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An Appraisal-Based Coping Model of Attachment and Adjustment to Arthritis

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Abstract

Guided by pain-related attachment models and coping theory, we used structural equation modeling (SEM) to test an appraisal-based coping model of how insecure attachment was linked to arthritis adjustment in a sample of 365 people with arthritis. The SEM analyses revealed indirect and direct associations of anxious and avoidant attachment with greater appraisals of disease-related threat, less perceived social support to deal with this threat, and less coping efficacy. There was evidence of reappraisal processes for avoidant but not anxious attachment. Findings highlight the importance of considering attachment style when assessing how people cope with the daily challenges of arthritis.

A major source of disability worldwide (Arthritis Society, 2010), arthritis is one of the most common chronic pain conditions. Although arthritis can take many different forms, joint pain, inflammation, and functional limitations are common challenges for people living with arthritis. The functional limitations and unpredictable nature of arthritis symptoms can also contribute to stress by making daily planning difficult and creating dependency upon others for routine daily activities (Gignac, Cott, & Badley, 2000). Together these disease-related and psychosocial stressors can take a toll on psychological well-being (e.g., Murphy, Sacks, Brady, Hootman, & Chapman, 2012). Given that stress has been implicated in the etiology, maintenance, and exacerbation of rheumatic diseases (Cohen et al., 2012; Evers et al., 2013), and that adaptive coping is linked to better adjustment to arthritis over time (Pinto-Gouveia, Costa, & Marôco, 2013; Sirois & Hirsch, 2013), understanding the factors and processes that impact how people with arthritis perceive and respond to disease-related stressors can have important implications for disease management and adjustment.

How stressors are appraised and the factors that affect these appraisals are key for understanding how people successfully cope with arthritis. The role of appraisals in the perception of and adjustment to stressors is perhaps best explained by Lazarus and Folkman's (1984) cognitive transaction model of stress. In this model appraisals play a central role in both the initiation and continuance of the stress response. The presence of a stressor alone is not sufficient to understand its impact; rather how that stressor is appraised initially and in light of perceived coping resources will determine the extent to which it is threatening. In the context of arthritis, primary appraisals of challenging events such as pain or functional limitations, are followed by a secondary appraisal of the potential coping resources that may be available to help manage the stressor.

Because functional limitations are a common stressor for people with arthritis, social support is one coping resource that may be particularly important. Low levels of social support have been implicated in long-term functional disability and pain (Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2003a), psychological distress shortly after diagnosis (Evers, Kraaimaat, Geenen, & Bijlsma, 1997), and longitudinally over several years (Benka et al., 2012; Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2003b; Gafvels, Hagerstrom, Nordmark, & Wandell, 2014) in people with arthritis. However, social support may have to be first perceived and then used to facilitate healthy coping and adjustment (Curtis, Groarke, Coughlan, & Gsel, 2004; Kool, van Middendorp, Lumley, Bijlsma, & Geenen, 2013).

One individual difference that may play an important role in whether social resources are perceived and successfully used by people with arthritis is attachment style. Briefly, attachment was conceptualized by Bowlby (1969) to describe relationship patterns between children and their caregivers that evolve into stable expectations and patterns of relating to significant others in adulthood. In contemporary research, attachment is typically measured by dimensions related to anxiety and avoidance (Brennan, Clark, & Shaver, 1998; Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Individuals high on anxiety tend to be dependent on significant others and fear rejection by them, while those high on avoidance are self-reliant and uncomfortable with close relationships. In contrast, the securely attached are low on both anxious and avoidant dimensions and seek out close relationships for comfort during times of stress. From this perspective, secure attachment can be considered an inner resource or resilience factor that can foster successful coping with stress, whereas insecure attachment is a risk factor that may interfere with successful coping (Mikulincer & Florian, 1998).

Central to attachment theory is that the attachment system is activated during the

experience of a threat (Bowlby, 1988). This threat, however, can include symptoms of illness or pain. In the Attachment-Diathesis Model of Chronic Pain (ADMoCP; Meredith, Ownsworth, & Strong, 2008), appraisals of pain, as well as of the ability to cope with it and the availability of support, influence responses to appraisals and adjustment outcomes. Studies have shown that individuals with chronic pain who were insecurely attached appraised pain as more threatening (Meredith, Strong, & Feeney, 2005), and described themselves as less capable of coping with pain (Meredith et al., 2008). Mikulincer and Shaver's (2007) general model of attachment activation and functioning posits that initial threat appraisal is followed by the appraisal of social resources in the form of availability and responsiveness of an attachment figure as a means of coping with the threat. Hyperactivating strategies (e.g., hypervigilance and rumination over both the threat and proximity seeking) characteristic of anxious attachment may ensue as a means of coping when proximity seeking is possible but the attachment figure is perceived as unavailable. Deactivating strategies such as distraction, and distancing from the threat and from proximity seeking that are common to avoidant attachment may also result. Hyperactivation and deactivation can each lead to poor adjustment over time (Mikulincer & Shaver, 2007), can influence threat appraisal through feedback loops and reappraisal. According to this model, attachment factors prominently in the primary and secondary appraisals of stress and therefore can influence perceptions of how well one is coping with illness.

