Recent Advances and Future Directions in the Biopsychosocial Assessment and Treatment of Arthritis

Francis J. Keefe  
Duke University Medical Center

Angela L. H. Buffington  
Duke University

Jamie L. Studts  
University of Louisville School of Medicine

Suzanne J. Smith  
Ohio University

Jessica Gibson  
Ohio University

David S. Caldwell  
Duke University Medical Center

This article provides an overview of the emerging literature on biopsychosocial assessment and treatment for two of the most common forms of arthritis: osteoarthritis and rheumatoid arthritis. The article is divided into 3 parts. In the 1st part, the basic elements of the biopsychosocial approach to assessing and treating persons having arthritis is described. In the 2nd part, the authors evaluate studies of biopsychosocial approaches to the assessment of arthritis pain and disability. Six research areas are reviewed: learned helplessness, depression, stress, pain coping, self-efficacy, and the social context of arthritis. The 3rd part of the article reviews studies that testing the efficacy of biopsychosocial treatment approaches for persons having osteoarthritis and rheumatoid arthritis.

Arthritis is among the leading causes of pain and disability; within the United States alone, it is estimated that 37 million persons have arthritis (Centers for Disease Control, 1990). A total of 50% of people in their 70s and 80s suffer from osteoarthritis (OA; C. S. Stein, Griffin, & Brandt, 1996), and 1% of the general population suffers from rheumatoid arthritis (RA; Pincus, 1996). The economic costs of arthritis are enormous. In 1992, the total costs of arthritis were $64.8 billion (Yelin & Callahan, 1995), with $15.2 billion of those costs reflecting direct medical care and $49.6 billion reflecting indirect costs, mainly due to lost wages. The economic costs of RA are three times the costs of medical care for age- and gender-matched individuals who do not have RA (Allaire, Prashker, & Meenan, 1994) and are similar to those of persons having coronary heart disease (Lubeck, 1995). The economic burden for individual arthritis sufferers can be significant. Research, for example, has shown that persons with rheumatoid arthritis experience a 50% drop in their income over a 9-year period (Doherty, Brandt, & Lohmander, 1998).

Over the past decade, it has become increasingly clear that the persistent pain, joint stiffness, and joint damage of arthritis not only produce substantial physical disability but also have important social and psychological consequences (Escalante & Del Rincon, 1999; van der Heide et al., 1994; Yelin & Callahan, 1995). People with arthritis are often impaired in their abilities to engage in basic and valued activities of daily living, such as dressing, eating, shopping, doing household chores, and participating in enjoyable social activities (Katz, 1995). People with arthritis often experience psychological responses such as helplessness, depression, and anxiety that can heighten their pain and increase disability (Keefe & Bonk, 1999; Yelin & Callahan, 1995).

With recognition of the psychosocial impact of arthritis has come growing awareness of the need to incorporate behavioral and psychosocial approaches into ongoing biomedical treatment for managing arthritis (Simon et al., 2002). The purpose of the present article is to provide an overview of the emerging literature on biopsychosocial assessment and treatment for the two of the most common forms of arthritis: OA and RA. The article is divided into three parts. In the first part, the basic elements of the biopsychosocial approach to assessing and treating persons having arthritis is described. In the second part, we describe and evaluate studies focusing on a number of biopsychosocial approaches to the assessment of arthritis pain and disability. The third part of the article reviews studies that assess the efficacy of biopsychosocial approaches to treating arthritis pain and disability. Throughout the article, we comment on potential future directions for research in this area.
Biopsychosocial Model of Arthritis Pain and Disability

Arthritic disorders such as OA and RA are particularly appropriate diseases in which to apply the biopsychosocial model (Keefe & Bonk, 1999; Schoenfeld-Smith et al., 1996; Zautra, Hamilton, Potter, & Smith, 1999). These diseases are among the most common forms of arthritis, are chronic in nature, cannot be cured using current biomedical treatments, and can produce high levels of pain and disability. Although both OA and RA are considered by laypeople to be primarily joint diseases, RA is perhaps better considered to be systemic because it can affect many organ systems of the body, with resultant potential for significant morbidity and mortality. Engel (1977) first proposed the biopsychosocial model and argued that it could be used to understand how persons cope with a variety of diseases. The biopsychosocial model continues to be seen as a very useful approach to understanding both pain (Keefe & Bonk, 1999) and disability (Osterweis, Kleinman, & Mechanic, 1987). As shown in Figure 1, a biopsychosocial model of arthritis maintains that the pain and disability experienced by persons having OA and RA is not only affected by underlying biological factors but also by psychological and social factors.

Rheumatoid arthritis is a chronic, inflammatory, systemic disease with an immunologic basis. The prevalence of rheumatoid disease is 0.3%–1.5% of the North American population. Studies support a genetic predisposition to RA (Nelson et al., 1993). RA is a persistent and progressive inflammation of the synovium or joint lining that leads to joint destruction. RA includes a wide spectrum of disease, from self-limiting joint involvement to multijoint involvement with systemic manifestations, including ocular, respiratory, cardiac, gastrointestinal, renal, neurologic, and hematologic manifestations. An infectious etiology for RA has been extensively studied, but attempts to identify a specific agent have failed. Without knowledge of the precise cause of RA, a cure for RA is lacking. New biological agents have had a significant impact on the illness. However, at present, treatment for RA is multifaceted and directed not only at immunologic abnormalities but also at the social and psychological functioning of the patient. Because RA has an immunologic basis, it can potentially be influenced by factors that affect the immune system: for example, stress, environmental extremes, or unrelated illness. RA, characterized by unpredictable flares of extreme pain and disability, seriously taxes patients’ coping resources. As Zautra, Burleson, Matt, Roth, and Burrows (1994) noted, “Because of the strain placed on their capacity to adjust psychologically, both from the illness itself and also from related psychosocial stresses, RA patients may be at great risk for collapse of their physical health” (p. 1).

Osteoarthritis is the second most common cause of long-term disability in adults in the United States (Fife, 1997). The prevalence of OA varies in different populations, but the prevalence and severity of OA increase with age, with over 50% of people over age 65 showing evidence of OA of the knees (Fife, 1997). Osteoarthritis is a degenerative disease that is the result of both mechanical and biological events affecting joint cartilage and underlying bone. Although it may be initiated by multiple factors (e.g., repetitive trauma, genetic factors, and metabolic factors), the end result is a breakdown of cartilage and changes in the underlying bone, the consequences being joint pain, tenderness, limitation of movement, occasional swelling, and varying degrees of inflammation. Therapies for OA are primarily symptomatic, as there is no known cure. The symptoms of OA are slowly progressive and do not vary as unpredictably as those of RA. The daily pain experienced by OA is also significantly lower than that experienced by persons having RA (Affleck et al., 1999). Persons with OA have also been found to be less reactive to interpersonal stress than persons with RA (Zautra et al., 1994).

Many persons having OA and RA become physically deconditioned over the course of the disease, a biological response that can contribute to pain, muscle weakness, and difficulty tolerating activity. Psychological factors also can influence pain and disability in persons with arthritis. Recent research, summarized below, indicates that psychological variables such as helplessness, depression, stress, coping, and self-efficacy are important in understanding differences in how persons with arthritis respond to their disease. Social factors, such as social support and socioeconomic status, are also increasingly being shown to be important in understanding arthritis pain and disability.

The biopsychosocial model provides a systems perspective on arthritis. Changes in one part of the system can produce changes in another part of the system. For example, increases in disease activity (a biological change) can lead to increases in anxiety and depression (psychological changes) and decreases in the ability to work or perform household chores (social changes), both of which, in turn, can increase pain and disability. Alternatively, improvements in a person’s self-efficacy about controlling arthritis symptoms (a psychological change) can lead to enhanced compliance with medications (producing biological changes) or increased interaction with supportive friends and family (a social change), both of which can reduce pain and disability.

