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Kevin Vowles & Miles Thompson

Mindfulness and Acceptance in Behavioral Medicine: Current Theory and Practice

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Acceptance and Commitment Therapy for Chronic Pain

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Introduction

Chronic pain is a frequent human experience. Prevalence estimates typically indicate that between 15.0% and 21.0% of adults experience chronic pain, although some prevalence estimates are substantially higher than this, 46.5% (Breivik et al., 2006; Elliot et al., 1999). For many individuals, chronic pain has significant adverse impacts on daily activity, employment, relationships, and emotional functioning (Breivik et al., 2006). It also leads to significant healthcare use and expenditures (Haetzman et al., 2003). A key element in the problem of chronic pain is the way it leads to a wide range of persistent and inflexible efforts to avoid pain exacerbation and to an incessant cycle of escalating distress and disability when these efforts fail (Crombez, Eccleston, Van Hamme, & De Vlieger, 2008).

Unfortunately, the modern medical armamentarium does not appear adequate to the problem of chronic pain. For example, opioid medications often fail to provide sustained relief and can contribute to additional problems in the form of opioid dependence, misuse, or other adverse effects, such as constipation, sedation, nausea, and the like (Ballantyne & Fleisher, 2010; Martell et al., 2007). Pain relief achieved with devices or interventional procedures, such as injections, transcutaneous electrical nerve stimulation, implantable devices and surgery, are often transient and these procedures rarely produce beneficial impacts on functioning or healthcare costs (e.g., Armon, Argoff, Samuels, & Backonja, 2007; Chou, Baisden, Carragee, Resnick, Shaffer, & Loeser, 2009; Nnoaham & Kumbang, 2010). It could be argued that pain per se is essentially untreatable for at least a proportion of chronic pain sufferers. In other words, for at least some with chronic pain, there will not be a treatment that reliably leads to durable and clinically significant pain relief. Furthermore, although additional interventions aimed at pain relief can be and often are done with the laudable intention of decreasing pain and suffering, the unending pursuit of new treatments can reinforce a message that pain must be reduced in order for meaningful functioning to be restored, which is not necessarily true (McCracken, 2005). Additionally, the cumulative effect of recurrent failures of treatment to achieve pain relief often include feelings of defeat, confusion, and dismay, and these experiences may further exacerbate pain-related difficulties (e.g., Benner, 2007).

Historically, psychologically oriented treatment approaches have pursued an agenda alternative to the more mainstream one of pain reduction. In essence, these approaches have aimed at the restoration of effective and adaptive functioning within a context of continuing pain (e.g., Mayer & Gatchel, 1988). The development of Acceptance and Commitment Therapy (ACT; Hayes, Wilson, & Strosahl, 1999) offers a number of refinements that are directly relevant to this aim.

The present chapter provides a review of the history of psychological interventions for chronic pain and how developments within clinical psychology more broadly have been specifically integrated into chronic pain settings up to the more recently developed “third wave approaches” (Hayes, 2004), of which ACT and mindfulness-based approaches are prominent examples. A review of this history will hopefully allow for a better understanding of how these approaches were developed and may clarify their specific applicability to chronic pain. While mindfulness and ACT have developed from separate roots, there are similarities between them that deserve discussion. Among these both ACT and mindfulness-based approaches have substantially overlapping clinical goals, including a general loosening of verbally-based influences on behavior, the strengthening of present-focused, moment to moment awareness, and increasing of flexibility in responding to aversive experiences, so that this responding is more congruent with vital and meaningful living (Hayes & Wilson, 2003).

In addition to an overview of how the history of psychologically-based interventions has contributed to ACT and related approaches, the chapter also has a number of other purposes. First, key treatment processes targeted for change within ACT will be reviewed, as will methods for measuring a subset of these processes. Evidence with regard to the effectiveness of ACT for chronic pain will be reviewed. The chapter concludes with a brief discussion of two specific clinical issues.

The Development of Psychological Models of Chronic Pain

While psychological models of chronic pain have been in existence since far back in human history, it is possible to argue that the advent of more modern approaches began after the publication of Melzack and Wall's 1965 paper outlining their Gate Control Theory of pain. The essence of the theory was that pain perception is a dynamic affair; one that is modified both by physiological and psychological variables. Furthermore, although not directly specified in the original paper, a second key implication of the theory was that situational and historical variables may play a role in pain perception, as they provide additional influences on ongoing physiological and psychological experiences (Fordyce, 1976; Skinner, 1953).

