A systematic review of evidence about the role of alexithymia in chronic back pain

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Abstract

Individuals with alexithymia struggle to make sense of their emotions. Alexithymia has been associated with a range of physical illnesses, but may influence different illnesses differently, so to understand the role of alexithymia in illness it is important to focus on specific conditions. This article reviews evidence from ten reports published between 2000 and 2018 of studies with samples of adults with chronic back pain that used the Toronto Alexithymia Scale (TAS). The studies were conducted in Germany, Israel, Italy, Russia, Turkey and the USA. Eight studies involved clinical samples and two involved public transit workers. Studies that compared participants with high and low alexithymia consistently found associations with measures of pain. The findings show that more severe alexithymia plays a role in the experience of chronic back pain, and support the incorporation of alexithymia-related elements in interventions to help people with chronic back pain improve their emotional regulation and reduce their pain-related distress.

Introduction

Alexithymia involves difficulties with identifying and describing feelings and distinguishing between feelings and bodily sensations. Severely affected people also have difficulty with verbally communicating emotional distress (Taylor, 2000). Alexithymia was associated first with psychosomatic disorders, then with substance use disorders and more recently with conditions involving clear organic pathology, including chronic pain (Di Tella & Castelli, 2016).

The most widely accepted measure is the Toronto Alexithymia Scale (TAS), which has a 26-item and a more reliable 20-item version (Taylor et al., 2000; Wise et al., 2000). Both versions give a total score and three subscale scores: Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF) and Externally Oriented Thinking (EOT). Alexithymia is usually treated as a dimensional construct and TAS-20 scores are recommended to be scored as continuous variables, but TAS-20 total scores of 61 or more indicate high alexithymia (or 'alexithymia') and those of 51 or less indicate low alexithymia (or 'nonalexithymia') (Taylor et al., 1992; Bagby et al., n.d.). For the TAS-26, scores of 74 or higher identify alexithymia (Taylor et al., 1988).

Several casual pathways between alexithymia and physical health were proposed (Lumley et al., 1996, 2008). In the first, alexithymia causes or exacerbates physical illness through physiological processes such as immune functioning or sympathetic nervous system reactivity, or through behaviours such as eating or substance use. However, the evidence for this pathway comes from studies of conditions other than chronic pain (Lumley et al., 2008).

In the second proposed pathway, alexithymia causes somatisation rather than illness, leading to greater experience of physical symptoms and/or greater healthcare seeking (Lumley et al., 1996, 2008). The evidence for this includes studies of chronic pain, and one proposed mechanism was 'hypersensitivity to aversive bodily sensations and prolonged pain-related affective reactions, such as distress' (Kano & Fiduko, 2013, p. 5), which would increase the impact of pain and make pain more likely to become chronic, distressing and disabling.

In the third proposed pathway, physical illness causes 'secondary alexithymia', possibly because of stress or trauma (Lumley et al., 2008). However, one review concluded that alexithymia related to chronic pain was primary and not merely a reaction to pain (Kreitler & Niv, 2001).

In the fourth proposed pathway, both alexithymia and illness are caused by a third factor such as negative affect, because negative affect directly causes both alexithymia and illness, or confounds the measurement of both, or mediates the relationship between them (Lumley et al., 2008).

Chronic back pain is back or spinal pain lasting longer than three months or beyond the expected healing period or recurring frequently over a long period. It is one of the most prevalent chronic pain conditions worldwide and a major cause of disability, affecting work performance and general wellbeing. Annual prevalence ranges from 15–45%, and 70–80% of the population have back pain at some point in their lives (Andersson, 1999). Chronic back pain is also a significant burden on healthcare services, causing more consultations, referrals to secondary care and pain relief medications, compared with patients without chronic low back pain (Hong et al., 2013).

Chronic back pain may also be distinct from other chronic pain conditions because there is often no clear diagnosis to explain the pain, so there is greater uncertainty about the cause of the pain. Some theorists argue that the evidence about social and psychological risk factors for low back pain suggests psychosomatic causes (Rashbaum & Sarno, 2003), so alexithymia might be expected to play a greater role in the onset or maintenance of pain. Chronic back pain may also be experienced differently from other types of chronic pain because it is more likely to affect mobility and because the back has such a central, supportive role in the body.

