Understanding the link between feelings of mental defeat, self-efficacy and the experience of chronic pain

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Abstract

Objectives: 'Mental defeat' (MD) has been identified among people with chronic pain as a type of self-processing related to social role and rank. Research has linked it to anxiety, pain interference and functional disability. The relationship between MD and other cognitive constructs, such as hopelessness and depression, remains poorly understood. This study considers the association between MD, pain symptomatology and self-efficacy in the context of other cognitive factors.

Methods: In total, 59 participants completed a questionnaire pack assessing anxiety, depression, hopelessness, pain catastrophising and MD in order to examine the relationship with pain symptomatology and self-efficacy.

Results: Linear multiple regression analyses showed that anxiety was most strongly associated with pain symptomatology, accounting for 26% of the variance, while catastrophising showed the strongest association with sensory pain and MD the strongest association with affective pain. Finally, MD was found to be strongly associated with pain-related self-efficacy, accounting for 47% of the variance.

Conclusion: This research has demonstrated the potential importance of assessing MD in chronic pain patients, suggesting that targeting these cognitions during interventions and therapy could be valuable. Furthermore, the study indicates that MD differs from related cognitive constructs involved in pain, such as depression, hopelessness and catastrophising.

Keywords
Anxiety, catastrophisation, chronic pain, mental defeat, self-efficacy

Introduction

Chronic pain is a potentially disabling and distressing condition. It is useful to distinguish the characteristics of chronic pain (its severity, distribution, etc.) from the level of impact that it can cause (pain interference, disability and distress). The latter variables, which represent the disruption to the individual's happiness and successful living, are predicted by a wide range of factors, of which the raw sensory characteristics of pain are far from the most important.[1] It has long been accepted that psychological variables – for example, related to coping or beliefs – can account for why some

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people struggle so much in the face of the chronic pain experience.[2] However, there is no consensus as to which psychological variables are most important, and sometimes psychological variables can intercorrelate and overlap – for example, concepts such as catastrophising and helplessness share some aspects.[3]

Mental defeat (MD) is a carefully defined cognitive construct that was created to explain aspects of the development and maintenance of post-traumatic stress disorder[4] (PTSD) and depression.[5] Ehlers et al.[4] defined MD as a perceived loss of autonomy, a state of 'giving up in one's own mind' any effort to retain one's identity as a human being. The concept of MD has most widely been studied in relation to uncontrollable traumatic events such as torture or rape and has been shown to predict both the development and severity of PTSD symptoms, and response to treatment.[4,6] However, it seems plausible that MD may be a factor where patients are seeking help for chronic pain, as in these situations the duration of pain is often long and the impact high; patients are usually seeking help for the fact that their pain is partly uncontrollable.

MD has been considered as a sort of self-processing where a given traumatic situation results in a linked set of negative beliefs about the self in relation to the experience of suffering.[7] As there is a considerable overlap between chronic pain and PTSD (e.g. 34.7% prevalence of PTSD diagnosis in a pain population[8]), it is likely that MD will be present in at least a subset of chronic pain patients. Preliminary qualitative findings supported this idea; Tang et al.[9] interviewed treatment-seeking chronic pain patients and many used the word 'defeated' to express feelings of a loss of control, autonomy and identity as a 'functional human being'. Patients referred to a sense of 'defeat of the mind' and the pain 'belittling them as a person'. Tang et al.[10] proposed that MD may represent a type of catastrophising around future consequences of the pain, primarily concerning the individual's sense of identity, agency and self. MD in relation to chronic pain focuses not on the experience and meaning of pain itself, but instead is a type of self-catastrophising focused on the effects of pain as an attack on the person's life and sense of identity.[9]

Further quantitative work has confirmed the importance of MD in chronic pain. Tang et al.[10] reported a significant correlation between MD and pain interference, sleep disturbance, anxiety, depression, functional disability and psychosocial disability and in a later paper found MD was a significant predictor of both functioning and distress.[11] However, these papers did not examine whether there was a direct association between MD and pain symptomatology. Only one study has specifically examined this; García-Campayo et al.[12] found a significant association between levels of MD and pain intensity in a Spanish sample of patients with fibromyalgia. MD may have an important role in suicide risk; a 2016 study found specific relationships between MD and suicidal intent.[13]

