

EXAMINING ENGAGEMENT IN A SELF-IN-RELATIONSHIP OBSERVATION
EXERCISE BY COUPLES COPING WITH BREAST CANCER: A MIXED-METHODS
INTEGRATIVE STUDY

SAMI IMAD HARB

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

GRADUATE PROGRAM IN PSYCHOLOGY
YORK UNIVERSITY
TORONTO, ONTARIO

August 2022

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Abstract

Young women with breast cancer (BC) and their partners face several psychosocial difficulties that are generally elevated in this age group relative to older women with BC. I examined to what extent, and how, may becoming more aware of potentially relationship-enhancing and -eroding behaviours, through a daily self-in-relationship observation exercise, relate to positive relationship adjustment in the context of an online couple-based intervention for young women living with BC and their male partners. In the exercise, partners observed and textually described interactions deemed to contribute to relationship closeness or distance over the course of at least a week. Partners subsequently reviewed together (and discussed) the collection of their recorded entries. Upon completion of the exercise, partners provided feedback on the exercise's perceived benefit and likeability on a one to five Likert scale, and elaborated on their ratings via open-ended text boxes. *Analysis I* utilized an integrative mixed methods design that led to adding a partial-proxy predictor of effort in analysis, which showed this variable and perception of benefit to trend towards a small positive relationship with improved relationship adjustment. *Analysis II* entailed a qualitative thematic analysis yielding four themes: "Receptivity to exercise," "Shifting how I *attend* in relationship," "Generated insight," and "Shifting how I *engage* in relationship." I discuss how engaging in the exercise may have had a positive influence on relationship adjustment in young couples coping with breast cancer, and how they engaged with and benefitted (or not) from the exercise, including how it facilitated interpersonal awareness and 'bringing partners closer together' according to their language accounts.

Acknowledgements

First, I would like to thank my supervisor, Dr. Karen Fergus. I am very grateful for the opportunity to work on this knowledge piece and for your help along the way. I appreciate your constructive comments, as well as your kindness and patience. Through our participating in conversation together, I further developed my process of making careful research decisions and interpretations, especially in the context of a qualitative stance. Karen, I appreciate that you challenge and inspire me to improve as a burgeoning research-practitioner. I also extend my gratitude to Dr. Joel Katz for your thoughtful feedback on this project.

Thank you to the individuals who contributed to the Couplelinks intervention study, including researchers and participating couples coping with breast cancer. Additionally, thank you to Dr. Rob Cribbie, Naomi Martinez Gutierrez, and Arjun Singh for statistical consultation.

Lastly, thank you to my dear friend, Nolan.

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Examining engagement in a self-in-relationship observation exercise by couples coping with breast cancer: A mixed-methods integrative study

Psychosocial Difficulties Faced by Young Women with Breast Cancer and their Partners

Young women, herein ≤ 50 years of age, who live with breast cancer (BC) face a range of psychosocial difficulties, many of which have been shown to be elevated in this age group as compared to older women (e.g., Ahmad et al., 2015). Among the concerns reported by young women with BC include fear of cancer recurrence, concerns related to potential infertility, physical and sexual difficulties, body image difficulties, and distress in relation to their partner as well as children. Clinical levels of fear of cancer recurrence were reported by 70% of a sample of 218 young women living with BC (Thewes et al., 2012). In another cross-sectional study, almost 30% of a sample of young women with BC ($n = 297$) had indicated, in the context of treatment decisions, that they were ‘very concerned’ about possible infertility (Ruggeri et al., 2019). Further, they found that participants who undertook chemotherapy had higher levels of physical and sexual difficulties than those who did not undertake it. Pertaining to sexual functioning assessed in another study of young women with BC, 64% of those *undergoing* treatment reported experiencing sexual dysfunction versus 45% of those who *completed* treatment (Kedde et al., 2013). With respect to breast surgeries, empirical work has examined how different surgeries are related to psychosocial outcomes. For example, a large sample study ($n = 826$) of young women with BC who had breast surgery demonstrated that measures of sexuality and body image were generally worse for those who had a bilateral mastectomy in comparison to breast-conserving surgery or unilateral mastectomy (Rosenberg et al., 2020). A review found that among the most commonly reported physical effects of treatment in young women with BC were fatigue and pain in the breast. In empirical work on psychological or psychosocial outcomes, one study found that

