Perceived Injustice
A Risk Factor for Problematic Pain Outcomes

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Background: Emerging research suggests that perceptions of injustice after musculoskeletal injury can have a significant impact on a number of pain-related outcomes.

Aims: The purpose of this paper is to review evidencelinking perceptions of injustice to adverse pain outcomes. For the purposes of this paper, perceived injustice is defined as an appraisal cognition comprising elements of the severity of loss consequent to injury ("Most people don't understand how severe my condition is"), blame ("I am suffering because of someone else's negligence"), a sense of unfairness ("It all seems so unfair"), and irreparability of loss ("My life will never be the same").

Results: Cross-sectional studies show that high scores on perceptions of injustice are correlated with pain catastrophizing, fear of movement, and depression. Prospective studies show that high scores on perceived injustice are a prognostic indicator of poor rehabilitation outcomes and prolonged work disability. Research shows that perceptions of injustice interfere not only with physical recovery after injury, but perceptions of injustice also impact negatively on recovery of the mental health problems that might arise subsequent to traumatic injury. Although research has yet to address the process by which perceptions of injustice impact on pain-related outcomes systematically; possible mechanisms include attentional disengagement difficulties, emotional distress, maladaptive coping, heightened displays of pain behavior, anger, and revenge motives.

Conclusions: Perceived injustice appears to be associated with problematic health and mental health recovery trajectories after the onset of a pain condition. Future directions for research and treatment are addressed.

Key Words: perceived injustice, pain catastrophizing, pain, pain behavior, disability

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Research has shown that perceptions of injustice are likely to arise when an individual is exposed to situations that are characterized by a violation of basic human rights, transgression of status or rank, or challenge to equity norms and just world beliefs.[1–3] The experience of unnecessary suffering as a result of another's actions and appraisals of irreparable loss are also likely to give rise to perceptions of injustice.[4] A case can be made that the situations or conditions that contribute to a sense of injustice characterize the life situation of many individuals who have sustained musculoskeletal injuries.

Particularly in situations where injury has occurred as a result of another's error or negligence, the injury victim might experience postinjury life with a sense of injustice.[4] Clinical anecdotes abound of people with persistent pain who feel that they have been caused to suffer unjustly either as a direct result of their injury, or indirectly by the sequellae of their injury.[5,6] Verbalizations such as "I wish he could see what he has done to my life" or "Nothing will ever make up for what I have gone through" reflect at once elements of unfairness and the irreparability of loss.

Whether considered from philosophical, social, legal, or psychological perspectives, writers have suggested that injustice demands retribution.[7,8] Central to the process of litigation within "tort": systems is the determination of fault and quantification of loss, and the exchange of financial resources as a proxy for retribution.[8] The extant literature of the deleterious effects of litigation on suffering and recovery suggests that high levels of perceived injustice might represent a risk factor for problematic recovery after musculoskeletal injury.[9–12]

Although discussions of philosophical, social, and legal issues related to injustice have a long history, only recently have there been systematic efforts to study the psychology of perceived injustice in the context of injury and pain.[4] A few recent studies have examined the relation between injury-related perceptions of injustice and pain-related outcomes after musculoskeletal injury. Sullivan et al[13] described the development of the Injustice Experience Questionnaire (IEQ). On this measure, perceived injustice is construed as an appraisal cognition comprising elements of the severity of loss consequent to injury ("Most people don't understand how severe my condition is"), blame ("I am suffering because of someone else's negligence"), a sense of unfairness ("It all seems so unfair"), and irreparability of loss ("My life will never be the same"). Factor analysis reveals that the IEQ yields 2 correlated factors that have been labeled severity/irreparability of loss and blame/unfairness.[13]

In a prospective study of individuals with mixed musculoskeletal injuries (ie, back sprain, whiplash), Sullivan et al[13] reported that high scores on perceived injustice predicted work disability at 1-year follow-up. Perceived injustice predicted work disability even when controlling for initial pain severity, postinjury functional limitations, catastrophizing, depression, and pain-related fears. In the latter study, perceived injustice was more strongly related to disability than to pain severity. Prospective analyses

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showed that perceived injustice was the best predictor of follow-up occupational disability, whereas catastrophizing was the best predictor of follow-up pain severity.