From Gate Control through to Cognitive Behavioral Approaches

The theoretical assumptions posited within the Gate Control Theory were of topical relevance to clinical psychology. At this point in time, clinical psychology was developing alternate conceptualizations with regard to the cause, consequences, and treatment of problematic human behavior, unlike those posited within the psychodynamic theories of Freud and colleagues. In particular, operant approaches were becoming increasingly dominant and were demonstrating success across a wide variety of personal and societal problems (e.g., Baum, 2003; Franks & Wilson, 1974). Within chronic pain settings, Wilbert Fordyce and colleagues (e.g., Fordyce, 1976) recognized the relevance of operant theory to chronic pain, as well as the potential utility of treatment techniques such as exposure, skills training, shaping, modelling, and use of specific schedules of reinforcement.

For example, Fordyce, Fowler, Lehmann, and DeLateur (1968) introduced the idea of "pain behavior" as a unit available for clinical analysis. Pain behavior referred to the combination of verbal and observable behavior used to communicate that someone was experiencing pain. For instance, the verbalization "ouch!" followed by rubbing of the area where pain is occurring are instances of pain behavior. It was theorized that the occurrence of pain behavior, like any other behavior, is influenced by situation, context and history. Taking the above example one step further, if the rubbing leads to pain reduction, then rubbing has been reinforced and is therefore more likely to occur again in the future.

The approach developed by Fordyce and colleagues was quite sophisticated and is detailed in Fordyce (1976). Patients with pain were brought into the clinic where pain behavior and functional status were assessed in an in depth fashion. Following assessment, functional analysis, and formulation of the patient's presenting behavior patterns, operant methods were used to gradually extinguish problematic behaviors, such as unhelpful or excessive analgesic consumption, shape and reinforce more adaptive behaviors, such as sustained improvements in activity, and train in skills where deficiencies were identified. There is persuasive evidence for operant approaches in terms of the achievement of marked reductions in pain behavior and analgesic consumption, as well as improvements in overall levels of functioning in those suffering from chronic pain (e.g., see the meta-analysis of Flor et al., 1992). These successes are consistent with those observed in other clinical arenas, where interventions based on operant behavioral theory have good evidence of effect (Baum, 2003; Skinner, 1981).

Even early on, however, there were concerns that operant approaches were not able to adequately account for human cognition and language (e.g., Bandura, 1968). In particular, concerns were raised that verbal behavior, including inaudible behavior in the form of self talk or cognitions, was somehow unique and that the tried and true behavioral principles which came from the laboratory were not applicable (*cf*. Chomsky, 1959; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). At the same time, common sense models of cognition were being postulated within the wider area of clinical psychology – a prominent example is the cognitive therapy of Beck, Rush, Shaw & Emery (1979) where a principle of treatment is the logical analysis, alteration, and testing of cognitions that are deemed to be dysfunctional or maladaptive (Clark, 1995). Cognitive techniques were combined with the operant approaches that had proven utility and Cognitive Behavioral Therapy, or CBT, emerged.

As with the previous work including operant behavioral methods, wider developments in clinical psychology were adapted for use within chronic pain settings. In particular, the idea that a core problem within chronic pain had to do with problematic beliefs *about* pain seemed plausible and treatment approaches were outlined (e.g., Turk, Meichenbaum, &

Genest, 1983). Over the ensuing decades, evidence emerged that provided support for the role of thoughts and beliefs in functioning of those with chronic pain. In fact, many concepts that are now widely known within chronic pain have emerged from this common sense cognitive tradition and have been shown to be related to functioning - these include constructs such as catastrophizing, anxiety sensitivity, self-efficacy, control beliefs, illness perceptions, and motivation for change, among many others (Gatchel, Peng, Peters, Fuchs, & Turk, 2007).

Consistent with CBT more generally, treatment methods integrating cognitive change approaches, as well as operant techniques, also emerged. To date, there is good evidence that a CBT approach to chronic pain works reasonably well. For example, there are at least three meta-analyses which indicate relatively good outcomes of operant and cognitive-behavioral approaches to chronic pain (Hoffman, Papas, Chatkoff, & Kerns, 2007; Morley, Eccleston, & Williams, 1999; Ostelo, van Tulder, Vlaeyen, Linton, Morley, & Assendelft, 2005). On the other hand, the most recently performed meta-analysis pointed out several shortcomings of the extant literature and, using a more stringent and conservative meta-analytic approach in comparison to previous work, indicated that outcomes are not as good as previously suggested (Eccleston, Morley, & Williams, 2009).

Critique of Cognitive Behavioral Approaches for Chronic Pain

Although studies of CBT approaches for chronic pain provide generally supportive evidence, there are a number of areas where there is a lack of clarity or where the extant data do not provide specific support for the principles derived from the model. These limitations do not undermine CBT as a whole; however, they do highlight areas in need of focused work to improve clarity or areas where adjustments to the model may be considered.