In the context of a painful chronic illness such as arthritis, insecure attachment may be particularly problematic. The heightened stress appraisals and perceptions of unavailable social support resources associated with insecure attachment may foster feelings of being unable to cope successfully with illness-related stressors and contribute to poor adjustment. For example, coping efficacy, the perceived ability to cope with stressors, has been linked to arthritis

adjustment outcomes (Katz, 1998; McKnight, Afram, Kashdan, Kasle, & Zautra, 2010), and to perceptions of psychological growth over time (Sirois & Hirsch, 2013). Although attachment theory posits that secure attachment is associated with greater self-efficacy (Mikulincer & Florian, 1998), the inter-relations between insecure attachment, primary and secondary illness-related stress appraisals, and coping efficacy have not been previously examined in the context of arthritis.

The Current Study

Bringing together this theoretical and empirical literature we propose an appraisal-based coping model of attachment and adjustment to arthritis (see Figure 1). Consistent with coping theory (Lazarus & Folkman, 1984), models of attachment activation and pain-related stress (Meredith et al., 2008; Mikulincer & Shaver, 2007), we posit the following: Insecure attachment will be associated with poor coping efficacy and this link may be explained by primary appraisals of stressors related to arthritis that include but are not limited to pain, and by secondary appraisals of social resources or social support assessed as perceived social support. Coping efficacy was chosen as the indicator of adjustment to arthritis as previous research has demonstrated that perceiving oneself as coping well with illness-related stressors is linked to a variety of other important adjustment outcomes (Katz, 1998; McKnight et al., 2010; Sirois & Hirsch, 2013).

Using structural equation modeling (SEM) we tested the proposed model with arthritis coping efficacy as the outcome variable (see Figure 1). Given that theory and research indicates that attachment may have both direct and indirect effects on primary stress appraisals and secondary appraisals of perceived social support (Meredith et al., 2008; Meredith et al., 2005; Mikulincer & Shaver, 2007), we included both direct and indirect paths from attachment to

appraisals and coping efficacy and tested alternative models to examine the possible mediating effects of appraisals on coping efficacy. We also allowed primary and secondary appraisals to covary to simulate the reappraisal process, with less perceived social support increasing appraisals of arthritis-related stressors and vice versa. To test the possible differential associations of anxious and avoidant attachment with the appraisal and coping variables we chose to test the model separately for anxious and avoidant attachment.

Method

Participants and Procedures

A sample of 365 people (82 % women; mean age 43.7, *SD* = 11.1) diagnosed with any form of arthritis (i.e., any major rheumatic disease) were recruited via notices posted on on-line support boards for various forms of arthritis, online classified ads, online psychological research web pages, in the community, and on the Arthritis Society's online research web page. Informed consent was implied through submission of the online or mail-in survey and participation was anonymous. The majority of participants (96.8%) completed the survey on-line. To increase confidence in the self-reported diagnosis of arthritis all participants were asked to report any medications that they were currently taking to manage their arthritis. The sample therefore included only those participants who reported taking a prescribed non-steroidal anti-inflammatory drugs (NSAIDs) or disease-modifying antirheumatic drugs (DMARDs) for treating arthritis.

Demographically, the sample was primarily White (93.9%), from the U.S. (62.4%) or Canada (17.7%), married or living with an intimate partner (69.5%), employed full-time (43.5%) or on disability (24.8%), had a university level education (63.7%), and had rheumatoid arthritis (40.4%) or osteoarthritis (13.2%).

Measures

Table 1 presents the means and Cronbach alphas for all the scales.

Arthritis pain and functioning. Two questions addressed when participants had received a formal diagnosis of arthritis and the specific type of arthritis. Severity of arthritis pain experienced within the past month was measured with one item from the Arthritis Impact Measurement Scales 2 (Meenan, Mason, Anderson, Guiccione, & Kazis, 1992). Participants rated their usual pain severity on a 4-point Likert-type scale ranging from severe to none, and the item was reverse scored so that higher scores reflected greater pain. Day to day functioning was assessed with the 20-item functioning subscale which includes statements about different daily activities such as climbing five steps, doing chores, and running errands rated on a 4-point scale ranging from 1 (without any difficulty) to 4 (unable to do). Items are averaged to form a mean score with higher scores reflecting lower levels of functioning.