young women with BC, in comparison to older women with BC, had significantly higher levels of BC-specific concerns and emotional distress, including depressive symptoms (Wenzel et al., 1999). At the level of couples coping with BC, Acquati & Kayser (2019) observed generally poorer scores for quality of life and dyadic coping in a sample of 35 young couples versus 51 middle-aged couples.

Other potential challenges faced by young women with BC involve managing several life demands such as paid work, medical appointments, and family responsibilities (Mackenzie, 2014). Further, a review of 16 qualitative studies of participants from this population (Campbell-Enns & Woodgate, 2017) described challenges they experienced with respect to, for example, lack of information around dealing with cancer (n = 6 studies), confusion around present treatment or next steps in treatment (n = 6 studies), and feeling that cancer stressed their relationship and corresponding worry about one's intimate partner (n = 4 studies). For those who are mothers, they reported feeling guilty regarding their BC diagnosis for its impact on their families. The experience of BC also relates to parenting partners' distress. In one study of parenting partners of young mothers with BC (n = 219), over half of them reported behaviours representative of maladaptive coping in reaction to their partner's BC diagnosis (Borstelmann et al., 2022). With respect to young women with BC and their relationship with their children, participants reported feeling distressed about 'lost time' interacting with their children as a result of treatment burden as well as physical factors such as fatigue (Walsh et al., 2005). Another study found that partners of young women with BC (n = 289) who indicated maladaptive coping while their partner received treatment was associated with higher levels of anxiety post-treatment, as compared to partners who reported relatively more adaptive coping (Borstelmann et al., 2020).

For women with BC who are in a committed relationship, the occurrence of BC does not only affect the partner living with BC. Partners are interdependent as the context of coping with BC affects each partner and their relationship as a whole. In one cross-sectional study, for example, psychological distress scores were positively correlated between women with BC and their partners, as well as psychosocial adjustment scores (Ben-Zur et al., 2001). This result illustrates the relatedness between both partners' experience with BC. Moreover, the couple's collective meaning made in relation to their facing BC (Skerrett, 1998), as well as the quality of their interactions (Kraemer et al., 2011), influence the couple's coping and adjustment to BC.

Mindful Awareness in Couples

Given partners' interdependency in coping with BC, processes that enhance the relationship may alleviate BC-related distress and may improve their coping and adjustment to BC. One possible relationship-enhancing process is mindful awareness, which commonly refers to flexible, non-judgemental attention to one's ongoing present experience (Bishop et al., 2004). Limited research has supported the potential for couple-based mindfulness interventions (including but not limited to engaging mindfulness meditation) to influence positive relationship outcomes in samples of couples facing cancer (e.g., Birnie et al., 2010; Price-Blackshear et al., 2020).

Outside the cancer context, with respect to cross-sectional studies examining trait-level mindfulness and relationship outcomes, a meta-analysis found that degree of mindfulness was significantly associated with relationship satisfaction (McGill et al., 2016). Relationship adjustment was an outcome of interest in five of the 10 examined studies. One of these studies by Wachs and Cordova (2007) cross-sectionally examined couples as a unit and found that degree of mindful awareness was related to degree of relationship adjustment. Further, the authors

described the concept of ‘mindful relating’ as mindfulness that influences a more accepting and less avoidant approach to distressing emotions which in turn facilitates adaptive or healthy responding in the relationship. Methods of the aforementioned studies broadly involved (1) examining outcomes related to participation in a mindfulness-related intervention, or (2) cross-sectionally examining mindfulness globally on a scale at the level of the individual. A limitation, however, is that those studies did not engage or assess couple awareness in moment-to-moment contexts between partners.