A review of evidence about alexithymia and chronic pain, which included just one study of patients specifically with chronic back pain, found a high prevalence of alexithymia across different chronic pain conditions and concluded that research should analyse the role played by alexithymia in the development of different chronic pain conditions (Di Tella & Castilla, 2016). There is therefore a case for examining the potential role played by alexithymia specifically in chronic back pain. A meta-analysis of psychological interventions for chronic low back pain suggested that their efficacy could be enhanced through refinements designed to address putative mechanisms involved in the development and perpetuation of pain (Hoffman et al., 2007). It is therefore possible that reducing or moderating the effects of alexithymia could be a useful target for supportive interventions in chronic back pain.

The present review therefore aimed to examine the evidence about relationships between alexithymia and chronic back pain and inform potential interventions to improve adjustment to chronic back pain by targeting impairments related to alexithymia. There were two specific research questions:

- Do people experience greater or more intense pain depending on their level of alexithymia?
- Is alexithymia associated with psychological factors that could act either as causes or consequences of pain via the pathways proposed by Lumley et al. (1996, 2008)?

Methods

The inclusion criteria were published studies with participants with chronic back or spinal pain that used the Toronto Alexithymia Scale. There were no criteria related to other aspects of study design or methods. Using Library Plus, we electronically searched the PsycINFO, ScienceDirect, Psychology and Behavioural Sciences Collections, MEDLINE, CINAHL Plus, Science Citation Index, Social Sciences Citation Index, Academic Search Index, Complementary Index and CINAHL Complete. We also searched using Google Scholar, and searched for papers that cited key studies, and searched the reference lists of identified studies as well as previous review articles.

The searches used Boolean commands to identify articles with titles containing one or more of these terms: ‘alexithymia’ OR ‘alexithymic’ OR ‘emotion regulation’ AND ‘chronic pain’ OR ‘persistent pain’ OR ‘long term pain’ AND ‘back’ OR ‘spine’ OR ‘spinal’. Main texts were also searched for the term ‘Toronto Alexithymia Scale’ OR ‘TAS’.

Information about the aims, design, participants, measures, findings, strengths and limitations of each study was tabulated. Quality was assessed with a Critical Appraisal Skills Programme checklist. Each study was rated ‘Yes’, ‘Somewhat’ or ‘No’ for ten criteria: 1) clearly focused research question; 2) appropriate methodology; 3) research design; 4) recruitment strategy; 5) data collection strategy; 6) rigorous data analysis; 7) clear findings; 8) consideration of methodological issues; 9) consideration of ethical issues; and 10) contribution to research. The quality scores were the numbers of ‘Yes’ ratings (CASP UK, 2018).

Table 1. Key study features

Study	CASP score	Participants	Measures in addition to the TAS	Key findings
Studies of single clinical samples				
Esin et al. (2008)	7	156 patients with lumbar, neck or thoracic axial pain.	Self-reported pain intensity (VAS), disability, life satisfaction (VAS), depression and anxiety (HADS).	Pain intensity, disability, anxiety and depression were all higher, and life satisfaction was lower among those with TAS total scores >60.
Faia et al. (2002)	6	50 orthopaedic outpatients with low back pain.	Self-reported pain experience including quality, recency and location (QUID).	Participants with TAS total scores >60 used more verbal descriptors for pain.
von Korn et al. (2014)	7	49 patients with chronic lumbar spine pain.	Self-reported pain (Graded Chronic Pain Scale), Emotion recognition (Facially Expressed Emotion Labelling (FEEL).	Participants with higher TAS scores correctly recognised more ‘anger’ emotions.
Turesky (2011)	8	81 patients with chronic back pain.	Depression and anxiety (Center for Epidemiologic Studies Depression Scale (CES-D), quality of life (SF-36), recovery processes including pain complaints and somatic complaints (Battery for Health Improvement-2 (BBHI-2).	No association between alexithymia and pain. TAS total and DIF correlated positively with depression, anxiety and somatic complaints. The TAS total-somatic complaints association was mediated by negative affect.
Comparative studies of clinical samples				
Pecukonis (2009)	7	59 women with chronic intractable back pain. 53 pain-free controls.	Physician back pain checklist, physical self-efficacy scale.	Women with back pain had higher TAS total and self-efficacy scores, but TAS scores were not independent predictors of back pain in logistic regression.
Tuzer et al. (2011)	8	56 female patients with chronic low back pain.	Attributions for somatic symptoms (Symptom Interpretation Questionnaire)	For TAS total scores, SIQ attributions and the BSI global severity index, women with chronic low back pain and fibromyalgia were similar

