

# A Review of the Common Factors Model and Its Application in Pain Management

## Review Article

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## Abstract

Pain management providers in the field tend to be eclectic and flexible in their choice of modalities and attempt different treatments until they find something that suits the patient, a phenomenon known as the “Goldilocks effect” which derives from the children’s story *The Story of the Three Bears*. Research studies in pain management have concluded that the diverse treatment interventions currently available all appear to be equivocally effective. In the past, the practice of psychotherapy confronted a similar issue-- research studies concluded that all psychotherapies were effective which led to a verdict later termed the “Dodo bird effect” referencing a scene from *Alice’s Adventures in Wonderland*. This conclusion led to the distinction of two possible mechanisms of psychotherapeutic change, specific versus non-specific effects, also known as “common factors.” The purpose of the current review is to outline the applicability of the common factors model to pain management and provide supportive evidence from existing research.

**Keywords:** Chronic pain; Pain management; Common factors; Dodo bird effect

## Introduction

Chronic pain is a pervasive problem that affects about 20% of adults globally, and continues to grow annually by 10% with newly diagnosed patients [1]. In the past two decades, the field of pain management has witnessed advances in the understanding of the mechanisms of pain and the application and practice of pharmacological, interventional, physical, psychological, rehabilitative, and alternative modalities in the treatment of pain. According to the International Association for the Study of Pain, pain is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of tissue damage, or both” [2]. This definition is the culmination of centuries of ideas and work that have explored the concept of pain. Pain can be classified as acute pain (last a moment to weeks or longer, and is typically associated with tissue injury or disease) and chronic, or persistent, pain (pain signals remain active in the nervous system beyond the normal time of healing, and does not have a simple or immediate treatment).

Traditional, “bio-medical” methods used to treat acute pain have proven unacceptable in the treatment of chronic, non-cancer pain. Bio-medical methods tend to utilize technology as its diagnostic strategy, are short-term in time span, assess the cause, and define pain as a symptom which separates the body and mind relationship. Single modalities of treatment, whether they are pharmacological, interventional, physical, psychological, rehabilitative, or an alternative modality, rarely have been found to be sufficient in the treatment of chronic pain [3]. Thus, the rules about treating chronic pain have changed in the medical field in the past two decades. Governing agencies have suggested that if pain persists beyond three to six months, or the normal time of healing, then the patient should be approached using

the “bio-psycho-social” method. The bio-psycho-social method suggests that the pain provider not only identify bio-medical factors, but also encourages them to focus on the psychological and social elements (including spiritual) of the individual which are believed to be responsible for the persistence of the pain [4]. Bio-psycho-social methods tend to utilize comprehensive psychosocial diagnostic strategies, are long-term in time span, assess the effects of pain, and define pain as a complex problem which acknowledges the need to treat the whole person, mind, body, and spirit.

Effective pain management has been deemed a human right [5,6], but some chronic pain patients perceive that to mean they are entitled to opioid analgesics for prolonged pain control [7]. In response to these expectations, physicians may feel pressured to continue prescribing opioids-therby reinforcing the patient’s beliefs and reliance on medication [8]. This has contributed to a dramatic rise in opioid analgesic misuse and a death from prescription drug overdose [9], and was identified in 2013 by the Centers for Disease Control and Prevention [10] as a “public health epidemic.” Unfortunately, the medical education system lags behind with regards to teaching future practitioners the difference between treating acute versus chronic, non-cancer pain [11,12]. Providers may consider several factors when choosing a treatment for pain, including pain-related, individual-related, and environment factors. Thus, providers in the field of pain management tend to be eclectic and flexible in their choice of treatment methods and try different treatments until they find something that suits the patient, a phenomenon known as the “Goldilocks effect” which derives from the children’s story *The Story of the Three Bears* [13]. As a result, research has shown that the overall treatment effectiveness for chronic pain remains inconsistent and fairly poor.

## Effectiveness of Treatments

A general conclusion about the treatment of chronic, non-cancer pain is that the results presented are disheartening. Of all the treatment modalities delineated below, the best evidence for pain reduction averages around 30% in about half of treated patients [3]. In other words, one could only expect for a person suffering from chronic, non-cancer pain reporting a “9” on the Numeric Rating Scale (with “0” meaning no pain, “1 to 3” mild pain, “4 to 6” moderate pain, and “7 to 10” severe pain) to see a three point reduction in their severity score half of the time. Clinical trials have indicated the comparable efficacy of numerous diverse treatment interventions, such as acupuncture, behavioral therapy, exercise therapy, and non-steroidal anti-inflammatory medications, for chronic, non-cancer pain [14]. Overall, the current evidence provides little support for choosing one approach over another. The following is a review of the effectiveness of treatments for chronic, non-cancer pain. An appraisal of treatments for specific diagnoses is beyond the scope of this examination.

### Pharmacological treatments

Medication management has continued to be the mainstay of chronic pain treatment over the past two decades. The classes of drugs most commonly used for the treatment of chronic, non-cancer pain are opioids, non-steroidal anti-inflammatory drugs (NSAIDs), antidepressants, anticonvulsants, muscle relaxants, and topical agents. The effectiveness of opioids has been evaluated for the treatment of various forms of chronic, non-cancer pain using a meta-analysis. The study strongly concluded that opioids result in small improvements in pain severity and function compared with placebo [15]. The efficacy of NSAIDs has been established for some patients with pain (i.e., arthritis and back), but has not been investigated in others (i.e. neuropathic pain and fibromyalgia) [16,17]. Meta-analyses have also suggested that antidepressants result in moderate symptom reduction and are superior to placebo for the treatment of chronic, non-cancer pain [18]. The best evidence supports the efficacy of anticonvulsant drugs for the treatment of chronic, non-cancer pain, specifically gabapentin and pregabalin and carbamazepine [19-21]. Muscle relaxants are typically recommended as adjuvant therapy and seem to have a restricted role in the treatment of chronic, non-cancer pain [22,23]. Topical agents have also been shown to effectively reduce chronic pain in comparison to placebo [24].