Attachment style. A 12-item measure of attachment style (Simpson, Rholes, & Nelligan, 1992) assessed anxious (4 items) and avoidant (8 items) attachment. Higher scores on the avoidant subscale (e.g., "I'm somewhat uncomfortable being too close to others") reflect greater avoidant attachment, whereas lower scores on this scale reflect more secure attachment. Higher scores on the anxious subscale (e.g., "I often worry that my partner(s) don't really love me") reflect greater anxious attachment. Responses are scored on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Primary stress appraisals. The appraisal of arthritis related stressors was assessed with four questions designed for this study which became the indicators for this latent variable. The questions were based on previous empirical work on the key areas of stress for people with arthritis: 1) Pain and symptom related problems including symptom severity, unpredictability, and symptoms related to medication; 2) Physical limitations and functional impairment; 3)

Dependence on others, including feeling that they are a burden to others; 4) Impact of arthritis on day to day life, including social limitations, difficulties planning activities (Gignac et al., 2000; Katz, 1998). Participants rated how stressful each of these four arthritis-specific concerns had been for them over the previous 6 months on a 6-point scale ranging from 1 (did not experience/not stressful) to 6 (extremely stressful).

Perceived social support. The Duke-UNC Functional Social Support questionnaire (Broadhead, Gehlbach, De Gruy, & Kaplan, 1988) assessed perceived social support which served as a proxy secondary stress appraisals. Eight items are rated on a 5-point Likert-type scale with responses ranging from 1 (much less than I would like) to 5 (as much as I would like). Items include both emotional and practical aspects of social support with higher scores reflecting greater perceived social support.

Coping efficacy. The three-item coping efficacy scale developed by Gignac and colleagues (2000) assessed appraisals of efficacy in coping with the chronic stressors associated with arthritis. The scale focuses on three particular challenges associated with arthritis: symptoms, emotional aspects, and day-to-day problems. Items such as "I am successfully coping with the symptoms of my arthritis" are scored on a 5-point Likert type scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree); higher scores reflect greater coping efficacy.

Results

Bivariate Associations of Model Variables

The attachment variables were significantly correlated with the main model variables in the expected directions (see Table 1). Both anxious and avoidant were associated with higher appraisals of arthritis-specific stress, lower perceived social support, and lower coping efficacy.

Arthritis related stress was negatively associated with both perceived social support and coping efficacy, whereas perceived social support was positively associated with coping efficacy.

Using Meng's (Meng, Rosenthal, & Rubin, 1992) *z*-test for correlated correlations, the correlation between anxious attachment and perceived social support was significantly larger than the correlation of avoidant attachment with this variable ($z = 2.70$, $p <. 01$). However there was no difference between anxious and avoidant attachment in the magnitude of their associations with arthritis-specific stress (s $z = -.17$, *ns*) or coping efficacy ($z = -1.37$, *ns*). Pain and functioning were significantly and negatively correlated with coping efficacy; however they were not significantly associated with either anxious or avoidant attachment, and were therefore not included in the SEM model.

SEM Analyses of the Anxious Attachment-Adjustment Model

Structural equation models (SEM) were estimated using AMOS 21.0. Several indices were used to assess model fit: (i) chi-square statistic; (ii) RMSEA (root mean square error of approximation); (iii) CFI (Comparative Fit index); (iv) IFI (Incremental fit index). A model is considered to have a good fit to the data if the CFI and IFI are greater than 0.95, and the RMSEA is 0.05 or less (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Given the relatively large sample size and the known tendency of the chi-square test to become significant as sample size increases (Kline, 2005), more weight was placed on the results of the fit indices for evaluating model fit.

Latent variables were created for both attachment styles and for primary appraisals using parceling. Anxious attachment items were divided into two parcels and avoidant/secure attachment items were divided into three parcels. Given that the primary appraisal items each tapped a different domain of potential illness-related stressors and therefore reflected distinct but

related factors of this construct, each of these four items served as a single item domain representative parcel (Little, Rhemtulla, Gibson, & Schoemann, 2013) for the latent variable reflecting primary appraisals. This approach was taken following Little et al's (2013) recommendations outlining the advantages of parceling for creating indicators with better measurement properties than scale scores, for reducing Type II errors, and for enhancing precision in measuring constructs.