It is likely that MD is related to other concepts used in the chronic pain literature; MD implies a negative view of the self and a sense of uncontrollability, both of which are referenced by other important constructs in chronic pain research. In particular, a loss of a sense of agency has been cited as central to MD. Self-efficacy represents an opposing concept, as it reflects the belief that people can expend effort and persist in the face of 'obstacles and aversive experiences'.[14] Self-efficacy has been shown to be a powerful, positive variable in relation to chronic pain, having been linked to better pain tolerance,[15,16] as well as superior quality of life, general health, activity level and reduced pain severity.[17–19] However, fewer studies have examined which cognitive and emotional factors are predictive of high self-efficacy. Sánchez et al.[20] found that depression was a significant predictor of self-efficacy in fibromyalgia patients; we predict that a sense of being mentally defeated would be likely to reduce self-efficacy.

In this study, we predicted that greater MD would be related to poorer self-efficacy and higher pain severity. However, we also knew from previous research that MD would probably be correlated with other negative emotional states in our sample (e.g. depression[5]), and we wished to establish whether MD had a specific and unique role, when controlling for the established influence of other negative cognitive and affective variables. Previous research has demonstrated the negative impacts of constructs such as catastrophising,[3] hopelessness and negative affective states.[2] Thus, we predicted that MD would retain the power to significantly predict decreased self-efficacy and increased pain symptomatology, even when anxiety, depression, catastrophising and hopelessness were controlled for in previous steps in a hierarchical regression design.

Method

Participants

Participants were 59 treatment-seeking patients with chronic, non-malignant pain attending either an outpatient pain clinic or an intensive residential service across three sites. Patients were included if they were (1) aged 18+ years; (2) English-speaking and could read; (3) had a complaint of chronic pain for 6 months or longer; (4) had no co-morbid malignant/terminal disease (e.g. HIV/AIDS, cancer); and (5) had no severe psychopathological co-morbidity including substance misuse, schizophrenia, bipolar disorder and major depression with suicidal intention. A priori testing revealed that a sample size of 58 would provide sufficient statistical power to detect an effect of 0.25 at

power 0.8 and alpha 0.05. We sampled patients from outpatient and residential (intensive specialist) pain management services in order to guarantee an appropriate range of variability in the data set. The different services catered for people with different levels of chronicity and pain-related disability, who would as a consequence be likely to have a broad range of levels of self-efficacy and pain symptoms.

Design and procedure

This cross-sectional study factors examined predictors of pain self-efficacy and pain symptomatology. Participants were given an information sheet explaining that the study was exploring feelings of defeat, pain and how well people feel they can cope with pain. Eligible patients were provided with a questionnaire pack assessing anxiety, depression, hopelessness, pain catastrophising, MD, pain symptomatology and self-efficacy. They were asked to sign a consent form and to post this and their completed questionnaire pack back to the researcher.

Measures

The Generalized Anxiety Disorder-7. The Generalized Anxiety Disorder-7 (GAD-7) is a 7-item self-administered measure of anxiety with a cut-off score of 7 widely used to indicate clinical levels of anxiety symptoms.[21] Total scores can range from 0 to 21. Higher scores indicate higher levels of anxiety. It has been demonstrated to have good reliability internal consistency and factorial validity.

The Patient Health Questionnaire-9. The Patient Health Questionnaire-9 (PHQ-9) is a 9-item self-administered measure of depressive symptoms with a cut-off score of 9 widely used to indicate clinical levels of depression.[22] Total scores can range from 0 to 27. Higher scores indicate higher levels of depression. It has been demonstrated to have good reliability and validity.

