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Emotional Approach Coping and Depressive Symptoms in Colorectal Cancer Patients: The Role of the Intimate Relationship

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Abstract

This study examined whether emotional approach coping was associated with lower depressive symptoms, and whether intimacy moderated this association, in 121 married/partnered colorectal cancer outpatients. Prospective analyses of survey data on emotional approach coping, depressive symptoms, and intimacy measured at baseline and 6-month follow-up showed that depressive symptoms were inversely related to processing, expression, and intimacy. At baseline, the association between processing and depressive symptoms was moderated by intimacy: greater processing was associated with lower depressive symptoms only for those in relatively high intimacy relationships. Enhancing emotional approach coping efforts and relationship quality may benefit colorectal cancer patients' adjustment.

Keywords

emotional approach; coping; colorectal cancer; relationship quality; intimacy

Colorectal cancer (CRC) is the third most common cancer type for both men and women in the U.S., excluding skin cancers (Siegel et al., 2014). While many individuals diagnosed with CRC adjust quite well to their surgeries and treatments (Jansen et al., 2011; Jansen et al., 2010), because diagnosis and treatment for CRC often undermines patients' psychological adjustment and quality of life (Dunn et al., 2013), effective coping strategies are needed. In the context of CRC, psychological distress has been associated with worse quality of life and morbidity, among other outcomes (Gray et al., 2011; Sharma et al., 2007).

Research examining coping methods that reduce distress for individuals facing CRC is scarce and could inform interventions.

Emotional Approach Coping and Cancer

It is important to identify methods of coping that can help CRC patients manage stressors associated with CRC and limit impact on psychological well-being. Among the coping methods that have been examined in relation to psychological distress (Skinner et al., 2003), emotional approach coping (EAC) has particular relevance to cancer populations because of the emotion-laden nature of cancer diagnosis and treatment and the potential effects that approach or avoidance of such emotions can have on psychological well-being (Austenfeld & Stanton, 2004; Holahan et al., 2005; Stanton, 2011). EAC is defined as coping with a stressor through emotional processing (i.e., active attempts to acknowledge and understand emotions) and expression (i.e., verbal or non-verbal expression; Stanton et al., 1994). EAC is hypothesized to be an adaptive form of coping that is characterized by the active identification, acknowledgment and expression of emotions, and has been contrasted with passive emotion-focused coping strategies (e.g., avoidance), which tend to be maladaptive (Austenfeld & Stanton, 2004). Use of EAC has been linked to positive psychosocial and health outcomes, including reduced distress and depression (Cho et al., 2013; Hoyt, 2009; Stanton et al., 2000a), inflammatory processes (Hoyt et al., 2013) and even survival (Reynolds et al., 2000) in survivors of breast, lung and prostate cancer. However, although issues related to support and coping are of major importance to individuals diagnosed with colorectal cancer (Dunn et al., 2006), we are not aware of studies that have investigated EAC among patients with CRC. CRC patients can experience unique challenges in response to their treatments that have ramifications for coping, such as gastrointestinal side effects of treatments or surgery that necessitates the use of an ostomy (i.e., an external appliance used for removal of waste from the colon through the skin surface; Gray et al., 2013; Pachler & Wille-Jorgensen, 2012; Rinaldis et al., 2012). Yet whether the nature of these challenges would change patients' use of EAC or the effects of EAC on their psychological well-being is not known.

Psychosocial interventions for cancer patients often emphasize emotional expression. Yet not all studies have found emotional approach to be beneficial for those facing the stress of cancer. For example, some research has shown that expression of cancer-related thoughts and emotions to one's significant other has little benefit for patient psychological adjustment (Hagedoorn et al., 2011) and other studies have found a negative association between emotional processing and positive affect (Shapiro et al., 2010). Further, interventions that encourage expression of stress-related thoughts have not generated uniformly positive outcomes (Lepore et al., 2015). In light of such mixed effects, researchers have investigated whether individual characteristics, such as gender or personality characteristics (Cho et al., 2013), and interpersonal differences, such as the social context in which the coping occurs (Low et al., 2006; Stanton et al., 2000a), could moderate the effectiveness of emotional approach as a coping strategy (Austenfeld & Stanton, 2004). With regard to the latter, Revenson and Lepore (Revenson & Lepore, 2012) have noted, "Coping does not take place in a social vacuum (Revenson, 1994); rather it takes place, implicitly or explicitly, in an interpersonal context that can shape and change it" (p. 191).