The initial test of the overall model with anxious attachment revealed a good fit to the data, $\chi^2(16, N = 365) = 31.51$, $p < .05$; RMSEA = 0.05 (90% CI: 0.05 – 0.07); CFI = 0.98; IFI = 0.98. The direct paths from anxious attachment to primary stress appraisals, social support, and coping efficacy, were each significant in the expected directions (see Figure 2). However, the paths linking primary stress appraisals to social support, and social support to coping efficacy appraisals, were not significant and were therefore removed from the model. Accordingly, the nested mediation model was tested for significant indirect effects though primary stress appraisals by constraining the path from attachment to coping efficacy to zero following the recommendations of Holmbeck (1997). The fit of the nested model was generally good, although the fit indices changed in a direction reflecting slightly poorer fit, $\chi^2(19, N = 365) = 57.80$, $p < .01$; RMSEA = 0.07 (90% CI: 0.05 – 0.10); CFI = 0.96; IFI = 0.96. The test comparing the chi-square value for the nested model with indirect effects through primary and secondary stress appraisals, to the full model, found significant difference in the chi-square values, $\Delta \chi^2 (1) = 26.25$, $p < .01$, such that the addition of the constrained path was a significant decrement to the model fit. These findings suggested that the unconstrained, direct effects model should be retained and that test of the mediation model was not necessary. The total effect of anxious attachment on coping efficacy for the final model was -.44, $p < .001$.

SEM Analyses of the Avoidant Attachment-Adjustment Model

The test of the overall model with avoidant attachment revealed a very good fit to the data, $\chi^2(23, N = 365) = 34.38$, *ns*; RMSEA = 0.04 (90% CI: 0.00 – 0.06); CFI = 0.99; IFI = 0.99. Similar to the model for anxious attachment, the direct paths from avoidant attachment to primary stress appraisals, social support, and coping efficacy, were all significant in the expected directions (see Figure 2). In contrast to the anxious attachment model, the path linking primary stress appraisals to social support was significant. The test of the nested model revealed that constraining the path from attachment to coping efficacy to zero resulted in fit indices with a slightly poorer fit, $\chi^2(24, N = 365) = 44.82$, $p < .01$; RMSEA = 0.05 (90% CI: 0.03 – 0.07); CFI = 0.98; IFI = 0.98. The chi-square difference test for the constrained model was also significant ($\Delta \chi^2 (1) = 10.44$, $p < 01$) suggesting that the full unconstrained model should be retained. The total effect of anxious attachment on coping efficacy for the final model was -.27, $p< .01$.

Discussion

To the best of our knowledge, this is the first study to empirically test an appraisal-based model of attachment and coping in people with arthritis based on the general attachment activation and functioning model proposed by Mikulincer and Shaver (2007) and the ADMoCP (Meredith et al., 2008). Similar to other research on insecure attachment in chronic pain populations (Meredith et al., 2008), we found that both anxious and avoidant attachment were associated with appraisals of disease-related threat and less perceived social support to deal with this threat. However, a unique finding of this study was that both forms of insecure attachment were also associated with feeling less successful in being able to cope with the emotional, symptom-related, and day-to-day aspects of arthritis.

Contrary to our hypothesis, the primary appraisals and social support (secondary

appraisals) did not explain the link between insecure attachment and coping efficacy. Instead, the direct effects of attachment on coping efficacy were present after considering the role of primary and secondary stress appraisals. This suggests that in the context of arthritis, people who are insecurely attached may perceive difficulty in managing their disease regardless of how threatened they feel by the illness-related stressors they experience or any perceived lack of social support. Similar to general self-efficacy (Bandura, 1977), coping efficacy is likely reinforced by past successes and failures in managing stressors. Thus, previous unsuccessful attempts to manage the demands of living with arthritis associated with insecure attachment could contribute to a general and enduring perception that one is not coping well with its challenges that is independent of appraisals of current stressors.