Adair et al. (2018), who also measured trait mindfulness, explored a possible mediating mechanism to partially account for the association between level of mindfulness and relationship satisfaction. That mechanism pertained to perception of partner’s responsiveness, and core to this concept is feeling understood, validated, and cared for (Reis et al., 2004). Adair and colleagues (needs citation here) experimentally measured perception of partner’s responsiveness by asking the partners to have a conversation about a personal concern specific to partner A, followed by one specific to partner B. They measured perception of partners’ responsiveness through behavioural coding by investigators, as well as participants’ scores on a scale measuring perception of partner responsiveness. The analysis controlled for behavioural coding scores such that it focused specifically on the partner’s perceptions of the other partner’s responsiveness. They found that the association between level of mindfulness and relationship satisfaction was mediated by perception of partner’s responsiveness.

Expanding on the limited yet growing empirical research connecting mindfulness and relationship outcomes or functioning, Karremans et al. (2017) described a theoretical model that included how mindfulness influences three relationship processes: (1) pro-relationship motivation and behaviour, (2) coping with distress, and (3) relationship cognition (refers to

thoughts and beliefs pertaining to their partner, relationship, and committed relationships in general). They posited how being mindful in conflictual or distressing moments of the relationship can influence a partner's response to the other in potentially helpful or constructive ways. Related to 'relationship cognition', research by Acitelli (2002) on thinking and talking about relationships addressed a concept of 'relationship awareness' which refers to one's focusing of attention on patterns of interaction in the relationship, as well as similarities and differences between their self and partner. Given that mindfulness is commonly described as involving attention to one's ongoing present experience, for the purposes of the present research, to participate mindfully in relationship (or 'mindfulness in action') involves attending to the ongoing flow of interaction between self and partner.

A Framework for Interactions in Couples

Given the literature suggesting a link between mindfulness and improved relationship outcomes, and considering how one may act or engage mindfully with their partner, the question may arise: What form of couple interaction patterns could be identified which, when attended to by partners, may contribute to alleviating relationship distress and enhancing relationship adjustment? One line of research by Gottman and colleagues led to the development of the Sound Relationship House (SRH) Theory, which includes a framework for observing/assessing couple interactions using the distinction between 'turning towards' (positive) and 'turning away or against' (negative) interactions (Gottman, 2011). 'Turning towards' interactions by Partner A involve his or her responding to Partner B's 'bids' for emotional connection in a way that brings the partners closer together emotionally and may strengthen their relationship bond. On the other hand, 'turning away or against' behaviours expand the emotional distance between partners and which may potentially weaken the relationship bond. "Turning away" behaviours occur when

Partner A does not respond to Partner B's bid, and 'turning against' behaviours occur when Partner A responds negatively to Partner B's bid. It is important to note that the SRH theory does not aim to remove negative interaction patterns as couples necessarily engage in a fluctuating between positive and negative interactions that are part of the relationship. Further, negative interactions when addressed well or repaired by the couple can prove constructive for the couple.

SRH theory elucidates that well-functioning relationships tend to involve a greater proportion of positive interactions than negative ones (Gottman, 2011). This theory also posits that turning towards behaviours involve positive feedback and are self-reinforcing in that engaging in these behaviours contributes to further engagement in them. Their empirical research found that a higher frequency of turning towards behaviours was related to greater relationship longevity, as well as greater affection and humour during conflictual interactions (Gottman, 2011). Based on Gottman & colleagues' research program, they proposed that well-functioning relationships tend to possess at least a 5:1 ratio of positive to negative interactions (Gottman, 1994). Connecting the mindfulness-relationship research and interaction patterns in couples to the context of BC, facilitating BC couples' mindful awareness of moment-to-moment turning towards and away interactions may influence a greater proportion of positive to negative interactions, thereby potentially influencing an improvement in relationship adjustment.

