

Self-Efficacy and Chronic Pain Outcomes: A Meta-Analytic Review

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Abstract: A meta-analysis was performed to evaluate overall strengths of relation between self-efficacy (SE) and functioning (pain severity, functional impairment, affective distress) in chronic pain samples, as well as potential moderating effects of sociodemographic characteristics and methodologic factors on these associations. In sum, 86 samples (N = 15,616) fulfilled selection criteria for analysis. SE had negative overall correlations with impairment, affective distress, and pain severity although considerable heterogeneity was observed for all effect sizes. Age, pain duration, SE scale content (SE for functioning despite pain vs SE for pain control vs SE for managing other symptoms such as emotional distress) and type of impairment measure (self-report vs task performance) had significant moderating effects on SE–impairment associations. SE–affective distress relations were moderated by employment status and SE scale content. Finally, moderator analyses of studies having longitudinal designs indicated associations between baseline SE, and each outcome at follow-up remained significant in prospective studies that had statistically controlled for effects of baseline responses on that outcome. Hence, SE is a robust correlate of key outcomes related to chronic pain and a potentially important risk/protective factor that has implications for subsequent functioning in affected groups.

Perspective: Meta-analysis indicated that SE has significant overall associations with impairment, affective distress, and pain severity within chronic pain samples and identified several factors that contribute to variability in effect sizes. Findings highlighted SE as a robust correlate and potentially important risk/protective factor for subsequent adjustment in affected groups.

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Key words: Meta-analysis, self-efficacy, chronic pain, impairment, pain severity, emotional distress.

Self-efficacy (SE) is a widely examined psychological influence on chronic pain and related functional outcomes. Bandura^{12–14} defined SE as confidence that one can successfully execute a course of action to produce a desired outcome in a given situation and contended that SE determines how much effort and persistence people exhibit in the face of obstacles or aversive experiences. SE is hypothesized to influence pain and associated outcomes in at least 2 ways. First, SE affects the performance of actions necessary for managing or controlling pain itself.^{41,61} Second, perceived SE can determine the manner in which situations associated with pain are managed.

For example, patients with comparatively low pain coping SE may avoid activities that are accompanied by pain or use more pain medication in those situations.³⁰

Numerous studies have linked SE with more adaptive functioning in chronic pain samples, but the evidence is not uniformly consistent. For example, many studies have reported that SE predicts reductions in impairment,^{2,7,24,34,36,42} depression,^{43,95} anxiety,^{25,66,74} fear,^{9,11,29,59,114} and pain severity.^{15,21,23} Conversely, some researchers have observed nonsignificant associations between SE and impairment,^{30,31,44,97} affective distress,^{34,60,89,97,104} and pain severity.^{4,31,94} Meta-analysis may aid in drawing general conclusions about links between SE and chronic pain outcomes given its focus on synthesizing data from multiple studies rather than possibly idiosyncratic results of individual studies.²⁶

Furthermore, variable results within this literature suggest that other factors moderate SE–outcome associations. In Bandura's view,¹⁴ person factors such as SE have reciprocal relations with behavior as well as imposed, selected, and constructed environments.

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Although it is not clear how environments are best measured in clinical research, sociodemographic characteristics (sex, age, marital status, employment status) reflect contextual influences to at least some degree. To illustrate, sex is used as a biological marker to categorize human beings, yet accompanying environmental influences such as gender-role socialization and norms affect health care providers' treatment and personal experiences of pain in men versus women.⁴⁵ Similarly, aging reflects clear biological changes, yet social stereotypes about age result in distinct "environmental" responses, including possible underrecognition and undertreatment of pain in older than in younger adults.^{49,93,112} Variations in psychosocial environments of employment and unemployment have also been linked to differences in well-being of employed versus unemployed adults.⁵⁴⁻⁵⁷

Aside from these sociodemographic factors, poorer outcomes have been linked to pain characteristics, including more chronic courses,⁴⁷ and back pain, which is especially common and disabling.^{6,27} Hence, duration and site of pain are other possible moderators that might elucidate why SE corresponds to better functioning in some samples but not others.