First, CBT has become a catch-all term for a broad combination of techniques that are often applied in the absence of a clear and well integrated theoretical framework (Eccleston et al., 2009). Particular packages of CBT can include specific components that differ substantially from one treatment to another (Morley et al., 1999). Given this lack of coherence across CBT packages, it is not possible to discern individual contributions of specific techniques to specific outcomes, nor can one identify the inert components of treatment from those that are active. In short the processes by which CBT works are not clear.

Second, one of the key specific hypotheses of cognitive approaches, which is that specific cognitive change techniques are fundamental to the achievement of adaptive behavior change (Clark, 1995; Beck et al., 1979) hasn't held up under empirical scrutiny. It is not necessary, for example, to include methods directed at achieving cognitive change in order to achieve positive treatment outcomes in chronic pain (Vowles, McCracken, & Eccleston, 2007). Furthermore, the inclusion of cognitive change methods does not appear to reliably increase the effectiveness of interventions for chronic pain (Smeets, Vlaeyen, Kester, & Knottnerus, 2006). Such findings are present in treatment trials for depression and anxiety as well, where specific cognitive change techniques are not required ingredients for positive outcomes, nor does their inclusion lead to greater improvement (Hayes et al., 2006; Longmore & Worrell, 2007).

Third, the lack of a coherent theoretical model within CBT has meant that there is significant ambiguity and confusion within the model itself. It is not clear how the significant number of thoughts, beliefs, and perceptions previously identified as relevant within chronic pain settings are distinct from or serve to influence one another (Vowles, Wetherell, & Sorrell, 2009). There is, in fact, evidence of significant shared variance amongst relevant constructs (e.g., Foster, Thomas, Bishop, Dunn, & Main, 2010).

Fourth, in contrast to operant behavioral techniques, which were based on established experimental paradigms from the behavioral laboratories (Franks & Wilson, 1974; Hayes et al., 2006), the link between applied cognitive therapy interventions and basic cognitive science is weak. For example, while cognitive neuroscience has increasingly gone in the direction of imaging studies examining cortical functioning to examine cognitive processes, such as pain perception (e.g., Borsook & Becerra, 2006; Guedj, 2009), it is not clear how these studies are relevant to clinical situations or helpful in deriving interventions that will contribute to adaptive changes in behavior in those suffering from pain.

Finally, from a practical standpoint, many of the behaviors targeted for change within cognitive and behavioral treatments for chronic pain may have little relevance to current or future functioning. These behaviors include use of relaxation or distraction strategies, activity pacing, exercise, and positive thinking. At present, there is persuasive evidence from a variety of studies which indicates that these traditionally conceived “coping strategies” are only weakly related to emotional and physical functioning (see Curran, Williams, & Potts, 2009 and Vowles & McCracken, 2010 for a brief reviews). These results are striking, particularly when one considers that interventions such as training in relaxation or distraction, activity pacing, exercise, and the challenging of maladaptive cognitions are recommended, and often regarded as crucial, components of interdisciplinary treatment programmes for chronic pain (e.g., see chapters 9-11 of Main, Sullivan, & Watson, 2008). At the very least, it would seem reasonable to re-evaluate the role of these specific components within treatments for chronic pain.

In sum, there is a degree of incongruity within the literature on CBT for chronic pain. On the one hand, it offers the possibility of a more sophisticated model with regard to human cognition and there is reasonable data indicating that CBT is efficacious. On the other, there is a lack of clarity within the model with regard to ingredients and key processes and the extant data do not support some of the specific hypotheses posited, particularly with regard to the core assumption that cognitive techniques and cognitive change are necessary for improvement.

ACT and Mindfulness-Based Approaches for Chronic Pain

The recent “third wave” approaches can be viewed as adjustments and further developments of previous operant and cognitive models. In many ways, these emerging methods are more consistently aligned to operant behavior theory in that they emphasize functional analysis over description of behavior and work to identify basic processes that are common across settings and syndromal definitions (Hayes et al., 2006). In addition, they also emulate the early goals of cognitive approaches by providing a more accurate and sophisticated understanding of human language and cognition, particularly with regard to the arbitrary nature of language-based processes and the deleterious effects these processes can have on people’s lives. At their core, these approaches are about deriving a more adequate understanding of human suffering and using this understanding to directly inform treatment technologies such that treatments are ultimately more effective at decreasing suffering, as well as augmenting effective and meaningful functioning.