Couplelinks Intervention

Overview

Research supports how both partners approaching BC as a shared problem (dyadic coping) may enhance relationship outcomes (Regan et al., 2012; Rottmann et al., 2015), including dyadic adjustment (Badr et al., 2010). Moreover, theoretical work by Reid et al.

(2006), Fergus (2015), and Reid & Ahmad (2015) described how adaptive relational changes and resilience may be facilitated in relation to strengthening couple identity and partners taking on a ‘we-oriented’ approach to coping. Research on the interdependence of partners in coping with BC has led to a call for psychosocial BC interventions that include both partners, not only the ill-partner [e.g., (Baucom et al., 2006)]. A review of online couple interventions in the cancer context found that the online format may garner more accessible participation while also showing improved efficacy in dyadic coping (Vanstone & Fergus, 2020). Further, a review of psychosocial problems in young women with BC suggested a need for psychosocial interventions in this group, which is the age group in BC with the lowest psychosocial adjustment, and one that has specific needs that historically have not been well addressed by BC psychosocial interventions (Ahmad et al., 2015). To address the need for an accessible online intervention for young women living with BC and their male partners that potentially facilitates their dyadic coping, the Couplelinks intervention was developed and tested with this population in a randomized controlled trial (Fergus et al., 2015; 2022). Couplelinks is an online intervention designed to promote relationship enhancement in young couples facing a BC diagnosis. The intervention consists of six experiential-dyadic modules (the seventh module is optional) that are done sequentially and in asynchronous consultation with a Couplelinks facilitator.

Module 3 Exercise

Module 3 (titled ‘Creating Connection’) is the third sequential module of the Couplelinks intervention. This module is based on the SRH theory’s emphasis on ‘turning towards’ and ‘turning away or against’ behaviours as well as the mindfulness and relationship adjustment literatures. The objective of this daily self-in-relationship observation exercise is to promote each participant’s awareness of their own turning towards and away/against behaviours as well as

their partner's turning towards behaviours. Participation in this module involved five steps. In brief, the first step involved both partners independently tracking in text their own 'turning towards' and 'turning away or against' behaviours, as well as their partner's 'turning towards' behaviours, and entering of these relationship incidents on the online Couplelinks platform throughout the course of a week. Second, Partner A independently provided feedback in text to Partner B's entries and vice versa. Third, partners' reviewed together and discussed the full collection of their data from steps one and two. Fourth, the Couplelinks facilitator provided text feedback to reflect and validate the couple's new awareness and learning/insights. The final step involved asking participants to rate and describe their appraisal of Module 3. This collection of post-module feedback data is described in detail in Methods.

By promoting couples' mindful awareness of interactions that close and expand distance between partners, Module 3 aimed, in part, to promote an increase in positive (turning towards) relationship interactions relative to negative (turning away/against) interactions. Furthermore, promoting each partner's awareness of their own momentary behaviour in relation to their partner's momentary behaviour may enhance partners' mutual understanding and perspective-taking versus solely considering the behaviour of self *or* partner. In line with Bateson's concept of 'double description,' a holistic view of a relationship may emerge from jointly considering two sides (partners) of the relationship (Bateson, 2002). To illustrate employing a metaphor, both partners can represent an 'eye' of the relationship, and that observing both partners' perspectives may provide a binocular, more comprehensive view of the relationship. Further, as what may occur from facilitating mindful awareness in couples is a positive or constructive change in how they respond to each other's momentary bids for connection, their connectedness or relationship bond may be strengthened more broadly in a way that enhances their couple identity and

relationship adjustment. Improving the relationship strength or bond could help to bolster the shared coping by young women with BC and their partners.