As shown in Figure 1, the biopsychosocial model not only can be used to understand arthritis pain and disability but it also can serve as a guide for psychosocial treatment interventions. Treatment protocols that target psychological and/or social factors can

Figure 1. The biopsychosocial model of arthritis pain and disability. Adapted from “Psychosocial Assessment of Pain in Patients Having Rheumatic Diseases,” by F. J. Keefe and V. Bonk, 1999, Rheumatic Disease Clinics of North America, 25, p. 82. Copyright 1999 by W. B. Saunders Company. Adapted with permission.
potentially modify the arthritis experience. Recent controlled studies (reviewed below) have shown that biopsychosocial interventions, such as pain coping skills training or stress management training, can be useful in reducing arthritis-related pain and disability.

Biopsychosocial Approaches to Assessing Arthritis

Over the past 10 years, numerous studies have focused on psychological and social variables that are related to arthritis pain and disability (Keeffe & Bonk, 1999). Many of these studies are particularly salient, because they can lead to new assessment and treatment protocols for managing arthritis. In this section, we review five areas of research that have particularly important implications for the biopsychosocial management of arthritis pain and disability. These research areas include studies of learned helplessness, depression, stress, pain coping, self-efficacy, and the social context of arthritis.

Learned Helplessness

It has become increasingly clear that many people having arthritis develop a sense of helplessness when dealing with the daily challenges of their disease. This learned helplessness occurs when individuals come to expect that either negative outcomes will occur or positive outcomes will not occur and simultaneously feel a lack of control over the occurrence of these outcomes (T. W. Smith, Peck, & Ward, 1990). Recent studies suggest that helplessness is particularly important in understanding the experience of persons suffering from RA, a disease that is characterized by flares in disease activity that are often unpredictable and severe.

In research studies, helplessness is typically assessed using the 15-item Arthritis Helplessness Index (AHI), a measure developed by Nicassio, Wallston, Callahan, Herbert, and Pincus (1985). This instrument has been shown to have good test–retest reliability ($r = .64$; M. J. Stein, Wallston, & Nicassio, 1988) and acceptable internal consistency ($\alpha = .69$; Nicassio et al., 1985). The psychometric properties of the AHI have been shown to be good, even when this instrument has been translated into different languages, for example, Swedish (Lindroth, Strombeck, Brossner, Gullberg, & Wollheim, 1994). Early validation studies showed that persons scoring high on the AHI were more likely to have lower self-esteem and lower internal health locus of control, and higher anxiety, depression, and impairment in performing daily living activities (Nicassio et al., 1985). It is interesting that older persons and those having less formal education have been found to score low on the AHI, suggesting that in persons having arthritis, age and education are related to perceptions of helplessness (Nicassio et al., 1985).

Research findings. Early studies of helplessness used mostly cross-sectional designs in which helplessness was assessed at the same time as measures of arthritis pain and disability. A good example of such a cross-sectional study is T. W. Smith et al. (1990), which found that helplessness mediated the relationship between RA disease severity and depression. Although the results of such studies are interesting, they are unable to address important issues such as the direction of effects or causal relationships.

Recent studies have used longitudinal designs to examine how helplessness relates to the subsequent development of pain and disability. T. W. Smith, Christensen, Peck, and Ward (1994), for example, conducted a 4-year follow-up of their original study (T. W. Smith et al., 1990) and found that helplessness assessed at baseline was significantly related to higher levels of depressed mood 4 years later (T. W. Smith et al., 1994). It is interesting that these findings were obtained even after controlling for initial levels of depression.

C. A. Smith and Wallston (1992) conducted a longitudinal study of 157 persons having RA that examined the role of helplessness and passive coping in predicting changes in health outcomes that occurred over a 1-year period. Using sophisticated path analytic techniques, this study found clear evidence for the influence of helplessness. In fact, the pattern of findings suggested there might be a vicious cycle involving helplessness appraisals that lead to passive coping with pain and psychosocial impairment. Schoenfeld-Smith et al. (1996) conducted a longitudinal study to examine the role of helplessness in predicting disability in persons having RA. A sample of 63 men having RA completed measures of disease activity, helplessness, pain, and psychological and physical function at three time points: baseline, 3 months, and 6 months. Path analysis revealed several interesting findings. First, disease activity did not have direct effects on either psychological or physical disability. Instead, disease activity was found to directly influence helplessness and pain. Second, both helplessness and pain were found to have direct effects on psychological disability and physical disability. Thus, the findings of this study suggest that helplessness and pain may mediate the relationship of disease activity to psychological and physical disability. Together, the results of longitudinal studies suggest that helplessness is important in understanding how persons adapt over time to their disease.

Does helplessness have direct implications for how individuals having RA respond to medical therapies? Nicassio et al. (1993) conducted a longitudinal study that examined how helplessness was related to the outcome of a disease-modifying drug-treatment protocol. Participants were 50 persons with RA who completed a measure of helplessness before and after participating in a 3-month study of a disease-modifying drug. Cross-sectional analyses revealed that both before and after the drug trial, helplessness accounted for a highly significant amount of variance in measures of pain and disability. It is interesting that helplessness assessed prior to the drug trial was a significant predictor of flares in disease activity after the drug trial.

A growing body of research suggests that people with RA who have lower levels of formal education die at a much earlier age (Pincus & Callahan, 1985). The mechanisms by which formal education is related to increased morbidity and mortality, however, are unknown. Callahan, Cordray, Wells, and Pincus (1996) conducted a very important study in which they examined whether the relationship of socioeconomic status to morbidity might exist because persons with less formal education may feel helpless and unable to deal with their disease and its consequences. In this study, a cohort of 1,416 individuals diagnosed as having RA completed measures of helplessness, education, and disease activity at baseline and were then followed for 5 years. As expected, persons with low formal education and higher levels of disease activity were found to have a significantly higher risk for early mortality. It is interesting, however, that when helplessness was entered into a model predicting mortality, education level was no
longer found to be a significant predictor. These results suggest that helplessness may actually mediate the association of education level to mortality in persons having RA.

Comment. As described above, converging lines of evidence suggest that helplessness is a very important construct in understanding pain and disability in people with arthritis. To date, most studies of helplessness have focused on populations of persons having RA, and it is unclear how these findings generalize to persons having OA. Nevertheless, the findings are compelling. In samples of people having RA, helplessness has been found not only to relate to current and subsequent pain and disability but also to responsiveness to drug therapy. More important is that helplessness has been linked to early mortality, even after controlling for biomedical risk factors (Callahan et al., 1996). Together, these findings have implications for the treatment of RA. The focus of RA treatment has traditionally been on biomedical interventions, and the results of the studies reviewed in this section suggest that increased attention needs to be given to addressing psychosocial variables such as helplessness. Cognitive–behavioral and some educational interventions have been shown to reduce helplessness. At present, these interventions, however, are not reimbursed and thus not well-integrated into the management of RA (Callahan et al., 1996). Research is needed to examine whether interventions designed to reduce helplessness can improve the long-term health status of persons having RA, particularly in those subgroups whose high levels of helplessness may make them vulnerable to negative health outcomes (Callahan et al., 1996).

Depression

A growing body of research underscores the role that depression and negative affect can play in adjustment to arthritis (Blalock & Devellis, 1992; Huysen & Parker, 1999; Katz & Yelin, 1993; Morrow, Parker, & Russell, 1994; Parker & Wright, 1995; Smarr et al., 2000; Wright et al., 1996). Depression has been found to be a particularly significant problem in RA. A 4-year longitudinal study by Katz and Yelin (1993) showed that 15%–17% of persons having RA have depressive symptoms each year and that depression in any given year substantially increases the likelihood of depression in subsequent years. Katz and Yelin found that persons who were depressed had significantly poorer function and generally reported more RA-related physician visits and hospitalizations. There is growing agreement that the determinants of depression in arthritis are complex and multifaceted (Blalock & Devellis, 1992), and there is increasing interest in understanding how depression develops and contributes to RA symptoms.