Coping in the Social Context of a Supportive Intimate Relationship

According to the Social Cognitive Processing Model (Lepore, 2001), the social context in which one cognitively processes and expresses thoughts and feelings about a stressor such as cancer can influence whether such coping reduces psychological distress and promotes adjustment. In the context of a supportive social environment, such as a close relationship characterized by trust and intimacy, individuals may feel encouraged both to process a stressful event and to express thoughts and feelings related to a stressor within that relationship, which could further facilitate cognitive and emotional processing. Heightened processing and expression could lead to lower psychological distress. In addition, exploring and sharing emotional responses to cancer in a supportive social context can validate and normalize feelings, increase tolerance of negative feelings, and enhance the potential for positive growth, which may reduce distress levels. Alternatively, in an unsupportive context, i.e., in which there are social constraints (e.g., criticism by one's partner or lack of support), individuals may feel isolated and lonely (Mosher et al., 2012) and avoid thinking about or expressing stressor-related thoughts and feelings (Lepore & Revenson, 2007). Importantly, feelings of isolation and poor cognitive processing of a stressful event are associated with increased psychological distress (Juth et al., 2015; Lepore & Helgeson, 1998; Lepore & Revenson, 2007). Thus, patient engagement in emotional approach coping in order to understand or share cancer-related concerns and fears in the context of a close relationship that is relatively low in intimacy may increase psychological distress, as it may increase feelings of isolation and loneliness, make aversive feelings less tolerable, and diminish opportunities for psychological growth that can occur through EAC. Evaluating the effectiveness of emotional approach coping efforts and understanding the modifiable factors that influence the effectiveness of such efforts are needed to guide the development of interventions that improve coping and psychosocial outcomes (Stanton & Low, 2012b).

The present study examines the effectiveness of emotional approach coping in the context of a marital relationship that is relatively high or low in intimacy. For cancer survivors who are married or partnered, the quality of the relationship with the partner can play a substantial role in their psychological adjustment (Hagedoorn et al., 2008; Manne & Badr, 2008). If intimacy does moderate the effectiveness of emotional approach coping efforts, it provides a target for intervention with couples coping with cancer.

Study Objectives and Hypotheses

Thus, the objectives of this study were (1) to examine whether there is an association between different aspects of Emotional Approach Coping (EAC)—processing emotions and expressing emotions—and psychological distress (i.e., depressive symptoms) among patients with CRC, overall, and (2) to examine whether this association is moderated by an important dimension of the social context, namely, the level of intimacy in patients' intimate relationships, given that the intimate relationship often serves a critical role in influencing patient and partner psychological distress and adjustment in response to CRC and other cancers (Kayser et al., 2007; Northouse et al., 1999) and is amenable to intervention (Regan et al., 2012). These associations were first evaluated in cross-sectional analyses of baseline data (i.e., analyses conducted using the data collected at baseline only); then, we conducted

analyses using the longitudinal data obtained from both time points in order to examine the significance of the associations between the predictor and outcome variables across both time points and to examine whether these associations would change over time (i.e., from baseline to follow-up).

We hypothesized first that there would be significant inverse associations between the Emotional Approach Coping scales (Processing/Expression) and depressive symptoms, which would suggest that greater use of these coping methods is associated with lower depressive symptoms. Second, we hypothesized that greater intimacy would be negatively associated with depressive symptoms. Finally, we hypothesized that the level of intimacy in the partnered relationship would moderate these relations.

Methods

Participants

Men and women older than age 21 with a diagnosis of CRC were recruited between December, 2009 and April, 2012 from Johns Hopkins Sidney Kimmel Comprehensive Cancer Center.

Procedure

Participants were part of a larger study on sexual quality of life following CRC (For details see Reese et al., 2014). Participants were recruited directly in the clinic or through mailings to Johns Hopkins tumor registry patients. A total of 258 surveys were administered, and 143 (55%) were returned; two were excluded because they did not have CRC, leaving 141 in the overall sample. The paper survey assessed a range of sexual, relationship, and physical and mental health outcomes; here, we report on the measures relevant to the research questions for this study assessing emotional approach coping, intimacy within a partnered relationship, and depressive symptoms. Follow-up surveys were sent through the mail 6 months after the baseline packet. From the overall sample, 88 participants completed 6-month follow-up surveys (62%), which were sent through the mail (average length of time following baseline = 6.5 months; $SD = .84$); 66 married or partnered participants provided follow-up data. Of the participants who did not complete follow-up surveys, 22 entered a separate study pilot testing a couple-based intervention and were un-enrolled in the current data collection to reduce potential overlap across studies, 23 were lost to follow-up, and 8 died. Because we were specifically interested in the role of intimacy within the context of an intimate relationship, the current subsample contains the 121 participants who were partnered (i.e., married or living with a significant partner). Sexual orientation was not an eligibility criterion for participation and was not queried. Institutional Review Board approval was obtained and patients provided informed consent.

