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Associations of Psychological Thriving with Coping Efficacy, Expectations for Future Growth, and Depressive Symptoms over Time in People with Arthritis

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Abstract

Objective: Psychological thriving reflects a trajectory of growth over time as opposed to scaling back expectations. Whether thriving is a product, precursor, or process of coping with arthritis-related limitations is unclear. We examined associations between thriving, coping efficacy, and expectations for future growth in individuals with arthritis, and the relations of thriving to depressive symptoms and retrospective perceptions of personal growth over a six-month period.

Methods: A sample of 423 people with arthritis completed measures of thriving, coping efficacy, depressive symptoms, and expectations for future growth; 168 individuals completed a six-month follow-up survey. Structural equation modeling analyses compared three possible models of psychological thriving, controlling for disease-related variables. Hierarchical regression analyses of the cross-lagged associations of thriving with retrospective perceptions of positive personal change and depressive symptoms were also conducted.

Results: Structural equation analyses suggest that the process model in which thriving and coping efficacy jointly predicted expectations for future growth best fit the data. Baseline thriving was also associated with retrospective perceptions of personal growth at follow-up and fewer depressive symptoms at baseline and follow-up, after controlling for disease-related variables.

Conclusion: Overall, these finding suggest that psychological thriving is synergistically related to coping efficacy, and to expectations for future growth and less depression, in people with arthritis. Importantly, our findings support the notion that psychological thriving is more than scaling back expectations, and that thriving may be an important quality to cultivate to address the burden of depression in people with arthritis.

Keywords: thriving; coping efficacy; depressive symptoms; arthritis; adjustment to illness

Associations of Psychological Thriving with Coping Efficacy, Expectations for Future Growth and Depressive Symptoms over Time in People with Arthritis

As one of the most common chronic diseases, arthritis ranks among the top ten causes of disability worldwide [1]. Most forms of arthritis share the common symptoms of pain, fatigue, and decreased daily functioning which can threaten independence and psychological well-being [2,3]. Functional challenges can create uncertainty about the future and viability of achieving personal goals, further eroding well-being [4]. Indeed, a recent population-based study indicates that rates of depression may be as high as 18 percent among people living with arthritis [3]. Depression etiology may be complex in individuals with arthritis, as loss of valued activities may be a more robust predictor of risk than simply functional decline [5]. Consistent with biopsychosocial models of arthritis pain and disability [6], depression can, in turn, exacerbate arthritis-related pain and impairments, thus damaging health status [6,7]. Yet, despite such physical and psychological downturns, some people with arthritis report experiencing personal growth [8] and finding benefits [9,10] from living with their illness. The success of interventions to improve mental health and quality of life in individuals with arthritis is equally dependent on a better understanding of how growth, and not just loss, is experienced.

The question of why some individuals thrive and experience personal growth while living with arthritis while others struggle to adapt, or become depressed, is the focus of this paper. Terms such as post-traumatic growth [11], adversarial growth [12], resilience [13], benefit finding [14], and thriving [15] are often used to describe the positive adjustment that some people experience in response to living with the daily challenges of chronic illness. A common feature of these different perspectives is a focus on potential for positive change over time as

individuals recalibrate and adjust their self-view in relation to illness. Despite this commonality, researchers have made distinctions in how and why these positive effects may occur. O'Leary and Ickovics [16] proposed four types of responses to the initial psychological downturn experienced following the onset of chronic illness. The first two possibilities involve experiencing a further loss either as a continued downward spiral in physical and psychological functioning, or as a loss to a lesser extent which diminishes functioning compared to the pre-illness state. The third possibility, resilience, involves a return to pre-illness level of functioning. The final possibility is that the individual comes to function at a level that is higher than the pre-illness state. Referred to as psychological thriving, this latter possibility reflects not just a homeostatic "bouncing back" from adversity, but a transformative state of personal growth and flourishing [16].

