Nurses’ performance relates to real-time stress and overall susceptibility to cognitive failures at work

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High stress levels linked to:

- Workload
- Conflicting demands
- Inadequate resources and support
- Difficult patients
- The need to deal with death and dying
Nursing performance

• As a result of their role in providing the majority of direct patient care, the performance of nurses is closely tied to the quality and safety of healthcare services
Stress and cognitive changes

- The relationship between stress and performance in nurses may be due in part to the fact that stress produces changes in cognitive function.
- Nursing typically requires multi-tasking thoughts and actions within a fast-paced environment filled with interruptions and distractions.
Research questions

• Is real-time stress associated with poorer perceived performance in real-time?
• Do habitual workplace cognitive failures predict poorer perceived performance in real-time?
• Is there a moderating effect of workplace cognitive failures on the relationship between stress and performance?
Methods

- **Participants**
  - 100 qualified nurses on medical and surgical wards

- **Questionnaire measure**
  - Workplace cognitive failure scale (WCFS; Wallace & Chen, 2005)

- **Real-time measure**
  - Analogue ratings of UWIST Mood Adjective Checklist tense arousal items (Matthews, Jones & Chamberlin, 1990): stressed, nervous, calm, relaxed
  - Analogue ratings of perceived work performance
Data collection procedure

Before real-time study

- Work cognitive failures Q

Shift 1
- Every 90 mins
- Mood
- Performance

Shift 2
- Every 90 mins
- Mood
- Performance
Questions are about minor mistakes at work that everyone makes from time to time, but some of which happen more than others.

E.g. indicate how often at work you...

• Are easily distracted by co-workers
• Do not fully listen to instruction
• Cannot remember work-related phone numbers or codes
Real-time measures
## Characteristics of sample

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of observations</th>
<th>Min (0-100 scale)</th>
<th>Max (0-100 scale)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>1453</td>
<td>0</td>
<td>100</td>
<td>71.65 (19.24)</td>
</tr>
<tr>
<td>Tense Arousal</td>
<td>1453</td>
<td>0</td>
<td>96.25</td>
<td>27.76 (19.49)</td>
</tr>
<tr>
<td>Work cognitive failures Q (15 items)</td>
<td>97</td>
<td>16</td>
<td>53</td>
<td>31.95 (7.41)</td>
</tr>
</tbody>
</table>
Analysis - MLwiN

• Repeated multi-level design
  – Level 3 – the nurse
  – Level 2 – the shift
  – Level 1 – each observation
# Results

## Full model

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate Beta Weight</th>
<th>SE</th>
<th>Z</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept (I)</td>
<td>71.467</td>
<td>1.317</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Tense arousal</td>
<td>-0.147</td>
<td>0.038</td>
<td>-3.87</td>
<td>p&lt;.001</td>
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<tr>
<td>WCFS</td>
<td>-0.880</td>
<td>0.141</td>
<td>-6.24</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>TA x WCFS</td>
<td>0.003</td>
<td>0.005</td>
<td>0.6</td>
<td>NS</td>
</tr>
</tbody>
</table>
Performance and Tense Arousal, averaged
Performance and Tense Arousal, individual data
Performance and Tense Arousal, intercept set to group average
Nursing tasks
Results

- Further analysis focusing on performance ratings for “main nursing tasks” only: Direct care, Indirect care, Medication tasks

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate Beta Weight</th>
<th>SE</th>
<th>Z</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept (I)</td>
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<td>1.326</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Tense arousal</td>
<td>-0.169</td>
<td>0.039</td>
<td>-4.33</td>
<td>p&lt;.001</td>
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<tr>
<td>WCFS</td>
<td>-0.824</td>
<td>0.148</td>
<td>-5.57</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>TA x WCFS</td>
<td>-0.003</td>
<td>0.006</td>
<td>-0.5</td>
<td>NS</td>
</tr>
</tbody>
</table>
Performance and Tense Arousal, averaged
Performance and Tense Arousal, individual data
Performance and Tense Arousal, intercept set to group average
Conclusions

- As stress at work increases, nurses perceive increasing declines in the quality of their work performance.
- Nurses’ tendency to make workplace cognitive failures is related to their performance throughout the working day.
- Enduring cognitive characteristics do not appear to affect the relationship between stress and performance in nurses.
- These results hold when investigating performance on main nursing tasks only.