Consistent with cognitive transactional models of stress and coping (Lazarus & Folkman, 1984), our model includes a dynamic element that allows for reciprocally-determined transitions between primary and secondary appraisals of arthritis-related threats and the perceived social resources available to deal with those threats. However, our findings suggest that there may be differences in the way that avoidant and anxious attachment shape this process. Although the test of the model with avoidant attachment supported a dynamic reappraisal process between primary and secondary appraisals similar to the feedback loops between the hyperactivating and deactivating strategies proposed by Mikulincer and Shaver (2007), this was not found when testing the model with anxious attachment. Instead, arthritis-related threat appraisals were unrelated to perceptions of available social support, despite the fact that they were negatively correlated in the bivariate analyses. For avoidant individuals, arthritis-related stressors may lead these individuals to react with heightened emotional distress not only because they feel helpless to deal with this chronic stress, but also because they may need to rely on others, given their

functional limitations and yet, unlike the anxiously attached, are uncomfortable with having to do so due to their perception of others as being untrustworthy (Mikulincer & Florian, 1998). In contrast, our findings suggest that, like the avoidantly attached, anxiously attached individuals also perceive low social support and higher stress associated with arthritis, but these primary and secondary appraisals are unrelated when considered in the context of coping efficacy. Given that anxious attachment was more strongly related to perceived social support then avoidant attachment, it is possible that this result also reflects preoccupation with the unavailability of the attachment figure. Clearly more work is needed to replicate and probe this intriguing result.

Although unique, the current findings should be considered in the context of certain limitations and strengths. The diagnosis of arthritis was self-reported and although carefully screened by requesting that participants report any medications they were currently taking to manage their arthritis, it may not have been as reliable as a formal diagnosis from a rheumatologist. Despite this, the use of a large community-based sample of people self-reporting a variety of major rheumatic diseases is a potential strength. It could be argued that because the sample was heterogeneous with respect to arthritis type the results may not be generalizable to specific forms of arthritis. However, there is some evidence that coping and adjustment related outcomes do not vary significantly across major forms of arthritis such as rheumatoid and osteoarthritis (Sirois & Hirsch, 2013). Research replicating the proposed models here with individual arthritis samples would nonetheless clarify this issue. Although the use of an internet survey may appear to present certain limitations with respect to generalizability, there is significant evidence that samples obtained from the internet tend to be larger and more heterogeneous than those recruited by more traditional means, while being of equal quality (Gosling, Vazire, Srivastava, & Oliver, 2004). Another strength is that stress and coping efficacy

were not measured generally, but specific to the challenges that people with arthritis face. The use of cross-sectional data precludes strong statements regarding the direction of causality amongst the variables proposed by our model. However, the proposed pathways are based on extant theory and research lending support to our model. Future work focusing on the proposed processes as they occur in daily life or in controlled settings is necessary to confirm the directionality of the relationships.

Our findings have several potential implications for improving the coping of people with arthritis who are insecurely attached. Given the direct link between insecure attachment and coping efficacy found in the current study, interventions aimed at increasing coping efficacy may be important for improving adjustment, especially given the associations with lower pain severity and better physical functioning noted in the current study, and with lower depression over time found in other research (Sirois & Hirsch, 2013). For example, interventions such as cognitive behavioral therapy (CBT) to enhance perceptions of control over common arthritis-related stressors including pain, dependence on others, physical limitations and daily functioning, may be particularly effective (Halford & Brown, 2009); see also Astin, Beckner, Soeken, Hochner & Berman (2002) for a meta-analysis indicating the effectiveness of psychological interventions, including CBT. Encouraging a focus on small coping successes might increase patients' feelings of efficacy for coping with the daily demands of arthritis. Our findings further suggest that applying aspects of interventions focused on relationships (e.g., interpersonal therapy) or attachment theory (e.g., Johnson, Hunsley, Greenberg, & Schindler, 1999) may be an import way to maximize the effectiveness of psychological interventions for arthritis patients with insecure attachment (Sharpe, 2013). As suggested by Meredith et al. (2008), making health-care providers aware of the stress and coping appraisals associated with insecure

attachment and tailoring treatments accordingly may be an additional way to facilitate translational application of our findings into practice

Conclusion

Overall, the findings from the current study provide new and important insights into how insecure attachment is implicated in the coping appraisals and responses to disease-related stressors in people with arthritis. Although the findings support the notion that both anxious and avoidant attachment can be considered risk factors for coping with the stressful challenges of living with arthritis, our findings also indicate that there may be differences in how these two forms of insecure attachment contour the coping process. Nonetheless, finding ways to enhance confidence in one's ability to cope with arthritis related stress may be an important priority for improving adjustment in individuals who are insecurely attached.

Author Note

The authors have no conflicting interests.

References

Astin, J. A., Beckner, W., Soeken, K., Hochberg, M. C., & Berman, B. (2002). Psychological interventions for rheumatoid arthritis: A meta-analysis of randomized controlled trials. *Arthritis Care & Research, 47*(3), 291-302.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Benka, J., Nagyova, I., Rosenberger, J., Calfova, A., Macejova, Z., Middel, B., . . . Groothoff, J. W. (2012). Social support and psychological distress in rheumatoid arthritis: a 4-year prospective study. *Disability and Rehabilitation, 34*(9), 754-761. doi: doi:10.3109/09638288.2011.619618

Bowlby, J. (1969). *Attachment and loss. Vol. 1, Attachment*: Hogarth London.

