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A Longitudinal Study of the Profiles of Psychological Thriving, Resilience and Loss in People
with Inflammatory Bowel Disease

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Abstract

Objectives: Despite the toll of inflammatory bowel disease (IBD) on adjustment, many patients are resilient to the challenges associated with living with IBD, and successfully cope with their illness and thrive. Yet there is little research on why some individuals with IBD enter a trajectory of growth while others may struggle to adapt. The aim of this study was to investigate the adjustment-related factors that distinguished thriving, resilience, and loss in people with IBD across personal growth, life satisfaction, and relationship quality domains.

Design: Prospective cohort design with two data collection points, six months apart.

Methods: From a sample of 420 people with active IBD who completed an online survey, 152 participants completed the follow-up survey and were included in the analyses. Participants completed measures of thriving, and cognitive, affective, social, and disease-related variables known to predict adjustment.

Results: Time 1 ANCOVAs and pairwise comparisons controlling for demographics distinguished loss from resilience and thriving on the four outcomes - coping efficacy, illness acceptance, depressive symptoms, and perceived social support – for all three domains. Time 2 ANCOVAs and pairwise comparisons controlling for baseline outcomes revealed that the Time thriving categories predicted differences in Time 2 adjustment, mainly for the life satisfaction domain, with those experiencing loss reporting poorer adjustment than those experiencing resilience and thriving.

Conclusions: Findings highlight the distinctions among profiles of thriving, resilience and loss in adjustment to IBD, and suggest that strategies that enhance coping and address depressive symptoms may optimize thriving in the context of IBD.

Keywords: psychological thriving; inflammatory bowel disease; adjustment; coping

Inflammatory bowel disease (IBD) is a challenging, chronic inflammatory illness that can take a substantial toll on quality of life (Casellas, López-Vivancos, Casado, & Malagelada, 2002). The two main forms of IBD, Crohn's disease and ulcerative colitis, share a common symptom profile and clinical course that includes painful, uncontrollable and unpredictable bowel movements, and flare-ups with increased inflammatory activity (Searle & Bennett, 2001). These stressful symptoms can disrupt personal goals, social and daily functioning (Graff, Walker, Clara, et al., 2009; Wolfe & Sirois, 2008) and contribute to further stress which can, in turn, exacerbate IBD symptoms, disease progression (Maunder, 2005; Maunder & Levenstein, 2008), and mood disorders (Goodhand et al., 2012; Graff, Walker, & Bernstein, 2009). Although the complexity of the linkages among IBD symptoms, stress, and psychological disorders make it difficult to distinguish cause from consequence (Mikocka-Walus et al., 2007), evidence to date indicates that disease course is substantially worse in individuals with IBD who are depressed (Graff, Walker, & Bernstein, 2009). Accordingly, research on adjustment to IBD has tended to focus on the factors associated with poor adjustment, with much less attention given to the factors that may promote positive adjustment.

Despite the potential toll of stress on quality of life and physical symptoms (Maunder & Levenstein, 2008), many individuals with IBD are resilient to the challenges associated with living with IBD and may even flourish. Indeed there is evidence that some individuals with IBD can experience positive adjustment and successfully cope with their illness (Voth & Sirois, 2009). Psychological growth, resilience and related concepts associated with positive adjustment have been examined in chronic health conditions such as cancer and multiple sclerosis (Helgeson, Reynolds, & Tomich, 2006), and other chronic inflammatory diseases such as arthritis (Sirois & Hirsch, 2013). Yet to date there is little research on the factors that may

contribute to ongoing positive adjustment in the context of IBD.

Theoretical perspectives on adjustment posit three general patterns of response to the ongoing challenges associated with chronic illness. Individuals can experience continued loss after the initial downward turn in physical and psychological functioning following diagnosis, resilience or a return to their pre-illness functioning, or a transformative state of personal growth and flourishing known as psychological thriving that reflects gains in psychological and physical functioning. (Carver, 1998; O'Leary & Ickovics, 1995). Research on adjustment to IBD has tended to focus on loss responses which are characterized by depression, anxiety and greater perceived stress (Cámara et al., 2011; Graff & Dudley-Brown, 2013). Much less is known about the qualities that characterize and distinguish the positive responses of resilience and thriving from loss and each other.

Carver's (1998) model of psychological thriving provides an appropriate and previously validated (Sirois & Hirsch, 2013) conceptual framework for understanding not only the factors that might contribute to positive adjustment to chronic illness such as IBD, but also the life domains in which thriving may occur. Building on work by O'Leary and Ickovick's (1995), Carver (1998) conceptualized thriving as the sum gains and trajectory of growth that an individual experiences in one or more psychosocial life domains following a pivotal and stressful life event such as the diagnosis of a chronic illness. With respect to chronic illness, psychological thriving is evident when an individual perceives current gains relative to the pre-illness state in their personal relationships, life satisfaction, and important life skills (Carver, 1998). Support for the validity of this view of thriving comes from a longitudinal study of arthritis patients (Sirois & Hirsch, 2013). Psychological thriving was associated with expectations for future growth at baseline and with retrospective perceptions of personal growth at the six-month follow-up.

Importantly, thriving was also associated with fewer depressive symptoms both at baseline and six months later (Sirois & Hirsch, 2013).

Despite the promise of this initial work on the role of psychological thriving in adjustment to chronic illness, several key questions remain with respect to understanding thriving, particularly in the context of IBD. In the study of arthritis patients, thriving was assessed and examined as a global score of positive personal change across three unique life domains: relationship satisfaction, personal growth, and life satisfaction (Sirois & Hirsch, 2013). It is unknown, therefore, the extent to which these domains differ with respect to the indicators of adjustment noted in the initial study (e.g., coping efficacy, depression), and with respect to IBD. Relationship concerns and difficulties are known to impact adjustment to IBD (Gick & Sirois, 2010), and life satisfaction in IBD has been linked to several quality of life indicators, but not social support (Janke, Klump, Gregor, Meisner, & Haeuser, 2005). Less is known about how perceptions of personal growth are linked to adjustment in IBD.