Sullivan et al[13] also reported on treatment-related changes in perceived injustice in individuals enrolled in a multidisciplinary pain rehabilitation program. Compared with other psychosocial measures (eg, catastrophizing, fear of movement, depression), perceived injustice showed the least change through the course of treatment. The minimal change in perceived injustice cannot be attributed to the lack of sensitivity of the IEQ as treatment-related reduction in perceived injustice was the only psychological variable that was associated with increases in walking speed through the course of the rehabilitation program. It is possible that, for individuals with initially high scores on perceived injustice, reduction in perceived injustice might be a prerequisite for improvement in physical function.

In the research conducted to date, perceived injustice has been highly correlated with catastrophizing. The magnitude of the correlations between the IEQ and the pain catastrophizing scale (PCS) (0.65 to 0.75) has been sufficiently high to invite reflection about the degree of overlap between these constructs. The "severity/irreparability of loss" dimension of the IEQ likely overlaps to a substantive degree with the exaggerated negative orientation toward pain that characterizes catastrophizing. However, the "blame/unfairness" dimension of the IEQ is neither reflected in the conceptual framework that underlies catastrophizing or the item content of the PCS.[14,15]

Despite the high correlation between the IEQ and the PCS, there are also findings to support the distinctiveness of the IEQ. Sullivan et al[13] reported that the IEQ and the PCS each contributed significant unique variance to the prediction of pain suggesting that perceived injustice might impact on pain experience in a manner distinct from catastrophizing. The IEQ was also shown to prospectively predict return to work even when controlling for scores on the PCS (and other measures), whereas the PCS prospectively predicted the persistence of pain independent of the IEQ. Treatment-related changes in the IEQ were correlated with increased walking distance even when controlling for catastrophizing (and other measures). In addition, treatment-related changes in the IEQ were not correlated with changes in pain, whereas treatment-related changes in the PCS were significantly correlated with changes in pain. These results argue for a conceptualization of perceived injustice as a construct distinct from catastrophizing.

With respect to mechanisms of action, the high correlation between perceived injustice and catastrophizing suggests that perceived injustice might impact on pain outcomes, at least in part, in a manner similar to catastrophizing. In other words, attentional disengagement difficulties, emotional distress, and maladaptive coping might also be vehicles through which perceived injustice impacts on pain outcomes.[16]

Perceived injustice has also been associated with the persistence of posttraumatic stress symptoms in individuals who have sustained whiplash injuries. Sullivan et al[17] examined the predictors of recovery of posttraumatic stress symptoms in a sample of individuals with recent onset whiplash injuries who were participating in a multidisciplinary rehabilitation program. Individuals who scored in the clinical range on a measure of posttraumatic stress symptoms, and who scored high on a measure of perceived injustice, were less likely to show recovery of their posttraumatic stress symptoms than individuals with low scores on perceived injustice. The latter findings suggest that perceptions of injustice interfere not only with physical recovery after injury, but perceptions of injustice also impact negatively on recovery of the mental health problems that might arise subsequent to traumatic injury.

A recent experimental study examined the relation between perceived injustice and displays of pain behavior in individuals who had sustained whiplash injuries.[18] Pain behavior refers to movement alterations or expressive displays that are enacted during the experience of pain. Pain behaviors can take varied forms including activity avoidance, redistribution of weight to alleviate pressure on affected limbs, holding or rubbing affected areas of the body, facial grimaces, and vocalizations.[19] Research shows that heightened expressions of pain behavior are associated with a variety of adverse outcomes such as increased pain, depression, functional disability, and prolonged work absence.[20,21] Research has supported a distinction between communicative and protective pain behaviors. Communicative pain behaviors might include facial expressions such as grimacing or wincing, and verbal or paraverbal pain expressions such as pain words, grunts, sighs, and moans. The overt display of distress during pain experience conveys information to observers about the internal state, pain-related limitations, and needs for assistance of the individual who is experiencing pain.[19,22–24] Protective pain behaviors might include any action that is intended to reduce the probability of further injury, minimize the experience of pain, or promote recovery from injury. For example, the withdrawal of a limb from a hot surface serves to terminate the action of a noxious stimulus and in turn, protects the limb from further injury.[25] Protective pain behaviors might also include movements such as guarding, holding, touching, or rubbing of the injured or affected area of the body.[26]

