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Prediction of occupational disability from psychological and neuropsychological evidence in forensic context

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ABSTRACT

Within the fields of psychiatry, psychology, and neuropsychology, medical examiners are often tasked with providing an opinion about an injured individual's health prognosis and likelihood of returning to work. Traditionally, examiners have conducted such assessments by employing clinical intuition, expert knowledge, and judgment. More recently, however, an accumulation of research on factors predictive of disability has allowed examiners to provide prognostications using specific empirically supported evidence. This paper integrates current evidence for four common clinical issues encountered in forensic assessments—musculoskeletal pain, depression, Posttraumatic Stress Disorder, and traumatic brain injury. It discusses an evidence-informed, cross-diagnostic and multifactorial model of predicting disability that is emerging from the literature synthesis, along with recommendations for best forensic assessment practice.

1. Introduction

The primary goal of most civil forensic mental health assessments is predicting future functioning and disability. This is especially the case for psychological, neuropsychological and psychiatric assessments undertaken in medicolegal contexts, including personal injury, disability, employment, workers' compensation, and family and human rights law. Prognosis of future functioning, particularly at work, is often requested, explicitly or implicitly, to be a part of these assessments. Prognostic determinations and judgements in the courtroom, however, are fraught with challenges, especially for high stakes medicolegal cases, due to the subjective aspects of expert testimony, which render the clinician's testimony vulnerable to counter-argument. The subjectivity of clinical and occupational disability prognostication is not only a problem in terms of undermining the scientific credibility of the experts and admissibility of evidence, but it could also lead to inappropriate treatment and rehabilitation interventions (or lack thereof) as well as unfair legal and compensation outcomes.

In recent decades, significant advances have been made in bridging the science of disability development, rehabilitation and return to work (RTW) with the practice of prediction of occupational outcomes. These efforts have taken the forms of quantitative studies of predictors of common clinical conditions and predictive models of disability constructed based on research evidence (Schultz, 2009; Schultz & Gatchel, 2008). The opportunity to transition from a purely clinical judgment-based approach of predicting disability to a more defensible research-based approach, which relies largely on empirically derived clinical data, has emerged. To date, however, the research-based or actuarial approach has not been fully utilized by forensic mental health assessors, and the associated science–practice gap in forensic prognostication has continued. This gap may have resulted from fragmentation and a lack of integration of psychological, neuropsychological and psychiatric predictor data that have accumulated over the last two decades.

This paper integrates current research evidence on factors predicting occupational disability for common clinical conditions encountered in medicolegal settings, including chronic pain, depression, Posttraumatic Stress Disorder (PTSD) and traumatic brain injury. Consistent with recent systematic review studies on this topic (Wagner et al., 2014; White et al., 2013, 2015), we elected to categorize the factors into those related to the individual worker and those related to the workplace, with each category further divided into subcategories of modifiable and non-modifiable predictors. It is important to differentiate modifiable from non-modifiable predictors of disability because they have different implications for the patient's long-term and short-term prognosis. Specifically, while modifiable factors can be targeted by clinical and vocational rehabilitation interventions, non-modifiable factors cannot.

An ability to understand the factors that predict disability for depression, PTSD, pain and traumatic brain injury is expected to help forensic examiners to focus on relevant psychosocial domains in their assessments, render more accurate and evidence-informed decisions, and present a line of reasoning that is more defensible in court. This is particularly important in light of an increasing emphasis on standards for admissibility of scientific evidence in legal systems.

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2. Predictors of disability among workers with musculoskeletal injury and pain

Among common clinical conditions encountered in forensic contexts, musculoskeletal pain has been the most researched. Empirical evidence has been best synthesized in emerging biopsychosocial multivariate models that emphasize the contribution of psychosocial worker and workplace factors to the development of pain-related occupational disability (Boersma, Carstens-Söderstrand, & Linton, 2014; Gross, Bostick, & Carroll, 2016; Schultz & Chlebak, 2014). Notably, the majority of prediction studies and literature syntheses in the field of pain focused on back pain, a condition that is most costly, disabling and prevalent in the personal injury and workers' compensation populations.

2.1. Worker factors: non-modifiable

In the reviews just cited, several worker characteristics have been shown to predict a greater likelihood of occupational disability. These characteristics include demographic variables and psychosocial factors that are present in the person's background history and that are not amenable to change.

2.1.1. Demographic variables

In regards to demographic variables, studies consistently suggest that injured workers and adults of female gender tend to show more prolonged disability (Crook, Milner, Schultz, & Stringer, 2002). Specifically, compared to male injured workers, women show poorer recovery at 1 year post-injury follow-up (Hendriks et al., 2005), a greater likelihood of developing chronic disability (Gatchel, Polatin, & Kinney, 1995), and less success at retaining work 1 year following multidisciplinary rehabilitation treatment (Brede, Mayer, & Gatchel, 2012). A critical review of the evidence revealed that female and male injured adults experience their illness differently and face differing social responses from their support network (Côté & Coutu, 2010). For example, women are expected to display more negative emotions from their pain and have a more difficult time convincing others of the veracity of their pain experience.

