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Topical review

Cognitive dimensions of anger in chronic pain

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1. Introduction

Anger has long been recognized as an integral part of pain experience [1,19]. Reviews highlight the deleterious effect of anger on social, clinical, and functional outcomes [9,22,32]. Anger has been discussed as an aversive emotional state ranging from mild irritation to fury [25], and comprising specific cognitive attributions and action tendencies [21,34]. Anecdotal and empirical data suggest that anger is commonplace among chronic pain sufferers [32]. In their 2003 review, Greenwood et al. [22] identified anger as an important target of research and behavioral management; since that review, research has highlighted biopsychosocial mechanisms through which anger may affect pain experience [5,9,33]. However, to date, no systematic line of research has addressed the cognitive dimensions of anger in chronic pain. We believe that elucidating these facets of anger in pain sufferers might strengthen the empirical foundation for more effective treatment. Although not exhaustive, the current review highlights potential sources of anger among pain sufferers by drawing on conceptualizations from existing social psychological theory and newly evolving lines of research. On this basis, we discuss the role of anger in treatment settings, and possible frameworks for research and intervention.

2. Anger in pain: state of the evidence

Research over the past two decades reveals a robust relation between anger and adverse pain outcomes [5,25]. Higher anger expression has been linked with decreased experimental pain tolerance and greater reported pain intensity, as well as with increased post-surgical pain report and analgesic intake [7]. Anger is associated with pain intensity in many chronic pain conditions, including headache, fibromyalgia, complex regional pain syndrome, and back pain [25]. Higher anger expression is prospectively associated with poorer functional outcomes such as physical performance deficits and work disability [32]. Correlates of anger include detrimental health behaviors, maladaptive coping responses, and poor sleep quality [25]. Studies of interpersonal consequences of anger in chronic pain suggest associations with less social support and greater interpersonal conflict [20]. There is likewise a well-documented relationship between anger, anxiety, and depression [25,28].

Recent research has examined the role of anger regulation strategies [10], highlighting ironic processes, symptom-specific muscle tension, and alterations in endogenous pain-inhibitory mechanisms as possible pathways by which anger exerts a negative impact [6,33]. This recent work suggests that the well-established relationship between anger and pain is far from straightforward. Targeted efforts to better understand the anger experience are warranted, and our focus on the cognitive dimensions (or substrates) of anger is intended to spur those efforts.

3. Cognitive dimensions of anger: clues from social science

Candidate cognitive dimensions of anger in chronic pain include goal frustration, external attribution for negative outcomes (i.e., blame), and perceived injustice. We briefly summarize research related to each construct, and highlight directions for future research.

3.1. Goal frustration

Frustration–aggression models suggest that anger arises from external obstructions to personally significant goals [2]. Among individuals with persistent pain, anger may emerge from frustration experienced as a result of compromised goal pursuits; altered goal appraisal and strategy in the context of pain has been extensively discussed by Karoly and Ruehlman [26,27]. Frustration may be particularly salient when pain interferes with activities that define identity in specific life-domains (e.g., parent, spouse, friend, worker), fostering role loss and identity erosion [23,30]. In turn, discrepancy between one's actual and hoped-for identity has been linked to emotional distress and depression in chronic pain sufferers [30], as has the degree to which individuals feel that achieving their goals is contingent on pain relief [30].

For many chronic pain patients, efforts at complete pain relief are likely to be associated with repeated failure. Rigid pursuit of finite pain relief has been associated with greater distress and hypervigilance in regard to pain sensations [14]. Pain sufferers may become trapped in a cycle of "misdirected problem solving"

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characterized by continued perseverance and frustration regarding efforts to extinguish pain (Carver and Scheier's discussion of goal monitoring and affect is particularly relevant here [12]). When increased attention to pain and its eradication occurs at the cost of once-valued or identity-relevant pursuits, this narrowed motivational perspective may further exacerbate pain-related losses and identity disruption [17].

3.2. External attribution

Attribution theory suggests that individuals are motivated to understand the cause of events in their day-to-day lives. Anger is thought to emerge when self-relevant negative outcomes are attributed to external rather than internal agency [31]. Consistent with this perspective, anger is associated with degree of blame that individuals with pain ascribe to negative events in their lives [15,29]. Although blame can facilitate coping in specific situations (e.g., in the case of accident victims [24]), the overall trend is toward negative outcomes [37]. Crime victim research suggests that externalization of blame may, in the long run, leave individuals experiencing a lack of behavioral control over negative outcomes, ultimately increasing feelings of distress and helplessness [40]. Among chronic pain patients, DeGood and Kiernan [15] found that those who blamed others for their pain reported more pain and emotional distress than those who did not ascribe fault for their pain condition.

Research has identified varied targets of anger in chronic pain patients, including medical and mental health providers, the legal system, third-party payer, employers, significant others, God, self, and the whole world [19,32]. However, little attention has been given to the cognitive content of anger toward these targets, leaving the question open to inquiry. Moreover, existing studies make little distinction between anger and blame per se, leaving open the question of what (if any) responsibility patients ascribe to outside agents in terms of their pain condition.

3.3. Perceived injustice

Classical definitions of anger highlight the perceived illegitimacy or unfairness of an instigating event. Central to anger is appraisal that one has somehow been wronged [19,34]. Berkowitz and Harmon-Jones [3] quote Frijda: "An angering event is one in which someone or something challenges what 'ought' to happen" [21]. Recent work has drawn attention to the fact that chronic pain patients often perceive themselves as victims of injustice, conceptualized by Sullivan et al. [35] as a set of cognitions comprising attributions of blame, magnitude of loss, and irreparability of loss.