		70 female patients with fibromyalgia. 72 female healthy controls.	and psychological distress (Brief Symptom Inventory).	and both groups were higher than healthy controls. Among women with chronic low back pain, TAS total scores correlated with somatic attributions for symptoms and DIF scores correlated with psychological attributions for symptoms.
Gregory et al. 2005	7	49 patients with back/extremity pain. 46 patients with other types of pain. 45 patients with no pain.	Somatosensory amplification, attachment style and 'counter-dependency'.	Patients with back/extremity pain had less alexithymia, somatosensory amplification, insecure attachment and emotional distress, and more secure attachment and 'counter-dependency' than patients with pain in other locations.
Margalit et al. (2014)	8	30 patients with chronic back pain. 30 patients with complex regional pain syndrome.	Self-reported pain intensity and severity (McGill Pain Questionnaire), depression and anxiety.	Patients with chronic back pain had less alexithymia, depression and anxiety than patients with complex regional pain syndrome.
Studies of transit workers				
Mehling & Krause (2005)	7	1,180 public transit workers.	Self-reported low back pain plus potential covariates including vehicle type, job strain and coping styles.	Participants with upper compared with lower quartile for TAS total and DIF scores had higher odds of low back pain. The effect was stronger for women than men.
Mehling & Krause (2007)	8	1,207 public transit workers.	Company records of compensated low back pain injury plus potential covariates including vehicle type, job strain and coping styles.	Higher TAS total and DIF scores predicted lower odds of filing a compensated claim for low back pain injury.

Notes: CASP=Critical Appraisal Skills Programme checklist (CASP UK, 2018). TAS=Toronto Alexithymia Scale; VAS=visual analogue scale; HADS=Hospital anxiety and depression scale; QUID=Questionario Italiano sul Dolore (Italian Pain Questionnaire).

Results

The search process initially identified 31 reports of which nine were duplicates, eight did not use the TAS measure of alexithymia and four did not include specific groups with chronic back pain. There were ten studies that met the inclusion criteria, all published between 2000 and 2018, eight as full-length journal articles, one as a 400-word abstract (Faia et al., 2002) and one as a PhD thesis (Turesky, 2011). Eight were in English, one in Russian (Esin et al., 2008) and one in German (von Korn et al., 2014). None were identified in other languages. The non-English language reports were translated into English for review. Five of the studies were conducted in the USA (Gregory et al., 2005; Mehling & Krause, 2005, 2007; Pecukonis, 2009; Turesky, 2011) and one each in Germany (von Korn et al., 2014), Israel (Margalit et al., 2014), Italy (Faia et al., 2002), Russia (Esin et al., 2008) and Turkey (Tuzer et al., 2011).

Table 1 shows key study features. Four involved single samples of neck, back or spinal pain patients (Esin et al., 2008; Faia et al., 2002; von Korn et al., 2014; Turesky, 2011). Another four compared back or spinal pain patients with complex regional pain syndrome patients (Margalit et al., 2014), pain-free controls (Pecukonis, 2009), pain-free controls and fibromyalgia patients (Tuzer et al., 2011), and pain-free controls and patients with other types of pain (Gregory et al., 2005). Two studies involved participants with chronic low back pain among larger surveys of transit workers (Mehling & Krause, 2005, 2007).

Sample sizes ranged from 49 (von Korn et al., 2014) to 1,207 (Mehling & Krause, 2007). Participant ages ranged from 18 to 60 years. Two studies involved only female participants (Pecukonis, 2009; Tuzer et al., 2011). Eight studies used the TAS-20 and two the TAS-26 (Pecukonis, 2009; von Korn et al., 2014). Only one study was longitudinal, with alexithymia scores used to predict low back pain outcomes 7.5 years later (Mehling & Krause, 2007).