Researchers studying depression in arthritis populations have relied on both structured interviews to diagnose depressive disorders and self-report measures to assess depressive symptoms: for example, the Beck Depression Inventory (BDI) and Center for Epidemiological Studies Depression Scale (CES-D). Both methods are known to be reliable and valid and have been used extensively in the depression research literature.

Research findings. Over the past decade, a number of studies have examined the interrelationships between depression and arthritis-related physical limitations and disease activity. Using Diagnostic and Statistical Manual of Mental Disorders (3rd ed., rev.; DSM–III–R, American Psychiatric Association, 1987) criteria for diagnosing depression, Abdel-Nasser et al. (1998) found that 23% of persons with RA and 10% of persons with OA were depressed and that in the RA sample, measures of disease activity (erythrocyte sedimentation rate) and disability (Health Assessment Questionnaire) were significant predictors of clinical depression. Parker et al. (1992) found that individuals with higher counts of painful or swollen joints were more likely to report depressive symptoms on the BDI. A study by Beckham et al. (1992) found that depression (as assessed using the BDI) predicted a moderate to large amount of the variance in physical and psychosocial disability, even after analyses controlled for important demographic and medical status variables. Together, these and similar studies demonstrate that there is a significant relationship between depression and functional status of people having arthritis.

Are persons with arthritis who have had a prior history of major depression at greater risk of experiencing higher levels of pain or other arthritis symptoms? To address this question, Fifield, Tennen, Reisine, and McQuillan (1998) randomly selected a sample of 203 persons with RA from a national panel and conducted a telephone interview to assess their history of major depression, current depressive symptoms, and pain, fatigue, and disability. The authors excluded any individual who currently met criteria for major depression. Participants who reported more depressive symptoms at the time of interview had higher levels of pain. More important, this study found participants who had a previous history of major depression were more likely to currently have higher levels of pain, even if the episode of depression occurred prior to the onset of RA.

What factors predispose people having arthritis to experience depression? Age is one factor that appears to be important. Wright et al. (1998) found that younger persons having RA (age ≤ 45 years) were significantly more likely to report depressive symptoms on the CES-D than older persons. These results were particularly impressive because they were obtained after controlling for variables that might influence depression, including sex, marital status, antidepressant medication, arthritis medication, arthritis functional class, and disease duration. In a study of 110 persons having RA, Devins, Edworthy, Guthrie, and Martin (1992) found that as the lifestyle disruptions of RA become more intrusive, younger persons were much more likely to develop depressive symptoms than older persons.

A second factor that appears to be important in predicting depression is the loss of activities that individuals particularly value. Katz and Yelin (1995) conducted a longitudinal study of persons having RA in which they examined how declines in function were related to depression. Although overall level of functional decline did not predict depressive symptoms (as assessed using the Geriatric Depression Scale [Short Form]), the loss of valued activities was a significant predictor of the subsequent development of depressive symptoms.

Comment. Given the physical limitations and social and occupational disability that arthritis can produce, it is not surprising that some individuals develop depressive symptoms. In general, the studies reviewed above suggest that depression can exacerbate arthritis symptoms and functional impairments, and lead to worse health status outcomes. Recent studies suggest that in persons having RA, age and the loss of valued activities may be important in the development of depression. A number of these studies have positive methodological features, including controls for important demographic and medical variables and the use of longitudinal
designs. Almost all of the research on depression in arthritis, however, has been conducted in individuals having RA, and future studies need to examine the role of depression in other arthritis disorders (e.g., OA). Arthritis patients having flares in their disease have increased somatic symptoms, and because of this may endorse somatic items on depression scales (Pincus, Callahan, Bradley, Vaughan, & Wolfe, 1986), this could lead to an overestimate of depression levels in arthritis populations. Research, however, has shown that even when somatic items are omitted on scales such as the BDI, associations between depression and other constructs are similar (Peck, Smith, Ward, & Milano, 1989). Another concern is that measures of depression or other negative affects may not adequately capture the complexity of emotional responses to arthritis. A study of RA patients has shown that although positive and negative affects are negatively correlated, they constitute two separate and distinct emotional responses (Zautra et al., 1995). It is interesting that this study found that different forms of coping show different relations to positive affect and negative affect. Whereas active coping was related to only positive affect, maladaptive coping was related to both increased negative affect and decreased positive affect. These findings support the importance of including measures of both positive affect states and negative affect states when trying to understand adjustment to arthritis. Finally, future research needs to examine whether early identification and aggressive treatment of depression can prevent and reduce the impact of depression on arthritis pain and disability (Parker & Wright, 1995).

**Stress**

When asked about the cause of disease flares, persons having RA most often list stress as the primary cause (Afflecke, Piefiffer, Tennen, & Fifield, 1987). Numerous studies have examined the relation of stress to disease activity in RA and OA, and until the last decade, these studies have tended to yield contradictory findings (Zautra et al., 1989). Over the past 10 years, however, converging lines of evidence suggest that stress may be particularly important in understanding how persons adjust to RA.

**Research findings.** Zautra et al. (1994) studied how interpersonal stress related to depression and disease activity in 33 women having RA and 37 women having OA. The RA and OA patients had similar levels of pain, life stress, and ratings of disease activity. Although interpersonal stress was found to be related to depression in both OA and RA patients, this relationship was much stronger in the RA patients than in the OA patients. Furthermore, in only the persons with RA was there a significant positive relationship found between prolatin and estradiol (immune stimulating hormones) and measures of interpersonal conflict, depression, and disease activity. Together, these findings suggest that persons with RA show much more psychological and physiological reactivity to interpersonal stress than do persons with OA.

A recent study by Hirano, Nagashima, Ogawa, and Yoshino (2001) examined the effects of surgical stress on immune system responses of persons having RA and OA. Blood samples for assessing Interleukin-6 (IL-6), epinephrine, and cortisol were collected 24 hr before and 30 min before anesthesia for total knee or hip surgery and 30 min after the onset of anesthesia (just prior to the start of surgery). All patients rated their level of stress in the moderate to severe range. Data analyses revealed that as RA patients lay on the operating table awaiting surgery, “the levels of IL-6 [a mediator related to inflammation or the disease activity of RA], cortisol, and epinephrine [a neuroendocrine transmitter] were markedly increased” (p. 494). These physiological changes were reversed in RA patients under anesthesia. No such changes were noted in the OA patients. These findings are intriguing, although the small number \((n = 8)\) of OA patients may have compromised the study’s ability to detect differences between RA and OA patients.

Many studies of stress and arthritis have used a cross-sectional design that measures stress and arthritis symptoms or disease activity at a single point in time. Longitudinal analyses, however, may be more sensitive in identifying the effects on arthritis. Zautra et al. (1999) conducted a 10-week longitudinal study of 41 RA patients, in which they collected weekly measures of stress and disease activity. Patients experiencing a high stress week were asked to come in to a lab to give a blood sample and for an intensive clinical evaluation to evaluate changes in disease activity from baseline. The results revealed that increases in interpersonal stress were related to increases in pain and joint tenderness. Intensive analysis of 20 patients who showed a significant increase in interpersonal stress and were able to come in to the laboratory revealed several interesting findings. First, this subgroup showed significant increases in immune system measures (DR + CD3 cells and sIL-2R). Second, higher levels of depression at baseline were related to higher overall levels of disease activity. Finally, increases in stress were found to relate to clinician’s ratings of disease activity, except in those patients with low disease activity or who reported having a strong, positive relationship with their spouse. Together, these findings suggest that the degree to which stress is associated with increased disease activity in RA varies across individuals and that this variability is related to factors such as level of disease activity, marital support, and depression.