Furthermore, methodologic factors may underscore variable findings in this literature. Most notably, because validated pain SE measures can tap confidence in one's capacity to function despite ongoing pain,^{88,114} control pain,^{32,37,90} and/or manage other symptoms of pain,^{5,20,108} SE scale content is a plausible moderating influence. In addition, strengths of association may vary as a function of the assessment of impairment (self-report vs performance-based), type of distress (specific vs general), or pain severity (single-item vs multi-item). Finally, within longitudinal designs, associations between baseline predictors and follow-up outcomes are generally attenuated when baseline responses on outcome measures are first controlled rather than uncontrolled.^{31,37}

On the basis of this overview, a meta-analysis was performed to evaluate the overall impact of SE on specific outcomes (ie, impairment, affective distress, pain severity) in studies of chronic noncancer pain. Although higher overall SE levels were expected to correspond to better functioning on each outcome of interest, significant heterogeneity in effect sizes was also anticipated. Therefore, we explored the extent to which SE–outcome associations were moderated by sociodemographics, pain characteristics, and methodologic factors outlined above.

Methods

Search Strategy

To identify relevant studies, PubMed, PsycINFO, Web of Science, Google Scholar, and Science Direct database searches were performed between the dates of September 1987 and September 2012. Search terms included "self-efficacy" OR "beliefs" AND "pain" OR "chronic pain" OR "illness" OR "disease." In addition,

pain SE measures including the Chronic Pain Self-Efficacy Scale (CPSES),⁵ Pain Self-Efficacy Questionnaire (PSEQ),⁸⁰ and Arthritis Self-Efficacy Scale (ASES)⁶⁹ were used as search terms. Searches were performed using names of authors who had published multiple papers in the area (ie, Anderson, Arnstein, Asghari, Bandura, Brekke, Buckelew, Lorig, Nicholas, Turner, Thompson) as search terms. All searches used the broad search field "anywhere" to identify citations. Several authors were also contacted to solicit overlooked papers. Finally, reference lists of articles obtained from these strategies were reviewed to identify other potentially relevant papers.

Selection Criteria

Abstracts of all potentially eligible studies were independently screened by T.J. and Yal.W. to exclude papers whose content was not salient. Subsequently, full-text versions of relevant papers were retrieved and reviewed to determine if they met the following 9 inclusion/exclusion criteria:

1. Studies included samples of adult human participants who were at least age 18 years and younger than age 65 years on average.
2. Studies comprised samples with ongoing chronic "noncancer" pain of at least 3 months average duration. Studies of acute pain, laboratory pain, and cancer pain were excluded.
3. The measurement of SE had to conform closely to Bandura's^{12,14} operationalization of SE as confidence related to successfully performing a course of action related to the task at hand or domain-specific operationalizations that assess SE orientations within the pain domain. Studies that used measures of "general" SE, general competence, or physical SE were excluded from assessment.
4. Included studies assessed at least 1 association between SE and disability/functional impairment, affective distress, and/or pain severity.
5. Both cross-sectional and longitudinal studies were eligible for inclusion. When prospective studies only reported findings from the baseline assessment in sufficient detail, analyses of SE–outcome associations were limited to the initial assessment as per cross-sectional studies. Studies that reported only associations between change scores for SE and change scores in outcomes were excluded. However, in other longitudinal studies, moderating effects of analytic approach (baseline levels of outcome measure controlled or uncontrolled) were assessed to determine the extent to which baseline SE was a risk factor for changes in the outcome at follow-up versus a correlate of follow-up responses on the outcome.
6. Studies were included when SE measures were treated as independent variables or predictors rather than dependent measures.
7. Reliability and validity data for SE and outcome measure(s) were reported or available.

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