With regard to chronic pain, there is an inherent appeal to the idea that “acceptance” is likely to be of assistance. This idea is actually not all that new and has been around at least since the time of Fordyce (1976) and perhaps even longer (e.g., Rogers, 1946). In reality, the ACT model as applied to the problem of chronic pain is much broader and more complex than the idea that treatment is simply about acceptance of chronic pain. The term “acceptance” itself carries with it some unhelpful connotations and patients with pain may see it as the equivalent of “giving up hope” (Viane et al., 2003). What has been discussed as acceptance within early work in this area (e.g., McCracken, 1998) can now be more precisely and broadly defined as psychological flexibility, the promotion of which is the primary goal of ACT (Hayes et al., 2006). Psychological flexibility is defined as direct and open contact with present experiences on a moment to moment basis in a way that allows behavior to continue or change according to opportunities present and one’s goals and values (Hayes et al., 2006). It is also worth noting that “psychological” is used within ACT so that it not only includes private psychological experiences such as thoughts and feelings, but also explicitly includes flexibility in action regardless of whether it is private or public behavior (Hayes et al., 2006).

In essence, ACT-based treatment aims to enable pain sufferers to flexibly respond to pain, distress, and related experiences in a particular way, such that needless and ineffective struggling with these experiences decreases in frequency, options for living well with them increase, and behavior follows one’s goals and values. For example, if a person with pain was fully willing to have pain, without reservation or condition, in the service of living a fuller and more meaningful life, then that pattern of behavior would likely be an instance of psychological flexibility. Further, if one were more sensitive to moment to moment, and sometimes arbitrary, variations in urges, thoughts, feelings, and sensations, as well as the consistent presence of one's values, options for behavior in these experiences can be broad rather than narrow and less restricted by the influence of pain or other aversive experiences. These processes are the primary focus of treatment within ACT.

Within the ACT model, psychological flexibility is an overarching process that is, in itself, composed of six interrelated processes, which are examined in detail in Chapter 1 of this volume (see also Hayes et al., 2006). These six processes are briefly detailed in Table 1 as they relate to chronic pain specifically. It is important to note that each of these processes is assumed to relate to and overlap with the others. An analysis of any one, therefore, by definition includes at least a peripheral analysis of the others.

Measures

To date, several measures have been developed from the ACT model for use in chronic pain settings, which are reviewed in the following few sections. Further, there are a number of additional measures, not reviewed here, that tap into ACT processes, such as those assessing mindfulness (e.g., the Mindful Attention and Awareness Scale; Brown & Ryan, 2003) and those that are not specific to chronic pain (e.g., the Acceptance and Action Questionnaire; Bond, Hayes, Baer, Carpenter, Orcutt, Waltz, & Zettle, under review) . Chapter 8 includes a review of the wider range of measures related to acceptance and mindfulness. We examine two of these measures as these are pertinent to treatment process results we will subsequently present.

Chronic Pain Acceptance Questionnaire

Arguably the most widely used measure of ACT processes in chronic pain has been the Chronic Pain Acceptance Questionnaire (CPAQ). The original version of the CPAQ was used within an unpublished doctoral dissertation (Geiser, 1992). Work using this early version of the measure indicated that the CPAQ total score accounted for significant variance in functioning in those with chronic pain above and beyond that accounted for by pain intensity (Esteve, Ramírez-Maestre, & López-Martínez, 2007; Mason, Mathias, & Skevington, 2008; McCracken, 1998). Further research (McCracken, 1999; McCracken, Vowles, & Eccleston 2004) examined the content, internal consistency and factor structure of the instrument. Ultimately, upon further analysis, a revised 20-item scale was developed, including two subscales: Activity Engagement and Pain Willingness. The former scale reflects the extent of participation in activities explicitly with continuing pain (e.g., “I lead a full life even though I have chronic pain.”) and the latter willingness scale reflects the capacity to experience pain fully and without attempts to avoid or control it (e.g., “Before I make any serious plans, I have to get some control over my pain.” – *reverse scored*). There are numerous studies that provide support for the revised version of the CPAQ and indicate good convergent and divergent validity (see Reneman, Dijkstra, Geertzen, & Dijkstra, in press for a review).

More recent work (Vowles et al. 2008) carried out both exploratory and confirmatory analyses on two large samples and provided further support for the 20-item, two factor version described above. In a recent systematic review of the psychometric properties of a number of pain acceptance questionnaires, which judged the measures against strict psychometric criteria, the CPAQ was found to have the best overall results with positive ratings for internal consistency, construct validity and reliability (Reneman et al., in press). The CPAQ has been translated into German (Nilges, Koster, & Schmidt, 2007), Spanish (Esteve et al., 2007), Swedish (Wicksell, Olsson, & Melin, 2009) and Cantonese (Cheung et al. 2008) and also adapted for adolescent populations (McCracken, Gauntlett-Gilbert, & Eccleston, 2010).

