Study 2: Asking why and how mental health problems occur alongside work injuries

Anecdotal evidence from the workplace, with qualified support from the team's meta-analysis of published research, suggests that workers' mental health problems and work injuries are interconnected in meaningful ways. The team's next step was to ask why and how that connection takes place.

Study 2 was initiated to try to get closer to the actual lived experience of workers who had been injured. To do that, the team identified a large-scale, Canada-wide body of data called the CLSA: Canadian Longitudinal Study on Aging (Raina et al., 2009). It is a 20-year study, started in 2013, of 51,000 workers aged 45-85. This large sample size means that, though severe work injuries are rare, the study would contain enough work injuries to be meaningful, and it also means that the small effect sizes identified in Study 1 might be more frequent and observable. The longevity of the CLSA is important because the interval between injury and mental health impact could be long or short — and the data would reveal the effects of time in both cases.

The CLSA data are very robust for the purposes of the study, combining telephone surveys with clinical tests of cognition, as well as physical examinations. The study excluded non-working and retired individuals from the CLSA data.

The team examined the data with two psychological frameworks shaping their approach.

The Cognitive Capacity Framework

The team theorized that cognitive mechanisms could explain why workers with mental health problems might be vulnerable to injury, and also why injured workers might develop mental health problems.

Specifically, the team drew on theories of cognitive resources (e.g., resource allocation model; Ellis & Ashbrook, 1988) and maladaptive cognitions (e.g., information processing model; Beck & Clark, 1988). In simple terms, cognitive resources theorists suggest that humans have a limited capacity to think or remember in a focused way, leading ultimately to failures of self-preservation under stress; maladaptive cognition theorists propose that those with cognitive vulnerabilities can activate negative thought patterns because stresses, such as injuries, can change the way we think and feel.

The Psychology of Workplace Injury — a 40-year gap in theory

The team also drew on the work of occupational and industrial psychologists dating back to the 1930s with Hersey (1932, 1936); the 50s with Hill and Trist (1953); and the 60s with Hirschfeld and Behan (1963). There has been a tradition of theoretical explanation that tended to 'blame the worker' for injuries due to inherent mental vulnerabilities, and the theory that subsequent depression or anxiety were continuations of a predisposition to mental health problems.

It was only in the 1970s that this attitude was challenged by Allodi and Montgomery (1979) who put three strands of thinking to the test with over 500 interviews of injured workers:

- accident proneness theory (i.e., some individuals are predisposed to be injured more often than others)
- sociogenic theory (i.e., pre-existing social stress, such as job dissatisfaction, will exacerbate the negative consequences of an injury),
- and life events theory (i.e., stress caused by life events, like work injuries, will contribute to the genesis of mental health problems).

Even though the work of Allodi and Montgomery had serious research flaws, it suggested at least that it might be possible that psychological states could create the conditions for injury and that injuries could change psychological states. In the case of life events theory described above, Allodi and Montgomery didn't publish their results, but the possibilities remain intriguing.

After Allodi and Montgomery, there has been a gap in theoretical thinking about the relationship between work injuries and mental health. Instead, researchers have focused on who is injured, how they are injured, and what those injuries are, typically only looking at causality in one direction at a time. In Study 2 for WorkplaceNL, the team sought to ask once again — why do psychological states seem to be closely linked to workplace injury in both directions, both as cause and consequence?

Asking why in two different directions

Armed with these theoretical tools, the team began to mine the CLSA data in detail by proposing two testable theories.

On the one hand, a worker's cognitive load might be overwhelmed by mental health problems making them vulnerable to injury, due to lack of attention, for example. On the other hand, an injured worker's pre-existing mental health problems can be activated or new negative thinking, such as excessive introspection, can be generated, leading to mental health challenges.

Four models were used to investigate the possible mechanisms around depression and post-traumatic stress leading to work injury, while two models investigated mechanisms where work injury led to depression.

What we learned from Study 2: two-way influence of psychological states and injury

Study 2 reveals that depression and post-traumatic stress symptoms were found to be linked with future work injury *only* when cognitive issues around memory surfaced. In the other direction, prior work injury was clearly linked to depression through maladaptive negative cognitions, like dissatisfaction with quality of life, over time.

Looking at the first finding in more detail, the researchers noted that memory and general cognition are typically treated as one in research studies. Since the CLSA population was weighted towards older workers, it is interesting to see memory failure as having a significant impact on injury. As for the more inconclusive results around general cognitive function, it was noted that the CLSA data may not have included a high proportion of workers exposed to highly hazardous activities in unsafe industries, where specific task-oriented attention is demanded.

The second finding was more conclusive: an injury led to worse mental health outcomes through maladaptive cognitions, such as workers' negative perceptions and attempts to regain an idealized state (prior to injury, for example). This finding reinforces the importance of how workers feel about work injuries as well as the physical impact of the injury itself and aligns with other studies highlighting the importance of appropriate treatment and support following a work injury.

Note on Newfoundland and Labrador data subset

A small subsample (484 records) from Newfoundland and Labrador was investigated alongside the main study. No notable findings were derived from this group due to its small size and consequent lack of statistical significance.