Understanding what factors differentiate those who experience thriving versus loss, and thriving versus resilience in the context of IBD may be important for several reasons. Distinguishing thriving from resilience would provide greater clarity between these adjustment constructs, which are often viewed as being synonymous by researchers (Ryff & Singer, 2003). From the lens of Carver's model of thriving (1998), resilience refers to recovery from the initial loss experienced after disease onset, whereas thriving reflects going beyond one's initial baseline and experiencing positive growth and change. Accordingly, thriving and resilience should both share common links with indicators of adjustment, such as depression, and yet be distinct on others. Carver (1998) suggests that individuals who thrive in the context of an ongoing stressor do so because they develop more efficacious strategies for coping with daily challenges, and this

is one factor that contributes to their ongoing trajectory of growth in comparison to those who simply return to baseline. Indeed, coping efficacy was reciprocally related to psychological thriving in a sample of arthritis patients (Sirois & Hirsch, 2013), supporting the notion that it may also distinguish thriving from resilience. In terms of IBD, there is some evidence that positive and negative adjustment can be distinguished according to a set of psychological variables including coping, health beliefs, stress, and depressive symptoms (Pellissier, Dantzer, Canini, Mathieu, & Bonaz, 2010). Psychological thriving may be differentiated from resilience and loss on a similar set of variables.

Apart from this previous work (Pellissier et al., 2010), there is little research examining the profiles of IBD patients based on their psychological functioning and the factors that may contribute to adjustment across key life domains. This is somewhat surprising given that researchers have proposed that understanding psychological adjustment to IBD involves considering a comprehensive range of disease-related cognitive and emotional factors beyond just depression and anxiety (Kiebles, Doerfler, & Keefer, 2010). For example, in one study with a small sample of IBD patients, illness acceptance, coping, disease impact, and perceived stress were among the set of variables collectively associated with better adjustment (Kiebles et al., 2010). There is evidence that social support is an important variable to consider when examining the adjustment profiles of IBD patients. Patients with IBD tend to have less interpersonal support compared to healthy controls (Jones, Wessinger, & Crowell, 2006); however, the provision of social support has been linked to better quality of life (Janke et al., 2005) and adjustment in IBD patients both cross-sectionally (Gick & Sirois, 2010), and longitudinally (Oliveira et al., 2007). Examining how thriving and its dimensions relate to a comprehensive set of psychological variables would provide a more complete understanding of the factors that

contribute to this form of psychological growth in patients with IBD.

The present study brings together this theory and research to address the question of why some individuals with IBD enter a trajectory of growth while others may struggle to adapt by examining the psychological factors that distinguish those who thrive from those who are resilient or who experience loss from living with IBD. In line with previous work on psychological adjustment to IBD (Kiebles et al., 2010; Pellissier et al., 2010), we propose that taking a profile-based approach is useful for achieving this aim, and also for understanding the relative importance of the different life domains of psychological thriving for adjustment to IBD as proposed by Carver's (1998) model of thriving. Specifically, we tested how psychological thriving was similar or distinct from resilience and loss across three life domains (life satisfaction, personal growth, and relationship quality) in a sample of people with IBD. To better understand the implications of thriving for adjustment over time, we also prospectively examined potential differences in adjustment outcomes for each life domain as a function of thriving, resilience and loss with a six-month follow-up survey.

A set of variables reflecting the cognitive, affective, and social factors suggested by previous research to relate to adjustment to IBD were examined. The cognitive factors included coping efficacy, which was associated with psychological thriving in a previous study (Sirois & Hirsch, 2013), and illness acceptance, a known correlate of adjustment to IBD (Kiebles et al., 2010). Depression was chosen as the affective factor as depression is prevalent in IBD and can adversely affect disease course (Graff & Dudley-Brown, 2013). As noted previously, social support is an important social factor linked to better adjustment to IBD (Gick & Sirois, 2010; Oliveira et al., 2007). Because adjustment to IBD may rely upon how long the individual has lived with the disease (Kiebles et al., 2010), disease duration was included as a covariate in the

analyses. Based on this previous research on adjustment to IBD and on thriving theory (Carver, 1998), it was expected that psychological thriving would be distinguished from loss in terms of coping efficacy, depressive symptoms, and illness acceptance across most domains, and that the provision of social support would be a prominent distinguishing factor primarily for the relationship quality domain. Given that previous research has not previously examined how thriving is distinct from resilience in the context of chronic illness, but has demonstrated that coping efficacy is dynamically linked to greater perceptions of thriving (Sirois & Hirsch, 2013), it was expected that this factor might also distinguish thriving from resilience. Differences between each of the three thriving categories for the four adjustment outcomes were tested at baseline, and then prospectively six months later to examine whether thriving categories accounted for any potential changes in adjustment (see Figure 1).

Method

Participants and Procedure

Following ethics clearance from the University Research Ethics Board, a sample of 420 people diagnosed with inflammatory bowel disease (IBD) was recruited online via advertisements in IBD support forums, online classified ads, online psychological research web pages, in the community, and on the Crohn's and Colitis Foundation of Canada's newsletter. Informed consent was implied through submission of the online or mail-in survey and participation was anonymous. Data collection was planned to continue until approximately 400 participants had completed the Time 1 (T1) survey to allow for attrition at Time 2 (T2). All participants agreed to be contacted for the 6-month follow-up and, of those contacted, 152 participants (36.2%) completed the follow-up survey, and thus only those who completed both T1 and T2 surveys were included in the analyses. The T1 and T2 surveys were linked with a

participant generated code. The data collected and analysed for this study was part of a larger multi-aim study investigating the psychosocial and disease-related factors associated with adjustment to chronic illness (Sirois, 2014; Sirois, Hirsch, & Molnar, 2014; Sirois & Wood, 2017).

The majority of participants were female, White, from Canada or the U.S., married or living with an intimate partner, employed full-time, and had a university level education (see Table 1). Data regarding income were not collected. Participants self-reported whether they had received a diagnosis of Crohn's Disease or ulcerative colitis, and the majority reported having Crohn's disease. Approximately one-quarter of participants reported having been diagnosed with a mental health issue, with depression being the most frequently reported diagnosis.

Measures

The T1 and T2 surveys included demographic and disease-related questions, including disease type, whether there had any IBD related surgeries, and measures of each of the cognitive, affective, and social domain outcome variables, disease-related factor, and psychological thriving.

Psychological thriving. The Psychological Thriving Scale (Sirois & Hirsch, 2013) is a 3-item measure derived from Carver's (1998) model of psychological thriving which was previously validated with a sample of arthritis patients. The perception of change (for better or worse) over time due to illness is assessed by asking respondents to compare their current circumstances to those in their life before they were ill, across each of three domains: life satisfaction ("Compared to how satisfied I was with my life before inflammatory bowel disease (IBD), right now I am..."), self-improvement ("Compared to the person I was before IBD, right now, other than having this condition, right now I am..."), and quality of personal relationships

(“Compared to the quality of my relationships before IBD, right now my relationships are...”). For the current study, “IBD” replaced the word “arthritis” in each of the items. 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 (loss), and the fourth reflecting larger negative change (loss; See Appendix for all scale items and scoring). All responses were reverse-scored with higher scores reflecting greater positive change. To assess profiles of thriving, resilience, and loss, the two loss items were collapsed into a single “loss” category for each of the three life domains.