Studies in occupational and social/organizational psychology reliably demonstrate the negative impact of perceived injustice on physical and mental health outcomes [4,13]. In the rehabilitation setting, higher perceived injustice was associated with missed clinic appointments, less improvement on measures of physical function, and lower probability of work return [35]. In one study, pre-treatment scores of perceived injustice predicted long-term work absence even when controlling for other medical, functional, and psychological variables [35]. Perceived injustice likewise emerged as a unique predictor of posttraumatic symptom chronicity among whiplash injury patients [36]. The role of perceived injustice in conceptualizations of anger and its negative impact among injured patients suggest that this may be an important area for future research and intervention. Moreover, as perceived injustice may inherently imply externalization of blame, research is encouraged to examine the extent to which injustice and blame cognitions overlap in contributing to anger in pain experience.

4. Role of anger in treatment settings

Examining cognitive dimensions of anger can help to account for observed associations between anger and poor clinical outcomes. Below, we discuss how goal frustration, external attribution, and perceived injustice can negatively inform treatment through related pathways such as impaired engagement, disrupted therapeutic relations, and excessive focus on pain and injury.

4.1. Treatment engagement

Repeated failures to achieve pain relief combined with externalized blame are likely to fuel anger and to disrupt engagement in treatment. This is particularly true if patients frame their pain problem as necessitating absolute relief from an external biomedical source [17], or (relatedly) if patient treatment goals do not match those of the provider. A recent study found that chronic pain patients rated acceptable levels of pain relief as considerably greater (>50%) than what is currently offered by cognitive behavioral therapy [38], suggesting an incongruence in patient–provider objectives that may magnify patient distress and anger. In addition, it remains an interesting question whether external/blame attribution may promote outsourcing of responsibility for treatment progress and failure to agents such as treatment provider, workplace environment, or insurance carrier, thus sabotaging active participation in treatment efforts [18].

4.2. Therapeutic alliance

Much attention been given to "difficult patients" in the pain treatment setting [39], and there is consistent evidence that patients' anger expression impairs establishment of working alliance [8]. Perceptions of injustice, blame, and goal frustration may foster disturbed therapeutic relations with treatment providers and others in the social environment. Themes of perceived injustice and deserved retribution may be reflected in feelings of entitlement among chronic pain sufferers, recently documented by Cano et al. [11]. Greater entitlement to social support was, in turn, associated with punishing spousal responses and perceived spousal invalidation [11].

Hostile interactions are not surprising, given that the specific motivation–action tendency most frequently associated with anger is that of retaliation [21]. In response to perceived insult, one is motivated to right the wrong or remove obstructions to desired outcome. The circumstance of chronic pain thwarts this natural action response, as the obstacle (i.e., pain) is often intractable, solutions obscure, and targets of blame imprecise.

4.3. Focus on pain and injury

Perhaps centrally, anger may undermine treatment by continually reinforcing the inherent tendency of pain to capture attention and achieve psychological priority [16]. Rumination regarding injustice, blame, and goal disappointment may steer attention toward "unsolvable" issues, while simultaneously detracting from evidence-based treatments and exacerbating distress. Patients may become mired in a preservative cycle similar to that suggested by the Misdirected Problem Solving model of pain [17]. In line with this, some anecdotal data suggest that perceived injustice may draw priority away from treatment involvement. Sullivan et al. [35] note that, in group discussions, "perceived injustice seemed to focus individuals' attention on the injustice of their injury or accident as opposed to. . .their role in the rehabilitation process" (p. 258). Fueled by anger cognitions, efforts may be directed away from restoration of functional identity and perhaps invested in demonstration of underserved suffering [18].

5. Directions for treatment and research

Although this review highlights directions for potentially fruitful inquiry, we do not exhaustively characterize cognitive aspects of anger in persistent pain and such inquiry is indeed encouraged. Research should continue to examine the nature of anger cognitions among pain sufferers, including their impact on individuals' orientation toward their pain condition and treatment, as well as the emergence/evolution of anger in the acute to chronic pain trajectory. Further research efforts would likewise shed light on other important psychological correlates of pain, such as depression, which shares a number of cognitive characteristics with anger (e.g., self-blame, rumination). In addition, the development of viable assessment methodologies gauging anger-related cognitions would aid both theoretical understanding and clinical intervention.

Although existing psychological interventions offer a number of well-validated techniques that serve to reduce negative affect and build communication to enhance treatment engagement, no studies to date have examined the effectiveness of anger management interventions for pain sufferers. This is not surprising, given our limited understanding of the experience of anger in chronic pain. Although anger management is often part of cognitive-behavioral treatment packages, attention should be given to the specific effectiveness of current treatment strategies for anger-relevant outcomes. Current research and treatment perspectives might likewise offer resources for improving anger interventions. For example, acceptance-based interventions explicitly target several themes of anger discussed above (e.g., identity disruption and goal frustration). The growing body of work on the state–trait interaction in anger regulation may inform the utility of specific anger interventions for certain portions of the pain population [10].

Conclusion

Although feelings of anger are recognized as common among chronic pain sufferers, little attention has been given to the cognitive dimension of anger within the unique psychosocial context of chronic pain. In conjunction with flourishing research on anger regulation, we invite rigorous and systematic inquiry regarding the cognitive components of anger in persistent pain. Improved basic understanding of anger in this population is essential for development of more effective clinical interventions that will improve the quality of life for patients and will supply valuable tools for the provider community.

Conflict of interest statement

The authors have no other conflict of interest to declare with regard to this work.

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