### Interventional treatments

Interventional pain medicine involves the application of various techniques, such as injections, surgery, and implantable devices that can be used for diagnostics or pain relief. Epidural steroid and facet injections are the most commonly used in the U.S. [25]. However, the evidence for epidural steroid injection use as long-term monotherapy is not clear [26,27]. Facet injections have some evidence for use with facet joint pain, but not clearly effective for other syndromes [28,29]. In terms of surgery, evidence has rated lumbar fusion as fair and both discectomy and laminectomy as good [30], with the proviso that significant pain can persist even after spinal surgery [31,32]. Several meta-analyses have evaluated the efficacy of spinal cord stimulation and concluded that there was moderate evidence for improvement in pain [33-36]. A more

recent systematic review evaluated the efficacy of epidural and intrathecal drug delivery systems, and determined that there was a moderate reduction in pain but the long-term effectiveness remains unclear [37].

### Physical medicine and rehabilitation approaches

Evidence suggests that exercise can effectively decrease pain and improve function, but no conclusions can be made about exercise type [38]. Physical medicine approaches are commonly included as components of interdisciplinary pain rehabilitation programs. Interdisciplinary pain rehabilitation programs are the embodiment of the bio-psycho-social model of care for patients with chronic pain [39]. It has long been recognized that the complexities of chronic pain require the collaborative expertise from multiple disciplines (although the professional staff may vary from one practice setting to another), including pain specialty anesthesiologists, osteopathic physicians, physiatrists, psychologists, pharmacists, and registered nurses. The patient is also considered an integral member of the team, and is responsible for self-management which may include the use of heat/ice, stretching, walking, repositioning, etc. The reduction of pain after treatment at an interdisciplinary pain rehabilitation program has been reported to be significant [40-42].

### Psychological approaches

Psychological treatment as a whole results in modest improvements in pain and physical and emotional functioning, but there is insufficient evidence to recommend one therapeutic approach, such as behavioral therapy, cognitive-behavioral therapy, psychodynamic therapy, stress management, emotional disclosure, biofeedback, and hypnosis, over another [41-46]. Interestingly, the modest reductions in pain severity witnessed with psychological interventions were similar to those noted with pharmacological, interventional, physical, and rehabilitative approaches [47].

### Complementary & Alternative approaches

Complementary and Alternative Medicine (CAM) is a group of medical and health care systems, practices, and products which can be categorized into four general categories: mind-body medicine (e.g., biofeedback, hypnosis, yoga), natural-biological based (e.g., aromatherapy and herbs), manipulation-body based (e.g., chiropractor, massage, spinal manipulation), and energy medicine (e.g., acupuncture and healing touch). There is promising scientific evidence to support the use of CAM for non-cancer pain conditions, such as low back pain (e.g. massage, spinal manipulation, progressive relaxation, and yoga), arthritis (e.g. acupuncture), and headaches (e.g. acupuncture and spinal manipulation); and limited support for neck pain (e.g. acupuncture and spinal manipulation) (National Center for Complementary & Alternative Medicine, 2014) [48].

The practice of psychotherapy confronted a similar issue, deciding which approach to choose over another, in the past. The field of pain management may be able to glean insight from the psychological research literature in “common factors.” The purpose of the current review is to outline the applicability of the common factors model to pain management and provide supportive evidence from existing research.

### Common Factors Model

References to the concept of “common factors” in psychotherapy began as early as 1936 [49]. At that time, research studies were concluding that all psychotherapies were effective and “all must have prizes,” a verdict later termed the “Dodo bird effect” which references a scene from *Alice’s Adventures in Wonderland* [50]. It wasn’t until 1952 when Eysenck [51] announced his refutation, psychotherapy did not lead to improved patient outcomes, that research into the efficacy of psychotherapy witnessed resurgence. It was then when discussions about common factors began to appear in psychology textbooks and manuscripts. Soon thereafter, several meta-analyses have illustrated the absolute efficacy of psychotherapy [50,52-54]. Two important findings have been noted from those analyses, 1) that improved research methods did not increase the effects found and 2) that effect sizes were comparable across all treatments.

These conclusions led to the distinction of two possible mechanisms of psychotherapeutic change, specific versus non-

specific effects. Specific effects were associated with unique interventions to certain therapy approaches, while non-specific effects were linked with contextual factors of the clinical encounter (Figure 1). Evidence from systematic reviews of diverse psychotherapy interventions indicate that factors common across therapies contribute more to treatment outcomes than effects associated with specific technical interventions [55,56]. Specific groupings and examples of these “common factors” were later categorized into five areas, including change processes, therapist qualities, relationship elements, treatment structures, and client characteristics. Meta-analytic studies then summarized psychotherapy outcome research and reduced the factors into four areas, including client factors (explaining 40% of the variance in outcomes), therapeutic relationship factors (30%), expectancy/placebo/hope (15%), and techniques/models (15%) [57,58]. This research later inspired a book on common factors theory titled *The Great Psychotherapy Debate* [56]. It concluded that non-specific effects were responsible for more than four times the amount of variance in treatment outcomes across various interventions.