Cognitive outcomes. The 6-item Acceptance subscale of the Illness Cognition Questionnaire (ICQ; Evers et al., 2001) assessed acceptance of one’s chronic illness, an illness cognition that is linked to favorable adjustment to chronic illness. Respondents indicate the extent to which they agree with statements such as “I have learned to accept the limitations imposed by my illness” on a 4-point response format ranging from 1 (not at all) to 4 (completely). The ICQ has demonstrated good internal consistency for the Acceptance scale in previous research (Cronbach’s $\alpha = .91$)(Evers et al., 2001), and in the current study at T1 and T2 (alphas = .92, .89 respectively).

Appraisals of efficacy in coping with chronic illness was assessed with the three-item coping efficacy scale developed by Gignac and colleagues (2000). This scale assesses three challenges associated with adjustment to chronic illness: symptoms, emotional aspects, and day-to-day problems. For the current study the term “IBD” replaced the term “illness” in all items to make it more relevant for our sample. Items such as “I am successfully coping with the symptoms of my IBD” 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 has demonstrated good internal consistency in a study of arthritis patients ($\alpha = .80$; Sirois & Hirsch, 2013), and in the current study at T1 and T2 (alphas = .90, .91 respectively).

Affective outcome. A 10-item version of the Center for Epidemiological Studies Depression (CES–D) scale (Radloff, 1977) 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 (Sirois, Davis, & Morgan, 2006) and demonstrated good reliability in the current study at T1 and T2 (alphas = .87, .92 respectively).

Social outcome. Perceived social support was assessed with the Duke –UNC Functional Social Support questionnaire, a widely used and accepted measure (Broadhead, Gehlbach, Gruy, & Berton, 1988). The amount of perceived personal social support is assessed with 8 items that 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). Scores reflect the mean of the scale items with higher scores reflecting greater perceived social support. The Duke –UNC Functional Social Support questionnaire has demonstrated good internal consistency in previous studies ($\alpha = .86$) (Broadhead et al., 1988), and in the current study at T1 and T2 (alphas = .91, .93 respectively).

Disease-related factor. The total time since diagnosis of IBD in years was calculated from the date of diagnosis to the date the survey was completed. This factor was assessed only at T1.

Statistical Analyses

For cases missing data on the key variables, expectation-maximisation was used to impute and replace the missing data to minimise loss of power for the analyses. Differences

between the demographic characteristics of the T1 and T2 responders were evaluated to assess the equivalencies of the two samples. Descriptive analyses among the study variables at T1 and T2 were conducted with correlations. Differences between the T1 and T2 outcome variables were assessed with paired sample *t*-tests.

A series of analyses of covariance (ANCOVAs) were then conducted to examine potential differences among the T1 thriving categories with respect to the outcomes at T1 and then again at T2, controlling for age and disease duration (see Figure 1). The T1 analyses were cross-sectional, and the T2 analyses provided a prospective replication of the T1 analyses. Specifically, differences among T1 thriving categories on T2 outcome variables were tested, while controlling for T1 values of the outcome variable tested to provide a more stringent test of the longitudinal model. Planned pairwise comparisons using Tukey's LSD test of thriving to loss, and to resilience, were conducted to further identify distinctions between the thriving categories at T1 and at T2 on the outcome variables.

Results

Descriptive analyses

Demographic and clinical characteristics and differences between the full T1 and T2 samples, and the T2 non-responders, are presented in Table 1. Compared to those who did not participate at T2, participants who completed both surveys were older, but were otherwise similar on both the demographic and disease-related variables. Participants who completed both surveys had been living with their disease for 9.67 years on average, with a median time of 6 years.

Correlation analyses among the T1 and T2 variables revealed the expected associations between the T1 thriving variables and the T1 and T2 outcome variables (see Table 2). The

thriving variables across each of the life domains were associated with better coping efficacy, greater illness acceptance and perceived social support, and lower depressive symptoms, at both T1 and T2. Only thriving with respect to life satisfaction was significantly associated with disease duration

Comparisons of T1 and T2 outcome variables revealed that coping efficacy significantly increased and depressive symptoms significantly decreased over the six-month period of the study (see Table 3). However, an inspection of the correlations among the T1 and T2 variables ranged from .45 for coping efficacy to .70 for illness acceptance, indicating individual change in all of the outcome variables from T1 to T2. A Fisher's z test of the differences between correlations indicated that there was greater change in coping efficacy from T1 to T2 compared to illness acceptance ($z = -3.30, p < .001$), depressive symptoms ($z = -3.30, p = .05$), or perceived social support ($z = -2.81, p < .01$).

Table 4 presents the results of the ANCOVAs and pairwise comparisons at T1 of each of the four outcome variables as a function of each of the three thriving categories (loss, resilience, and thriving) across the three life domains. Overall, the ANCOVAs were significant for all of the life domains at T1. However, pairwise comparisons found the differences were largely due to significant differences between loss and the other two thriving categories. Table 5 presents the results of the ANCOVAs and pairwise comparisons for the T2 outcome variables for each life domain, controlling for T1 of each outcome variable, and Figure 2 provides an overview of the significant results at T1 and T2.

Profiles of adjustment outcomes – Life satisfaction domain

For the life satisfaction domain, those experiencing loss reported lower illness acceptance and perceived social support, and higher levels of depressive symptoms compared to those

experiencing either resilience or thriving. For coping efficacy, there were significant differences between each thriving category, with highest scores for those reporting thriving and lowest scores for those reporting loss in this domain (see Table 4).

Longitudinal analyses of the six-month follow-up adjustment outcomes for the life satisfaction domain revealed significant differences as a function of the three thriving categories (loss, resilience, and thriving) at T1 with respect to T2 coping efficacy, depressive symptoms, and perceived social support, but not T2 illness acceptance, after accounting for the contributions of T1 levels of each T2 outcome variable. Specifically, those who experienced loss were less likely to be coping successfully at the follow-up compared to those who were resilient, and to those who were thriving in this domain. Similarly, those in the loss category perceived less social support than those who were resilient, and those who were thriving. Those who experienced loss in terms of life satisfaction also reported greater depressive symptoms at T2 than either those who were resilient or those who were thriving. Planned comparisons for illness acceptance found that compared to those who were thriving, those who were resilient reported less illness acceptance (see Table 5).