Sullivan et al[18] reported that perceived injustice was associated with heightened levels of protective pain behavior but was unrelated to communicative pain behavior. The relation between perceived injustice and protective pain behavior remained significant even when controlling for variables known to be associated with pain behavior such as pain severity, pain catastrophizing, and depression. Mediation analyses revealed that protective pain behavior might be one of the processes through which perceived injustice might impact on disability. These findings are consistent with previous research showing that protective pain behaviors are more strongly associated with disability than communicative pain behaviors.[21,27]

Pain behavior is also one of the primary means by which observers infer someone's pain experience.[19,28] The observation of heightened levels of pain behavior in an injured patient might lead physicians to infer high levels of pain and in turn, consider prescribing an extended period of sick leave. The observation of heightened levels of pain behavior might also lead an employer to consider that the employee is unable to meet his or her occupational responsibilities. In addition to the communication value of protective pain behaviors (eg, overt display of distress), which might impact indirectly on the disability by influencing observers' judgments of an individuals' potential limitations, protective pain behaviors also engage the musculature that would be required for task performance. As such, pain behavior may not only be disruptive to activity engagement, but the social response to pain behavior might also contribute to prolonged disability.

It has been suggested that revenge motives might be elicited by perceptions of injustice.[29] The 12th century philosopher, Anselm de Canterbury discussed injustice as a state of mind that demanded retribution. He suggested that individuals would only be liberated from the clutches of injustice when suffering could be inflicted on the perpetrator of injustice that was equal in magnitude to that of the experienced loss.[30] Under some circumstances, it is possible that "disability" might represent the only "power" that an individual possesses in efforts to bring about retribution for losses sustained. In some cases, disability behavior might be intentionally maintained to seek adequate retribution for losses. Pain behavior might provide a useful vehicle for publicly demonstrating the severity of one's disability. Challenges for future research will include the development of paradigms that might elucidate the motives underlying the expression of different forms of pain behavior and the degree to which these motives are consciously represented.

It has been suggested that perceptions of injustice might be one of the cognitive antecedents of anger reactions associated with pain.[29] Anger reactions have been discussed as central to the experience of perceived injustice.[4,31] Social psychological research has shown that blame attributions for negative outcomes are likely to trigger anger responses.[32] Emotional reactions to negative events persist for longer periods of time when events are appraised as unjust.[33] It has been suggested that a hostile attributional style and beliefs in a just world might predispose anger reactions to perceived injustice.[3,34]

Numerous investigations have shown significant relations between anger, pain, and disability in patients with chronic pain.[35–37] Anger reactions that take the form of nonadherence to treatment recommendations could impact negatively on recovery trajectories after injury.[37] It has been suggested that anger might contribute to heightened pain experience by increasing muscle reactivity.[38] Burns et al[39] have proposed that anger might contribute to dysfunction of the endogenous opioid system. Anger and anger-related physiological changes might be one of the vehicles through which perceptions of injustice impact on pain experience.

Research on the prognostic value of perceived injustice for recovery outcomes of individuals who have sustained pain-inducing injuries is still in its infancy. Nevertheless, the studies that have been conducted to date suggest that perceived injustice might be a significant determinant of response to rehabilitation interventions, and a powerful predictor of prolonged occupational disability in individuals who have sustained whiplash injuries. Although research has yet to systematically address the mechanisms by which perceived injustice might contribute to prolonged disability in individuals with whiplash injuries, there are grounds for suggesting the potential contributions of catastrophizing, pain behavior, and anger.