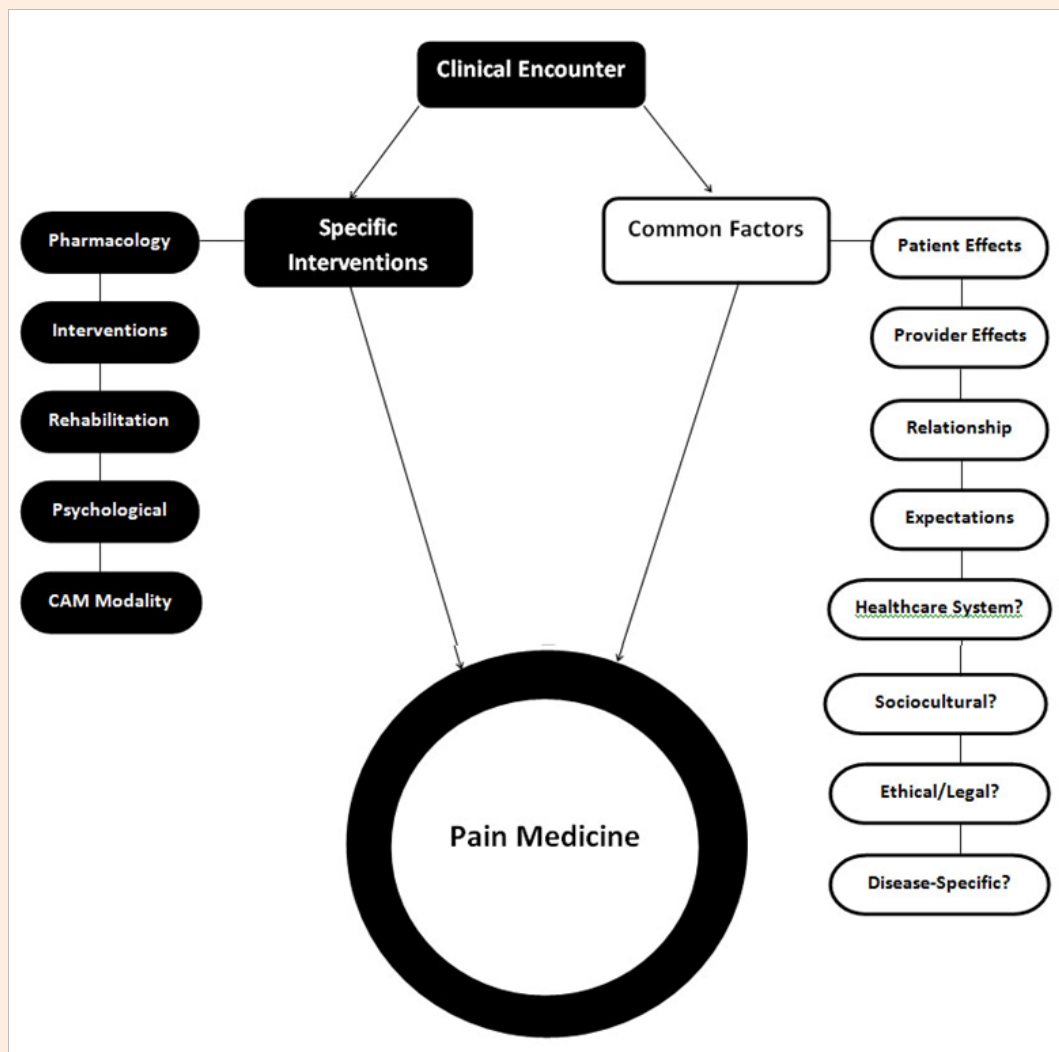


Figure 1: Common Factors Model in Pain Management.

### Common Factors in Pain Management

A common factor speaks to pain management being an art form in addition to a science. From a psychotherapy perspective, specific interventions, such as techniques/models discussed previously, will not be fully effective without the contribution from the other common factors. The following is a review of the evaluative evidence (including theoretical and literature reviews)

indicating that factors common across all therapies, such as patient factors, therapeutic relationship factors, and expectancy/placebo/hope, may also be responsible for general effects in pain management (Tables 1-3). English-language articles and books were identified through the Google Scholar database when searched for approximately the last thirty years. Many of the themes under each common factor put forth had overlapping content and thus were parceled by the dominant theme.