Profiles of adjustment outcomes – Personal growth domain

The results of the pairwise comparisons at T1 for the personal growth domain followed the same pattern as those for the life satisfaction domain, with those experiencing loss scoring significantly differently on illness acceptance, depressive symptoms, and perceived social support compared to those experiencing resilience and thriving. For coping efficacy, there were again significant differences between each thriving category, following the same pattern as that found in the life satisfaction domain (see Table 4).

At T2 in the personal growth perceptions domain there was a significant main effect only

for depressive symptoms. The planned pairwise comparisons revealed that those who experienced loss reported greater depressive symptoms at T2 compared to those who were thriving in this domain. For coping efficacy, the main effect was marginally significant, and the only significant difference was that those in the thriving group were coping more successfully with their IBD than those in the resilient group (see Table 5).

Profiles of adjustment outcomes – Relationship quality domain

For the relationship satisfaction domain, the pairwise comparisons at T1 revealed a consistent pattern across all four outcome variables. Those experiencing loss reported lower coping efficacy, illness acceptance, and perceived social support, and higher levels of depressive symptoms compared to those experiencing either resilience or thriving (see Table 4).

At T2 there were no significant main effects for any of the four outcome variables in the relationship quality domain (see Table 5).

Discussion

Previous research has examined adjustment to IBD primarily in terms of poor psychological adjustment rather than focusing on positive psychological adjustment and perceived growth, or on distinguishing between different forms of positive adjustment across life domains. The findings from our theoretically informed (Carver, 1998), profile-based, longitudinal study contribute to a greater understanding of the psychological factors that distinguish individuals with IBD who thrive and experience positive growth across different life domains over time from those who are resilient, and from those who experience loss in these domains. The cross-sectional analysis at T1 revealed that for two of the life domains, life satisfaction and personal growth, psychological thriving and resilience were characterised by higher levels of coping efficacy, illness acceptance, and perceived social support, and lower

levels of depressive symptoms, compared to those who experienced loss in each domain.

Consistent with theory (Carver, 1998) and previous research on thriving and coping (Sirois & Hirsch, 2013), greater coping efficacy was the only psychological factor that distinguished thriving from resilience across two of the three life domains, providing some support regarding the conceptual differences between these two positive adjustment constructs. The prospective analysis further highlighted how psychological thriving may contribute to short-term improvements in adjustment across different life domains for individuals living with IBD.

Longitudinal analyses of the role of thriving categories in predicting outcomes over the six months of the study revealed differences in adjustment over time primarily with respect to the life satisfaction domain.

Within the life satisfaction domain, the cross-sectional results indicated that the resilience and thriving categories were similar with respect to levels of illness acceptance, perceived social support, and depressive symptoms. However, both categories demonstrated better adjustment profiles in comparison to the loss category, which was characterised by significantly lower levels of acceptance and social support, and higher levels of depressive symptoms. Individuals who experienced thriving in the life satisfaction domain at T1 also reported greater coping efficacy and perceived social support, and less depressive symptoms at T2 than those experiencing loss. This pattern of results also held for coping efficacy when comparing thriving to those reporting resilience in this domain. Overall, these findings suggest that, individuals who feel that living with IBD has contributed to a loss of life satisfaction struggle to cope and accept their illness, or find adequate social support, and feel more depressed about their circumstances than those who have managed to maintain or increase their life satisfaction.

Longitudinally, better coping efficacy, greater perceived social support, and fewer

depressive symptoms were the outcomes that characterised resilience and thriving with respect to life satisfaction as compared to loss, and that coping efficacy further differentiated resilience from thriving. This implies that over time, feelings of having experienced gains in life satisfaction from living with IBD may contribute to increases in efficacy for coping with the challenges of living with IBD, in part perhaps because these challenges are viewed as opportunities to experience further gains (Carver, 1998). Thriving and coping are posited to have reciprocal and dynamic relationships, such that thriving promotes effective coping, which in turn fosters thriving, suggesting that thriving may be best viewed as a process (see Sirois & Hirsch, 2013). That the T2 findings approximately replicated the cross-sectional findings further underscores the benefits of thriving for coping effectively with the daily and disease-related stresses that are part of living with IBD, as suggested by thriving theory (Carver, 1998; O'Leary & Ickovics, 1995).

For the personal growth domain, coping efficacy, depressive symptoms, illness acceptance and perceived social support differentiated loss from thriving and resilience at T1. However, coping efficacy again distinguished thriving from resilient individuals. For patients with chronic illnesses such as IBD, clinical interventions to promote coping in a way that alters the perspective of disease to one that integrates opportunity for personal growth may be desirable, and may include Cognitive-Behavioral strategies such as cognitive restructuring and reframing.

The T1 thriving categories for personal growth also predicted significant differences in depressive symptoms at T2, but not in the other adjustment outcomes. This finding suggests that the changes in illness acceptance, coping efficacy, and social support over the six months of the study did not vary significantly as a function of loss, resilience or thriving, whereas the

depressive symptoms of those who experienced a sense of loss from their IBD in terms of personal growth at T1 persisted at T2, and remained elevated. As with the domain of life satisfaction, addressing psychopathology including symptoms of depression appears indicated as a means to facilitate progress toward thriving, rather than loss, as it relates to gaining a sense of personal growth while living with IBD. Previous research suggests that individuals with IBD who are also depressed have a poorer quality of life (Graff, Walker, & Bernstein, 2009) and this may be, in part, due to the impact of depression on inability to envision a better future or have belief in ability to achieve previously-important goals (Hirsch & Sirois, 2016) that contribute to a sense of personal growth.

For the relationship domain, a sense of loss in terms of relationship quality was distinguished from resilience and from thriving for all four adjustment outcomes at T1. Specifically, those in the loss category reported lower efficacy in coping with their IBD, less perceived social support, less acceptance of their illness, and higher levels of depressive symptoms, reflecting an overall profile of poor adjustment. In some respects this finding is not surprising given past research on the role of social resources in adjustment to IBD (Oliveira et al., 2007). Clinical efforts to enhance social functioning may therefore be critical components in the process of moving a patient from a loss trajectory to one of resilience or thriving in this life domain. However, the effect size for social support was similar to those for other outcomes in this life domain, suggesting that thriving within the relationship domain can have benefits across multiple outcomes.

Interestingly, there were no significant differences among the thriving categories for the T2 outcomes after controlling for T1 outcomes in the relationship quality domain. Experiencing a sense of loss, maintenance or gain with respect to relationship quality may not differentially

impact adjustment outcomes over time, or at least over the relatively short period of time of this study. Further research examining potential differences among the thriving categories in this life domain is needed to verify if this is the case.