Measures

Emotional Approach Coping—Emotional approach coping was assessed with the two subscales of the Emotional Approach Coping (EAC) Scale: the 4-item Emotional Processing scale (I take time to figure out what I'm really feeling; I delve into my feelings to get a thorough understanding of them; I realize that my feelings are valid and important; I

acknowledge my emotions) and the 4-item Emotional Expression scale (I let my feelings come out freely; I take time to express my emotions; I allow myself to express my emotions; I feel free to express my emotions) with reference to what the participant usually does when “under a lot of stress” (Stanton et al., 2000b). Because these aspects of coping can have differing effects on physiological and psychological outcomes (Cho et al., 2013; Dunn et al., 2013; Stanton et al., 2000a) we take the approach to consider them distinct factors (Stanton et al., 2000b). The EAC scales have good psychometric properties and have been used in both cancer and non-cancer populations (Stanton, 2011). In the current study, the measures had good internal consistency (Cronbach’s alpha for Emotional Processing = .80 and for Emotional Expression = .92). The four response options range from “1 = I usually don’t do this at all” to “4 = I usually do this a lot;” mean scores for these subscales are presented. The two scales were moderately correlated at $r = .49$ ($p < .001$), which is consistent with prior work (Stanton et al., 2000b) and shows they have shared and unique variance.

Depressive Symptoms—Level of depressive symptoms in the prior week was assessed using the 10-item version of the Center for Epidemiologic Studies Depression Scale (CESD-10) (Andresen et al., 1994) which has excellent psychometric characteristics and sensitivity in a brief format (Irwin et al., 1999). This measure assesses mostly affective and cognitive symptoms of depression (e.g., “I felt lonely”; “I had trouble keeping my mind on what I was doing;” with 1 item assessing poor sleep. Response options range from 0 = “rarely or none of the time (less than one day)” to 3 = “most or all of the time (5-7 days).” In the current study, the CESD-10 had very good reliability (Cronbach’s alpha = .86).

Intimacy in the Partnered Relationship—Level of intimacy in patients’ partnered relationship was assessed using the 17-item Miller Social Intimacy Scale (MSIS; Miller & Lefcourt, 1982). The MSIS purports to measure degree of emotional intimacy, closeness, and trust toward an individual’s significant partner. The measure has been used in samples of CRC patients and those with mixed gastrointestinal cancers (Barsky Reese et al., 2014; Porter et al., 2009; Reese et al., 2012). Item examples are: “How often do you confide very personal information to him/her?” and “How satisfying is your relationship with him/her?” Response options range from 1 = “very rarely” to 10 = “almost always” or 1 = “not much” to 10 = “a great deal.” In the current study, the MSIS had excellent reliability (Cronbach’s alpha = .94).

Medical Information—Information on medical characteristics including tumor site (colon/rectum), metastatic disease, treatment status (on active treatment such as chemotherapy or completed active treatment), and length of time since diagnosis were obtained through self-report and/or medical chart review.

Statistical Methods

First, all variables were analyzed descriptively. Next, associations among predictor, outcome, and moderator variables and demographic and medical factors (i.e., gender, age, metastatic disease, currently receiving treatment, length of time since diagnosis) at baseline were analyzed using t-tests for dichotomous variables and Pearson correlations for continuous or semi-continuous variables. Because scores on the depressive symptoms

measure were significantly positively skewed, these scores were log-transformed prior to the regression analyses to improve distribution normality and model fit (Vittinghoff et al., 2012). Two primary sets of regression analyses were conducted, first, using the cross-sectional baseline data, and second, using data available at both baseline and follow-up (longitudinal data). There were two sets of regression analyses conducted for each of the two Emotional Approach predictor variables. In the first set of regression analyses, Emotional Processing and Emotional Expression were tested as predictors of depressive symptoms in separate multiple linear regressions alongside intimacy, controlling for demographic/medical covariates (i.e., age, gender, metastatic disease, currently on treatment, time since diagnosis). The selection of covariates in the analyses was informed both by theoretical considerations pertaining to the nature of the stressor (e.g., the level of advanced disease, currently being on treatment), prior research showing significant associations between the covariate (e.g., gender) and EAC (Cho et al., 2013; Stanton et al., 1994), and results of our analyses examining associations between the EAC scales and significant demographic factors (e.g., gender). Then, interactions between Emotional Processing/Expression and intimacy were added to models. The interaction effects were evaluated using linear combinations of regression parameters, holding covariates constant at their mean values. After conducting the second regression model (with the interaction term), a likelihood ratio test was conducted to determine whether the model which included the interaction term was a better fit for the data compared to the model without the interaction term.