**Table 1:** Patient Factors Research in Pain Management.

Theme Author (Year); Title; Journal	Sample	Results
Remission Carragee, Alamin, Miller, et al. (2005) Discographic, MRI and psychosocial determinants of low back pain disability... The Spine Journal	100 subjects with mild persistent low back pain	Likelihood of a sustained remission linked to occupation; neurophysiology; and psychometric profiles at baseline.
Inner Strength & Resiliency Rudich, Lerman, Gurevich, et al. (2008) Patients' self-criticism is a stronger predictor of physician's evaluation of... Journal of Pain	64 patients with chronic pain	Patients' self-criticism emerged as a predictor of physicians' pessimism regarding outcome.
Sturgeon & Zautra (2010) Resilience: a new paradigm for adaptation to chronic pain Current Pain and Headache Report	Theoretical Review	Resilience can illuminate the traits and mechanisms underlying the sustainability of a good life and recovery from chronic pain.
West, Stewart, Foster, et al. (2012) The meaning of resilience to persons living with chronic pain: an interpretive... Journal of Clinical Nursing	10 individuals with chronic pain with purposive sampling and in-depth interviewing	Resilient individuals with chronic pain recognize the value of remaining positive, accepting help, and learn to live with pain.
Goal Directedness & Purpose Heck (1988) The effect of purposeful activity on pain tolerance American Journal Occupational Therapy	30 normal college-age Students with electrically induced pain	Subjects tolerated pain significantly longer while performing the activity designated as purposeful.
Gustin, Burke, Peck, et al. (2015) Pain and personality: Do individuals with different forms of chronic pain exhibit a... Pain Practice	32 females with chronic orofacial pain matched with 37 healthy females	Pain scores higher for harm avoidance and lower in self-directedness-cluster c personality associated with pain
Motivation Jensen, Nielson, & Kerns (2003) Toward the development of a motivational model of pain self-management Journal of Pain	Theoretical Review	Adaptive management of chronic pain depends on how patients choose to cope with pain and its impact. Patient motivation is an important factor in determining how well patients learn to manage pain.
Personal Agency & Sense of Control Jensen & Karoly (1991) Control beliefs, coping efforts, and adjustment to chronic pain Journal Consulting and Clinical Psychology	118 patients' adaptation to chronic pain	Control appraisals were related to psychological functioning. Control appraisals yielded a positive relation to activity level.
Fortuitous events & By Chance Crisson & Keefe (1988) The relationship of locus of control to pain coping strategies and psychological... Pain	62 chronic pain patients	Patients high on chance locus of control reported feeling helpless to deal effectively with their pain problem.

<p>Social Support Jamison &amp; Virts (1990) The influence of family support on chronic pain Behavior Research and Therapy</p>	<p>181 chronic pain patients whose family support influenced treatment outcome</p>	<p>Perceived support is an important factor in the rehabilitation of chronic pain patients.</p>
<p>MacDonald &amp; Leary (2005) Why does social exclusion hurt? The relationship between social and physical pain Psychological Bulletin</p>	<p>Theoretical Review</p>	<p>Social exclusion is experienced as painful because reactions to rejection are mediated by aspects of the physical pain system.</p>
<p>Romano, Jensen, Turner, et al. (2000) Chronic pain patient-partner interactions: Further support for a behavioral model of chronic pain Behavior Therapy</p>	<p>121 patients with chronic pain and their partners</p>	<p>Partner solicitous and negative behaviors were associated significantly with the rate of patient pain behaviors.</p>
<p>Faith Büssing, Michalsen, Balzat, et al., (2009) Are spirituality and religiosity resources for patients with chronic pain conditions? Pain</p>	<p>580 patients with chronic pain conditions</p>	<p>Patients relied on external disease control and internal powers and virtues, while intrinsic religiosity or reappraisal were valued moderately; and spiritual quest orientation was of minor relevance.</p>
<p>Dezutter, Kryszynska, &amp; Corveleyn (2011) Religious factors in pain management: A psychological perspective Journal Anesthesiology Clinical Research</p>	<p>Theoretical Review</p>	<p>The God image and prayer may have an impact on chronic pain and provide coping.</p>
<p>Glover-Graf, Marini, Baker, et al. (2007) Religious and spiritual beliefs and practices of persons with chronic pain Rehabilitation Counseling</p>	<p>95 persons receiving treatment for chronic pain</p>	<p>Majority perceived God or a Spiritual Power as helping them cope with pain and as a source of happiness, connection, and meaning in life.</p>
<p>Lyvers, Barling, &amp; Harding-Clark (2006) Effect of belief in "psychic healing" on self-reported pain in chronic pain... Journal of Psychosomatic Research</p>	<p>20 volunteers suffering from chronic pain</p>	<p>Belief in psychic healing was significantly correlated with improvement in pain ratings.</p>
<p>Risdon, Eccleston, Crombez, et al., (2003) How can we learn to live with pain? A Q-methodological analysis of the diverse... Social Science and Medicine</p>	<p>30 participants</p>	<p>Eight factors of accepting chronic pain were derived, with spiritual strength being one.</p>
<p>Life Experiences Affleck, Tennen, Urrows, et al., (1994) Person and contextual features of daily stress reactivity: individual differences in... Journal Personality and Social Psychology</p>	<p>74 individuals with rheumatoid arthritis</p>	<p>Those with a recent history of major life stressors showed a greater positive relation of events with next-day pain.</p>
<p>De Benedittis &amp; Lorenzetti (1992) The role of stressful life events in the persistence of primary headache: major events vs. daily hassle Pain</p>	<p>83 chronic headache patients</p>	<p>It was concluded that daily hassles were significantly associated with the persistence of headache and might be a better life event approach to chronic headache than major stressful events.</p>
<p>Strengths &amp; Abilities Albrecht &amp; Devlieger (1999) The disability paradox: high quality of life against all odds Social Science and Medicine</p>	<p>153 semi-structured interviews with persons with disabilities</p>	<p>Of respondents, 54% with moderate to serious disabilities reported having an excellent or good quality of life confirming the existence of the disability paradox.</p>