Across all domains, our findings highlight the potential ways in which individuals with IBD experiencing adjustment, whether as thriving or resilience, may differ from those experiencing loss. It may be that the passage of time since diagnosis, as well as pre-existing coping ability and skills that develop post-diagnosis, enhance accessibility to, and quality of, social relations, which are often negatively impacted for those with IBD (Jones et al., 2006; Oliveira et al., 2007). Similarly, evaluations of life satisfaction, which can be viewed as a proxy measure for quality of life (Strine, Chapman, Balluz, Moriarty, & Mokdad, 2008), may be linked to the development of more successful coping in people with IBD who thrive.

In addition to reporting fewer depressive symptoms and more successful coping and perceived social support, those who reported experiencing adjustment were more accepting of their illness across all three life domains at T1. This finding mirrors results from a study with a smaller sample of IBD patients in which each of these factors figured prominently in the profiles of patients who experienced better psychological adjustment (Kiebles et al., 2010). Stress-management and coping-enhancement therapeutic strategies, therefore, may be important approaches for improving life satisfaction across trajectory groups (Langhorst et al., 2007), particularly for those who may not yet have attained a sense of illness acceptance and may be experiencing more acute symptoms (Irvine, 2004). Overall, these findings suggest that outcome profiles for thriving and resilience, whilst not being distinct with respect to affective and social outcomes, or illness perceptions, can be distinguished in terms of gains in coping efficacy across important life domains cross-sectionally. However, when viewed longitudinally, these

distinctions between loss versus thriving and resilience profiles appear to occur mainly within the life satisfaction domain.

Though promising, the current findings need to be considered in light of several limitations. The participation rate at T2 was less than ideal due largely to changes in contact information over the six months of the study, and therefore greatly reduced the sample size for the study. Nonetheless, those who did not participate at T2 did not differ significantly from non-participants on key demographic and health variables, including mental health issues and type of IBD. However, there are some characteristics of our sample of people with IBD that suggest that it may not be representative of people with IBD in the general population. Several population-based studies indicate a slightly higher incidence of IBD among females compared to males, with an approximately a 1:3 ratio (Bernstein et al., 2006; Brant & Nguyen, 2008), yet approximately three-quarters of our sample was female. As well, ulcerative colitis is more common than Crohn's disease (Marshall, 2008), but a larger proportion of people in our sample had Crohn's disease. Nonetheless, the incidence of IBD is also highest among the 20-29 age group with the 30-39 age group having the second highest incidence (Johnston & Logan, 2008). As the average age of our sample was 37.9, and the average time since diagnoses was 9 years, this suggests that on average our sample was diagnosed whilst in their 20's. This falls within the highest incidence group and supports the notion that the current sample is representative of people with IBD with respect to age.

Participants also self-reported their diagnosis of IBD, which may be less reliable than recruiting directly via gastroenterologists. Nonetheless, evidence from a large, Internet-based cohort of people with IBD recruited from a national association suggests that self-reports of IBD compared to physician reports of IBD are generally very reliable (Randell et al., 2014). Given

this finding, and that one of our recruitment approaches included study notices in the newsletter of the CCFC, a national association for people with IBD, it is likely that the self-report of IBD in our study can be considered reliable. It could be argued that given the fact that study participants had been living with their IBD for 9 years on average, that the relatively short follow-up period may not have been long enough to assess potential changes that would distinguish those on a trajectory of growth from those who may have reached a plateau of resilience. Indeed, significant change was found for only two of the four outcome variables suggesting that over a longer period of time different results may have been obtained. However, given the fluctuating nature of IBD with respect to symptom flares and active and quiescent periods (Graff, Walker, Clara, et al., 2009), changes in adjustment over a 6-month period are possible. Indeed, this was demonstrated by the significant changes in coping efficacy and depressive symptoms in the current study, and is consistent with research noting fluctuations in coping strategies depending on whether or not IBD is quiescent or active (Graff, Walker, Clara, et al., 2009; Sirois, 2009). To the extent that such strategies promote confidence in the ability to cope with IBD, changes in levels of coping efficacy can be expected. Future research on this topic that takes multiple assessments over time of thriving and across different levels of and periods of disease activity is needed to better understand the process of psychological adjustment to IBD.

Noteworthy strengths of our study include the use of a community-based sample of people with IBD recruited from professional association web sites and support networks, and the use of a prospective cohort design, controlling for T1 of each adjustment variable assessed at T2. Also noteworthy was that our sample included individuals who had been living with IBD for a long period of time on average. Yet many still reported feelings of loss when considering how their life may have changed as a result of living with IBD. This highlights the importance of

clinical interventions for promoting better adjustment and potentially a sense of positive growth not just among those who have been newly diagnosed with IBD, but also for those who having been living with their disease for some time and who may still be struggling to adjust.

In conclusion, the findings from the current study indicate that across important life domains, individuals who are thriving or resilient report better cognitive, affective, and social outcomes in comparison to those who experience loss as a result of their IBD, and that thriving categories predict adjustment outcomes with respect to life satisfaction. These findings support and extend previous theory (Carver, 1998) and research (Sirois & Hirsch, 2013) regarding the loss, resilience and thriving trajectories of illness by taking a profile-based approach to understanding the distinctions and similarities in the adjustment outcomes of people with IBD. Our findings also extend the scope of past research by indicating that individuals with IBD who are better able to cope and who have less depression are more likely to manifest resilience and thriving over time in the areas of life satisfaction and personal growth. Consonant with a positive clinical psychology perspective (Wood & Tarrier, 2010), therapeutic prevention or intervention strategies to enhance coping ability and reduce psychopathology may therefore be warranted to optimize adjustment and growth for individuals living with IBD.