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*: Routledge.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York, NY: Guilford.

Broadhead, W. E., Gehlbach, S. H., De Gruy, F. V., & Kaplan, B. H. (1988). The Duke-UNC functional social support questionnaire: Measurement of social support in family medicine patients. *Medical Care, 26*, 709.

Cohen, S., Janicki-Deverts, D., Doyle, W. J., Miller, G. E., Frank, E., Rabin, B. S., & Turner, R. B. (2012). Chronic stress, glucocorticoid receptor resistance, inflammation, and disease risk. *Proceedings of the National Academy of Sciences, 109*(16), 5995-5999.

Curtis, R., Groarke, A., Coughlan, R., & Gsel, A. (2004). The influence of disease severity, perceived stress, social support and coping in patients with chronic illness: A 1 year follow up. *Psychology, Health & Medicine, 9*(4), 456-475.

Evers, A. W., Kraaimaat, F. W., Geenen, R., Jacobs, J. W., & Bijlsma, J. W. (2003a). Pain coping and social support as predictors of long-term functional disability and pain in early rheumatoid arthritis. *Behavior Research and Therapy, 41*(11), 1295-1310.

Evers, A. W., Kraaimaat, F. W., Geenen, R., Jacobs, J. W., & Bijlsma, J. W. (2003b). Stress-vulnerability factors as long-term predictors of disease activity in early rheumatoid arthritis. *Journal of Psychosomatic Research, 55*(4), 293-302.

Evers, A. W. M., Kraaimaat, F. W., Geenen, R., & Bijlsma, J. W. J. (1997). Determinants of psychological distress and its course in the first year after diagnosis in rheumatoid arthritis patients. *Journal of Behavioral Medicine, 20*(5), 489-504.

Evers, A. W. M., Verhoeven, E. W. M., van Middendorp, H., Sweep, F. C. G. J., Kraaimaat, F. W., Donders, A. R. T., . . . van Riel, P. L. C. M. (2013). Does stress affect the joints? Daily stressors, stress vulnerability, immune and HPA axis activity, and short-term disease and symptom fluctuations in rheumatoid arthritis. *Annals of the Rheumatic Diseases*.

Gafvels, C., Hagerstrom, M., Nordmark, B., & Wandell, P. (2014). What predicts negative effects of rheumatoid arthritis? A follow-up two years after diagnosis. *SpringerPlus, 3*(1), 118.

Gignac, M. A. M., Cott, C., & Badley, E. M. (2000). Adaptation to chronic illness and disability and its relationship to perceptions of independence and dependence. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 55*(6), 362-372.

Gosling, S. D., Vazire, S., Srivastava, S., & Oliver, J. P. (2004). Should we trust Web-based studies? A comparative analysis of six preconceptions about Internet questionnaires. *American Psychologist, 59*, 93-104.

Halford, J., & Brown, T. (2009). Cognitive–behavioural therapy as an adjunctive treatment in chronic physical illness. *Advances in Psychiatric Treatment, 15*(4), 306-317.

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599-610.

Johnson, S. M., Hunsley, J., Greenberg, L., & Schindler, D. (1999). Emotionally focused couples therapy: Status and challenges. *Clinical Psychology: Science and Practice, 6*(1), 67-79.

Katz, P. P. (1998). The stresses of rheumatoid arthritis: Appraisals of perceived impact and coping efficacy. *Arthritis Care and Research, 11*(1), 9-22.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: The Guilford Press.

Kool, M. B., van Middendorp, H., Lumley, M. A., Bijlsma, J. W., & Geenen, R. (2013). Social support and invalidation by others contribute uniquely to the understanding of physical and mental health of patients with rheumatic diseases. *Journal of Health Psychology, 18*(1), 86-95.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.

Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods, 18*, 285-300.

McKnight, P., Afram, A., Kashdan, T., Kasle, S., & Zautra, A. (2010). Coping self-efficacy as a mediator between catastrophizing and physical functioning: treatment target selection in an osteoarthritis sample. *Journal of Behavioral Medicine, 33*(3), 239-249.

Meenan, R. F., Mason, J. H., Anderson, J. J., Guiccione, A. A., & Kazis, L. E. (1992). AIMS2: The content and properties of a revised and expanded arthritis impact measurement scales health status questionnaire. *Arthritis and Rheumatism, 35*, 1-10.