Selected RCT Outcomes

The two primary outcomes in the Couplelinks randomized controlled trial (RCT) were: (1) dyadic coping as measured via the Positive Dyadic Coping subscale of the Dyadic Coping Inventory (Bodenmann et al., 2006), and (2) relationship adjustment as measured via the Revised Dyadic Adjustment Scale (RDAS) (Busby et al., 1995). With respect to between-group effects, the treatment group demonstrated moderately improved dyadic coping in comparison to the waitlist group, although this effect was small (Cohen's $d = 0.24$) (Fergus et al., 2022). There were no between-group effects for the RDAS outcome.

Study Rationale and Research Questions

Rationale

The RCT results demonstrated a small between-group effect in favour of the treatment group for positive dyadic coping, but no between-group effect for relationship adjustment. While the Couplelinks intervention was evaluated as a whole in an RCT, it would be elucidating to understand whether certain modules or mechanisms accounted for some couples improving on relationship adjustment while others did not. Toward this end, I examined potential mechanisms of action pertaining to the outcome of relationship adjustment. Given that couples with good outcomes on the RDAS commented specifically on the value of the Module 3 exercise in a recent task analysis of the Couplelinks intervention (Yufe, 2022), I endeavoured to examine couple responses to the Module 3 exercise in greater depth. The design of this module was largely grounded in the research program by Gottman (2011) proposing that relationship distress may be alleviated through increasing the number of positive interactions relative to negative interactions

between partners. It is, however, not known how promoting awareness of possible relationship enhancing and eroding behaviours as facilitated in Module 3 relates to positive relationship adjustment in the context of young couples coping with BC. The present study addressed this research gap employing an integrative mixed-methods research design to examine how degree or quality of engagement in or appraisal of Module 3 relates to relationship adjustment in young women living with BC and their male partners.

Research Questions

Overarching Research Question. To what extent, and how, may becoming more aware of potentially relationship enhancing and eroding behaviours, through a daily self-in-representation observation exercise, relate to positive relationship adjustment in the context of a larger intervention for young women and their male partners coping with BC?

Research Question I. How do participants engage with the Module 3 exercise, and in what ways do they derive benefit from doing so?

Research Question II. To what extent is degree of engagement in Module 3 related to change in couples' relationship adjustment?

Methods

Mixed-Methods Integrative Approach

Mixed-methods is commonly defined as the integration of qualitative and quantitative data into a unified study (Tashakkori & Creswell, 2007). In contrast to multiple-methods research, mixed-methods research requires integration which addresses how qualitative and quantitative data strands are intentionally brought together in the research process (Bartholomew & Lockard, 2018). Bringing together of qualitative and quantitative data can occur through a number of different methodological practices that range in complexity. For example, integration

may occur by connecting data strands (e.g., using qualitative results to develop a quantitative scale), transforming data (e.g., quantifying frequencies of codes to represent qualitative data), or merging data (e.g., bringing together results in a narrative discussion) (Creswell & Clark, 2017). Integration may occur at various stages of the research process including data collection, data analysis, presentation of results, and discussion of results. In a mixed-methods integrative study, regardless of how integration is done in data collection and/or analysis phases, it is important that the discussion of results constructs an integrative narrative which brings together quantitative and qualitative findings in the study context and in relation to the mixed-methods research question(s).

One review of mixed-methods integration specific to psychotherapy research had identified various mixed-methods designs (and their subtypes) that mainly differ on timing of data collection and analyses (Creswell & Clark, 2017). Included among many designs were three core designs: (1) convergent studies involving qualitative and quantitative phases that co-occur and are converged to answer a central question; (2) explanatory sequential studies involving a quantitative phase that is subsequently explained with more depth in a qualitative phase; and (3) exploratory sequential studies involving a qualitative phase that subsequently informs a quantitative phase. Researchers describing their mixed-methods designs may choose to indicate, broadly or in relation to specific research steps, an emphasis on qualitative data, quantitative data, or both.