The current study uses the model of psychological thriving proposed by Carver [15] which elaborates on the O'Leary and Ickovics' [16] model. Carver [15] posits that psychological thriving occurs as a result of continued growth and gains in one or more important psychosocial areas, namely, personal relationships, self-confidence, and important life skills. In the context of chronic illness these gains may be ongoing and reflect a trajectory of growth as the individual learns to adapt to the stress of living with a chronic illness. This model further indicates that personal qualities that promote successful management of illness-related stressors may foster thriving, perhaps by transferring knowledge learned from grappling with illness-related stressors to new situations, thereby facilitating continued growth.

Coping responses are one set of qualities noted by Carver [15] as particularly relevant for understanding thriving. In the context of chronic illness, coping responses that promote a sense of control or mastery over illness-related challenges may be particularly important for the

development of thriving. Indeed, Carver [15] proposes that, because it is self-perpetuating, mastery may be a key factor distinguishing those who thrive from those who become depressed. This view converges with other definitions of thriving which highlight the effective mobilization of resources to respond to threat [17], and with research demonstrating the importance of coping efficacy for psychological and physical adjustment to arthritis [18,19].

From the perspective of Carver's [15] model, an important issue in understanding thriving and its development in the context of arthritis is how it may be related to coping efficacy. Does learning to cope more efficaciously with the daily challenges of arthritis contribute to thriving, or does thriving give rise to employing more efficacious coping strategies to deal with the ongoing pain and functional limitations of arthritis? Alternatively, if thriving is viewed as a process, rather than a state, then it is also possible that coping efficacy both results from and contributes to thriving. Testing these competing models would therefore provide valuable insights into the ways in which thriving can be promoted in those struggling to adjust to life with arthritis.

A final issue identified by Carver [15] involves whether the positive changes that characterize thriving reflect true growth in skills, knowledge, and confidence to deal with stressful situations or simply scaling back expectations to accommodate illness-imposed limitations. This latter explanation is often used to account for how individuals living with chronic illness regain control over uncontrollable circumstances [20]. Distinguishing between thriving and accommodation to limiting circumstances is, therefore, important for understanding psychological adjustment to arthritis. One way to approach this issue is to conceptualize thriving as not just a positive self-perception looking from the past to the present, but also as a positive self-perception looking from the present to the future. This positive present to future view of the self is akin to expecting continued growth in the future. If thriving was related to both of these

temporal self-appraisals then this would support the notion that thriving reflects ongoing perceptions of personal growth rather than lowering expectations to accommodate illness-related limitations. As a perception of personal growth rather than loss due to illness, thriving should also be related to fewer depressive symptoms over time.

We examined psychological thriving and its association with well-being in people with arthritis from the lens of Carver's [15] model. Specifically, we tested whether psychological thriving, that is perceiving oneself as experiencing growth versus loss as a result of having arthritis, was a product, precursor or process of coping efficacy in a large sample of people with rheumatic disease. Using structural equation modeling (SEM) we tested three competing models of the possible linkages between thriving and coping efficacy to examine the ways in which each may contribute to expectations of future growth (see Figure 1), as proposing and testing competing models with SEM is fundamental to theory building [21]. Perceptions of future growth were assessed using a possible self paradigm [22], with the expectations for achieving a hoped-for possible self providing a marker for future growth expectations and therefore support for the notion that expectations for the future had not been scaled back. Model 1 proposes that coping efficacy mediates the link between thriving and positive expectations for future growth, whereas Model 2 suggests that thriving mediates the link between coping efficacy and positive expectations for future growth. Models 1 and 2 are nested in Model 3 which suggests that thriving and coping efficacy synergistically enhance each other and jointly contribute to positive expectations for future growth. To further test the notion that thriving reflects a trajectory of growth, we examined the prospective associations of thriving to retrospective perceptions of positive personal change over a six-month period, hypothesizing that thriving would be significantly, positively related to change perceptions. Consistent with the assertions of Carver

[15] and others [16] that psychological thriving reflects perceived gains as opposed to losses in psychological functioning, we also expected that thriving would be negatively related to depression six months later.