In the second set of analyses, a longitudinal analysis modeled depressive symptoms using multivariate linear mixed effects regression to account for within-subject effects, including a main effect for time to determine if depressive symptoms changed from baseline to follow-up (denoted as “follow-up” in Table 4) and an interaction term in longitudinal models accounting to assess whether the effect of either Emotional Processing or Expression on depressive symptoms changed across the two assessment time points. In this model, the overall association between either of the Emotional Processing/Expression variables and depressive symptoms was tested using baseline and follow-up data, with baseline demographic and medical characteristics entered as covariates. Intimacy was entered into all models as a continuous variable. Because of the stability of depressive symptoms over time, we did not use depressive symptom change scores.

Analyses were performed using SPSS 22.0 (IBM Corp. 2013) and Stata Version 12.1 (StataCorp, 2011). All tests were two-tailed and p-values .05 were considered statistically significant.

Results

Sample Characteristics

As shown in Table 1, the sample was predominantly made up of men, Caucasian, and college educated. The average duration of the intimate relationship was 27 years. Most were diagnosed with colon rather than rectal cancer; half had metastatic disease. Almost all patients had undergone surgery and most had also undergone chemotherapy and/or radiation therapy, at baseline; the average length of time post-diagnosis was 31 months.

Baseline Associations among Study Variables with Demographic and Medical Factors

Emotional Approach Coping—At baseline, women scored significantly higher on Emotional Processing ($M = 2.95$; $SD = .66$) and Emotional Expression ($n = 43$; $M = 2.76$; $SD = .85$) than men ($n = 74$; $M = 2.52$; $SD = .71$; $p = .002$, and $M = 2.44$; $SD = .83$, $p = .05$, respectively). Those with non-metastatic disease used significantly more Emotional Processing ($n = 58$; $M = 2.81$; $SD = .69$) than those with metastatic disease ($n = 59$; $M = 2.55$; $SD = .72$; $p = .04$); there were no differences by metastatic disease on Emotional Expression ($p = .15$). Differences in Emotional Expression or Emotional Processing were not significant across race, educational level, tumor site, or currently being in treatment. Neither Emotional Processing nor Emotional Expression significantly correlated with age or time since diagnosis.

Depressive Symptoms—The level of depressive symptoms in the overall sample at baseline was approximately 4 points below the clinical cutoff score of 10 on the CESD-10 (Andresen et al., 1994), indicating modest levels of depressive symptoms (see Table 2). Differences in depressive symptoms were found by education status, metastatic disease, and treatment status. Depressive symptoms were higher among those with less than college education ($n = 36$, $M = 9.11$, $SD = 7.14$) than among those with a college education or higher ($n = 85$; $M = 5.59$; $SD = 5.23$, $p = .01$). Additionally, depressive symptoms were higher among those with metastatic disease ($n = 60$, $M = 8.25$, $SD = 6.18$), and those who were currently on treatment ($n = 46$; $M = 8.19$; $SD = 5.48$), respectively, than among those with non-metastatic disease ($n = 61$; $M = 5.05$; $SD = 5.52$; $p = .003$) and those not currently receiving treatment ($n = 75$; $M = 5.69$; $SD = 6.22$, $p = .02$). There were no significant differences in depressive symptoms by gender, race, or tumor site. Level of depressive symptoms was negatively correlated with age ($r = -.18$, $p = .05$) but not correlated with time since diagnosis.

Intimacy—Baseline intimacy scores for the sample were above the midpoint (see Table 2 for score ranges), indicating above average levels of intimacy. Intimacy was not significantly related to any demographic or medical variable.

Correlations among Study Variables at Baseline—As shown in Table 2, most study variables were inter-correlated at baseline in the expected directions. However, while Emotional Expression was negatively correlated with depressive symptoms and positively correlated with intimacy, Emotional Processing was significantly correlated with neither in the zero-order correlations.

