety risk associated with helping.
New Employee Helping: Helping decreases with tenure

Table 8.0. Descriptive statistics for participant tenure, and correlations between helping outcome measures and tenure reported by Burt et al. (2014).

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean (SD)</th>
<th>Min &amp; Max</th>
<th>Helped and increased safety risk for yourself</th>
<th>Helped and increased safety risk for the person you helped</th>
<th>Helped and increased safety risk for another employee</th>
<th>Overall Helping Safety Risk measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>163.6 (139.0)</td>
<td>1 to 552</td>
<td>-.10</td>
<td>-.12&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.14&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Study 2</td>
<td>85.0 (119.6)</td>
<td>1 to 540</td>
<td>-.18</td>
<td>-.23&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.21&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.23&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> p = .06, <sup>b</sup> p = .053 *p < .05
Conclusions: Eleven ways to keep new employees alive - integrated into HR practices

1. At recruitment - Understand safety expectations – inform, assess, feedback
2. At recruitment – Understand experience – measure correctly
3. At recruitment - Understand job risks – safety specific exit survey, adjust/remove
4. Improve and communicate selection predictor and pre-start training limits
5. Ensure all employees know new employee safety risks – no unconditional trust
6. Identify the new employee as a risk factor – adopt a trust building process
7. Manage task assignment
8. Manage supervision
9. Manage co-worker compensatory behavior/support to facilitate adaption & familiarity
10. Understand support/help reciprocity dangers
11. Manage/control new employee helping behaviors
Questions

In the past hour:

240 work-related deaths

36,720 workers have had a work-related accident