More recent, Zautra et al. (1999) conducted a longitudinal study of 100 RA patients, 90 OA patients, and 90 healthy controls. The participants, all women similar in demographic background, were followed weekly from 12 to 20 weeks and came in for clinician assessments during a week of high stress. Clinician ratings of disease activity revealed that both the RA and OA patients showed more disease activity during a week of high stress than during a baseline, low-stress period. In addition, RA and OA patients who were more depressed at baseline were more likely to show sustained elevations in disease activity during stress. Finally, there was evidence that the RA patients were more likely to experience depression following stressful events than were the OA patients. A more recent report based on this study (Zautra & Smith, 2001) found that depressive symptoms were related to weekly elevations in pain and negative affect for both RA and OA patients. However, depressive symptoms were related to increased reactivity to stress and pain in only RA patients and not in OA patients. The results again underscore the importance of individual differences in understanding how persons with arthritis respond to stress.

**Comment.** The recent studies of stress in arthritis patients are noteworthy for two reasons. First, they have analyzed the effects of stress using experimental and longitudinal designs that are more intensive and rigorous than cross-sectional designs used in the older literature. Second, many rely on sophisticated, multivariate data analysis methods, which provide an excellent means of identifying individual difference variables that may influence stress
reactivity in arthritis patients. Zautra’s research group has made particularly important contributions to this area (Zautra et al., 1999; Zautra & Smith, 2001) and has highlighted the roles that depression, marital support, disease type (OA vs. RA), and disease activity play in influencing stress reactivity.

Coping

Individuals faced with arthritis develop strategies to cope or to deal with their disease. During the 1980s and early 1990s, many studies of coping with arthritis relied on questionnaires, such as the Coping Strategies Questionnaire (CSQ; Rosenstiel & Keefe, 1983), that focused specifically on strategies that individuals used to cope with pain. Numerous studies have found the CSQ to be reliable and valid in both OA and RA populations and have also shown that changes in coping occurring over the course of a cognitive–behavioral pain management intervention are related to short- and long-term improvements in pain and to a variety of other outcomes (for reviews of this literature, see Keefe & Bonk, 1999; Lester, Lefebvre, & Keefe, 1996). Coping is increasingly recognized as an important variable in understanding adjustment to arthritis, and the research literature on this topic has been growing at a very rapid rate.

Research findings. One active area of coping research has been the application of new questionnaire methods to the analysis of coping in persons having arthritis. Pain-specific coping questionnaires have been developed and validated (as opposed to questionnaires assessing pain-specific coping strategies) to assess the use of cognitive and behavioral strategies varied considerably across different problem areas, such as dealing with problems with pain, disease activity play in influencing stress reactivity.

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One problem with questionnaires and interview methods is that they rely on retrospective accounts of coping that may be subject to recall bias (Stone, Kossler, & Haythornthwaite, 1991). In addition, coping is considered to be a dynamic process that may not be adequately captured by questionnaire or interview measures that are administered at only one or a few points in time. To overcome this problem, researchers have begun making use of newly developed daily diary methods. Affleck, Urrows, Tenen, and Higgins (1992) were among the first to use daily study methodologies to analyze the process of coping with RA. In their study, 75 persons conducted a study that examined the role of catastrophizing in explaining gender differences in the pain experience of persons having OA. A sample of 106 persons having OA (72 men and 96 women) completed the catastrophizing scale of the CSQ, along with measures of pain, pain behavior, and physical disability. Data analyses revealed that when compared with men, women experienced significantly higher levels of pain and physical disability and exhibited more pain behavior during an observation session.

Additional analyses showed that catastrophizing mediated the relationship between gender and pain outcomes, such that once catastrophizing was entered into data analyses, the previously identified significant effects of gender were no longer evident. These findings regarding catastrophizing remained significant, even after analyses controlled for current depression. Together, these results highlight the salience of both gender and catastrophizing in understanding OA pain and disability.

People having arthritis may be at different stages of readiness with respect to their willingness to actively make use of pain coping strategies. In a study (Keefe, Lefebvre, Kerns, et al., 2000) that relied on a questionnaire based on the transtheoretical model of DiClemente and Prochaska (1998), cluster analysis was used to identify five distinct subgroups of persons having arthritis who clearly differed with respect to their readiness for involvement in self-management: (a) a precontemplation group, (b) a contemplation group, (c) a preparation group, and (d) a prepared maintenance group. These subgroups were replicated in samples of persons having both RA (n = 103) and OA (n = 74). When the subgroups were compared with respect to the use of pain coping strategies (as assessed using the CSQ), it was found that persons in the prepared maintenance subgroup showed a significantly higher level of active coping (a factor on the CSQ) than did those in all other subgroup groups and that persons in the preparation group showed a significantly higher level of active coping than did persons in the precontemplation and contemplation subgroups.

Researchers have also begun to explore new methods to assess coping in individuals having arthritis. Blalock, Devellis, Holt, and Hahn (1993) conducted in-depth interviews to identify important life changes brought on by RA and to elicit information on how individuals coped with these changes. The interviews were transcribed, and a systematic content analysis was used to identify coping behaviors. The coping behaviors identified were then correlated with standardized measures of psychological and physical functioning. Data analysis revealed two interesting findings. First, the use of cognitive and behavioral strategies varied considerably across different problem areas, such as dealing with problems with pain, disease activity play in influencing stress reactivity.
having RA kept diary records of pain coping, mood, and joint pain each day for 75 days. To ensure compliance with the diary recording, all participants received systematic training in how to fill in the diary, were called periodically (a check on their progress), and were provided with a small monetary incentive for mailing each diary record in on a daily basis. In this study, pain coping was assessed at the end of each day using Stone and Neale’s (1984) Daily Coping Inventory (DCI) adapted for chronic pain coping. The coping strategies assessed by the DCI include (a) pain reduction effort, (b) relaxation, (c) distraction, (d) redefinition, (e) venting emotions, (f) seeking emotional support, and (g) seeking spiritual comfort. Affleck et al. (1992) found that persons having RA were most likely to report the daily use of relaxation strategies and least likely to use the strategies of venting emotions and redefinition. They also found that persons who used relaxation frequently had lower levels of pain during the study and that those who used a higher overall level of coping showed declining levels of pain over the 75 days of the study.

Diary recording need not be restricted to end-of-the-day ratings of coping. Cruise, Broderick, Porter, Kaell, and Stone (1996) had individuals with RA complete diary entries seven times a day for 1 week. It is interesting that no reactive effects in terms of changes in average level of pain were noted for this more intensive recording schedule.

Keefe, Affleck, and colleagues (Affleck et al., 1999; Keefe, Affleck, et al., 1997; Keefe et al., 2001) have conducted several daily diary studies of persons having arthritis. In one study of 53 persons having RA, time-lagged effects of pain coping and pain coping efficacy on next day pain and mood were examined (Keefe, Affleck, et al., 1997). Findings revealed that persons who reported using pain reduction and relaxation on one day were significantly more likely to experience an improvement in their next-day pain and a positive mood. Furthermore, persons who reported high coping efficacy on one day were much more likely to report decreases in pain on the next day. In a second study (Affleck et al., 1999), the effects of type of arthritis (OA vs. RA) and gender on pain and daily pain coping strategies were examined. Participants, 71 persons having OA and 76 persons having RA, kept daily diary records for 30 days. Results indicated that participants having RA had 42% greater daily pain than participants having OA. Diary records for 30 days. Results indicated that participants having RA had 42% greater daily pain than participants having OA.