The studies assessed different aspects of chronic back pain. The studies with single clinical samples measured pain with a visual analogue scale (Esin et al., 2008), ratings of pain quality, recency and location (Faia et al., 2002), the Graded Chronic Pain scale (von Korn et al., 2014) and the Bodily Pain scale of the SF-36 and the Pain Complaints scale of the Brief Battery for Health Improvement-2 (BBHI-2) (Turesky, 2011).

Of the comparative studies, one assessed the presence or absence of back pain using a seven-item physician back-pain checklist (Pecukonis, 2009). Three used medical diagnoses to define groups with different types or locations of pain (Gregory et al., 2005; Margalit et al., 2014; Tuzer et al., 2011) and one also measured self-reported pain intensity and severity using the McGill Pain Questionnaire (Margalit et al., 2014).

The studies of transit workers asked participants if they had experienced low back pain in the last 12 months (Mehling & Krause, 2005), with a follow-up of the same population that recorded the incidence of compensated low back pain injuries (Mehling & Krause, 2007).

Other measures included depression and anxiety (Esin et al., 2018; Gregory et al., 2005; Margalit et al., 2014; Turesky, 2011); physical self-efficacy (Pecukonis , 2009); somatosensory amplification, attachment and counter-dependency (Gregory et al., 2005); emotion recognition (von Korn et al., 2014); somatisation, symptoms of psychological distress and attributions for somatic symptoms (Tuzer et al., 2011); health-related quality of life and somatic complaints (Turesky, 2011); coping strategies (Mehling & Krause, 2005; 2007); and job strain (Mehling & Krause, 2007).

Associations between alexithymia and chronic back pain

Two of the studies with single clinical samples compared pain severity or intensity between participants with high and low alexithymia, and both reported positive associations (Esin et al., 2008; Faia et al., 2002). In the studies of transit workers, those who scored in the upper versus lower quartile for alexithymia had greater odds of having low back pain, and the association was stronger for women than men (Mehling & Krause, 2005). However, in a follow-up study of the same population, higher alexithymia scores were *negative* predictors of later compensated claims for low back pain injuries (Mehling & Krause, 2007). This meant that of four studies comparing measures of pain between participants with high versus low alexithymia, three reported positive findings and the fourth examined injury claims rather than pain itself.

Two studies tested correlations between alexithymia scores and pain ratings. In one, alexithymia and pain scores were not correlated among participants with chronic back pain (Turesky, 2011) and in the other, alexithymia and pain scores were correlated among participants with complex regional pain syndrome, but not

among those with chronic low back pain (Margalit et al., 2014). Three studies compared levels of alexithymia between participants with chronic back pain and pain-free controls. Two of these found greater alexithymia among those with chronic back pain (Pecukonis, 2009; Tuzer et al., 2011) but a third did not (Gregory et al., 2005). This meant that of five studies that used dimensional alexithymia scores rather than cut-offs, only two found associations with chronic back pain.

Three studies also compared levels of alexithymia between participants with chronic back pain and those with other chronic pain conditions. One found no difference in alexithymia between women with chronic low back pain and women with fibromyalgia (Tuzer et al., 2011). Two others found participants with chronic low back pain had lower alexithymia than those with complex regional pain syndrome (Margalit et al., 2014) or pain 'in other locations' (Gregory et al., 2005).

Alexithymia and psychological aspects of chronic back pain

Three studies examined associations between alexithymia and psychological wellbeing. In one, disability, anxiety and depression were all higher and life satisfaction was lower among participants with greater alexithymia (Esin et al., 2008). In another, alexithymia correlated positively with depression, anxiety and somatic complaints (Turesky, 2011). In another, alexithymia did not correlate with depression, anxiety or other psychological symptoms among participants with chronic low back pain (Tuzer et al., 2011).

Two studies conducted multivariate analyses to assess confounding or mediation of alexithymia effects by other factors. In one, the association between alexithymia and somatic complaints was mediated by negative affect (a composite of depression and anxiety) (Turesky, 2011). In the other, women with back pain had more alexithymia than pain-free controls but logistic regression showed that alexithymia did not predict back pain independently of self-efficacy (Pecukonis, 2009).