Regression Analyses

Baseline Analyses for Emotional Processing—With depressive symptoms as the outcome variable, Emotional Processing and intimacy were entered into the equation along with covariates simultaneously. Significant negative main effects were found for Emotional Processing ($p = .03$) and intimacy ($p = .004$), indicating that greater processing and intimacy were each related to lower depressive symptoms. This model accounted for 26.87% of the variance in depressive symptoms, $F(7, 105) = 5.51$, $p < .001$. When the interaction between Emotional Processing and intimacy was entered into the model, this effect was significant (p

= .05); Emotional Processing and intimacy main effects lost significance. Lower age, female gender, and currently being on treatment were significantly related to greater depressive symptoms. This model accounted for 29.5% of the variance in depressive symptoms (about a 3% increase in variance, or R^2), $F(8, 104) = 5.44$, $p < .001$. Results of a likelihood ratio test indicated that the model with the interaction term was a better fit for the data than the one without the interaction term ($\chi^2 = 4.13$, $p = .04$). Therefore, the interaction was included in the final model (see Table 3). The significant interaction suggests that effects of Emotional Processing on depressive symptoms depended on the level of intimacy in the relationship. Figure 1 shows the fitted regression lines for Emotional Processing at the 25th, 50th, and 75th percentiles of intimacy. P values $< .05$ represent a slope that is significantly different from zero. As shown in Figure 1, for those in medium or high intimacy relationships, greater Emotional Processing was associated with lower depressive symptoms; by contrast, Emotional Processing was unrelated to depressive symptoms for those in low intimacy relationships.

Baseline Analyses for Emotional Expression—First, with depressive symptoms as the outcome variable, Emotional Expression and intimacy were entered into the equation along with covariates. Again, lower age, female gender, and currently being on treatment were significantly related to greater depressive symptoms. This model accounted for 27.32% of the variance in depressive symptoms, $F(7, 105) = 5.64$, $p < .001$. Significant negative main effects were found for Emotional Expression ($p = .02$) and intimacy ($p = .01$), suggesting that greater expression and intimacy were each associated with lower depressive symptoms. When the interaction between Emotional Expression and intimacy was entered into the model, no significant Expression by intimacy interaction was found. Results of a likelihood ratio test indicated that the model with the interaction term was not a better fit for the data ($\chi^2 = 0.73$, $p = .39$). Therefore, the interaction was not included in the final model (see Table 3).

Regression Analyses Using Longitudinal Data—In the longitudinal analyses for Emotional Processing, across both time points and after adjusting for demographic and medical covariate effects, there was a marginally significant main effect for Emotional Processing and a significant main effect for intimacy, such that greater Processing and intimacy were each associated with lower depressive symptoms across both time points (see Table 4). The interaction between Emotional Processing and time (i.e., baseline versus follow-up) was not significant, suggesting that the effect seen at baseline was relatively stable over time, although the positive coefficient for the time interaction term may suggest a possible small decrease over time. In a separate model, significant main effects on lower depressive symptoms were found for both greater Emotional Expression and intimacy ($\beta = -0.044$, CI $-0.077, -.010$; $p = .01$; $\beta = -.434$, CI $-.698, -.170$, $p = .001$, respectively). The interaction between Emotional Expression and time was again not significant, suggesting that the effect of expression on depressive symptoms does not change from baseline to follow-up, but as in the model for Processing, the positive coefficient for the time interaction term again may suggest a small attenuation in this association over time. As shown in Table 4, depressive symptoms did not change significantly over time in either model. Female gender, younger age, and currently being on treatment were significant covariates in both

models ($p = .06$). However, when the interactions between either Processing or Expression and intimacy were entered into the respective models, no significant interactions were found, and adding the interaction terms did not improve model fit (models not shown).

Discussion

The objectives of this study were to examine the independent and interactive effects of emotional approach coping and intimacy on depressive symptoms among individuals treated for colorectal cancer (CRC). Results demonstrated that higher levels of intimacy and use of both Emotional Processing and Emotional Expression were significantly associated with lower levels of depressive symptoms, though some effects were slightly attenuated in the longitudinal analysis. These results suggest that processing and expression of stress-related thoughts and emotions and being a part of a relationship characterized by closeness, trust, and support (i.e., high emotional intimacy) may have benefit for the psychological adjustment of individuals treated for CRC, a finding echoed by prior research (e.g., Carmack et al., 2011; Rottmann et al., 2016).

An additional objective was to examine whether associations between EAC Processing or Expression and depressive symptoms would be moderated by the level of intimacy in patients' partnered relationships, as one dimension of the social context in which processing occurs. There was partial support for this hypothesis. In the cross-sectional sample, the negative association between Emotional Processing and depressive symptoms was stronger among patients with high rather than low intimacy. According to social cognitive processing theory (Lepore, 2001; Lepore & Revenson, 2007), a supportive intimate relationship may serve as an excellent context in which to engage in cognitive processing by allowing people to come to terms with, rather than avoid, stress-related thoughts, thereby encouraging acceptance and habituation to stress-related thoughts. In the context of a close and trusting intimate relationship, such that engaging in emotional processing in this context could reduce psychological distress by affirming the availability of loving and supportive relationships as well as by potentially increasing tolerance of negative emotions or experiences of positive emotions. This finding can be viewed in light of findings from prior studies demonstrating that individuals with cancer in socially constrained relationships show inhibited cognitive processing, namely, avoidance as well as greater psychological distress (Cordova et al., 2001; Lepore, 2001; Lepore & Helgeson, 1998). With cross-sectional data, an alternative interpretation of this interaction is that the negative association between intimacy and depressive symptoms is stronger among those with high Emotional Processing than among those with relatively low Emotional Processing.