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A third recent daily diary study examined the role of daily spiritual and religious coping strategies in the experience of RA (Keefe et al., 2001). A sample of 35 persons having RA kept a daily diary for 30 days that included a standardized measure of positive and negative religious and spiritual coping strategies (drawn from the Brief Multidimensional Measure of Religiousness/Spirituality; National Institute of Aging/Fetzer Working Group, 1998) and a measure of religious and spiritual coping efficacy. The perceived efficacy of religious and spiritual coping strategies was significantly related to a number of daily outcomes, including decreased pain, more positive mood, and higher levels of perceived social support. Positive religious and spiritual coping was also related to increased positive mood.

Comment. Coping is a topic that is clearly receiving growing attention from arthritis researchers. Perhaps the major reason for this is that data gathered on coping may have important implications for the prevention and treatment of arthritis pain and disability. Many of the psychosocial interventions now being used for persons with arthritis are designed to modify coping strategies initially identified as important in the arthritis coping research literature. Coping is increasingly being viewed as a complex and multidimensional phenomenon. In line with this viewpoint, more sophisticated approaches to the assessment and analysis of coping have emerged. Furthermore, the focus in coping research is no longer on solely pain coping but also on coping strategies that people use to manage other arthritis-related stressors. The array of coping measures is much broader and includes a variety of new questionnaires, interview methods, and daily diary methods. Interview methods are important, because they provide a broad and rich perspective on coping. Although the qualitative methodologies used to analyze interview data can be time-consuming and demanding, this type of research can potentially lead to new insights into the nature and process of coping. Diary studies are now using sophisticated within-person analyses that can control for potential confounding variables such as reporting biases or disease severity.

To aid in fully understanding the dynamics of coping, future studies are needed using daily diary methods and longitudinal designs. In particular, longitudinal research is needed to track how the coping process changes from the point of diagnosis to long-term adjustment to the disease.

Self-Efficacy

Self-efficacy is defined as a person’s confidence in their ability to successfully execute and accomplish a given task (Bandura, 1977). Self-efficacy is learned primarily through personal experiences (Schiaffino & Revenson, 1995), and studies show that people living with arthritis vary substantially in their self-efficacy (Lorig, Chastain,ung, Shoor, & Holman, 1989). Some persons having arthritis have a high level of self-efficacy and are confident about their abilities to cope with pain and other arthritis symptoms. Other persons, however, have a very low level of self-efficacy and feel unable to manage their pain or disability.

A major impetus for research on self-efficacy in arthritis was the development of the Arthritis Self-Efficacy Scale (ASES; Lorig et al., 1989). The ASES is a 20-item measure that assesses self-efficacy for three domains: pain, function, and other arthritis symptoms (e.g., fatigue). On the ASES, respondents indicate their certainty that they can perform specific behaviors in each of these domains using a 10 (very uncertain) to 100 (very certain) scale. Research has supported the internal consistency, test–retest reliability, and validity of the three self-efficacy domains of the ASES (Lorig, Mazonson, & Holman, 1993). Research also has supported the reliability and validity of a composite self-efficacy score (total self-efficacy), based on a sum of each of the individual domain scale scores (Parker et al., 1995).

Research findings. A number of recent studies have examined the role of self-efficacy in people having arthritis. Schiaffino and Revenson (1995) examined self-efficacy as mediator and moderator of depression and disability in individuals having RA. A
sample of 64 persons with RA was studied at two time points (baseline and 4-month follow-up). Data analyses revealed that at baseline and at 4-month follow-up, there was a significant relationship between perceived control and disability and self-efficacy mediated this relationship. Self-efficacy also functioned as a moderator, in that when self-efficacy was low and participants reported more internal and global attributions regarding their disease, participants experienced much higher levels of depression.

Shifren, Park, Bennett, and Morrell (1999) recently found that self-efficacy mediated the relationship of intellectual functioning to mental health outcomes in persons having RA. It is interesting that this study also found that older individuals having RA who had difficulty with cognitive tasks tended to report much lower self-efficacy, higher pain, and worse mental health outcomes.

Keefe, Lefebvre, et al. (1997) examined how self-efficacy was related to judgments of controlled thermal pain stimuli. A sample of 40 persons having OA of the knees completed the ASES, and then participated in a lab session in which a contact thermode was placed on the forearm to deliver brief presentations of thermal heat stimuli. During the lab session, assessments were made of pain threshold and tolerance, and participants were asked to rate a variety of randomly presented thermal stimuli. Data analyses revealed that persons who scored high on self-efficacy for arthritis pain actually rated the laboratory thermal pain stimuli as much less unpleasant and had higher thresholds and tolerance for laboratory pain than those scoring low on self-efficacy for arthritis pain. These findings provide further support for the validity of the ASES and show that variations in self-efficacy for arthritis pain are meaningfully related to the perception of controlled pain stimuli.

Keefe, Kashikar-Zuck, et al. (1997) examined the degree to which pain coping strategies used by persons having OA can predict those individuals' and their spouses' ratings of individuals' self-efficacy. Regression analyses examining predictors of the ratings of self-efficacy made by persons having OA revealed that (a) ignoring pain sensations was related to higher self-efficacy for pain, (b) coping self-statements were related to higher self-efficacy for other arthritis symptoms, and (c) catastrophizing was related to lower self-efficacy for pain and other arthritis symptoms (e.g., fatigue and mood). Regression analyses examining predictors of spouses' ratings of the self-efficacy of their partner who had OA showed that (a) diverting attention was related lower self-efficacy for pain, (b) praying or hoping was related to slower self-efficacy for function, and (c) catastrophizing was related to lower ratings of self-efficacy for other arthritis symptoms. These findings are particularly interesting in that they were obtained even after analyses controlled for pain intensity and demographic variables that may be important in explaining self-efficacy.

There is growing evidence that changes in self-efficacy are related to the outcomes of psychosocial and educational interventions for arthritis. In a mixed sample of persons having OA and RA, Lorig et al. (1993) found that increases in self-efficacy occurring over the course of a self-help intervention were correlated with improvements in pain and psychological functioning up to 4 years later. Keefe, Caldwell, et al. (1996) and Keefe et al. (1999) have reported that increases in self-efficacy experienced by persons having OA following pain coping skills training were related to immediate and long-term outcomes. Smarr et al. (1997) also found that increases in self-efficacy were related to long-term maintenance of treatment gains in persons with RA who had undergone stress management training.

Comment. In both cross-sectional and longitudinal studies, self-efficacy has been found to be predictive of indices of pain and disability in persons suffering from OA and RA. There is also evidence that self-efficacy relates to the perception of pain stimuli in a controlled laboratory environment. Furthermore, it appears self-efficacy may function as a mediator and moderator of pain and psychosocial health status in individuals having arthritis. Overall, self-efficacy is emerging as one of the most important factors in understanding pain and disability in persons having RA. Because of the consistency of findings regarding self-efficacy, health educators are increasingly incorporating behavioral interventions designed to enhance self-efficacy into their educational programs (e.g., Lorig et al., 1993). Furthermore, new guidelines for the management of pain in arthritis emphasize the importance of helping people build confidence in their self-help abilities as a routine part of the biomedical and psychosocial treatment process (Simon et al., 2002).

Social Context of Arthritis

A growing number of studies have examined the psychosocial context of arthritis. Three areas, in particular, have received research attention: social support, socioeconomic status, and patient–spouse and patient–caregiver relationships.

Research findings on social support. Social support can be defined as the "processes by which interpersonal relationships promote well-being and protect people from health declines, particularly when they are facing stressful life circumstances" (Lanza & Revenson, 1993, p. 97). In many arthritis studies, social support has been assessed using the Social Support Questionnaire (SSQ; I. G. Sarason, Levine, Basham, & Sarason, 1983). The SSQ is a 27-item self-report questionnaire that assesses the quality and quantity of social support a person receives. The test–retest reliability of the SSQ for both the measure of quantity of social support (r = .90) and the measure of quality of social support (r = .83) has been shown to be good (I. G. Sarason et al., 1983). Because this questionnaire is somewhat long, a shortened version has been developed that is highly correlated with the SSQ and has high internal reliability (B. R. Sarason, Shearin, Pierce, & Sarason, 1987).