In one of the comparative studies, participants with low back pain had less psychological distress (depression and anxiety) as well as less alexithymia than those with complex regional pain syndrome, although the groups did not differ in pain intensity or severity (Margalit et al., 2014). In another, participants with pain in 'other locations' had higher scores for somatosensory amplification, insecure attachment, emotional distress (depression and anxiety), as well as alexithymia. By

contrast, the low-back/extremity pain group was characterised not by alexithymia but by secure attachment and ‘counter-dependency’ (mainly positive traits including a strong work ethic, a care-giving role identity, and self-reliance) (Gregory et al., 2005).

Those findings seem to suggest that complex regional pain syndrome and pain in ‘other locations’, which may involve greater uncertainty about causes and diagnosis, were more strongly associated with alexithymia and other psychological factors than chronic back pain.

The TAS subscale most closely associated with chronic low back pain was Difficulty Identifying Feelings (DIF). Among transit workers, those with low back pain had higher scores for DIF but not TAS-20 total or the other two subscales (Mehling & Krause, 2005). Among patients with chronic back pain, DIF was the TAS subscale with the highest correlation with depression, anxiety and quality of life (Turesky, 2011). Among another group with chronic back pain, TAS-20 total scores correlated with somatic attributions for pain and DIF scores correlated with psychological attributions for pain (Tuzer et al., 2011).

These findings might suggest that the aspect of alexithymia most relevant to chronic back pain is difficulty identifying feelings, which could make affected individuals more likely to attribute their feelings or symptoms to back or spinal problems. Two studies examined aspects of emotion recognition and attributions for symptoms. One study found that alexithymia total scores were correlated with the number of ‘anger’ emotions correctly identified (von Korn et al., 2014). In one of the comparative studies, alexithymia total scores correlated with somatic attributions for pain and DIF subscale scores correlated with psychological attributions for pain among participants with chronic back pain, whereas alexithymia total scores, DIF and DDF (Difficulty Describing Feelings) subscales all correlated with psychological attributions for pain among those with fibromyalgia (Tuzer et al., 2011). The fact that alexithymia total scores were associated with somatic attributions among participants with chronic back pain and with psychological attributions of pain among participants with fibromyalgia might suggest that the impact of alexithymia differs between chronic pain conditions, and that people with alexithymia and back pain tend to explain their symptoms by relating them to physical abnormalities. However, the pattern of associations between alexithymia and attribution measures for the groups reported by Tuzer et al. (2011) are difficult

to interpret clearly and do not indicate clear attributional differences between groups.

Discussion

The review set out to address whether people experience greater or more intense pain depending on their level of alexithymia, and whether alexithymia is associated with psychological factors that could act either as causes or consequences of pain via the pathways proposed by Lumley et al. (1996, 2008).

Regarding the first question, five out of the nine studies that tested associations between alexithymia and chronic back pain found a positive association. However, the four studies comparing measures of pain between participants with high versus low alexithymia produced more consistently positive results, with three of the four reporting positive findings and the exception being a study of compensated injury claims rather than back pain itself. The studies with the least consistently positive findings analysed alexithymia dimensionally rather than using cut-off scores, of which only two out of five studies reported positive findings. This might suggest that alexithymia has to be relatively severe in order to influence people's experience of chronic back pain.

Regarding the second question, two out of three studies that examined associations between alexithymia and psychological wellbeing found positive findings (alexithymia was associated with lower wellbeing). The evidence about potential mechanisms focused mainly on somatosensory amplification and attributions for pain, whereby alexithymia could cause people to attribute their distress to physical symptoms, consistent with the second proposed causal pathway (Lumley et al., 2008). Causal mechanisms like that could potentially account for the fact that participants with complex regional pain syndrome or pain in 'other locations' had greater alexithymia and worse psychological wellbeing than those with chronic back pain. For example, complex regional pain syndrome and pain in 'other locations' might involve greater uncertainty about medical causes, making those conditions more likely to be influenced by alexithymia if the mechanism was somatosensory amplification or misattributions for pain. One study found that 'somatosensory amplification' was greater among participants with pain in 'other locations' than those with chronic low back pain, but did not examine

correlations between somatosensory amplification and alexithymia or other aspects of pain (Gregory et al., 2005).