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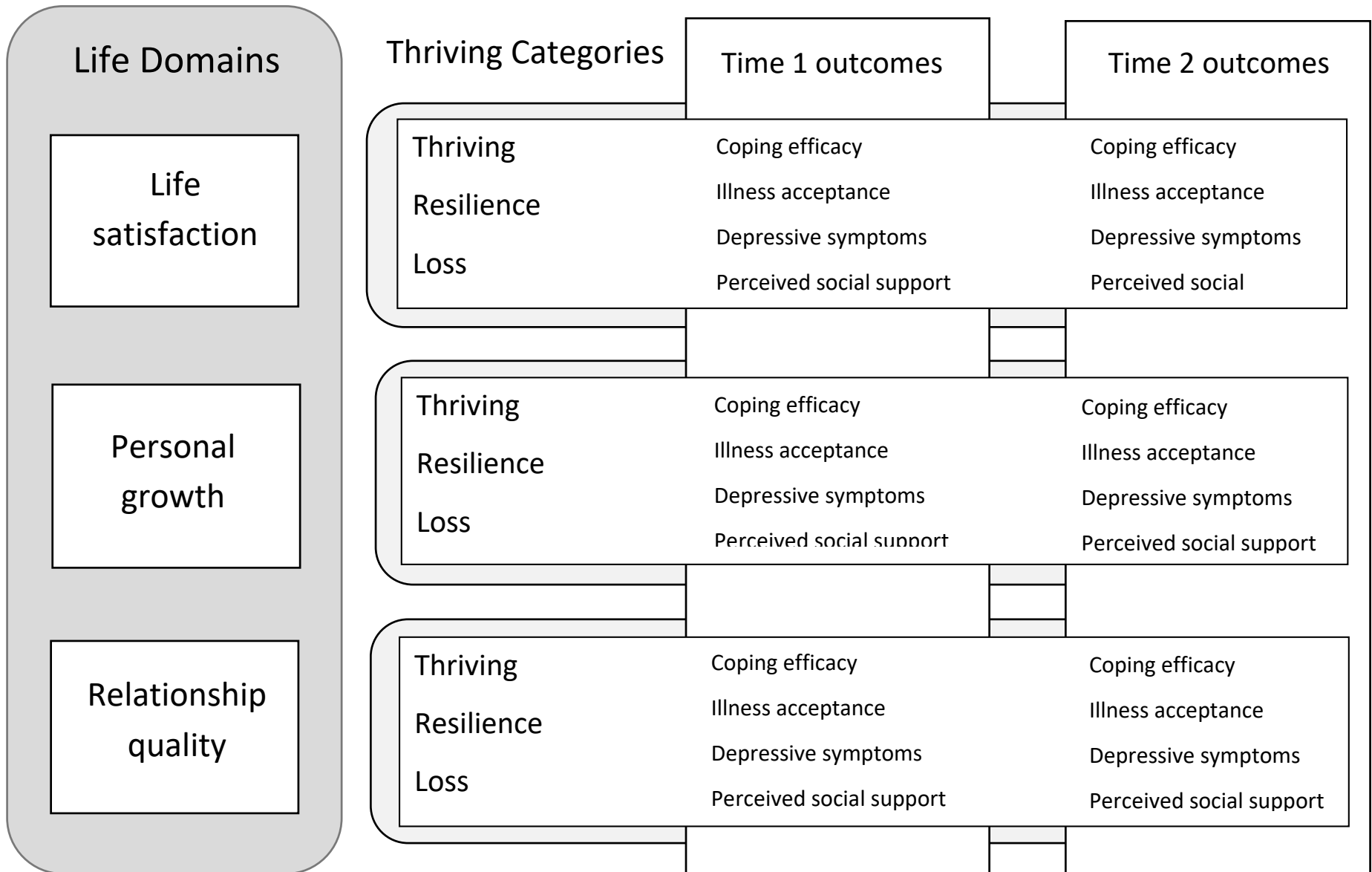


Figure 1. Overview of the study analyses comparing thriving categories in each life domain at Time 1 and 6 months later at Time 2 on the four outcome variables. Analyses control for age and disease duration at Time1 and Time1 outcome variables at Time 2.

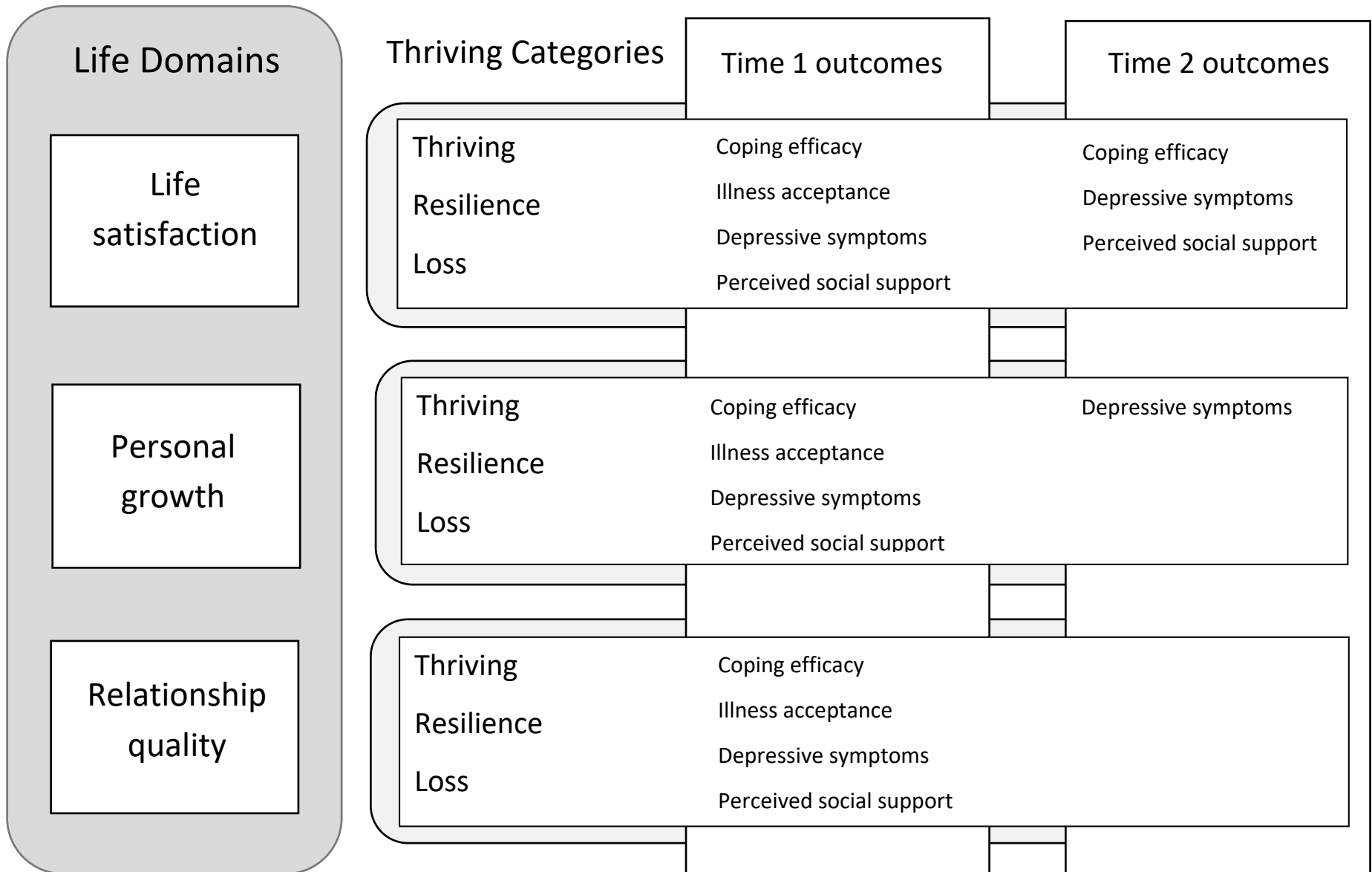


Figure 2. Overview of the results of the study analyses comparing thriving categories in each life domain at Time 1 and 6 months later at Time 2 on the four outcome variables. Only outcome variables that had significant differences among the thriving categories are shown at each Time. Analyses control for age and disease duration at Time1 and Time1 outcome variables at Time 2.