Chronic Pain Values Inventory

For those working within the ACT model the importance of values is self-evident, however attempts at its careful measurement are in still in their infancy. The CPVI measures self reports of importance, success and the discrepancy between them across six valued life areas including family, intimate relations, friends, work, and growth or learning. Primary scores include mean success and the discrepancy scores between success and importance

(McCracken & Yang, 2006). To date, the values success score has been most often used in research. Results indicate that greater success at valued activities is associated with better concurrent and future functioning (McCracken & Yang, 2006; McCracken & Vowles, 2008) and that greater improvement in values success is associated with greater improvements in functioning over the course of treatment and particularly through a three month follow-up appointment (Vowles & McCracken, 2008).

Treatment Outcome

At present, to our knowledge, there are nine ACT-specific treatment outcome studies published in the area of chronic pain, plus a tenth examining the results of a brief experimental manipulation. There are an additional nine studies that examine primarily mindfulness-based treatment methods.

The first ACT-specific study was a small randomized controlled trial (RCT) published by Dahl, Wilson and Nilsson (2004). In this study 19 public health service employees suffering from pain and stress were enrolled in either medical treatment as usual or medical treatment as usual plus four 60-minute individual ACT sessions. At a 6 month follow-up appointment, participants who had received ACT had taken substantially fewer sick days, averaging 0.5 days (*SD* = 1.8 days), in comparison to the medical treatment as usual, who averaged 56.1 sick days (*SD* = 78.9 days). Interestingly, there were no significant differences found in pain or stress levels between the groups suggesting that these factors were not responsible for the differences between the groups or improvements within the group receiving ACT.

The UK based Bath Centre for Pain Services (BCPS) has published several treatment outcome studies involving ACT and chronic pain. Treatments offered within the BCPS are group-based and interdisciplinary, with input from clinical psychology, physical therapy, occupational therapy, and nursing/medicine. The active phase of treatment is three to four weeks with patients attending treatment five days per week for approximately 6.5 hours each day. The typical treatment day includes approximately 2.25 h of physical conditioning, 1 h of psychological methods, 30 minutes of mindfulness training, and 1 h of activity management with the balance of time devoted to skills training and health/medical education. See McCracken (2005) for an overview of treatment methods and philosophy.

The studies from this group evaluate outcomes across a range of domains. Although there has been some variation in specific measures across studies, outcome evaluation has typically included measures of physical and psychosocial disability, depression, pain-related fear, daily rest due to pain, pain-related healthcare visits, and pain intensity, as well as two measures of physical functioning, including a two-minute walking speed test and one-minute repeated sit-to-stand test.

The first outcome study published by the BCPS involved 108 consecutive completers of a three or four week program of residential treatment who were followed through a three month follow-up appointment (McCracken, Vowles, & Eccleston, 2005). Changes over the course of treatment and follow-up were evaluated relative to change observed in the same group of patients while they were waiting for treatment. Results indicated an almost uniform absence of change during the waiting phase, with the sole exception of work status, which inexplicably improved. Significant improvements in all other measures of outcome were indicated at the end of treatment and these improvements were generally maintained through follow-up. A later study using an expanded sample of 252 replicated these outcomes and also found that increases in CPAQ scores through the end of treatment and follow-up accounted for significant unique variance in improvements across measures of functioning above and beyond that accounted for by changes in pain intensity or frequency in catastrophic cognitions (Vowles et al., 2007).

A second study examined outcomes in a group of 53 highly disabled individuals requiring treatment as inpatients, meaning that these patients required assistance with self-care or mobility in order to allow them to participate in treatment (McCracken, MacKichan, & Eccleston, 2007). Results indicated statistically significant improvements across outcome measures at post treatment and follow-up. In addition, there was good evidence of clinical significance, with medium to large effect sizes observed across measures of outcome and indications of reliable change, similar in magnitude to change achieved by a separate group of patients who completed the standard residential course of treatment.

The most recent outcome study from the BCPS involved 171 treatment completers, entirely independent from the previous trials, two thirds of whom also completed a 3 month follow-up (Vowles & McCracken, 2008). The significant improvements through follow-up in outcome measures found in previous studies were replicated. Treatment effect sizes were medium or large. In addition, at follow-up, 75.4% of patients demonstrated reliable change in at least one key domain, disability, pain-related anxiety, or depression, and 61.4% showed reliable change in at least two of these domains. Process analyses suggested that improvements in acceptance of pain (CPAQ) and values based action (CPVI) were related to improvements in functioning, accounting for an average of 17% of the variance in the outcomes measured.