The Pain Self-Perception Scale. To assess MD, the Pain Self-Perception Scale (PSPS) was completed by participants who were asked to read 24 statements and rate to what extent these applied to their experiences of pain.[10] These could be rated on a 5-point scale (from 0 = 'Not at all/Never' to 4 = 'Very strongly'), generating a total score ranging from 0 to 96. A higher score indicates a greater level of MD. The scale has demonstrated good psychometric properties, including high levels of internal consistency and test–retest reliability.[10]

Pain Catastrophizing Scale. The Pain Catastrophizing Scale (PCS) was used to measure the participant's catastrophising thinking associated with pain.[3] It consists of 13 items and the participant is asked to rate

how frequently they experience each of these thoughts or feelings when they are in pain. Ratings are made on a 5-point scale from 0 ('Not at all') to 4 ('All the time'), giving a total score ranging from 0 to 52. A higher score indicates more pain catastrophising cognitions. The PCS has demonstrated high internal consistency and test–retest reliability over a 6- to 10-week period.[3]

Pain Self-Efficacy Questionnaire. The Pain Self-Efficacy Questionnaire (PSEQ) consists of 10 items assessing self-efficacy regarding pain.[23] Participants rate their answers on a 7-point scale ranging from 0 ('Not at all confident') to 6 ('Completely confident') with total scores ranging from 0 to 60. Higher scores indicate stronger self-efficacy beliefs. It has been shown to have good test–retest reliability, internal consistency and construct validity.[24]

Beck Hopelessness Scale. To measure levels of hopelessness, participants completed the Beck Hopelessness Scale (BHS).[25] This is a 20-item questionnaire measuring three major aspects of hopelessness: (1) feelings about the future, (2) loss of motivation and (3) expectations. It consists of 20 questions requiring the participant to respond either true or false and total scores can range from 0 to 20. A higher score indicates greater levels of hopelessness. Beck et al.[25] reported good internal consistency (0.93), and others have demonstrated adequate reliability and validity.

Short-Form McGill Pain Questionnaire. To assess pain levels, participants completed the Short-Form McGill Pain Questionnaire (SF-MPQ) with reference to their pain experience over the past week.[27] The SF-MPQ consists of 15 representative words from the sensory (11 items) and affective (4 items) categories of the standard MPQ.[28] Each pain descriptor is ranked on a 4-point intensity scale (0 = 'None', 1 = 'Mild', 2 = 'Moderate', 3 = 'Severe'). Examples of Sensory Pain descriptors include 'stabbing' and 'aching' whereas Affective Pain descriptors included 'fearful' and 'punishing-cruel'. The sum of these rank values generates a Sensory Pain Rating Index (S-PRI) score (range = 0–33) and an Affective Pain Rating Index (A-PRI) score (range = 0–12). The Total Pain Rated Index (T-PRI) score is the sum of the A-PRI and S-PRI (range = 0–45). The SF-MPQ has been demonstrated to have good validity and reliability.

Ethical considerations

The study protocol was approved by the relevant National Health Service (NHS) Research Ethics Committee as well as by Research and Development departments for all hospitals involved.

Analytic strategy

Missing data. Missing data were limited apart from two participants who failed to complete all items on the BHS, and three participants who failed to fully complete the SF-MPQ. Appropriate steps were taken to impute missing values which included using ratio imputation for the BHS and assigning a score of 0 to missing items on the SF-MPQ. The latter decision was made due to feedback from several participants who had assumed they should only tick an answer for the descriptors of pain they actually experienced and to leave blank those they did not.

Regression analysis. Our dependent variables were (1) self-efficacy and (2) pain symptomatology. Self-efficacy was a single variable, and we examined three aspects of pain symptomatology – total pain, sensory pain and affective pain (derived from the SF-MPQ described above). Thus, there were four dependent variables. In all cases, we entered MD as a predictor, alongside age, anxiety, depression, hopelessness and pain catastrophising as other potential predictor/independent variables. A planned stepwise linear regression approach was used. We examined a range of coefficients in order to verify that the assumptions underlying linear regression were not violated.[29]