Many studies have examined the relationship of social support to health and psychological outcomes of persons having arthritis. In a study of 54 people having RA, Doeglas et al. (1994) found that persons who received higher daily emotional support experienced much higher levels of psychological well-being. Persons who had a higher degree of social companionship were also less depressed. In a study of people having RA who were in the early stages of their disease, Evers, Kraaimaat, Geenen, and Bijlsma (1998) found that persons who had smaller social networks were much more likely to experience a decrease in mobility. Penninx et al. (1997) conducted a study of a community-based sample of 1,690 people, aged 55–85 years, of whom 719 had no chronic disease, 612 had mild arthritis, and 359 had severe arthritis. This study provided evidence for the buffering effect of social support in that the results revealed that emotional support “mitigated the influence of arthritis on depressive symptoms” (Penninx et al., 1997, p. 393).
Manne and Zautra (1990) conducted a study of social interactions in 103 women with RA and their husbands. They found that in couples in which the husband made more critical remarks about the patient, the patient had higher levels of pain and disability, and the husband showed poorer psychological adjustment. In couples in which the husband was supportive, the patient showed better psychological adjustment. It is interesting that negative interactions with a spouse played a more significant role in explaining adjustment of the patient than supportive interactions. These findings suggest that negative aspects of social interactions may be related in important ways to adjustment to arthritis.

Research findings on socioeconomic status. There is growing evidence from epidemiological and sociological studies that education and income are related to arthritis mortality and morbidity (Callahan et al., 1996; Pincus & Callahan, 1985). Among people with RA, those who have lower levels of formal education have been found to have significantly higher mortality rates (Callahan et al., 1996; Pincus & Callahan, 1985). This relationship appears to be independent of age, medication use, functional status, or disease duration (Pincus & Callahan, 1985).

Socioeconomic status has been related to several dimensions of RA. Studies have shown that low socioeconomic status is related to higher functional disability, depressive symptoms, and maladaptive coping styles (Berkanovic et al., 1996; Downe-Wamboldt & Melanson, 1995). One study compared 141 persons having RA living in an affluent area with 106 persons having RA living in a less-affluent area of the same city (Brekke, Hjordal, Thelle, & Kvien, 1999). Participants were administered measures to assess the disease process, joint damage, health status, health-related quality of life, and arthritis self-efficacy. The results indicated that both groups of persons had similar levels of joint damage and arthritis self-efficacy. However, those who lived in the less-affluent area reported significantly poorer health status and lower self-efficacy.

Research findings on patient–spouse and patient–caregiver relationships. Arthritis is an issue not only for persons with arthritis but also for their spouses and caregivers. Recent studies have begun to examine the interrelationships between individuals’ responses to their disease and the responses of spouses and caregivers. Walsh, Blanchard, Kremer, and Blanchard (1999) studied the impact of RA on both persons having the disease and their spouses or partners. Using the CES-D cutoff for possible clinical depression, Walsh et al. found that 35.7% of persons with RA and 23.3% of their partners would be classified as depressed. It is interesting that there were no significant differences in the overall level of distress reported by the persons having arthritis and their partners. These findings underscore the psychosocial impact of RA on individuals and their partners.

Beckham, Burker, Rice, and Talton (1995) conducted a study of 65 persons having RA in which they attempted to identify demographic, medical, and psychosocial characteristics that could predict caregiver burden and caregivers’ sense of optimism versus pessimism. This study found that self-efficacy of the persons having RA was one of the best predictors of caregivers’ burden and caregivers’ optimism. People scoring high on self-efficacy had higher optimism about their arthritis, and Kraaimaat, Van Dam-Buggen, and Bijlsma (1995) examined how spouses’ reactions were related to psychological distress in men and women having RA. When spouses responded in a critical fashion, men having RA reported significantly higher levels of anxiety, and women having RA reported significantly higher levels of anxiety and depression.

One factor that may influence spouses’ reactions to arthritis is their ability to detect symptoms, such as pain, in their partners. Beaupre et al. (1997) evaluated a computer-assisted method for assessing how well spouses were able to track their partners’ pain. In this study, spouses of persons having OA viewed a videotape of the patient engaging in a series of sitting, walking, standing, and reclining tasks while providing continuous ratings of the partner’s pain level using a computer-controlled mouse. Data analyses compared ratings of pain made by the person having OA with those of their spouse. Overall, there was a significant correlation between spouses mean ratings of the partners’ pain and the partners own mean ratings of pain, \( r(18) = .74, p < .001 \). However, when time series analyses were used to examine relations between spouse ratings and their partners’ pain ratings over the entire 10-min observation session, it was found that some couples were highly synchronous in their ratings, and other couples were not at all synchronous in their ratings. Data analyses revealed that the level of synchrony was much higher in couples in which the spouse was female. These findings suggest that gender may be an important factor in understanding spouses’ ability to judge their partners’ pain.

Comment. Research findings on the social context of arthritis raise a number of interesting issues for future research. Although research on social support has shown a relationship between social support and health, it remains unclear whether social support has a direct effect on health outcomes or serves as a buffer against arthritis-related stressors. Future research needs to focus more on the different dimensions of social support (e.g., emotional support and instrumental support), as these might show different relationships to pain, disability, and other health outcomes. It is also important to identify the individuals who are most likely to benefit from social support, because researchers have occasionally found that certain forms of social support are related to increased disability (Krol, Sanderman, & Suurmeijer, 1993). Furthermore, studies are needed to examine the effects of integrating social support interventions into traditional health care settings.

Researchers also need to examine the pathways linking low socioeconomic status and increased morbidity and mortality in RA. One possibility is that people with low formal education have lifestyles that predispose them to arthritis and other diseases. Another possible explanation is that a low educational level contributes to learned helplessness, a factor that, in at least one study, has been found to mediate the relationship of socioeconomic status to early mortality (Callahan et al., 1996). Third, it is possible that limited access to health care may account for higher morbidity among low socioeconomic status groups.

To date, research evidence suggests that an individual’s response to arthritis might influence their partner’s level of distress and that the way a partner or caregiver responds to an individual having arthritis might influence arthritis pain and disability. Research on this topic, however, has been limited, and further research is needed to fully understand the different styles of interaction between persons having arthritis and their partners or caregivers and the significance of these styles of interaction for health outcomes.
Biopsychosocial Approaches to Treating Arthritis

Since the initial application of cognitive–behavioral treatment interventions for rheumatoid arthritis in the early to mid-1980s, there has been growing evidence that psychosocial interventions may be helpful in the management of arthritis pain (Bradley, 1994; Bradley & Alberts, 1999; Keefe, Kashikar-Zuck, et al., 1996; Keefe & Van Horn, 1993; Parker, Iverson, Smarr, & Stucky-Ropp, 1993; Young, 1992). In the past decade, one of the most important developments is that psychosocial interventions are being designed to address a broader range of arthritis-related outcomes. Newer protocols encourage persons having arthritis to use coping skills and cognitive–behavioral interventions not only to manage pain but also to address psychological disturbance, interpersonal distress, and physical function. In this section, we update and review the last 10 years of published research on psychosocial interventions for managing OA and RA and briefly review the emerging work on the effects of an emotional disclosure paradigm on RA.

Psychosocial Interventions for Osteoarthritis

Although controlled studies of psychosocial treatments for RA were first conducted in the early to mid-1980s, it was not until the late 1980s and early 1990s that well-designed treatment outcome studies were conducted with persons having OA (e.g., Keefe et al., 1990a, 1990b). These studies of persons having OA showed that cognitive–behavioral treatment protocols focused on teaching pain coping skills were effective in decreasing pain and reducing psychological disability when compared with arthritis education or standard care control conditions.