Qualitative data are descriptive and in the form of language, and in the present study I assume qualitative data reflect participants' subjective experiences. Qualitative analyses broadly involve different ways to examine patterns or themes of meaning (in relation to a research question), the conduct of which depends in part on a researcher's theoretical and epistemological

assumptions about the study in question. On the other hand, quantitative data involve information that is measured and assigned a numerical value. Quantitative analyses broadly involve different methods of mathematical modeling. One may view the different data forms as different ways of ‘knowing’ or of punctuating phenomena. In integrative mixed-methods studies, qualitative and quantitative data may be viewed as complementary, instead of opposing, data forms that may be brought together in various ways to more holistically approach and examine the complexity of a research phenomenon. The suitability of the integrative mixed-methods approach depends, in part, on the research question. In brief, the overarching research question of the present study asks to what extent, and how (quality), may a process (i.e., couples’ engagement in and appraisal of a module, and specific change in their relationship awareness) relates to positive relationship adjustment. In the present study, qualitative and quantitative data are collected about this process, and quantitative data are collected to measure relationship adjustment. Both data forms are integrated at different points in the research process, which is summarized in a subsequent section ‘Summary of Integration.’ Overall, careful and rigorous integration of qualitative and quantitative data may facilitate a more encompassing view and deeper understanding of a research phenomenon.

Participants

Eligible participants: (1) had received a diagnosis of non-metastatic, invasive BC or ductal carcinoma in situ within the last 36 months; (2) were ≤ 50 years of age (no age limit); (3) were in a heterosexual, committed relationship (i.e., married, cohabitating, or dating for at least six months before participation); (4) were fluent in English; and (5) had Internet access (Fergus et al., 2015). Couples were excluded if either partner reported current suicidality or diagnosis of a serious mental disorder. Couples were also excluded if they were currently in couple therapy or

planned to be during the study's duration, or if either partner reported experiencing domestic violence (Fergus et al., 2022). The sample examined in the present thesis comprised 30 couples participating in the treatment group of the Couplelinks RCT. Each of these participants completed the Module 3 exercise.

Procedures

Questionnaire Distribution

All partners were asked to complete a set of questionnaires at: time-point one (they were subsequently informed of the randomization outcome), time-point two following completion of the Couplelinks intervention (approximately eight weeks after time-point one or within a week of completing the intervention for couples for whom it took longer to complete), and time-point three (three months after time-point two). Data at time-point three were not examined in the present study because the research question is focused on the direct or acute influence of Module 3 on change in relationship adjustment from time-point one to time-point two.

Module 3 Exercise

Prior to beginning the Module 3 'Creating Connection' exercise, in keeping with the structure of all the Couplelinks modules, couples reviewed the web-based information relevant to the exercise. This information included the exercise objectives and rationale, relevant definitions, examples of turning towards and turning away behaviours, specific tasks for the couple to complete, and the steps comprising the activity. With respect to the tasks or steps, partners were first asked to observe and record events throughout the week that they perceived to be: (1) their own turning towards behaviours, (2) their own turning away or against behaviours, and (3) their partner's turning towards behaviours. Of note is that participants were *not* asked to observe and track the other partner's turning away or against behaviours in order to prevent potential conflict