Table 1.

Demographic and Disease-Related Characteristics of the Participants and Non-responders for Time 1 (T1) and Time 2 (T2).

| | Time Point | | Non-responders | T2 responders vs. non-responders |
|--|----------------------|----------------------|----------------------|-------------------------------------|
| | T1 <i>N</i> = 420 | T2 <i>N</i> = 152 | T2 <i>N</i> = 268 | <i>p</i> value* |
| Sex (% female) | 76.2 | 77.9 | 76.7 | 0.809(1) |
| Age (SD) | 35.4 (12.0) | 37.9 (12.5) | 34.1 (11.5) | 0.002(2) |
| Range | 18 - 70 | 16 - 70 | 18 - 68 | |
| Ethnicity (% Caucasian) | 93.0 | 93.4 | 92.9 | 0.999(1) |
| Country of residence (%) | | | | |
| United States | 46.9 | 49.0 | 45.7 | |
| Canada | 35.2 | 30.5 | 37.8 | |
| United Kingdom | 11.2 | 14.6 | 9.4 | |
| Other | 6.8 | 5.9 | 7.1 | 0.248(3) |
| Employment status (%) | | | | |
| Full-time | 50.2 | 44.5 | 53.5 | |
| Part time | 19.0 | 19.9 | 18.5 | |
| Unemployed / retired | 23.2 | 25.3 | 21.9 | |
| Disabled | 7.4 | 10.3 | 6.2 | 0.247(3) |
| Education (%) | | | | |
| High school or less | 14.1 | 13.9 | 14.2 | |
| University | 67.3 | 64.9 | 68.7 | |
| Graduate school | 18.6 | 21.2 | 17.2 | 0.592(3) |
| Relationship status (%) | | | | |
| Married / Living with significant other | 65.9 | 67.6 | 64.9 | |
| Separated / divorced / widowed | 7.0 | 7.4 | 6.7 | |
| Never married | 27.2 | 25.0 | 28.4 | 0.753(3) |

| | | | | |
|-------------------------------------|-------------|-------------|-------------|----------|
| Diagnosed mental health problem (%) | 24.1 | 22.5 | 25.0 | 0.635(1) |
| Type of IBD (%) | | | | |
| Crohn's disease | 56.3 | 51.7 | 59.0 | |
| Ulcerative colitis | 39.6 | 43.4 | 37.3 | |
| Other IBD | 4.1 | 4.6 | 3.7 | 0.349(3) |
| Time since diagnosis (SD) | 8.88 (8.30) | 9.67 (9.02) | 8.44 (7.78) | 0.167(2) |
| Surgeries for IBD (%) | 33.7 | 33.1 | 34.0 | 0.860(3) |

SD = standard deviations; * (1) Based on Fisher's Exact test, 2 sided, (2) based on an independent sample *t*-test, (3) based on a Pearson chi-square test, 2 sided.

Table 2.*Pearson Correlations Among the Study Variables at Time 1 and Time 2 (N = 152).*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------------------------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|------|
| 1. Thriving – life satisfaction | --- | | | | | | | | | | | |
| 2. Thriving – self-improvement | .65** | --- | | | | | | | | | | |
| 3. Thriving – relationship quality | .61* | .55** | --- | | | | | | | | | |
| 4. Disease duration (yrs.) | .20* | .17* | .12 | --- | | | | | | | | |
| 5. T1 Coping efficacy | .54** | .52** | .38** | .20* | --- | | | | | | | |
| 6. T1 Illness acceptance | .57** | .49** | .36** | .25** | .71** | --- | | | | | | |
| 7. T1 Depressive symptoms | -.46** | -.37** | -.30** | -.10 | -.62** | -.45** | --- | | | | | |
| 8. T1 Perceived social support | .33** | .23** | .35** | -.04 | .49** | .33** | -.45** | --- | | | | |
| 10. T2 Coping efficacy | .45** | .38** | .23** | .05 | .60** | .54** | -.46** | .26** | --- | | | |
| 11. T2 Illness acceptance | .45** | .40** | .29** | .11 | .63** | .70** | -.47** | .32** | .70** | --- | | |
| 12. T2 Depressive symptoms | -.46** | -.39** | -.22** | -.03 | -.46** | -.34** | .64** | -.31** | -.55** | -.50** | --- | |
| 13. T2 Perceived social support | .40** | .19** | .32** | -.03 | .31** | .30** | -.43** | .67** | .35** | .38** | -.38** | --- |
| Mean | 1.89 | 2.14 | 2.06 | 9.67 | 3.46 | 24.37 | 1.19 | 4.02 | 3.72 | 25.11 | 1.04 | 4.01 |
| Standard deviation | 0.82 | 0.78 | 0.78 | 9.02 | 1.01 | 6.88 | 0.71 | 0.84 | 0.92 | 6.28 | 0.72 | 0.96 |

Note: ^a $p = .05$, * $p < .05$, ** $p < .01$

Table 3.*Mean Differences Between the Time 1 (T1) and Time 2 (T2) Variables, N = 152*

| | Time Point | | <i>t</i> (151) | 95% <i>CI</i> |
|--------------------------|------------------|------------------|----------------|---------------|
| | T1 | T2 | | |
| | <i>Mean (SD)</i> | <i>Mean (SD)</i> | | |
| Coping efficacy | 3.46 (1.01) | 3.72 (0.92) | -3.78 | [-.40, -13] |
| Illness acceptance | 24.37 (6.88) | 25.12 (6.28) | -1.77 | [-1.56, .09] |
| Depressive symptoms | 1.19 (0.71) | 1.04 (0.72) | 3.12 | [.06, .25] |
| Perceived social support | 4.02 (0.84) | 4.01 (0.96) | .16 | [-.11, .13] |

Note: *SD* = standard deviations; *CI* = confidence interval.