An interesting, more recent direction for intervention research in OA has been studies testing effects of involving spouses in pain coping skills training. Keefe, Caldwell, et al. (1996) conducted a study in which 88 persons having OA and their spouses were randomly assigned to one of three conditions: (a) spouse-assisted pain coping skills training, (b) conventional coping skills training without spouse involvement, or (c) arthritis education–spousal support control condition. All participants having OA in the treatment conditions attended 10 weekly group sessions of 2-hr duration. Participants in the pain coping skills training condition were provided with a rationale for training (i.e., gate control theory) and systematic training in three sets of pain coping skills (attention diversion skills, activity-based skills, and cognitive coping strategies). Participants in the spouse-assisted coping skills training condition attended sessions with their spouses in which the couples not only received training in the pain coping skills used in conventional training but also received training in couples skills (e.g., communication skills, behavioral rehearsal, mutual goal setting, joint home and in vivo practice, and maintenance) designed to assist the person having OA in acquiring and maintaining learned coping skills. Participants in the arthritis education–spousal support control condition attended sessions with their spouses and received detailed information about the nature and diagnosis of OA, and medical, surgical, and alternative treatments of OA. Results revealed that persons in the spouse-assisted coping skills training condition and the conventional coping skills training condition showed significant immediate improvements in pain, psychological disability, self-efficacy, and marital satisfaction. Although the spouse-assisted coping skills training condition did not differ significantly from the coping skills training condition on any of the outcomes, there was a consistent pattern across seven of the eight study outcomes for spouse-assisted coping skills training to show the best outcomes, conventional coping skills training to show the next best outcomes, and the arthritis education–spousal support control condition to show the worst outcomes.

A subsequent study (Keefe et al., 1999) reported on results of 6- and 12-month follow-up evaluations of individuals having OA and spouses who had participated in the original study. At 6-month follow-up, participants in the spouse-assisted coping skills training condition were generally able to sustain therapeutic improvements on measures of coping and self-efficacy. Participants in the conventional coping skills training condition also retained, to a lesser degree, their initial treatment gains in coping and self-efficacy. At 12-month follow-up, the only significant difference in outcome was that participants in the spouse-assisted coping skills training condition showed higher self-efficacy for pain control than those in the control condition. Persons in both the conventional and spouse-assisted coping skills training conditions also showed marginally significant improvements in physical disability at 12-month follow-up. It is interesting that although persons in the two coping skills training conditions failed to show long-term improvements in pain, psychological disability, and pain behavior, pre- to posttreatment changes in self-efficacy and marital adjustment were related to long-term outcome. These results suggest that changes in self-efficacy and marital adjustment may be particularly important in explaining the maintenance of treatment gains in persons undergoing conventional or spouse-assisted coping skills training.

Can psychosocial intervention have an impact on how persons having OA respond to surgical interventions? This question was addressed in a recent study by Daltroy, Morlino, Eaton, Poss, and Liang (1998). In this study, 222 persons with OA undergoing total hip or knee replacement surgery were randomly assigned to one of four conditions: (a) training in a relaxation response procedure using a bedside audiotape, (b) an educational intervention that provided information on likely postoperative and rehabilitation procedures, (c) training in relaxation plus education, or (d) usual care control. All interventions were delivered in a single, brief (15–30-min) session on the day prior to surgery. A series of outcome measures was collected, including data on use of postoperative pain medication, length of hospital stay, anxiety, and mental status. Results indicated that none of the intervention groups had a significant effect on any of the outcomes. Certain subgroups of individuals (e.g., those scoring high on denial and anxiety), however, did benefit from the educational intervention. A major limitation of this study was the very brief nature of the interventions. Together, these findings suggest that more intensive treatment may be needed to produce clinically significant benefits in persons undergoing surgical procedures for arthritis. In addition, the timing of intervention may be critical. Working with persons on the day prior to surgery may not be effective, whereas educating and training persons over several weeks prior to surgery may be much more effective in enhancing learning and mastery of coping skills.

Psychosocial Interventions for Rheumatoid Arthritis

Over the past decade, a much larger number of controlled studies of psychosocial interventions have been conducted in RA...
populations than in OA populations. These studies have addressed a variety of questions regarding treatment efficacy.

Radojevic, Nicassio, and Weisman (1992) tested whether the addition of a family support component could enhance the efficacy of a cognitive–behavioral therapy intervention for controlling RA symptoms. A sample of 65 persons with RA were randomly assigned to behavior therapy alone, behavior therapy with family support, arthritis education with family support, or a no treatment control condition. All treatments were carried out in small group sessions that met weekly for 6 weeks. Data analyses revealed that, when compared with the control conditions, both of the behavioral interventions showed significant short- and long-term improvements in number of swollen joints and severity of swelling. These interventions also led to improvements in pain as assessed during direct joint examination at 2-month follow-up. Radojevic et al. concluded that cognitive–behavioral interventions are effective in managing RA disease-related symptoms and underscored the potential use of involving family members in cognitive–behavioral treatments for RA.

An important direction for treatment research on RA is comparing psychosocial interventions directly with standard treatments, such as physical or occupational therapy. Kraaimaat, Brons, Geenen, and Bijlsma (1995) conducted a study of 77 persons having RA, in which they tested the relative efficacy of a cognitive–behavioral intervention and an occupational therapy intervention. Participants in the cognitive–behavioral intervention received training in progressive relaxation, rational thinking, active coping skills, and goal setting. Participants in the occupational therapy condition received educational information about biomedical aspects of RA, training in energy conservation, and exercises for reducing stiffness and increasing or maintaining joint mobility. Although persons in both conditions showed immediate improvements in knowledge about their disease, only the cognitive–behavioral intervention produced gains in pain coping. These improvements were noted despite the fact that clinical and lab studies showed that this group of persons experienced significant deterioration in their disease status over the course of treatment.

Another recent study of persons having RA conducted by Leibing, Pfingsten, Bartmann, Rueter, and Schuessler (1999) compared the effects of a comprehensive cognitive–behavioral treatment protocol with a routine care control condition. When compared with persons in the control condition, persons in the cognitive–behavioral treatment condition showed significant improvements in pain affect, coping, and emotional stability.

Traditionally, cognitive–behavioral treatment protocols for RA have focused primarily on pain management. However, many of the skills included in cognitive–behavioral protocols for pain management can be used to help persons with RA manage stressors that may be related to their disease. Parker et al. (1995) conducted a study to test the use of a cognitive–behaviorally based stress management protocol in persons having RA. Persons in a stress management condition received a very comprehensive protocol that featured a variety of components, including relaxation training, methods for identifying stressors and life goals, methods for managing pain, mood, and interpersonal relationships, and specific strategies for managing stressors typical of RA. This innovative feature of this protocol was that it integrated therapist training in coping skills with a computer-driven multimedia presentation. Another key feature was the use of booster treatment sessions scheduled at least once every 3 months. At the end of 1 year, results showed that, when compared with an attention control condition and a standard care control condition, persons in the stress management condition showed statistically significant improvements in pain, coping, helplessness, self-efficacy, and health status. Together, these results indicate that comprehensive stress management training may be effective in improving a wide array of outcomes in persons having RA. It is interesting that recent evidence (Nakajima, Hirai, & Yoshino, 1999; Yoshino, Fujimori, & Kohda, 1996) suggests that novel stress management approaches, such as encouraging mirthful laughter, may reduce neuroendocrine and immune system measures (cortisol, IL-6, and CDR/CDH ratio) in RA patients.