A Swedish group, based at the Karolinska Hospital in Stockholm, has also published several outcome studies. Two of these importantly examine ACT for use with adolescents experiencing chronic pain. The first was a case series of 14 adolescents with chronic idiopathic pain (Wicksell, Melin, & Olsson, 2007). Treatment duration averaged 14.4 weekly sessions (*SD* = 6.6) with the adolescents alone and an average of 2.4 (*SD* = 2.9) additional meetings with adolescents and parents. At the conclusion of treatment and at 3 and 6 month follow-up, significant improvements were found in functional ability, school attendance, pain intensity, pain interference and catastrophizing. The second study was an RCT involving 32 adolescents with chronic pain (Wicksell, Melin, Lekander, & Olsson, 2009). Patients were randomized to receive either ten 60 minute sessions of ACT or a non-ACT multidisciplinary treatment. Results at post treatment and at 3 and 6 month follow-up indicated significant improvements as a result of both interventions. Adolescents receiving the ACT intervention however, had greater reductions in disability, pain interference, and pain-related discomfort, with the differences in favour of ACT achieving a medium to large effect size.

This group has also examined ACT within an RCT for adults with whiplash associated disorders (Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008). Outcomes in twentyone adults were compared to a waiting list. The ACT group received ten 60-minute individual sessions. In comparison to the waitlist controls, those receiving ACT showed greater improvements in disability, life satisfactions, fear of pain, depression, and psychological flexibility through follow-ups four and seven months following treatment conclusion.

In addition to the above, Vowles et al. (2009) published the results of two pilot studies, one conducted at a university-based outpatient pain management clinic and another based at a Veterans Administration hospital in the US. The outpatient study involved eight, 90 minute group sessions and results indicated that 9 of 11 patients made at least moderate improvements in measures of emotional and physical functioning. The second study involved group sessions which were either ACT or CBT. Results indicated that 5 of 6 patients in the ACT group and 3 of 5 in the CBT group showed at least moderate improvement in measures of emotional and physical functioning.

Finally, a randomized and controlled experimental study evaluated the effects of a brief instructional set on physical test performance in a sample of 74 individuals with low back pain (Vowles et al., 2007). Participants were asked to complete a series of seven physical tasks on two occasions. In between performance of the two sets of tasks, participants were randomized to listen to one of three brief audio-taped instructional sets on how to improve performance the second time the tasks were performed. The first set instructed them to control pain (Pain Control), the second instructed them to willingly have pain and discontinue attempts to control it (Pain Acceptance), and the third set, which was intended as an inactive control, instructed them to simply repeat their previous performance (Continued Practice). Primary analyses indicated that participants receiving the Pain Acceptance instructions demonstrated greater overall improvements in functioning in comparison to the group receiving the Pain Control instructions. Descriptively, the Pain Acceptance group exhibited a 16.3% improvement in performance, the Pain Control group exhibited an 8.3% worsening in performance, and the Continued Practice group improved by 2.5%.

In parallel to the ACT literature, mindfulness outcome research has also been conducted in the area of chronic pain. The early work was pioneered by Kabat-Zinn and colleagues (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burncy, & Sellers, 1986). The first outcome research was published in 1982 and studied 51 subjects who completed ten, two hour sessions of what later became known as Mindfulness Based Stress Reduction (MBSR). At the end of treatment, nearly two thirds showed 33% or more pain reduction; three quarters showed 33% or more reduction in mood disturbance, while over half showed a third or more reduction in psychiatric symptoms (Kabat-Zinn, 1982). In 1985, 90 subjects followed the same programme and reported significant improvements in pain, negative body image, interference with activity, anxiety, depression, medication use, and self-esteem. Interestingly, more then 70% of respondents were still practising mindfulness up to 15 months after the initial training period (Kabat-Zinn et al., 1985).

More recent mindfulness research has been undertaken in different areas of chronic pain with separate studies examining MBSR in rheumatoid arthritis (Pradhan et al., 2007), back pain in older adults (Morone, Greco, & Weiner, 2008), women with fibromyalgia (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Sephton et al., 2007), and the loss associated with chronic pain (Sagula & Rice, 2004). Each of these studies has indicated positive treatment outcomes, even up through long-term follow-ups of three or four years (Kabat-Zinn et al., 1986; Grossman et al., 2007).