Results

Participant characteristics

The sample overall had a mean age of 47.8 years (standard deviation (SD) = 11.4) and largely composed female participants (76.3%). A majority (67.8%) were married or living as married, and 44% were either unemployed, retired or on sick leave. Overall, 35.6% of participants experienced back/spinal pain, 32.7% reported either fibromyalgia or pain all over the body, and 27.1% experienced pain in the foot/leg/hip. Other sources of pain included shoulder/neck/head (20.3%), arm/hand (11.9%) and 'other' including testicles and stomach (5.1%). Using the 0–10 visual analogue scale, the mean pain intensity score was 5.0 (SD = 1.5), the mean S-PRI score was 19.5 out of a possible 33 (SD = 6.1), and the mean A-PRI score was 6.8 out of a possible 12 (SD = 3.3). The sample scored a mean of 21.3 (SD = 11.3) for self-efficacy, with a lower score indicating a lower perceived self-efficacy (possible range 0–60). On the psychopathology measures, participants obtained a mean score of 11 (SD = 5.9) for hopelessness, 11.1 (SD = 6.2) for anxiety, 15.8 for depression (SD = 6.8), 44.4 (SD = 28.2) for MD and finally 26.9 (SD = 10.5) for catastrophising (see Table 1).

Table 1. Participant characteristics.

	% or mean (SD)
Age (years)	47.8 (11.4)
Sex (% female)	76.3
Marital status (% married/living as married)	67.8
Employment status (% retired, unemployed or sick leave)	44
Sources of pain (%)	
Back/spine	35.6
Shoulder/head/neck	20.3
Arm/hand	11.9
Fibromyalgia/all body	32.2
Foot/leg/hip	27.1
Other	5.1
Mental defeat (PSPS)	44.2 (28.2)
Hopelessness (BHS)	11.1 (5.9)
Depression (PHQ-9)	15.8 (6.8)
Anxiety (GAD-7)	11.1 (6.2)
Catastrophising (PCS)	26.5 (10.9)
Self-efficacy (PSEQ)	21.3 (11.3)
Sensory pain (SF-MPQ)	19.5 (6.1)
Affective pain (SF-MPQ)	6.8 (3.3)
Total pain (SF-MPQ)	26.2 (8.5)

PSPS: Pain Self-Perception Scale; BHS: Beck Hopelessness Scale; PHQ: Patient Health Questionnaire; GAD: Generalized Anxiety Disorder; PCS: Pain Catastrophizing Scale; PSEQ: Pain Self-Efficacy Questionnaire; SF-MPQ: Short-Form McGill Pain Questionnaire.

Correlations

Results showed a significant positive correlation between MD and Total Pain ratings, $r = 0.51$, $n = 59$, $p < 0.001$. There was a significant positive correlation between MD and Affective Pain, $r = 0.62$, $n = 59$, $p < 0.001$, and Sensory Pain, $r = 0.38$, $n = 59$, $p < 0.001$. There was also a significant negative correlation between MD and self-efficacy, $r = -0.69$, $n = 59$, $p < 0.001$.

Regressions

Regression coefficients for the four stepwise linear regression models can be seen in Table 2. In all cases, MD was entered alongside age, anxiety, depression, hopelessness and catastrophising in a stepwise manner. With self-efficacy as the dependent variable, only MD showed a significant association, $\beta = -0.69$, $t(59) = -7.23$, $p = 0.001$, explaining a significant proportion of the variance $R^2 = 0.47$, $F(1, 59) = 52.26$, $p = 0.001$. All other variables were excluded from the model.

The same analysis was carried out for the Total Pain Score, and in this case, only anxiety was a significant predictor, $\beta = 0.51$, $t(59) = 4.52$, $p = 0.001$, explaining a

Table 2. Regression analysis: coefficients for each dependent variable.