Interactions between Emotional Approach and Intimacy on Depressive Symptoms

The interaction between Emotional Processing and intimacy on depressive symptoms was not significant when using the longitudinal data; the direction of effects was significant but the strength was attenuated. There are several potential explanations for this finding, including a weakening of effects at follow-up, participant drop out, or a lack of power to show longitudinal association. However, due to the strong auto-correlation in depressive symptoms assessed at baseline and follow-up ($r = .74, p < .001$), a cross-sectional

relationship may best characterize the nature of the associations among the variables measured here (Low et al., 2006). In other words, the effects of Emotional Approach Coping and intimacy on depressive symptoms may be fairly immediate rather than delayed. It would be interesting to examine how coping methods influence depressive symptoms for colorectal cancer survivors likely to experience a change in depressive symptoms, such as clinically depressed survivors receiving an intervention to improve mood. Additional research using ecological momentary assessment approaches (Shiffman et al., 2008) could be useful in better clarifying the time course of these inter-relationships.

As expected, Emotional Expression was associated with lower depressive symptoms. However, there were no significant interactions between Emotional Expression and intimacy on depressive symptoms, which could be seen as counter-intuitive, in light of previous findings showing that the social context can influence whether expressing stress-related thoughts has beneficial effects for psychological adjustment (Stanton & Low, 2012b). A possible explanation for the lack of an interaction between intimacy and Emotional Expression is that the level of intimacy in a close relationship may influence the effectiveness of some - but not all - types of expression at reducing distress. For instance, level of intimacy seems to better account for the relation between depression and mutual types of communication (i.e., those shared by both members of the couple) compared to individual-level types of communication, such as self-disclosure (Manne et al., 2010). Thus, examining the extent to which Emotional Expression occurs mutually versus in one partner alone may help clarify the nature of the associations among intimacy, expression, and psychological distress outcomes. Whether patients were expressing their emotions in large part to individuals outside their close relationship could also influence potential effects of the Emotional Expression measure on depressive symptoms because it might not be captured; however, individuals with cancer appear to confide about cancer-related stressors most often with an intimate partner, if available (Harrison et al., 1995; Ussher et al., 2012).

Clinical Implications

Taken together, these findings have interesting implications for approaches to intervention, and potentially clinical practice, by suggesting that increasing both emotional approach coping methods and intimacy for individuals who have been treated for colorectal cancer may be effective. In this vein, prior research in couples facing gastrointestinal cancer (Porter et al., 2009) has shown that a partner-assisted emotional disclosure intervention had positive effects on relationship quality and intimacy only when patients reported high levels of holding back from talking about cancer-related concerns to their spouse at baseline. An important implication of these findings for clinicians working with CRC patients on psychosocial concerns is that the social context in which their patients are engaging in coping efforts should be considered when evaluating and intervening on patients' coping. For instance, screening for both processing and intimacy could help identify patients at risk for poor psychological distress and ineffective coping efforts. Once identified, approaches could be offered that improve the quality of patients' relationships such as behavioral couple therapy or intimacy-enhancing couple therapies, some of which have preliminary evidence supporting their efficacy in this population (Barsky Reese et al., 2014; Reese et al., 2012). Important questions for future intervention research are whether improving patients'

intimacy also increases patients' emotional processing and psychological adjustment and to what extent enhancing emotional approach is necessary to achieve positive outcomes.