The positive association between low back pain and alexithymia among transit drivers was interpreted in a way that seems the opposite of a psychosomatic effect; the authors suggested that drivers with higher alexithymia ignored physical sensations that were early warning signs for low back pain (Mehling & Krause, 2005). However, in the follow-up study, higher alexithymia scores were *negative* predictors of compensated claims for low back pain injuries, which the authors suggested might be due to shame and reporting behaviour (Mehling & Krause, 2007). Transit drivers may well be a different population from those represented by the clinical samples of chronic back pain patients, so these findings may need different interpretations.

Four of the ten studies provided evidence relevant to the fourth potential causal pathway, which is that that depression, negative affect or psychological distress are the true influences on chronic pain, and that those factors influence both alexithymia and chronic pain or account for the association between them. Two out of three studies found associations between alexithymia and psychological wellbeing, and both of the studies that used multivariate analyses reported that apparent influences of alexithymia were accounted for by negative affect in one case (Turesky, 2011) and self-efficacy in the other (Pecukonis, 2009).

A strength of the review was that it focused on a specific type of chronic pain rather than chronic pain more generally, and also that it included only those studies that used a specific high-quality measure of alexithymia. Limitations include the varied designs of the included studies as well as the variable quality of the studies.

The evidence from this review supports a conclusion that severe alexithymia is associated with more severe chronic back pain, and that alexithymia is also associated with other aspects of psychological distress. To this extent the findings of the reviewed studies are broadly consistent with previous research on alexithymia in chronic pain more generally, and suggest that factors related to alexithymia should be targeted by supportive psychological interventions for patients with chronic back pain.

There is evidence from other research that alexithymia can be reduced. For example, a study of people receiving cognitive behaviour therapy for mild depression showed that alexithymia reduced during treatment and reductions in

alexithymia were associated with reductions in depression (Spek et al., 2008). In a study of cancer patients receiving a multicomponent psychological intervention, alexithymia was reduced by the intervention, leading to reductions in pain perception relative to a control group (Tulipani et al., 2010). In another study, an 'affect school' intervention specifically targeted the understanding and expression of feelings and emotions for people with chronic non-malignant pain at a pain rehabilitation clinic. This intervention reduced alexithymia and depression and increased quality of life among people with chronic non-malignant pain, although it did not reduce self-rated pain (Melin et al., 2010).

Some researchers have suggested that alexithymia could moderate treatment outcomes, especially in response to interventions that involve insight, emotional awareness and emotional disclosure (Lumley et al., 2008). Some of the most promising recent forms of psychological intervention for chronic pain are acceptance and commitment therapy (ACT) (Hughes et al., 2017) and compassionate mind training (CMT) (Dhokia et al., 2020). Both of these approaches involve recognition and awareness of emotional states, and alexithymia would be expected to impede effective engagement or be a negative prognostic indicator for both types of intervention. Incorporating alexithymia-related elements in ACT and CMT interventions, for example to help people identify or describe feelings and emotions, and help them discriminate between emotions and physical sensations, could contribute to tailoring those approaches more effectively for people with chronic back pain.

More research is needed on specific causal mechanisms, and future studies of alexithymia among patients with chronic back pain could include measures of other psychological constructs relevant to chronic pain, such as pain acceptance and analgesic dependence (Elander et al., 2014). There is also a need for more studies that make direct comparisons between participants with different types of pain, and for studies that consider the different causes of pain, eg injury versus illness versus musculoskeletal wear and tear. With back pain there is often no defining injury or event that causes the pain, so it would be informative to know more about the role that alexithymia might play over time in the development of chronic back pain problems. Qualitative research might also give insights into how alexithymia influences people's actual experiences of chronic back pain.

To conclude, studies that compared participants with high and low alexithymia consistently found associations with measures of pain. The findings show that severe alexithymia plays a role in the experience of chronic back pain, and support the incorporation of alexithymia-related elements in interventions to help people with chronic back pain improve their emotion regulation and reduce their pain-related distress.

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