In addition to gender, age also appears to be a reliable predictor of occupational disability. Comparisons between age groups, such as those from age 15 to 25 years and those above the age of 25 years, show that the older group tend to have more sickness absence from work, lower RTW rates (White et al., 2015), and less success at retaining work 1 year post-treatment (Brede et al., 2012).

A demographic variable with somewhat weaker predictive power is the race of the worker. A review of the literature by White et al. (2015) found that individuals of non-Caucasian descent tend to show more disability than Caucasians, although it was noted there may also be racial discrimination in the process, such as a selective absence of provision of modified positions at work.

2.1.2. Psychosocial variables

Characteristics of the worker's psychosocial context are predictive of occupational disability. Specifically, a lack of work experience and limited education are shown to result in a decreased likelihood of returning to work following occupational injuries, such as those of the spinal cord (White et al., 2015). A review study of individuals with chronic low back pain also revealed that negative feedback from family regarding the worker's illness leads to a greater number of total sick leave days (Kuijer, Groothoff, Brouwer, Geertzen, & Dijkstra, 2006). Similarly, presence of familial strain is shown to negatively impact a worker's ability to benefit from rehabilitation treatment (Côté & Coutu, 2010). These vulnerability factors are not readily modifiable and, therefore, are unlikely a focus of psychosocial treatment. Nevertheless, they are important variables to consider during medico-legal assessments.

2.1.3. Medical and clinical history

In addition to demographic and psychosocial factors, characteristics related to a worker's medical history, such as pain level, are also reliable predictors of occupational disability. In a systematic review of existing review studies on worker factors, Wagner et al. (2014) concluded that higher pain levels reported by workers predict poor RTW outcomes. Their conclusions were made based on high quality studies by Kuijer et al. (2006), which showed that pre-existing cervical and thoracic pain prior to workplace injury predicts sickness absence, and by Truchon and Fillion's (2000) study indicating that persistent pain and pain coping difficulty predict lower rates of RTW at follow-up. Similarly, in a study of disability claimants with subacute and chronic low back pain, Schultz et al. (2004) found that self-reported pain intensity and number of pain areas at an initial assessment predicted longer disability duration and higher cost of healthcare and wage loss compensations over the next 18 months. The same was observed in car accident survivors, in which higher neck pain levels at 2 weeks post-injury was predictive of lower functional recovery over the next year (Hendriks et al., 2005). Importantly, the number of musculoskeletal complaints also matters, with number of complaints being positively associated with number of days off work (Kuijer et al., 2006). Finally, there is strong evidence indicating that disability factors, such as muscular endurance at the initial assessment, predict longer sickness absences down the road (Wagner et al., 2014).

Non-pain related health factors that also predict disability include being overweight and having poor health during an acute phase of back injury (Steenstra, 2005), being in the chronic phase of musculoskeletal injury (Schultz et al., 2004), complications such as comorbid injuries (White et al., 2015), a past history of low back pain (Truchon & Fillion, 2000), and a past history of sick leave (White et al., 2015). Brede et al. (2012) have also found evidence that, among chronic pain patients receiving multidisciplinary treatment, those who have an opiate dependence prior to treatment are less successful at retaining work 1 year post-treatment.

The clinical worker variables described above, although unlikely to be targets of psychosocial treatments, are worthwhile areas to consider in making prognostic determinations due to the strength of the existing research evidence. The following shifts from a review of non-modifiable worker factors to modifiable ones.

2.2. Worker factors: modifiable

2.2.1. Clinical predictors

Current literature has revealed several clinical factors that predict later disability that, when detected, can be ameliorated by treatments, rehabilitation and supports. Consistent with theory suggesting that untreated pain conditions become more intractable with time (e.g., Turk & Monarch, 2002), evidence shows that the presence of early intervention predicts decreased disability. For example, among workers with low back injuries, those who were recommended for early treatment present with fewer absences from work and use fewer medical services, compared to those who were not recommended for early intervention (Kuijer et al., 2006). Another potentially modifiable predictor is sleep disturbance. In an investigation of adults with whiplash injuries, Hendriks et al. (2005) found that those reporting poor sleep following their accident are likely to exhibit poorer recovery when re-assessed at 4, 12, and 52 weeks post-accident.

In contrast, evidence about the impact of existing psychopathology on disability (Iles, Davidson, & Taylor, 2008; Wagner et al., 2014) among those with musculoskeletal pain has been equivocal. On the one hand, the presence of depression in those with chronic pain predicts decreased employment stability following treatment (Brede et al., 2012). On the other hand, depression symptoms level showed no predictability of RTW rate among those with subacute low back pain (Iles et al., 2008). Similarly, moderate evidence suggests that anxiety has no predictability of later disability among those with subacute low

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