Regardless of the specific processes by which perceived injustice might impact on disability, the results of recent research suggest that perceptions of injustice might be an important target of intervention for individuals recovering from musculoskeletal injury. Although cognitive-behavioral approaches are currently considered the preferred treatment orientation to managing the persistent pain conditions, treatment manuals on cognitive-behavioral interventions for persistent pain do not specifically discuss how perceived injustice should be addressed in the treatment.[40]

The impact that blame cognitions have on feelings of anger and revenge motives suggests that interventions to alter the injured individual's perceptions of the offender might be useful. Forgiveness interventions have been described as potentially useful for accident or crime victims.[41] Essentially, forgiveness is a method of dealing with an offense or injustice that benefits victims through the reorientation of their thoughts, emotions, and behaviors towards the offender.[41,42] Reducing perceptions of blame and revenge might serve to decrease an individual's attentional focus on his or her pain and disability, which may have previously been seen as the only means to ensure accurate retribution for one's suffering.[13] One issue surrounding forgiveness interventions, however, is that the continuation of suffering, as is likely to occur for victims of physical injury who have developed chronic pain, might serve to impede the forgiveness process.[43]

Anger management interventions might also be of benefit for individuals with high levels of perceived injustice.[44–46] Although techniques targeting anger might help address injustice perceptions of blame and unfairness, other interventions techniques might be needed to address appraisal of severity and irreparability of loss. The growing literature detailing the benefits of pain acceptance on pain-related outcomes is suggestive of one such intervention.[47–49] Essentially, acceptance entails continuing to pursue life goals and valued activities even when pain is experienced and the cessation of efforts to control or avoid pain,[49] and has been shown to decrease pain, disability, and depression, as well as to improve individuals' work status.[48] On the basis of the supposition that the appraisals of severity or irreparability of loss and unfairness facets of injustice perceptions are inherently linked,[13] acceptance-based treatments aimed at reducing severity cognitions may also help to inadvertently reduce perceptions of unfairness.

Mindfulness meditation has also been discussed as an intervention that can promote acceptance and reduce distress associated with pain.[50,51] One of the objectives of mindfulness meditation is to assist the client in reducing the struggle to control aspects of one's condition or situation that are essentially uncontrollable. Acceptance without judgment is considered to be one of the cognitive vehicles through which the health and mental health benefits of mindful meditation are achieved. There are indications that the relation between catastrophizing and pain might be moderated by mindfulness.[52] It has been shown that the adverse impact of catastrophizing on pain might be more pronounced in individuals who score low on measures of mindfulness. These findings suggest that increases in mindfulness might reduce the impact of risk factors such as catastrophizing. It is possible that increases in mindfulness might also reduce the negative impact of perceived injustice on adverse pain outcomes.

It is important to note that the legal context within which many pain conditions are treated might serve to maintain perceptions of injustice, and in turn compromise treatment effectiveness. When legal representation is sought to obtain compensation for losses, or to challenge inadmissibility decisions of insurers, legal procedures might actually augment or prolong perceptions of injustice. Legal representatives have a vested interest in ensuring that their clients' perceptions of injustice remain high. Interference with clients' ability to resolve their perceptions of injustice might be one of the avenues through which legal procedures contribute to poor recovery outcomes in individuals with pain conditions.

In summary, recent research suggests that perceptions of injustice can have a significant negative impact on health and mental health outcomes associated with pain. Perceptions of injustice might impact on health and mental health outcomes through several cognitive, affective, and physiological processes. Cognitive influences might include excessive focus on loss and appraisals of irreparability of loss, blame attributions, catastrophic thinking, and revenge motives. Affective influences might include anger, depression, and posttraumatic emotional reactions. Physiological influences might include sustained muscle reactivity and dysfunctions of the endogenous opioid system. Research linking perceptions of injustice to problematic recovery outcomes has been sufficiently compelling to support the use of measures of perceived injustice in the routine assessment of individuals with pain conditions. Little is currently known about the intervention approaches that will be most effective in reducing perceptions of injustice. Identifying the mechanisms by which perceptions of injustice impact on pain outcomes, and the development of techniques to reduce perceptions of injustice in pain sufferers will be fruitful domains of future inquiry.

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