Table 4.*Differences in Adjustment Outcomes at Time 1 as a Function of Thriving, Loss, or Resilience.*

| Outcome variables | Adjusted mean scores (95% CI) | | | <i>F</i> (2,147) | Effect size Partial η^2 |
|--------------------------|----------------------------------|----------------------------------|----------------------------------|------------------|---------------------------------|
| | Loss (<i>n</i> = 61) | Resilience (<i>n</i> = 47) | Thriving (<i>n</i> = 44) | | |
| Life satisfaction | | | | | |
| Coping efficacy | 2.85 ^a (2.6– 3.1) | 3.63 ^b (3.4 – 3.9) | 4.12 ^c (3.9 – 4.4) | 28.01** | 0.28 |
| Illness acceptance | 19.68 ^a (18.3 – 21.1) | 26.89 ^b (25.3 – 28.5) | 28.20 ^b (26.6 – 29.8) | 36.35** | 0.33 |
| Depressive symptoms | 1.60 ^a (1.4 – 1.8) | 1.02 ^b (0.8 – 1.2) | 0.81 ^b (0.6 – 1.0) | 21.49** | 0.23 |
| Perceived social support | 3.67 ^a (3.5 – 3.9) | 4.17 ^b (3.9 – 4.4) | 4.35 ^b (4.1 – 4.6) | 10.05** | 0.12 |
| Personal growth | | | | | |
| Coping efficacy | 2.58 ^a (2.3 - 2.9) | 3.53 ^b (3.3 - 3.8) | 3.93 ^c (3.7 – 4.1) | 27.30** | 0.27 |
| Illness acceptance | 18.96 ^a (17.0 – 20.9) | 25.03 ^b (23.5– 26.6) | 27.14 ^b (25.6 – 28.7) | 21.57** | 0.23 |
| Depressive symptoms | 1.78 ^a (1.6 – 2.0) | 0.99 ^b (0.8 – 1.2) | 1.0 ^b (0.8 – 1.2) | 20.58** | 0.22 |
| Perceived social support | 3.66 ^a (3.4 – 3.9) | 4.09 ^b (3.9 – 4.3) | 4.18 ^b (4.0 – 4.4) | 4.63* | 0.06 |
| Relationship quality | | | | | |
| | Loss (<i>n</i> = 42) | Resilience (<i>n</i> = 59) | Thriving (<i>n</i> = 51) | <i>F</i> (2,147) | Effect size Partial η^2 |

| | | | | | |
|---------------------|----------------------------------|---------------------------------|----------------------------------|---------|------|
| Coping efficacy | 2.77 ^a (2.5 – 3.0) | 3.69 ^b (3.5 – 3.9) | 3.75 ^b (3.5 – 4.0) | 16.02** | 0.18 |
| Illness acceptance | 20.40 ^a (18.5 – 22.3) | 25.70 ^b (24.1– 27.3) | 26.12 ^b (24.4 – 27.9) | 11.75** | 0.14 |
| Depressive symptoms | 1.68 ^a (1.5 – 1.9) | 0.94 ^b (0.8 – 1.1) | 1.08 ^b (0.9 – 1.3) | 17.14** | 0.19 |
| Social support | 3.42 ^a (3.2 – 3.7) | 4.29 ^b (4.1 – 4.5) | 4.20 ^b (4.0 – 4.4) | 17.71** | 0.19 |

Note: * $p < .05$; ** $p < .001$; All means and analyses control for age and disease duration. Planned pairwise comparisons were conducted with Tukey's LSD test. Means with different superscripts are significantly different from one another at $p < .05$

Table 5. Differences in Adjustment Outcomes at Time 2, Controlling for T1 Outcomes, as a Function of Time 1 Thriving, Loss, or Resilience.

| Outcome variables | Adjusted Mean scores (95% CI) | | | <i>F</i> (2,146) | Effect size Partial η^2 |
|--------------------------|----------------------------------|----------------------------------|----------------------------------|------------------|---------------------------------|
| | Loss (<i>n</i> = 61) | Resilience (<i>n</i> = 47) | Thriving (<i>n</i> = 44) | | |
| Life satisfaction | | | | | |
| Coping efficacy | 3.52 ^a (3.3 – 3.7) | 3.68 ^a (3.5 – 3.9) | 4.04 ^b (3.8 – 4.3) | 5.14** | 0.07 |
| Illness acceptance | 24.90 (23.6 – 26.2) | 24.27 ^a (23.0 – 25.6) | 26.31 ^b (24.9 – 27.7) | 2.36 | 0.03 |
| Depressive symptoms | 1.25 ^a (1.1 – 1.4) | 0.97 ^b (0.8 – 1.1) | 0.82 ^b (0.6 – 1.0) | 6.45** | 0.08 |
| Perceived social support | 3.76 ^a (3.6 – 3.9) | 4.13 ^b (3.9 – 4.3) | 4.23 ^b (4.0 – 4.4) | 5.75** | 0.07 |
| Personal growth | | | | | |
| Coping efficacy | 3.61 (3.4 - 3.9) | 3.60 (3.4 - 3.8) | 3.91 (3.7 – 4.1) | 2.98 | 0.04 |
| Illness acceptance | 24.43 (22.8 – 26.1) | 24.75 (23.6 – 26.0) | 25.89 (24.7 – 27.1) | 1.22 | 0.02 |
| Depressive symptoms | 1.29 ^a (1.1 – 1.5) | 1.04 ^b (0.9 – 1.2) | 0.90 ^b (0.7 – 1.1) | 4.59* | 0.06 |
| Perceived social support | 3.96 (3.7 – 4.2) | 4.01 (3.8 – 4.2) | 4.03 (3.8 – 4.2) | 0.10 | 0.00 |
| Relationship quality | | | | | |
| Coping efficacy | 3.73 (3.5 – 4.0) | 3.62 (3.4 – 3.8) | 3.82 (3.6 – 4.0) | 1.11 | 0.02 |

| | | | | | |
|--------------------------|---------------------|--------------------|---------------------|------|------|
| Illness acceptance | 24.70 (23.2 – 26.2) | 24.94 (23.8– 26.1) | 25.66 (24.4 – 26.9) | 0.54 | 0.01 |
| Depressive symptoms | 1.08 (0.9 – 1.3) | 1.06 (0.9 – 1.2) | 1.00 (0.8 – 1.1) | 0.33 | 0.01 |
| Perceived social support | 3.88 (3.6 – 4.1) | 4.00 (3.9 – 4.3) | 4.13 (3.9 – 4.3) | 1.23 | 0.02 |

Note: * $p < .05$; ** $p < .01$; All means and analyses control for age, disease duration, and T1 values of the outcome variable. Planned pairwise comparisons were conducted with Tukey's LSD test. Means with different superscripts are significantly different from one another at $p < .05$