Gerstle, All, & Wallace (2001) Quality of life and chronic nonmalignant pain Pain Management Nursing	Adult patients with chronic pain	Results revealed that a higher quality of life was associated with being older, female, and employed, whereas a lower quality of life was associated with low income, higher treatment costs, and a lack of workmen's compensation insurance.
Jensen, Turner, & Romano (1994) Correlates of improvement in multidisciplinary treatment of chronic... Journal Consulting and Clinical Psychology	94 chronic pain patients	Improved functioning and decreased health care use were associated with changes in both beliefs and cognitive coping strategies.
Readiness to Change Glenn & Burns (2003) Pain self-management in the process and outcome of multidisciplinary treatment... Journal of Behavioral Medicine	65 chronic pain patients in multidisciplinary treatment programs	Results showed pre-contemplation, contemplation, and action attitudes predicted greater improved outcomes
Jensen, Nielson, Turner, et al., (2004) Changes in readiness to self-manage pain are associated with improvement in multidisciplinary pain treatment... Pain	2 different samples of patients with chronic pain	Readiness increased from pre- to post-treatment and follow-up; changes were associated with changes in use of coping strategies; and increases in readiness associated with improvement in multidisciplinary pain treatment.

**Table 2:** Therapeutic Relationship Factors Research in Pain Management.

Theme Author (Year); Title; Journal	Sample	Results
Empathy Cohen, Quintner, Buchanan, et al., (2011) Stigmatization of patients with chronic pain: The extinction of empathy Pain	Theoretical Review	The extinction of empathy can overwhelm professionals, allowing the entry of negative community stereotypes of chronic pain sufferers and add to their stigmatization.
Drwecki, Moore, Ward, et al., (2011) Reducing racial disparities in pain treatment: The role of empathy and perspective-taking Pain	Undergraduates (Experiments 1 and 2) and nursing professionals (Experiment 3)	Empathy plays a crucial role in racial pain treatment disparities as one likely cause and an important means for reducing racial disparities in pain treatment.
Tait (2008) Empathy: Necessary for effective pain management? Current Pain and Headache Reports	Literature Review	Literature supports the clinical value of provider empathy, but little research has explicitly examined empathy in the treatment of pain.
Warmth Di Blasi, Harkness, Ernst, et al., (2001) Influence of context effects on health outcomes: A systematic review The Lancet	Literature Review	Physicians who adopt a warm, friendly, and reassuring manner are more effective than those who keep consultations formal and do not offer reassurance.
Respect Anderson (1996) A reflection on client-professional collaboration... Family, Systems, & Health	Theoretical Review	Hearing involves showing respect and regarding what the patients says as worth hearing.
Hartz, Noyes, Bentler, et al. (2000) Unexplained symptoms in primary care: Perspectives of doctors and patients General Hospital Psychiatry	439 patients and 280 primary care physicians	Patients perceived their physicians as caring a lot about their unexplained symptoms when they showed respect for what they said.

Haywood, Bediako, Lanzkron, et al. (2014) An unequal burden: Poor patient-provider communication and sickle cell... Patient Education and Counseling	African-American adult samples with and without sickle cell disease (SCD)	The SCD sample was more likely to report poor communication: listening; showing respect; and spending enough time.
Upshur, Bacigalupe, & Luckmann (2010) "They don't want anything to do with you": Patient views of primary care... Pain Medicine	72 adult patients forming 17 patient focus groups	More satisfaction with providers when they don't feel disrespected and distrusted.
Genuineness Brown (2008) The lived experience of chronic pain: Evidence of people's voices Chronic Pain	Theoretical Review	Patient suffering may be in part from the neglect and refusal to acknowledge the genuineness of their pain.
Fenderson (1984) Opportunities for psychologists in disability research American Psychologist	Theoretical Review	Research contributions benefit disabled citizens by looking at the helping relationship, including empathic accuracy, non-possessive warmth, and genuineness.
Martel, Thibault, & Sullivan (2011) Judgments about pain intensity and pain genuineness: The role of pain behavior... Journal of Pain	90 observers of video depictions of chronic pain patients	Observers rely less on gender stereotypes in favor of detailed behavioral information to judge genuineness.
Acceptance McCracken, Carson, Eccleston, et al. (2004) Acceptance and change in the context of chronic pain Pain	Theoretical Review	Reframe treatment of chronic pain as a problem with acceptance and change.
Shutty, DeGood, & Tuttle (1990) Chronic pain patients' beliefs about their pain and treatment outcomes Archives Physical Medicine & Rehab	100 outpatients viewed a 15-minute videotape detailing conservative approaches to pain management	The extent of acceptance of the videotape content was associated with lower pain ratings, increased ratings of physical ability, and higher treatment satisfaction.
Viane, Crombez, Eccleston, et al. (2003) Acceptance of pain is an independent predictor of mental well-being in patients with chronic pain: Empirical evidence... Pain	Study 1: 120 patients in tertiary care; Study 2: 66 patients from group for fibromyalgia	Acceptance of chronic pain is best conceived of as the shift away from pain to non-pain aspects of life, and the shift away from a search for a cure with an acknowledgement that pain may not change.
Encouragement & Instruction Cosio & Lin (2013) Effects of a Pain Education Program for Veterans with Chronic, Non-cancer Pain... Journal of Pain and Palliative Care Pharmacotherapy	88 veterans who participate in pain education program	Education had significant impact on pain intensity, stages of readiness, experience of pain, and depression.
Egbert, Battit, Welch, et al. (1964) Reduction of postoperative pain by encouragement and instruction of... New England Journal of Medicine	97 patients after elective intra-abdominal operations	Determined the effects of instruction, suggestion, and encouragement upon the severity of postoperative pain.
Geisser & Roth (1998) Knowledge of and agreement with chronic pain diagnosis: relation to... Journal of Occupational Rehabilitation	169 individuals with musculoskeletal pain problems	Educating patients regarding their diagnosis and the origin of their pain may be an important component of pain treatment.