Method

Participants and Procedure

A sample of 423 people diagnosed with any form of arthritis (i.e., any major rheumatic disease) was recruited online via advertisements in arthritis support forums, 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. All participants agreed to be contacted for the 6-month follow-up and, of those contacted, 168 (39.7%) completed the follow-up survey

Demographic characteristics and differences between the Time 1 (T1) and Time 2 (T2) samples are presented in Table 1. The majority were White, from the U.S. or Canada, married or living with an intimate partner, employed full-time, had a university level education, and had rheumatoid arthritis. Approximately one-third of participants reported having been diagnosed with a mental health issue, with depression being the most frequently reported diagnosis. Compared to those who did not participate at T2, participants who completed both surveys were older and more likely to be from Canada, but were otherwise demographically similar.

Measures

The T1 survey included demographic and disease-related questions, including disease duration and type, measures of coping efficacy and depressive affect, and a variety of measures assessing arthritis-related self-perceptions including thriving.

Arthritis symptoms. Severity of arthritis pain experienced within the past month was

measured at both T1 and T2 with one question from the Arthritis Impact Measurement Scales 2 [23], for which participants rated their usual pain severity on a 4-point Likert-type scale ranging from severe to none. Scores were reverse-coded so that higher values reflect higher pain severity.

Psychological thriving. Three items created for this study and derived from Carver's [15] model of psychological thriving addressed the perception of change (for better or worse) due to arthritis by asking respondents to compare their current circumstances to those in their life before they had arthritis, across each of three domains: life satisfaction, self-improvement, and quality of personal relationships. Responses were rated on a 4-point Likert-type scale individualized for each domain question with the first option reflecting positive change (thriving), the second reflecting no change (resilience), the third reflecting slight negative change, and the fourth reflecting large negative change (see Appendix A for the items). All responses were reverse-scored with higher scores reflected greater positive change. The three items exhibited good internal consistency when combined into a single measure of thriving (Cronbach's alpha = .80).

The thriving items were compared to validated scales of similar constructs to test for convergent and divergent validity. Thriving-related life satisfaction was compared to Diener's Life Satisfaction Scale [24], self-improvement was compared to the personal growth subscale of the Psychological Well-being Scale [25], and the quality of personal relationships item was compared to the Duke-UNC Functional Social Support Questionnaire [26]; validation correlations are presented in the results section.

Expectations for future growth. A question at T1 about expectations for achieving hoped-for possible selves, using the protocol from Frazier and colleagues [27] served as a proxy measure for assessing future growth expectations. Participants first generated a list of three

hoped-for possible selves, and then indicated their most important future self. The expectation for achieving this important future self was rated on a 5-point Likert-type scale (1 = *not at all likely* to 5 = *definitely likely*).

Coping efficacy. The three-item coping efficacy scale developed by Gignac and colleagues [28] assessed appraisals of efficacy in coping with the chronic stressors associated with arthritis. The scale was developed with arthritis patients and 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. The 3-item scale had very good internal consistency, Cronbach's alpha = .91.

Perceptions of personal change. Retrospective perceptions of personal change from T1 to T2 were assessed at T2 with a question about change over the previous six months for six characteristics: sense of control over illness, positive future outlook, quality of relationships, overall well-being, sense of life purpose, and ability to handle daily stressors. Each characteristic was rated on a 10-point Likert-type scale ranging from "much worse than before" (1) to "much better than before" (10).

Depressive symptoms. A 10-item version of the Center for Epidemiological Studies Depression (CES–D) scale [29] assessed depressive symptoms at both T1 and T2. Participants rate the frequency of depressive symptoms over the past two weeks on a 4-point scale ranging from "rarely or none of the time" (0) to "most or all of the time" (3). The 10-item version has demonstrated very good reliability (alpha = .92) in a previous study of people with chronic tinnitus [30] and demonstrated good reliability in the current sample at T1 and T2 (alphas = .91,

.92 respectively).

SEM Analyses

Structural equation models were estimated using AMOS 21.0. First, the fit of the measurement model to the data was assessed for each of the three proposed thriving models. 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) TLI (Tucker-Lewis fit index). A model is considered to have a good fit to the data if the CFI and TLI are greater than 0.95, and the RMSEA is below 0.05 [31]. Next, three models were compared using chi-square difference tests between the model with the lowest chi-square value and each of the other two models [32]. If there were no significant differences found between the chi-square values for each comparison, that is the simpler and complex models explain the data equally well, then the more parsimonious model would be accepted (e.g., Model 1 or Model 2), and tests of the significance of the indirect effects (mediation) would be conducted. If, however, the more complex model (Model 3) had the lowest chi-square value and it was significantly different from each of the two nested Models, then this would suggest that Model 3 explains the data better and no further tests of the indirect effects would be conducted.