The evidence presented above suggests that pain sufferers can achieve significant reductions across many areas from treatment based on ACT or mindfulness approaches. Those studies that employ control conditions tend to show that ACT or mindfulness is at least equal, and most often superior, to control conditions. Follow up data are generally promising, although results from longer follow-up intervals are needed, particularly from the ACT-based treatments. Of course the studies above are also notable in the ways they diverge. The length of treatment varies (from just 4 to over 90 hours), as do characteristics of the sample (e.g. adolescent and older adult), the setting (e.g. individual, group, outpatient, residential, inpatient), sample sizes and the measures used. This wide spread applicability perhaps is not surprising as the processes targeted in ACT and mindfulness appear relevant not just in pain sufferers but in humans beings more generally. There is a clear need for more work, including more adequately powered and controlled trials, and assessment of outcomes over a longer term, in the case of ACT trials particularly.

Clinical Issues

Thus far, this chapter has discussed subject matter fairly common within reviews and book chapters. It has reviewed the history contributing to contemporary practices and developments, discussed process and measurement issues, and reviewed treatment outcome literature. Within this chapter, however, we also want to highlight some key clinical issues of relevance to the *practice* of ACT. First is a section on clinical stance, or the way that one conducts oneself within the clinical interaction. Second, we discuss the history that pain patients often bring with them to treatment as that may allow for a better understanding of the often problematic patterns of behavior that they exhibit.

Therapeutic Stance

There is a risk that therapists, who are coming to ACT for the first time, may focus on metaphors and experiential exercises with the assumption that a faithful replication of these is all that is required to “do” ACT. While it is understandable that novice therapists might begin their ACT careers strictly following more rigid protocols, it should be remembered this is only a starting point and can be improved over the longer term. Doing ACT is not about delivering material in a rote fashion, but about acting with flexibility and an ability to adapt material, moment to moment, as best suits the situations we and our patients find ourselves in.

In a nutshell, ACT is primarily concerned with increasing psychological flexibility and naturally the therapist’s role is to support and encourage this both inside and outside of the therapeutic encounter. ACT tends not to find terms like “psychopathology” useful, nor to demarcate hard boundaries between “normal” and “abnormal” behavior. Instead, the model suggests that psychological inflexibility stems from ordinary language processes which are present for all of us - both therapist and client. The ACT therapist thinks about behavior along a continuum from “adaptive” to “not adaptive”, “functional” to “dysfunctional”, or “workable” to “unworkable”. ACT invites the therapist not to simply apply the model, and its processes, to the behavior of the person or people sitting opposite them in the therapy room, but to apply it to their own behavior. Indeed a challenging job for the ACT therapist is to keep track of the clients’ processes, and their own, and the dynamic interaction between them. A key task for the therapist is identical to the key objective of treatment for the client: to be aware of the unfolding influences on their own behavior and to have the flexibility within this to allow for action in the directions of values and goals.

There are many ways a therapist’s own psychological inflexibility might unhelpfully emerge in their behavior and influence client behavior. For example, it is sometimes the case that therapists help problem-solve difficulties their clients are recounting, predicting or experiencing in the session. In trying to help we might provide information, impart advice, or we might try and aid understanding. We may comfort our clients or reassure them. We may do something to lessen our clients’ suffering – we may even do it to lessen our own discomfort at witnessing the suffering of another human being. Whilst these reactions may be normal, natural and automatic – whilst they may seem caring and kind for clients and therapist alike – it is possible that a better way to encourage psychological flexibility in these moments, sometimes, is to allow our clients to stay with this discomfort and provide a space to allow them a fuller, more willing experiences of the situations with which they struggle and suffer. This possibility may be particularly true when the presenting problems are severe or complex; in such cases, simple advice may not be particularly useful. Much of the reflective listening techniques that are so key in a number of approaches are consistent with this purpose in that the therapist’s primary job is to attempt to understand, communicate the desire to understand, and to show understanding of what the client is going through (e.g., Rogers, 1946; Miller & Rollnick, 2002; Tsai, Kohlenberg, Kanter, Kohlenberg, Follette, & Callaghan, 2008).

In addition, the therapist might notice the need to be “right” and the behavior pattern this can contribute to - maybe to defend one’s position, lecture about what is the correct thing to do, or convince or coerce the patient into a certain course of action. It may be helpful for the therapist to determine what purpose is being served by this behavior and whether it directly contributes for more free, functional, and effective living in the patient. At times it may; many times it may not.

The Pain Patient’s History

It is worth taking a moment to review some of the different scenarios that may have played out on our patient’s journey in the time before they present to treatment, as this may allow for a better understanding of how current patterns of behavior, both helpful and unhelpful, have emerged. These scenarios seem rather common across different patients in our experience, although not all patients will have had all, or any, of these experiences.

When pain began, perhaps the patient’s mind told them that their general practitioner or family physician had the answer or could make a quick referral to a colleague who did. Perhaps friends told the patient their stories of similar problems and how they were resolved swiftly. Maybe professionals at this time spoke confidently that they had seen lots of people in similar situations for whom one particular procedure or another had removed the pain and solved the problem.