<p>McCracken, Evon, &amp; Karapas (2002) Satisfaction with treatment for chronic pain in a specialty service: preliminary... European Journal of Pain</p>	<p>62 adults seeking treatment for pain at a community-based, specialty clinic</p>	<p>Satisfy patients with quality care in numerous ways, including education, instruction, and encouragement.</p>
<p>Moseley (2002) Combined physiotherapy and education is efficacious for chronic low back pain... Australian Journal of Physiotherapy</p>	<p>57 chronic low back pain patients</p>	<p>Combined physiotherapy and education produces symptomatic and functional change in moderately disabled chronic low back pain patients.</p>
<p>Communication Dorflinger, Kerns, &amp; Auerbach (2013) Providers' roles in enhancing patients' adherence to pain self management Translational Behavioral Medicine</p>	<p>Literature Review</p>	<p>Self management is influenced in part by the patient-provider communication process-includes empathic discussion of barriers and motivation enhancement</p>
<p>Kenny (2004) Constructions of chronic pain in doctor-patient relationships: Bridging the communication chasm Patient Education and Counseling</p>	<p>20 chronic pain patients and the accounts of 22 pain specialists</p>	<p>The implicit dialogue of the chronic pain patient was based on biogenic theory while for doctors was underpinned by psychogenic theory.</p>
<p>Shaw, Main, &amp; Johnston (2011) Addressing occupational factors in the management of low back pain: Implications for physical therapist Physical Therapy</p>	<p>Literature Review</p>	<p>Encouraging effective communication and developing clients' ability to resolve obstacles to returning to work improves pain outcomes</p>
<p>Street, Makoul, Arora, et al. (2009) How does communication heal? Pathways linking clinician-patient... Patient Education and Counseling</p>	<p>Research Agenda Proposal</p>	<p>Seven pathways connecting communication to health outcomes are outlined.</p>
<p>Patient-Provider Relationship Bergman, Matthias, Coffing, et al. (2013) Contrasting tensions between patients and PCPs in chronic pain management: A qualitative study Pain Medicine</p>	<p>14 PCPs and 26 patients &gt;6 opioid prescriptions prior year on panel</p>	<p>Three notable tensions discovered: 1) role of discussing pain; 2) acknowledgement of pain; 3) recognition of patient individuality</p>
<p>Farin, Gramm, &amp; Schmidt (2012) The patient-physician relationship in patients with chronic low back pain as... Journal of Behavioral Medicine</p>	<p>688 low back patients</p>	<p>Patient-physician relationship is significantly associated with the outcome.</p>
<p>Ferreira, Ferreira, Maher, et al. (2013) The therapeutic alliance between clinicians and patients predicts Physical Therapy</p>	<p>182 patients with chronic LBP</p>	<p>Therapeutic alliance ratings between physical therapists and patients are associated with improvements of outcomes.</p>
<p>Hinchey &amp; Jackson (2010) A cohort study assessing difficult patient encounters in a walk-in primary care... Journal General Internal Medicine</p>	<p>750 adults presenting to primary care with physical symptoms</p>	<p>18% were identified as difficult; had more the five symptoms, had recent stress, and had depression or anxiety.</p>
<p>Vowles &amp; Thompson (2012) The patient-provider relationship in chronic pain Current Pain and Headache Reports</p>	<p>Literature Review</p>	<p>Key aspects specifically relevant to chronic pain include provider characteristics, collaboration, and congruence.</p>



**Table 3:** Expectancy Factors Research in Pain Management.

Theme Author (Year); Title; Journal	Sample	Results
Expectations Atlas & Wager (2012) How expectations shape pain Neuroscience Letters	Literature Review	Expectancies shape pain intensity processing in the central nervous system, with strong effects on nociceptive portions of insula, cingulate, and thalamus.
Bartfield, Salluzzo, et al. (1997) Physician and patient factors influencing the treatment of low back pain Pain	91 patients enrolled	Suggests that physician impression of patient pain rather than patient demographics influences analgesic use.
Boersma & Linton (2006) Expectancy, fear and pain in the prediction of chronic pain and disability... European Journal of Pain	141 patients with back and/or neck pain recruited via primary care	Negative expectancy explained unique variance in both pain and function at one-year follow up.
Council, Ahern, Follick, et al., (1988) Expectancies and functional impairment in chronic low back pain Pain	40 patients with chronic low back pain	Expectancy ratings were predictive of average daily pain ratings and questionnaire ratings of physical impairment in everyday life.
Goossens, Vlaeyen, Hidding, et al. (2005) Treatment expectancy affects the outcome of cognitive-behavioral... Clinical Journal of Pain	171 patients with fibromyalgia and chronic low back pain	Pretreatment expectancy predicted outcome measures immediately after treatment and at 12 months follow-up.
Linde, Witt, Streng, et al. (2007) The impact of patient expectations on outcomes in four randomized controlled... Pain	864 patients with migraine, headache, chronic low back pain, and osteoarthritis	An association was shown between better improvement and higher outcome expectations.
Pariente, White, Frackowiak, et al., (2005) Expectancy and belief modulate the neuronal substrates of pain treated by acupuncture Neuroimage	14 patients suffering from painful osteoarthritis	Patients' expectation and belief regarding a potentially beneficial treatment modulate activity in component areas of the brain's reward system.
Sanderson, Roditi, George, et al. (2012) Investigating patient expectations and treatment outcome in a chronic low back pain population Journal of Pain Research	47 chronic low back pain patients	Patients did not meet own success criteria despite a decrease in level of pain-related interference with daily living.
Placebo Colloca & Grillon (2014) Understanding placebo and nocebo response for pain management Current Pain and Headache Reports	Literature Review	Placebos mimic the action of active treatments and promote the endogenous release of opioids in humans.
Spiegel (1997) Nocebo: the power of suggestibility Preventive Medicine	Theoretical Review	Identifying the interactions of the problem, the person, and the totality of resources permits a focus on therapeutic strategies to promote placebo effects and prevent the consequences of nocebo.
Tracey (2010) Getting the pain you expect: mechanisms of placebo, nocebo and reappraisal Nature Medicine	Theoretical Review	Abnormal functioning of crucial brain regions affect analgesic outcome in the therapeutic setting.