Results

Validation of Thriving Items

Bivariate corrrelational analyses of the thriving items with conceptually similar constructs provided a preliminary assessment of convergent validity. The thriving life satisfaction item correlated positively with the Satisfaction with Life scale ($r = .53$, $p < .001$), thriving self-improvement correlated positively with the personal growth subscale of the PWB ($r = .41$, $p < .001$), and thriving personal relationships correlated positively with the Duke-UNC

perceived social support scale (r = .39, p < .001). To test whether psychological thriving was equally applicable to the different subtypes of arthritis, the two largest arthritis sub-groups, rheumatoid arthritis (RA; n = 171) and osteoarthritis (OA; n = 118), were compared to all remaining types (n = 134) on the mean thriving scores. The one-way analysis of variance (ANOVA) was non-significant (F (2,420) = 1.66, ns), indicating comparable levels of thriving across the different arthritis types.

Bivariate Associations of Thriving Model Variables

Thriving variables were each significantly and positively correlated with coping efficacy and future growth expectations (see Table 2). All three model variables (thriving, coping efficacy, and future growth expectations) were associated with lower pain severity and all but future growth expectations were associated with a longer time since diagnosis.

SEM Analyses of Thriving Models

The tests of the proposed structural equation models revealed good fit to the data for each of the three thriving models (see Figures 2, 3, and 4): Model 1, $\chi^2(25, N = 423) = 53.84$, p = .001, RMSEA = 0.052 (90% CI: 0.03 – 0.07); CFI = 0.98; TLI = 0.98; Model 2, $\chi^2(25, N = 423) = 59.56$, p < .001, RMSEA = 0.057 (90% CI: 0.04 – 0.08); CFI = 0.98; TLI = 0.97; Model 3, $\chi^2(23, N = 423) = 45.49$, p = .003, RMSEA = 0.048 (90% CI: 0.03 – 0.07); CFI = 0.99; TLI = 0.98. Given that the more complex model, Model 3, had the lowest chi-square value, chi-square difference tests were conducted with each of the other models. A significant difference was found for the test with Model 1, $\Delta\chi^2$ (2) = 8.35, p < .001, and Model 2, $\Delta\chi^2$ (2) = 14.08, p < .001, suggesting that the more complex process model, Model 3, provided the best fit to the data, with thriving (β = 18, p < .01) and coping efficacy (β = 24, p < .001) jointly predicting significant variance in future growth expectations.

Prospective Associations of Thriving

The responders and non-responders at T2 were first compared on the T1 key variables for this analysis to assess any differences. *T*-tests revealed that those who participated at T2 had significantly higher thriving scores at T1 ($M = 2.93$, $SD = .72$) than those who did not participate at T2 ($M = 2.63$, $SD = .78$; $t\ (421) = -3.90$, $p < .001$). T2 responders and non-responders also differed in depressive symptom scores with the T2 non-responders scoring significantly higher (T1 $M = 12.69$, $SD = 7.22$; T2 $M = 10.28$, $SD = 7.10$; $t\ (421) = 3.35$, $p < .01$).

To test whether thriving was associated with an ongoing perception of personal growth over time we first conducted a correlational analysis of the T1 thriving variables with the T2 retrospective perceptions of personal change (Table 3). Each dimension of thriving and thriving mean was prospectively associated with perceiving positive personal change on five of the six personal qualities assessed. The only quality not associated with thriving was a sense of control over one's illness, although two of the three individual thriving items approached significance (p's = .06).

In a series of hierarchical regression analyses, we examined whether these associations held after accounting for the effects of pain severity at T2 and the number of years living with arthritis (see Table 4). Thriving predicted variance in perceptions of change in each of the five qualities over and above that accounted for by pain severity and time since diagnosis, supporting the proposition that thriving is an ongoing perception of personal growth over time that is independent of disease-related variables.