Perhaps time moved on and the pain didn't lessen or not for as long as promised, or perhaps relief only came at a price that was paid in terms of lost work, relationships, independence, concentration, mood disruptions, later increases in pain, or dependence on medication or other substances. In spite of these costs, perhaps the patient’s mind maintained that the answer was out there and the patient needed to work harder, demand more, see another professional, or invest in some additional intervention to find the answer. Perhaps these too failed and perhaps desperation to save a life that was falling apart really set in.

Maybe a medical test showed something abnormal but the patient was told by the professional interpreting the test that nothing that can be done. Maybe, as is more often the case, all tests were negative and the patient was told that there was “nothing wrong.” Even when a patient is given a diagnosis, or an explanation for their condition, they might be told in the next breath that there was nothing to be done. What if the patient heard, was told, or feared that their pain was believed to be psychological, a mental problem, as in “its all in your head”? What patterns of behavior might these experiences lead to?

People suffering with pain often have many years of experience where they have been not heard, not believed and not helped. When we become caught up in our own frustration towards our clients inability to move forward and act from the stance of frustration, perhaps we can further impede progress. Perhaps we can notice our own feelings of inadequacy, about how we don't know what to do and can feel desperate ourselves, about how we worry we are poor therapists. Perhaps we can use this opportunity to model psychological flexibility ourselves and demonstrate acceptance and willingness to have these experiences as we move in directions that we deem to have meaning and value, which may, in turn, help our clients to do this as well.

Summary

Chronic pain occurs frequently and can tax the lives of sufferers and their families along with the resources of those professionals who care for them. Despite significant attention and investment from healthcare professionals, interventions and medications often are not adequate to the challenge of pain.

The psychological therapies have historically promoted functional improvement as an alternative to that of symptom reduction. While ACT builds on the history of both behavioural and cognitive traditions, it encompasses a number of changes in theory and technique, some obvious and some more subtle. At its core, ACT promotes the notion of psychological flexibility - an openness to private experiences and commitment to maintaining or changing behaviour depending on what successfully moves one in the direction of values and goals. At present, a number of well-developed assessment measures have been developed and at least nine treatment trials have examined the effectiveness of treatment with positive results. The ideas and advances offered within the ACT model suggest ways of re-orientating ourselves to chronic pain generally, and perhaps more importantly, towards the work that we do therapeutically alongside our patients.

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Table 1: ACT processes as applied to the experience of chronic pain

ACT Process	Psychological Inflexibility	Psychological Flexibility
Experiential Avoidance/ Acceptance (Unwillingness / Willingness)	Pain, Fatigue, Other challenging body sensations, Difficult thoughts, Traumatic memories, Aversive emotions Are met with avoidance and struggling for control not by their mere presence But by a unwillingness to experience them, or by unworkable attempts to control, escape or avoid them.	Pain, Fatigue, Other challenging body sensations, Difficult thoughts, Traumatic memories, Aversive emotions Are still present And the person is willing to experience them, in this moment and in the next and so on, in the pursuit of their values and goals.
Fusion / Defusion	Experience is dominated by thoughts, images, memories and other responses that might include: Predictions Evaluations Reasons Rules Have to's, Musts, and Can'ts	Predictions Evaluations Reasons Rules Have to's Musts and Can'ts “I am a failure” “I am sick” “I am a patient” “I must struggle on” “I am a perfectionist” “I always push through Still occur, but the powerful linkage between these thoughts and specific actions are loosened and now there is the possibility of choices and options.
Self as content / Self as context	Actions are determined by stories, evaluations, and judgements referring to the self such as: “I am a failure” “I am sick” “I am a patient” “I must struggle on” “I am a perfectionist” “I always push through”	
Dominance of Past or Future / Present moment awareness	Actions and choices are determined by memories of the past and fears of the future.	The mind still wanders to the past and future, but the individual has the ability to notice this, to track fluidly with thoughts in different times, and bring awareness back to behaviour in the present moment.

(*table continues*)

Table 1 (con't)

Lack of Values / Clear Values	There is a lack of clarity of what is most important personally. Behaviour is instead dominated by urges to reduce or remove pain, or the experience of other painful private experiences.	The individual has a clear sense of what gives most meaning to their life (their values) engages in behaviours that serves them.
Inaction or "stubborn" persistence / Committed Action	Actions have an impulsive or nonpersistent quality or persistently failing quality.	Actions include flexible persistence, choosing and rechoosing a course of action for positive non-avoidant purposes. Changing course is possible when a particular course is not working.