Gender Differences

Because this study centered around the examination of effects of highly modifiable characteristics (e.g., intimacy) as moderators of emotional approach coping compared to less modifiable characteristics (e.g., gender; Stanton & Low, 2012b), separate analyses by gender were not conducted, but rather gender was included as a covariate in analyses. A greater use of both emotional processing and emotional expression was found for women compared to men, which is consistent with results of prior studies (Cho et al., 2013; Stanton, 2011). Although some researchers have examined how emotional approach coping may have differential effects on psychological adjustment for men and women (Cho et al., 2013) or how gender role might interact with emotional approach coping (Hoyt, 2009), whether these effects would be moderated differently by the social context for men and women is unclear. The sample size was not adequate in the current study to investigate possible three-way interactions (emotional approach coping $\times$ gender $\times$ intimacy) or separate within-gender analyses. Therefore, to shed light on gender differences, we conducted correlational analyses between emotional approach coping and depressive symptoms separately for men and women, and found that the correlation between Expression and depressive symptoms was slightly larger for women ($r = -.44$, $p = .004$) compared to men ($r = -.22$, $p = .06$); however, Processing and depressive symptoms were similarly unrelated in men and women. While intriguing, these exploratory findings need to be subsequently verified in studies designed to examine such differences. Research efforts are needed to understand how gender as well as partner status (i.e., patient versus partners) relate to the use and effectiveness of emotional approach coping in the context of intimate relationships; such information could help refine coping or intimacy interventions such as through the development of gender-specific resources.

Study Limitations

This study has several limitations. The cross-sectional associations cannot be said to causal in nature, as previously discussed. For instance, it is possible that lower symptoms of depression might increase patients' likelihood of processing their stress-related thoughts or might improve intimacy. Yet the main effects for the predictors were generally also found using the longitudinal data as well as the cross-sectional data, bolstering findings. Further, the direction of associations studied here is consistent with the approach used in prior studies (Stanton et al., 2000a). An additional limitation of the study was the sample size, particularly when examining potential time interactions using the longitudinal data set. Specifically, although the time interaction suggested a possible attenuation of the associations between the Emotional Approach variables and depressive symptoms from baseline to follow-up, larger studies powered to detect such effects are necessary. In addition, the dispositional version of the Emotional Approach Coping scale was used (Stanton et al., 2000a), making it possible that participants responded to the items on this scale considering life stressors other than their CRC. That said, the dispositional and situational versions of the scale were highly correlated with one another in previous studies (Stanton et al., 2000b). Because dispositional and situation-specific coping methods can

interact in dynamic ways (Stanton & Low, 2012a), future studies could help parse out the relative benefits of coping through emotional approach using dispositional and situational methods. Moreover, emotional expression was assessed in general, rather than specifically to the intimate partner, which can be seen as a limitation. Additional limitations of the study include a participation rate that could be improved – probably due to the mailing-based recruitment methods – which may contribute to participation bias. Future studies replicating the analyses in other CRC samples could help determine generalizability of findings.

Conclusions and Future Directions

In this study, the intimate relationship was selected as one dimension of the social context because of the critical role that this relationship plays for both women and men with cancer in coping with the stress of cancer (Hagedoorn et al., 2008; Kayser et al., 2007) and because it is an ideal target for intervention. However, it would be interesting to consider whether the associations we found here would be replicated when considering a broader social context or specific relationships (e.g., friends) because patients may express their emotions to individuals other than their intimate partners. Future studies that add the perspectives of partners and utilize dyadic approaches to the study of these coping methods could also add much value to this research.

In sum, findings of this study have implications for understanding models of coping with cancer-related stress by suggesting that both emotional approach coping and intimacy are associated with psychological adjustment. Emotional approach is one important form of coping; future research could consider the role of EAC alongside other coping processes patients may use when faced with CRC. For instance, assessing the contribution of individual versus dyadic coping could add granularity to the understanding of coping efforts in the context of the intimate relationships of CRC survivors.

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Figure 1.
Effects of Emotional Processing on Depressive Symptoms by Level of Relationship Intimacy in Baseline Data

Table 1

Demographic and Medical Characteristics of the Study Sample

Variable	N=121 N (%)
<i>Marital length: Mean ± SD, y</i>	26.8 ± 15.6
<i>Age: Mean ± SD, y</i>	57.1 ± 13.3
<i>Male Gender</i>	75 (62)
<i>Education</i>	
Less than Bachelor's Degree	36 (29.8)
Bachelor's Degree or Advanced Degree	85 (70.2)
<i>Race</i>	
Caucasian	103 (85.1)
African American	7 (5.8)
Asian	9 (7.4)
Other	2 (1.7)
<i>Tumor Site</i>	
Colon (vs. rectum)	85 (70.2)
<i>Metastatic Disease</i>	60 (49.6)
<i>Currently receiving treatment</i>	46 (38.0)
<i>Length of time since diagnosis (months)</i>	31.3 (23.0)
<i>Treatment received</i>	
Surgery	113 (93.4)
Chemotherapy	93 (76.9)
Radiation	41 (33.9)
<i>Colostomy or ileostomy</i>	
Current	21 (17.4)
Past	17 (14.0)
Never had ostomy	83 (68.6)

Note. In analyses, race was dichotomized as White or Other.