	B	SE B	β	R^2
Self-efficacy				
Constant	33.53	2.00		
Mental defeat	−0.28	0.38	−0.69**	0.47
Total pain				
Constant	18.34	1.99		
GAD-7	0.71	0.16	0.51**	0.26
Sensory pain				
Constant	13.55	2.00		
Pain catastrophising	0.22	0.07	0.40*	0.16
Affective pain				
Constant	3.56	0.63		
Mental defeat	0.072	0.1	0.62**	0.39

GAD: Generalized Anxiety Disorder.
$*p < 0.01$; $**p < 0.001$.

significant proportion of the variance, $R^2 = 0.26$, $F(1, 59) = 20.41$, $p = 0.001$. MD did not account for independent variance. Similarly, MD was not a predictor of sensory pain, and only pain catastrophising remained in that equation, $\beta = 0.40$, $t(59) = 3.38$, $p < 0.01$, explaining a significant proportion of variance $R^2 = 0.16$, $F(1, 59) = 10.73$, $p < 0.01$. However, the results were again different for affective pain, where MD was the only variable in the final equation, $\beta = 0.62$, $t(59) = 6.01$, $p < 0.001$, explaining a significant proportion of variance, $R^2 = 0.39$, $F(1, 59) = 36.06$, $p = 0.001$.

Discussion

This study examined the impact of MD on the experience of chronic pain. Specifically, we explored the impact of MD on pain self-efficacy and pain symptomatology while accounting for other related variables. MD was negatively associated with self-efficacy and had the strongest influence on this variable, even when examined alongside anxiety, depression, catastrophising and hopelessness. With regard to the pain variables, MD demonstrated the strongest association with affective pain (incorporating qualities such as punishing and frightening pain). Total pain scores were associated with anxiety, and catastrophising showed the strongest association with sensory pain (incorporating qualities such as throbbing and stabbing pain). Each of these associations will be considered in turn.

MD, self-efficacy and affective pain

Many studies have shown self-efficacy to be an important predictor of distress and functioning but fewer have examined influences on self-efficacy. The link between MD and low self-efficacy is understandable when considering theory and other research in the area. In an early qualitative exploration of MD in chronic pain, patients interviewed by Tang et al.[9] described feelings of a loss of control, autonomy and ability to maintain their identity as a human being. In short, many felt like they had 'given up'. It seems clear that this experience of the self as helpless, out of options and disempowered would decrease self-efficacy, and this is what our results show.

Our results add to the increasing literature on the power of self-related processes in chronic pain. MD, along with other variables such as self-efficacy, the hoped-for self[30] and self-as-context,[31] are all variables that emphasise the self, in contrast to a literature that has often focused on variables such as beliefs about pain or coping styles. It could be argued that MD and self-efficacy are simply conceptual opposites: for example, that it is logically necessary that an increase in one produces a reduction in the other; previous research has shown them to be negatively correlated.[12] However, this does not do justice to the exact nature of the items in the questionnaires. The PSPS (MD questionnaire) asks entirely about historical experiences of MD – for example, 'I felt destroyed as a person' – whereas the self-efficacy items are all framed in the present moment around 'I can do X, despite the pain'. It may be interesting to come to understand how historical experiences of feeling 'defeated' by pain can have an enduring impact on a person's ability to feel effective in the present moment.

This study introduces the new finding that MD is specifically associated with the experience of affective pain, above and beyond the influence of other correlated variables. Previous studies have demonstrated the effects of psychological variables on pain severity, for example, studies of pain catastrophising.[32] This study also shows that MD may directly change the experience of one aspect of pain. The exact mechanism by which this might happen is unclear. Studies of health anxiety indicate that anxiety can promote great vigilance to a sensation, increasing its magnitude. However, it is not clear that MD is primarily an anxiety-related variable, and the items in the PSPS do not emphasise physical hypervigilance, or, indeed, pain at all. This is an area for future investigation.

Catastrophising and pain

The association found between pain catastrophising and sensory pain is in line with several findings from similar research.[32] The fear avoidance model[33] has guided understanding of these findings. The fear avoidance model states that pain initiates a set of cognitive, emotional and behavioural responses which can at times, exacerbate pain and disability. If the pain is

interpreted as threatening or catastrophic (e.g. 'the pain is causing my body damage'), this typically leads to an excessive fear of pain and injury which gradually incorporates a fear of physical movement. People thus limit their physical activity, and this avoidance then limits the individual's opportunity to disconfirm these beliefs. Although in the short-term the pain may decrease due to resting, in the long-term inactivity leads to more pain, disability and poorer quality of life.[34] This pain is then feeding back into initial beliefs about illness and makes avoidance more likely to continue, a vicious cycle.