Meng, X.-L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin, 111*(1), 172-175.

Meredith, P., Ownsworth, T., & Strong, J. (2008). A review of the evidence linking adult attachment theory and chronic pain: Presenting a conceptual model. *Clinical Psychology Review, 28*(3), 407-429.

Meredith, P. J., Strong, J., & Feeney, J. A. (2005). Evidence of a relationship between adult attachment variables and appraisals of chronic pain. *Pain Research and Management, 10*(4), 191-200.

Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles and emotional and cognitive reactions to stressful events. In J. A. Simpson & S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 143-165). New York: Guilford.

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*: The Guilford Press.

Murphy, L. B., Sacks, J. J., Brady, T. J., Hootman, J. M., & Chapman, D. P. (2012). Anxiety and depression among US adults with arthritis: Prevalence and correlates. *Arthritis Care & Research, 64*(7), 968-976.

Pinto-Gouveia, J., Costa, J., & Marôco, J. (2013). The first 2-years of rheumatoid arthritis: The influence of acceptance on pain, physical limitation and depression. *Journal of Health Psychology*.

Ravitz, P., Maunder, R., Hunter, J., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of Psychosomatic Research, 69*(4), 419-432. doi: http://dx.doi.org/10.1016/j.jpsychores.2009.08.006

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Test of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research - Online, 8*(2), 23-74.

Sharpe, L. (2013). Psychological treatment for rheumatoid arthritis works: Now we need to know what elements are most effective and for whom. *The Journal of Rheumatology, 40*(11), 1788-1790.

Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation: The role of attachment styles. *Journal of Personality and Social Psychology, 62*(3), 434-446.

Sirois, F. M., & Hirsch, J. K. (2013). Associations of psychological thriving with coping efficacy, expectations for future growth, and depressive symptoms over time in people with arthritis. *Journal of Psychosomatic Research, 75*(3), 279-286.

Society, A. (2010). Annual report. Toronto, ON.

Table 1.

Bivariate Correlations Among the Attachment and Appraisal Model Variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. AV attachment	---															
2. AV parcel 1	.91**	---														
3. AV parcel 2	.88**	.72**	---													
4. AV parcel 3	.72**	.50**	.46**	---												
5. ANX attachment	.33**	.33**	.25**	.28**	---											
6. ANX parcel 1	.29**	.28**	.19**	.28**	.89**	---										
7. ANX parcel 2	.30**	.30**	.23**	.22**	.89**	.58**	---									
8. Primary appraisals	.12*	.11*	.13**	.08	.24**	.26**	.15**	---								
9. Pain/symptoms	.07	.07	.07	.05	.19**	.20**	.13*	.78**	---							
10. Physical limitations	.08	.07	.09	.05	.13*	.15**	.07	.86**	.61**	---						
11. Dependence on others	.11*	.09	.11*	.07	.23**	.26**	.14**	.86**	.49**	.66**	---					
12. Daily impact	.14**	.13*	.15**	.08	.22**	.24**	.15**	.86**	.61**	.65**	.63**	---				
13. Social support	-.28**	-.26**	-.19**	-.29**	-.46**	-.38**	-.44**	-.21**	-.17**	-.13*	-.19**	-.20**	---			
14. Coping efficacy	-.26**	-.22**	-.23**	-.20**	-.32**	-.30**	-.27**	-.43**	-.32**	-.35**	-.36**	-.42**	.30**	---		
15. Functioning	.02	.06	.07	.06	.00	-.03	.01	.41**	.33**	.37**	.33**	.37**	-.03	-.28**	---	
16. Pain severity	.07	.02	.01	.03	.10	.11*	.04	.56**	.34**	.46**	.56**	.48**	-.08	-.29**	.48**	---
Mean	3.64	3.50	4.12	3.12	2.95	3.30	2.56	4.37	4.64	4.60	4.07	4.17	3.79	3.28	1.85	3.04
Standard deviation	1.20	1.52	1.30	1.40	1.23	1.34	1.38	1.10	1.08	1.18	1.65	1.33	1.04	1.01	.52	.77
Cronbach's alpha	.84	---	---	---	.65	---	---	.86	---	---	---	---	.92	.89	.94	---

Note: *$p < .05$, **$p < .01$; $N = 365$; AV = Avoidant; ANX = Anxious.