Turner, Deyo, Loeser, et al., (1994) The importance of placebo effects in pain treatment and research Journal American Medical Association	Literature Review	Placebo effects plus disease natural history and regression to the mean result in high rates of good outcomes, which may be misattributed to specific treatment effects.
Noncompliance & Relapse Turk & Rudy (1991) Neglected topics in the treatment of chronic pain patients-relapse, noncompliance, and adherence... Pain	Theoretical Review	Noncompliance is quite prevalent across treatment modalities and pain syndromes. The incidence of relapse following treatment of persistent pain ranges from 30% to 60%.
Optimism & Hope Ferreira & Sherman (2007) The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis Aging and Mental Health	73 older adults with osteoarthritis	Greater optimism was significantly related to both greater life satisfaction and lower depressive symptoms. Optimism partially mediated the relationship of pain to life satisfaction.
Hanssen, Peters, Vlaeyen, et al., (2013) Optimism lowers pain: evidence of the causal status and underlying mechanisms Pain	79 university students participated in a cold pressor task (CPT)	Optimism partially mediated the relationship of pain to life satisfaction.
Hasenbring & Pincus (2015) Effective reassurance in primary care of low back pain Clinical Journal of Pain	Literature Review	Induced optimism was related to lower pain intensity ratings during the CPT compared to the control group, thereby experimentally confirming causality.
Ramírez-Maestre, Esteve, & Lopez (2012) The role of optimism and pessimism in chronic pain patients adjustment Spanish Journal of Psychology	98 patients with heterogeneous chronic pain	Reassurance of patients in early phases of persistent back pain might improve tailored communication.
Wright, Wren, Somers, et al., (2011) Pain acceptance, hope, and optimism: relationships to pain and adjustment in... Journal of Pain	89 obese patients with persistent musculoskeletal pain	The results support the hypotheses formulated regarding the relations among optimism, pessimism, coping and adjust of chronic pain patients.
Credibility Frantsve & Kerns (2007) Patient-provider interactions in the management of chronic pain: current... Pain Medicine	Literature Review	Pain acceptance, hope, and optimism are all related to pain adjustment.
Reid, Ewan, & Lowy (1991) Pilgrimage of pain: the illness experiences of women with repetition strain injury and the search for credibility Social Science and Medicine	52 women who worked in telecommunications and a chicken processing factory diagnosed with repetition strain injury	Patients seek "to be understood as individuals" and struggling to have their pain concerns legitimized.  The need to be believed and to establish their integrity dominated their search for health care.
Smeets, Beelen, Goossens, et al. (2008) Treatment expectancy and credibility are associated with the outcome of both physical and cognitive-behavioral... Clinical Journal of Pain	167 chronic low back pain patients	Lower credibility was associated with higher pain-related fear and lower internal control of pain.

### Patient factors

Patient factors are characteristics of the patient and his/her environment. Several different themes were explored when

investigating the current research literature on patient factors, such as remission, inner strength, resiliency, goal directedness, purpose, motivation, personal agency, sense of control, fortuitous events, by chance, social support, faith, life experiences, strengths

and abilities, and readiness to change. More than twenty retrieved articles were related to this factor (Table 1). Themes such as faith, strengths/abilities, and social support seemed to have more literature related to it than other themes like motivation whose model of pain management was only recently developed. In summarizing the findings from the various studies, it would appear that treatment outcomes were better when the patient:

- i. was employed which affects remission
- ii. had high treatment outcome expectations
- iii. was resilient and remained positive
- iv. was engaged in activities that were purposeful
- v. was motivated to manage pain
- vi. had an internal locus of control
- vii. felt they had control over their pain
- viii. perceived having social support
- ix. believed in God or a spiritual power greater than themselves
- x. did not experience any recent/daily life stressors
- xi. had positive beliefs and used coping strategies
- xii. had an increased readiness for change

### Therapeutic relationship factors

Therapeutic relationship factors are perhaps the most researched common factor, besides the specific interventions. The therapeutic relationship, or therapeutic alliance, is a psychotherapy common factor identified by Grencavage & Norcross [59]. Therapeutic relationship factors are characteristics of the provider and the patient that facilitate change and are present regardless of the type of intervention. Several different themes were explored when investigating the current research literature on therapeutic relationship factors, including empathy, warmth, respect, genuineness, acceptance, encouragement and instruction, communication, and the patient-provider relationship. Approximately 25 retrieved articles were related to this factor (Table 2). Themes such as the patient-provider relationship and encouragement/instruction seemed to have more literature related to it than other themes like warmth. In summarizing the findings from the many examinations, it would appear that:

- a) provider empathy plays a crucial role in pain treatment
- b) providers who are warm are more effective
- c) patients are more satisfied when they perceive they are respected by providers
- d) patient suffering may be affected by acknowledgement of genuineness of pain
- e) patient need to reframe treatment as acceptance of chronic pain
- f) patient encouragement and instruction decreases pain and increases satisfaction

- g) the communication process influences self-management of pain
- h) patient-provider relationship is significantly associated with outcome

### Expectancy factors

Expectancy factors are improvements that result from the patient and provider's belief that treatment is effective. Several different themes were explored when investigating the current research literature on expectancy factors, such as expectations, placebo, noncompliance, relapse, optimism, hope, and credibility. Themes such as expectations seemed to have the most literature available. Almost twenty retrieved articles were related to this factor (Table 3). In summarizing the results from numerous investigations, it would appear that treatment outcomes were enhanced when:

- I. patients' expect and believe treatment is potentially beneficial
- II. providers consider how placebo effects and regression to the mean improve outcomes
- III. providers consider the patient's potential to be noncompliant and relapse
- IV. patients are optimistic, have hope, and/or accept their pain
- V. patients feel providers believe their pain is credible

### Other Factors

While conducting the current literature review, several common themes that are aligned with the pain medicine environment began to appear and reoccur throughout the search, including healthcare system, sociocultural, ethical/legal, and disease specific factors. In terms of healthcare system factors, it appears that the approach utilized to treat chronic pain in the healthcare system may have an effect on outcomes. For example, Pérula de Torres et al. [60] compared usual treatment from family physicians with the patient-centered approach in a primary care setting, and found significantly better results in self-rated pain and physical mobility in the patients who received care using the patient-centered approach. They further suggests that providers combine the patient-centered approach with other common factors aforementioned, including defining the illness and communicating it to the patient; offering support and being friendly, approachable, and empathic; engaging in mutual discussion and partnership; and providing clear information and looking for common ground.

There is also research which indicates that sociocultural factors may play a role in chronic pain outcomes. Sociocultural factors are the larger scale forces within cultures and societies that affect the thoughts, feelings, and behaviors of individuals. Sociocultural factors related to the pain experience may include pain expression, pain language, lay remedies for pain, social roles, tangibles, and perceptions of the medical care system. Sanchez-Ayendez et al. [61] evaluated how cultural values, standards, and beliefs in New England versus Puerto Rico affect health care professionals' responses to patients' pain, patient-provider relationships, and the patients' responses to illness. They found dissimilarities in cultural views about the mind-body relationship

between the two different health care contexts which in turn affected patient's pain. Bair et al. [62] identified several issues with tangibles, such as transportation and finances, as being barriers to self-management among patients who suffer from chronic pain. Matthias et al. [63] also concluded that the needs of pain management provider's, including instrumental support, cannot be ignored when considering patient pain care.

There are ethical and legal factors which influence the practice of pain management. Effective pain management has been deemed a right to health according to international human rights law. Thus, inadequate pain treatment is considered a violation to protect against cruel, inhuman, and degrading treatment. Chamberlain et al. [64] analyzed the narratives of patients who suffer from low back pain, and found they also perceive pain as being a "moral event," or concerning priorities and attitudes. As a result, providers may alter their practice in response to these expectations. However, it remains difficult to support this position as a point of law or as a matter of ethics.

Research also suggests that there are disease specific factors which influence the practice of pain management. Previous analyses show that high pain expectancy substantially increases pain. However, attention to the body reduced pain, partially suppressing the effects of expectancy. Furthermore, increased body focus had larger pain-reducing effects when pain expectancy was high, suggesting that attempts to focus on external distracters are counter-productive in this situation. Overall, the results show that attention to the body cannot explain pain enhancing expectancy effects, and that focusing on sensory/discriminative aspects of pain might be a useful pain-regulation strategy when severe pain is expected [65].

## Conclusion

Using models developed in other professions to inform inquiry in another field is appropriate and there is some precedence in the literature, specifically in physical medicine and rehabilitation [66]. The current review explored the applicability of the common factors model to pain management and provided supportive evidence from existing research. Research studies in pain management have concluded that the diverse treatment interventions currently available all appear to be equivocally effective, a verdict one should propose be termed the "*Manumea effect*." This term references Samoa's endangered counterpart to the dodo bird, which is apropos since it is a relative of the famously extinct bird (alike pain management and psychotherapy being relative) and its cryptic, almost invisible, nature (alike the use of common factors model in pain medicine being obscure). Even though a common factors model in pain management is not fully developed, such a model should be considered in order to further advance knowledge and practice in pain medicine. The true causes of improvements in pain after treatment remain unknown in the absence of independently evaluated randomized controlled trials. Additional research is needed to more clearly define the common factors model in pain management, specifically in 1) defining common factor categories which are more aligned with the pain medicine environment (e.g. healthcare system, sociocultural, ethical/legal, and/or disease specific factors); 2) estimating the impact of common factors on outcomes in comparison to the specific pain treatments; and 3) exploring the inter-relationships

of the common factors. Only then will we be able to increase the effectiveness and quality of health services during pain medicine consultations.

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