Anxiety and pain

The association between anxiety and overall pain rating (incorporating sensory and affective pain) found in this study is interesting. Specifically, it is significant that anxiety remained as a predictor in the equation where pain catastrophising, a powerful and pain-specific variable, did not. It may be that general anxiety, measured in this study by the GAD-7, was more powerful due to its emphasis on overall anxious physical arousal (e.g. 'being so restless that it is hard to sit still'), rather than the PCS's focus on pain-related cognition (e.g. 'I keep thinking of other painful events'). Equally, the mechanism could simply be via physical avoidance as noted for catastrophising above. For example, Asmundson and Norton[35] found that chronic back pain patients with high anxiety sensitivity (as here, not pain-specific) reported more fear of pain and tended to have greater avoidance of activities than those with lower anxiety sensitivity, despite equal levels of pain. Later, the authors showed that high anxiety directly exacerbates fear of pain, affecting escape and avoidance behaviours.[36] This may, again promote avoidance and safety behaviours that worsen pain. It is important to consider the directionality of these types of associations; one cannot determine whether higher anxiety causes more pain or whether higher levels of pain leads to heightened anxiety.

Limitations

This study is not without limitations. The sample was not homogeneous, being drawn both from an outpatient and a national residential pain service. However, this sampling guaranteed variability; by recruiting patients with greater and lesser disability, we were more likely to see a range of levels of MD, pain and self-efficacy. The sample size of 59 was adequate but a higher number of patients sourced from a range of clinics would improve the study. The sample also comprised 76.3% females and so future work would benefit from gaining greater data from males. Unfortunately,

the study did not record duration of pain symptomatology which might be expected to be linked to the extent of MD. Finally, the nature of the cross-sectional analysis means that we are not able to determine causal relationships. We consider it likely that there are reciprocal relations among feelings of defeat, pain symptomatology and self-efficacy.

Research implications

Further research is needed to experimentally examine the extent to which the associations noted in this study are causal or not. While this initial work is promising, the study was not able to answer the question regarding impact of MD on self-efficacy and pain symptomatology. Previous research has suggested that there may be a relationship between the activation of negative self-beliefs and engagement in safety seeking behaviours (SSBs) in chronic pain.[37] Future research could examine whether those higher in MD are engaging in more SSBs (such as avoidance of activity and reliance on medication) and if so, whether this affects self-efficacy and pain symptomatology. Finally, longitudinal studies examining MD would also be useful to track changes over time and research could consider the use of MD prospectively as a predictor for how well patients do in chronic pain rehabilitation programmes, for example.

Clinical implications

The results from this study indicate that MD may be an important factor in how well individuals perceive their ability to cope with chronic pain as well as the extent to which they perceive their pain in an emotional or affective manner. Tang et al.[10] offer hope by arguing that, as opposed to general mood states such as depression, the specific psychological processes involved in MD are amenable to more direct interventions, for example, by classic cognitive challenging techniques. Equally, other approaches to restrictive cognitions, such as mindfulness or acceptance-based approaches, may also help. However, the PTSD and chronic pain literature have not identified specific interventions which have been shown to be effective in reducing MD. We therefore can only suggest the use of interventions that have a proven track record in addressing cognitions and self-beliefs around pain, such as cognitive behavioural therapy (CBT) and acceptance-based therapy (ACT), though if other interventions can alter self-beliefs they should also be effective.

Conclusion

It may be useful to directly target cognitions of MD in the treatment of chronic pain, as they are important in

determining the affective impact of pain. Furthermore, the study also advances our understanding of cognitive variables in chronic pain by showing that MD is a valid construct, with additional predictive power above established variables such as depression, hopelessness and catastrophising.

Conflict of interest

Funding

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