To assess the prospective association of thriving with psychological well-being, correlational and hierarchical regression analyses were conducted to examine the links between thriving at T1 and depressive symptoms at T2 after controlling for pain severity at T2. Thriving was negatively

correlated with both T1 (r = -.49, p < .001) and T2 depressive symptoms (r = -.37, p < .001). The regression analyses revealed that although pain severity was significantly associated with higher levels of stress in the first step, thriving predicted an additional 12 percent in the variance of T2 depressive symptoms when added to the model. (see Table 5). However, when T1 depression was entered into the model in the first step with T2 pain it accounted for most of the variance in T2 depression and therefore thriving was no longer significantly associated with T2 depression.

Discussion

Our findings provide novel insight into the nature of psychological thriving in the context of living with arthritis and how thriving may be linked to positive views of the self and depressive symptoms, over time. Of the three alternative models suggested by Carver's [15] model of thriving, the process model, which proposed that thriving and coping efficacy are synergistically associated with future growth expectations, had the best fit to the data. If expecting to achieve a hoped for possible self is viewed as continuing to have positive expectations for growth in the future, then this finding together with the association of thriving with positive retrospective perceptions of personal growth at the six month follow-up provides some support for the notion that thriving reflects a trajectory of growth and striving for improvement over time rather than just a scaling back of expectations and accommodation to limiting circumstances [15]. In this respect, our findings are consistent with other research demonstrating that positive self-perceptions in the context of illness may reflect existential growth rather than delusions or wishful thinking [33].

That our sample had lived with arthritis for an average of 10 years is further evidence that thriving is not simply an initial optimistic or hopeful coping response to the diagnosis of chronic

illness, but an ongoing trajectory of growth that characterizes the experience that some people have in the context of living with arthritis. Thriving was modestly (r = .12) associated with number of years since diagnosis, which also suggests that the development of this growth trajectory may take some time as the individual develops ways to successfully cope with the limitations imposed by arthritis. Indeed, there is evidence that during the first two years after diagnosis of arthritis, psychological adjustment changes very little if at all, whereas psychological distress decreases after this transition period [34]. Longitudinal research following individuals after diagnosis would be useful for providing insight into this issue and the other factors that may foster thriving over time.

One finding worth noting was that thriving was significantly related to retrospective perceptions of positive personal change in the follow-up survey for all but one of the six personal qualities. The association between the overall thriving score and perceiving an increased sense of control over illness in the previous six months did not reach significance, although associations with two of the thriving items were marginally significant (p = .06). Although this may appear to contradict the notion that thriving involves enhanced mastery, it is possible that if the control question had been described as an enhanced sense of control over one's symptoms, rather than one's illness (which is incurable), then the associations with thriving would have been significant. Indeed, theory and research indicate that control over illness and control over symptoms are distinct types of control that are differentially related to adjustment [35], with the latter serving as a coping response that predicts better adjustment than the former when symptoms are more severe [30].

Although this study provides new insights into the nature of psychological thriving in people with arthritis, our findings need to be considered in light of several limitations. For

instance, was a less-than-ideal participation rate at Time 2, as many individuals contact information had changed. As well, those who did not participate at Time 2 were more depressed than those who did, which may have contributed to attrition. Despite this, our use of a large community-based sample of people with a diagnosis of a variety of major rheumatic diseases, recruited from professional association web sites and arthritis support networks, is a strength worth noting. The diagnosis of arthritis was, however, self-reported and, although all cases were carefully screened to ensure that there had been a formal diagnosis, the chosen recruitment method is likely less reliable than recruiting participants via referrals from rheumatologists.

We found that the thriving scores did not differ among the different arthritis subtypes, despite the fact that the nature and rate of disease progression can be very different in RA and OA. One reason may be that psychological thriving reflects focusing more broadly on the positive aspects of one's illness beyond the pain and functional limitations it imposes, and this view allows one to cope better with rapid disease progression or unpredictable symptoms. Understanding how the nature and rate of disease progression may impact the experience of thriving is an important issue that warrants further investigation. Along similar lines, it is also unclear whether the model of thriving we tested would apply to other diseases. As a chronic and often progressive illness, arthritis and its challenges may be viewed as a very different context for examining the nature of psychological thriving compared to other diseases such as cancer. Nonetheless, related constructs such as post-traumatic growth have been successfully applied to other illness groups such as cancer [36] and multiple sclerosis [14]. Psychological thriving may therefore be very appropriate for understanding adjustment to other chronic conditions, and future work with such groups is needed to verify its usefulness with these populations.