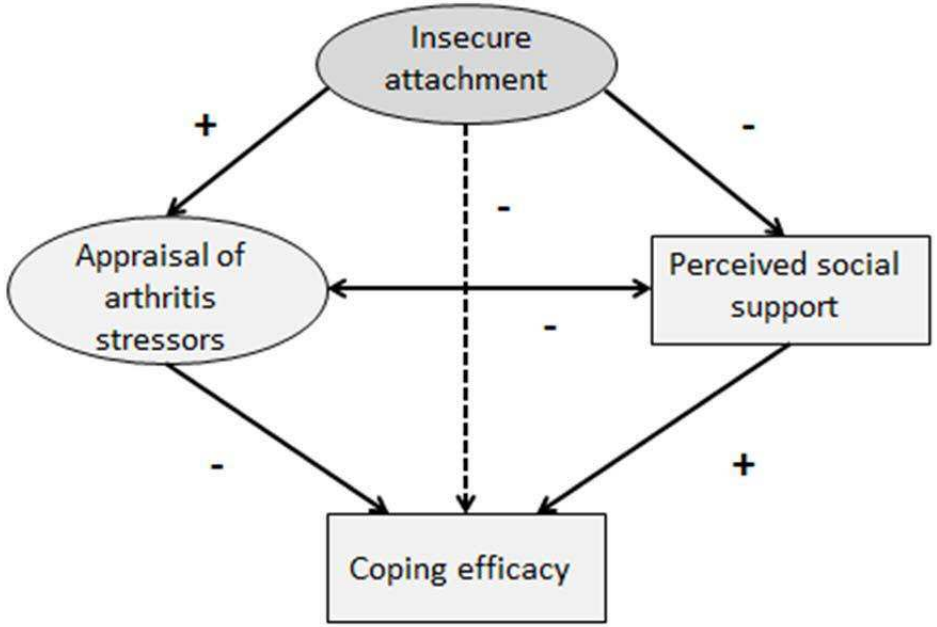

Figure 1: Proposed appraisal-based attachment model of coping and adjustment to arthritis. Dashed line indicates constrained path to be tested.

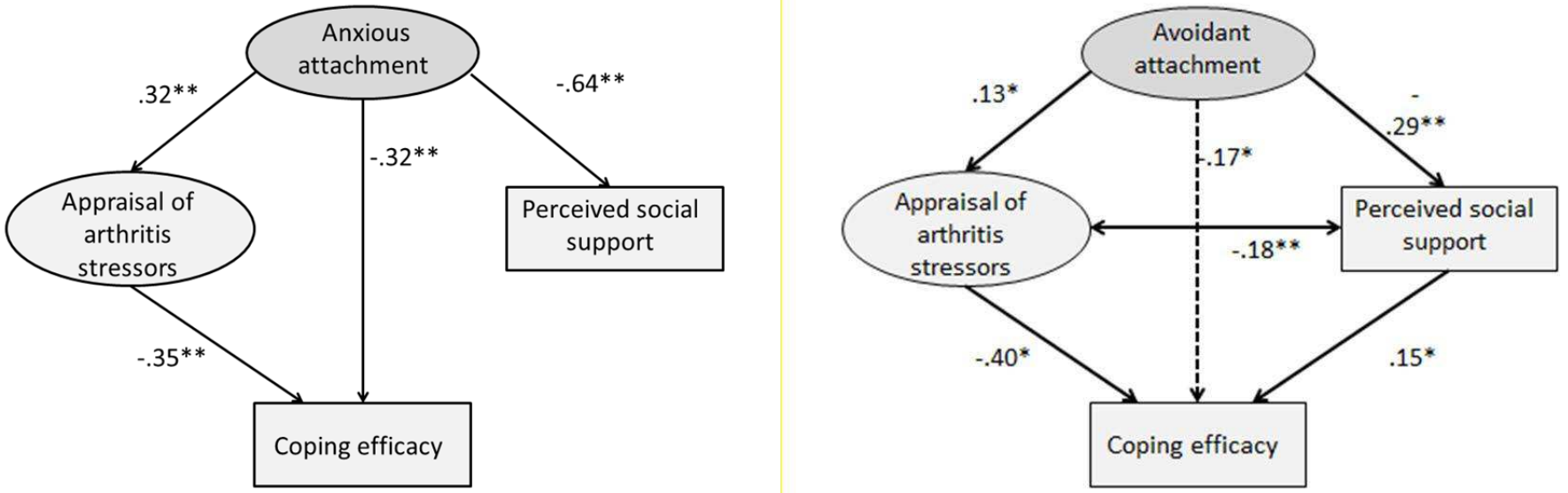

Figure 2: Final appraisal-based models of coping and adjustment to arthritis for anxious and avoidant attachment – standardized estimates. **p* < .05, ***p* < .01; *N* = 365.