Table 2
Baseline Descriptive Statistics and Inter-Correlations for Dependent, Predictor, and Moderator Variables

Variable	Descriptive Statistics				Inter-correlations		
	<i>n</i>	<i>M</i>	<i>SD</i>	Processing	Expression	Depressive Symptoms	Intimacy
Processing (range=1-4)	117	2.68	.72	–	.49***	-.12	.12
Expression (range=1-4)	117	2.56	.85	–	–	-.28**	.28**
Depressive Symptoms (range=0-25)	121	6.64	6.05	–	–	–	-.33***
Intimacy (range=78-170)	116	139.54	22.34	–	–	–	–

Note. Processing=Emotional Approach Processing subscale; Expression=Emotional Approach Expression subscale; Depressive Symptoms=CESD-10 Item Version; Intimacy=Miller Social Intimacy Scale;
Range of scores refer to those obtained in the current study.

***
p < .001;
**
p < .01

Summary of Final Models in Multiple Regression Analyses for Variables Predicting Depressive Symptoms in Baseline Data (N = 113)

Table 3

Emotional Approach Coping – Processing (R ² = .30)					
Variable	B	SE (B)	t	Sig. (p)	95% Conf. Interval
Processing	1.10	.70	1.58	0.12	(-28, 2.49)
Intimacy	.02	.01	1.17	0.25	(-.01, .04)
Processing X Intimacy	-.01	.00	-1.97	0.05	(-.02, .00)
Age	-.01	.01	-2.45	0.02	(-.03, -.00)
Gender	.39	.16	2.40	0.02	(.07, .71)
Metastatic disease	.12	.18	0.67	0.50	(-.23, .47)
Current treatment	.51	.18	2.91	0.00	(.16, .86)
Time since diagnosis	.01	.00	1.71	0.09	(-.00, .01)
Emotional Approach Coping – Expression (R ² = .27)					
Variable	B	SE (B)	t	Sig. (p)	95% Conf. Interval
Expression	-.22	.09	-2.41	0.02	(-.41, -.04)
Intimacy	-.01	.00	-2.52	0.01	(-.02, -.00)
Age	-.01	.01	-1.89	0.06	(-.02, .00)
Gender	.34	.16	2.13	0.04	(.02, .65)
Metastatic disease	.17	.17	0.99	0.33	(-.17, .51)
Current treatment	.45	.17	2.59	0.01	(.11, .79)
Time since diagnosis	.01	.00	1.87	0.07	(-.00, .01)

Note. After adding in the interaction term to the Emotional Approach Coping Expression model, all predictors lost significance; that model is not shown.

Table 4

Summary of Final Models in Mixed Effects Multiple Linear Regression Analyses for Variables Predicting Depressive Symptoms in Longitudinal Data (Number of observations = 180, N=116)

Emotional Approach Coping – Processing				
Variable	B	SE (B)	z	Sig. (p) 95% Conf. Interval
Processing	-.18	.10	-1.90	0.06 (-.37, .01)
Intimacy	-.01	.00	-3.89	0.00 (-.02, -.01)
Follow-up *	-.35	.34	-1.01	0.31 (-1.02, .33)
Processing × Follow-up *	.09	.12	0.72	0.47 (-.15, .32)
Age	-.01	.01	-2.05	0.04 (-.02, 0.00)
Gender	.38	.15	2.61	0.01 (.10, .67)
Metastatic disease	.21	.16	1.32	0.19 (-.10, .52)
Current treatment	.37	.16	2.32	0.02 (.57, .68)
Time since diagnosis	.00	.00	1.19	0.24 (-.00, .01)
Emotional Approach Coping – Expression				
Variable	B	SE (B)	z	Sig. (p) 95% Conf. Interval
Expression	-.17	.08	-2.08	0.04 (-.33, -.01)
Intimacy	-.01	.00	-3.59	0.00 (-.02, -.00)
Follow-up *	-.39	.27	1.47	0.14 (-.90, .13)
Expression × Follow-up *	.11	.09	1.16	0.25 (-.08, .29)
Age	-.01	.01	-1.89	0.06 (-.02, .00)
Gender	.36	.15	2.46	0.01 (.07, .64)
Metastatic disease	.23	.16	1.47	0.14 (-.08, .54)
Current treatment	.36	.16	2.24	0.03 (.04, .67)
Time since diagnosis	.00	.00	1.14	0.25 (-.00, .01)

Note. After adding in the interaction term to both models, all predictors lost significance; those models are not shown.

* Follow-up refers to time effect on depressive symptoms (included in the model as an indicator for measures at the follow-up compared with baseline)