Most of the controlled studies of psychosocial treatments for RA have used interventions based on behavioral or cognitive–behavioral principles. A study by Maisiak, Austin, West, and Heck (1996) sought to determine whether an alternative treatment protocol (a person-centered individual therapy intervention based on Rogerian therapy) might be effective for people having RA or systematic lupus erythematous (SLE). The therapy sessions were scheduled once every 4–6 weeks, over a 6-month period. Data analysis showed that although the treatment was ineffective for persons having RA, it did produce improvements in psychological functioning in the group of people having SLE.

With the increasing emphasis on cost control in health care, investigators have begun exploring the effects of briefer psychosocial interventions for managing RA. One example of this trend is a recent study by Sinclair, Wallston, Dwyer, Blackburn, and Fuchs (1998). Participants were seen for three 90-min group sessions that provided opportunities for education, social support, and direct training in coping skills for managing RA symptoms and common negative emotions. This training was supplemented by an 85-page workbook and a series of three 90-min videotapes. Outcome data revealed that there were significant immediate improvements in measures of fatigue, coping, psychological well-being, and pain behavior, and that many of these improvements were maintained at 3-month follow-up. These findings suggest that brief psychosocial protocols might be beneficial for persons having arthritis. However, a major limitation of this study was that it failed to include a control group against which treatment effects could be compared.

Another approach to abbreviating treatment is to train persons in one or two coping skills (e.g., relaxation training and imagery) as opposed to the more typical strategy of training in multiple coping skills. Lundgren and Stenstrom (1999) evaluated an intervention that was restricted to simply progressive relaxation and imagery training. Of the 21 outcome measures examined, persons receiving this intervention showed immediate improvements in two measures (self care and recreational activities), improvement in two measures at 6 months (mobility and arm function and leg muscle function), and no improvements in any measures at 12 months. Overall, these results suggest that training in a limited number of coping skills may not be the most effective strategy for persons having RA.

Do comprehensive psychosocial protocols have long-term benefits in terms of reduced costs and health care use? Young, Bradley, and Turner (1995) reported results from an 18-month follow-up of a study conducted on persons who had participated in
an earlier treatment outcome study (Bradley et al., 1985). They found that persons who had received a combined cognitive–behavioral and biofeedback intervention had fewer RA-related clinic visits and days hospitalized, and lower overall costs of medical services, when compared with a social support control condition and a no treatment control.

A promising new area of intervention research in arthritis management involves the study of the emotional disclosure paradigm developed by Pennebaker and colleagues (e.g., Pennebaker & Beall, 1986). In this paradigm, individuals are asked to disclose their most intimate and troubling thoughts and feelings regarding a traumatic experience in their lives through some form of verbal expression. A recent quantitative review indicated that emotional disclosure is associated with significant improvements in physical health, psychological well-being, physiological functioning, and general functioning (Smyth, 1998). Two studies have recently extended this paradigm to individuals having RA.

Kelley, Lumley, and Leisen (1997) conducted the first study of emotional disclosure with persons having RA. In their study, participants were randomly assigned to either an emotional disclosure condition or a control condition. Participants in the disclosure condition were asked to talk privately about a stressful event for 15 min during 4 consecutive days. Participants in the control condition were asked to discuss trivial topics during the same time frame. Results revealed that participants in the disclosure condition had significantly less physical dysfunction and less affective disturbance as compared with control participants when assessed 3 months following disclosure. However, no group differences in pain or joint condition were identified. A notable, yet transient, side effect of the intervention involved a significant increase in negative mood among the disclosure group immediately following the completion of the four private disclosure sessions. It is interesting that participants who had the largest initial increases in negative mood showed the best long-term improvements in joint condition at follow-up.

Smyth, Stone, Hurewitz, and Kaell (1999) recently explored the potential benefit of the emotional disclosure paradigm with a mixed sample of individuals diagnosed with RA or asthma. In this study, participants in the emotional disclosure condition were asked to write for 20 min for 3 consecutive days regarding either their most traumatically stressful life experience (intervention group) or their plans for the day (control group). Clinical outcomes, evaluated 4 months following completion of the intervention, revealed significant improvements in health status and disease activity for RA participants in the intervention group.

As much as the results of these two recent studies suggest that there might be clinical benefits of emotional disclosure in individuals having RA, they also raise questions regarding the possible mechanisms explaining the results. Although several pathways have been proposed, including alterations in coping, social interactions, immune function, or circulating stress hormones, compelling evidence has not yet been found to support any of these mechanisms. A second interesting question borne of these results involves whether combining emotional disclosure with cognitive–behavioral training might address a broader range of outcomes than either intervention alone.

Comment

Over the past decade, controlled research has continued to provide support for the efficacy of psychosocial interventions for OA and RA. Research has expanded beyond the original focus on pain management and has revealed beneficial effects across a number of arthritis outcomes, including diminished psychological distress, improved marital adjustment, and reduced disease-related symptomatology (e.g., joint swelling and fatigue). In addition there is one study that suggests psychosocial interventions for arthritis may provide significant cost savings in terms of reduced medical resource use (Young et al., 1995). The recent application of the emotional disclosure paradigm provides an interesting and innovative addition to the intervention research literature.

Results to date suggest a number of important areas for future research. First, future studies need to continue to identify and evaluate potential mechanisms explaining how psychosocial interventions work for people having arthritis. Second, most research thus far has focused on persons with advanced disease. In this context, the selection of appropriate control conditions and definition of treatment effects become significant. With progressive arthritic disease, maintenance of the status quo following psychosocial intervention may actually be a positive treatment effect when compared with the deteriorating condition of the standard care or control group. Along these lines, future research should also assess the efficacy of early psychosocial intervention trials to determine whether early intervention will prove more beneficial and serve to arrest or deter disease progression at an earlier stage. Only one, very recent study has evaluated the efficacy of coping skills training in patients having early RA (Sharpe, Sensky, Timberlake, & Ryan, 2001). In this study, 53 patients having RA for less than 2 years were randomly assigned to a conventional coping skills training intervention or routine medical treatment control condition. Data analyses revealed that at 6-month follow-up, patients in the coping skills training group had significant decreases in depression and in the number of actively inflamed and painful joints, and increases in the use of the coping strategies of attention diversion and reinterpreting pain.

Third, it is becoming increasingly important for researchers to incorporate measures of disease activity in their studies, to understand the impact of intervention on biological endpoints. Fourth, relatively few psychosocial treatment outcome studies have been conducted with persons having OA. Given the prevalence of OA and its often disabling effects, there is a clear need for additional psychosocial outcome studies in this population. Finally, most of the studies conducted have been efficacy studies that test psychosocial interventions in volunteers treated under optimal conditions. There is a clear need for controlled studies to test the effectiveness of these treatments with patients being seen in more typical clinical practice settings.

An emerging trend in psychosocial intervention research and practice is the pressure to compress and abbreviate therapies for cost-control purposes. To address this area, future research needs to explore dose–response relationships in treatment, novel methods of providing psychosocial treatment, and innovative methods of maintaining positive treatment effects. For example, at least one study has incorporated computer-based multimedia presentations requiring relatively less face-to-face contact (Parker et al., 1995). Such modalities may well hold promise for efficiently communi-
cating treatment-relevant information and concepts. Future research also needs to explore other innovative approaches to delivering psychosocial interventions, including interactive voice technology, delivering treatment using internet resources, and the use of personal data assistants.

As a whole, the past decade has witnessed rapid growth in psychosocial research in arthritis. Much of this growth can be attributed to increases in the priority of and funding opportunities for biopsychosocial research provided by major National Institutes of Health agencies (e.g., the National Institute of Arthritis and Musculoskeletal and Skin Diseases) and major foundations (e.g., the Arthritis Foundation). Given the progress made in the past decade, we can anticipate important new advances in biopsychosocial research on the assessment and treatment arthritis for many years to come.

References


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