Our use of cross-sectional Time 1 data to test the proposed thriving models, via structural

equation modelling, precludes examination of causality regarding the effects implied by the models tested. Yet, since we did test three alternate models with different directions among the variables, we are confident that the final model represents a plausible explanation of the way in which thriving and coping efficacy are associated with positive expectations for future growth. The prospective analysis demonstrating a cross-lagged association of thriving with retrospective perceptions of recent personal change is a strength of the study that provides support for the proposed direction of causality suggested by the structural equation model. However, it should be noted that the more stringent test of the effects of thriving on depressive symptoms, controlling for Time 1 depression, was not significant, making it unclear whether thriving is linked to improvements in depression over time. Further research is needed to understand how thriving is linked to a broader range of well-being indicators over time.

Despite limitations, our findings have several important implications for the treatment of individuals with arthritis. Brief therapeutic strategies are available that allow translational application of our findings to practice. For instance, decatastrophizing, a Cognitive-Behavioral Therapy (CBT) strategy, might help an individual with arthritis to envision, and imagine a resolution to a worst-case health-related scenario, perhaps resulting in a more manageable view of illness [37]; this technique can be augmented with guided imagery focused on goal-realization [38]. Encouraging an adaptive, volitional future orientation, including a sense of optimism and hope, might be achieved through identification of meaningful goals, including consideration of potential barriers and means of their resolution; such techniques could be delivered via Motivational Interviewing, Problem-Solving Therapy or Goal-Directed Health Care approaches [39-41]. Importantly, altering maladaptive illness attributions and promoting an efficacious view of one's ability to achieve goals in the future, may contribute to positive expectations for future

growth despite illness-related limitations [42,43]. Although future, prospective intervention research is necessary to determine whether such approaches – to mutually enhance both coping ability and future orientation - might have a synergistic, ameliorative effect on mental and physical health outcomes, our findings suggest that a positive, motivational future orientation, paired with coping efficacy, may allow individuals to adapt to, and even surmount, some of the daily challenges associated with arthritis that are known to increase vulnerability for depressive symptoms [5].

In conclusion, our findings provide insight into the nature and correlates of psychological thriving in people with arthritis. The structural equation modelling analyses supported a dynamic model of thriving whereby successful coping and thriving jointly contribute to positive expectations for reaching important personal goals in the future. Thriving was also associated with retrospective perceptions of growth at the follow-up and less depressive affect cross-sectionally initially and at the follow-up. Together these findings support the notion that many people with arthritis experience ongoing personal growth and positive adjustment despite the daily limitations and challenges of their illness. However, our findings also highlight the need to address the burden of depression in people with arthritis by developing interventions that foster successful coping strategies and a positive future orientation. Collectively, such approaches may help individuals to cultivate their capacity to psychologically thrive rather than just survive while living with the limitations associated with arthritis.

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Appendix A – Psychological thriving scale

1. Compared to how satisfied I was with my life **before** arthritis, **right now** I am

    a. more satisfied with most aspects of my life now.
    b. just as satisfied with most aspects of my life now.
    c. less satisfied with most aspects of my life now.
    d. extremely dissatisfied with most aspects of my life now.

2. Compared to the person I was **before** getting arthritis, right now, other than having this illness, **right now** I am

    a. a better person now in most ways, that is more like the person I always wanted to be.
    b. essentially the same person I was before in most ways.
    c. not quite the person I was before in most ways.
    d. a worse person now in most ways, and not at all like the person I always wanted to be.

3. Compared to the quality of my relationships **before** getting arthritis, **right now** my relationships are

    a. much more satisfying and emotionally rewarding.
    b. just as satisfying and emotionally rewarding.
    c. somewhat less satisfying and emotionally rewarding.
    d. very unsatisfying and emotionally unrewarding.