arising from drawing attention to the other's perceived distressing behaviours. They were asked to record these episodes in the form of asynchronous text entries on the Couplelinks platform. In addition to describing the event itself, they were asked to document their thoughts and feelings associated with it. Participants had the option to first document the events in a notebook as they happened and subsequently copy the information to the online platform, or to record the event directly in the online platform. At the end of this behavioural observation period (approximately one week), each partner independently viewed their partner's recorded events and provided a textual feedback response to each event on the online platform. Third, both partners collectively viewed and discussed the complete chart containing all their respective entries. Fourth, partners independently provided post-module-feedback in response to 4 stems/questions (data input type is indicated in italics): (1) "I liked doing the Creating Connection exercise (rate on 5-point scale ranging from 'Strongly Disagree' to 'Strongly Agree'). Please elaborate." (*5-point Likert scale response for 'like score,' and open-ended text response*); (2) "I found the tracking of 'Turning toward' and 'Turning away or against' behaviours beneficial (rate on 5-point scale ranging from 'Strongly Disagree' to 'Strongly Agree'.) Please elaborate." (*5-point Likert scale response for 'benefit score,' and open-ended text response*); (3) "What did you learn through the process of paying more attention to 'Turning toward' and 'Turning away or against' behaviours in your relationship?" (*open-ended text response*); and (4) "Did you discover anything new or interesting about your relationship or yourselves as a result of participating in the Creating Connection exercise? If so, what did you learn?" (*open-ended text response*). Finally, the Couplelinks facilitator reviewed and commented on each partner's post-module-feedback via the website 'Dialogue Room', an asynchronous discussion board accessible only to the couple and their individual facilitator. The facilitator feedback was intended to reflect or reinforce the couple's

experiences or new awareness they developed through participating in Module 3, as well as to provide validation and support when couples reported experiencing potential distress or problems when engaging in the module.

Data Sources

Randomized Controlled Trial Data Statement

The data examined in the present thesis were obtained from a Phase III RCT: a multicenter, Canadian prospective two-arm RCT of Couplelinks in order to examine differences in outcomes between the treatment group (participation in the Couplelinks intervention) and waitlist control group. The Couplelinks RCT protocol provides a detailed description of the RCT procedures (Fergus et al., 2015), and results of the Couplelinks RCT are presented elsewhere (Fergus et al., 2022). This RCT was approved by the Research Ethics Boards of all participating cancer centers and hospitals, namely Queen Elizabeth II Health Sciences Centre - Capital Health Research Ethics Board (reference number: CDHA-RS/2010-357), Sunnybrook Health Sciences Centre (reference number: 300–2009), York University (reference number: 2010-119), University of British Columbia - British Columbia Cancer Agency Research Ethics Boards (reference number: H10-00300), University of Manitoba (reference number: H2013:119), and Cancer Care Manitoba - Research Resource Impact Committee (reference number: 2013–017). This RCT was pre-registered on March 17, 2010 with Clinical Trials.gov (identifier: NCT01089764).

Revised Dyadic Adjustment Scale

In the present study, the RDAS (Busby et al., 1995) was administered as a general measure of relationship adjustment that is not specific to cancer. The RDAS was collected as part

of a set of measures at each time-point of questionnaire data collection. RDAS scores at time-points one and two were examined in the present study as change in relationship adjustment.

The RDAS (Busby et al., 1995) is a 14-item measure assessing 3 subscales: dyadic consensus, dyadic cohesion, and dyadic satisfaction. The output score of the RDAS is the sum of the three subscales, which ranges from 0 to 69, with higher scores indicating more positive dyadic adjustment. The RDAS is an abbreviated version of the Dyadic Adjustment Scale (DAS) (Spanier, 1976). Both measures have similar levels of reliability and validity (Busby et al., 1995). Psychometric evidence of the RDAS showing acceptable internal consistency and split-half reliability includes: Cronbach's alpha ($r = 0.90$), Guttman Split-Half ($r = 0.94$), and Spearman-Brown Split-Half ($r = 0.95$). Evidence showing acceptable construct validity of the RDAS includes correlations: between the RDAS and Locke-Wallace Marital Adjustment Test (MAT) (Crane et al., 1990) ($r = 0.68$; $p < 0.01$); between the DAS and MAT ($r = 0.66$; $p < 0.01$); and between the DAS and RDAS ($r = 0.97$; $p < 0.01$). Evidence showing acceptable criterion validity of the RDAS includes that the RDAS and DAS both correctly categorized respondents as distressed or non-distressed in 81% of cases.

Module 3 Data

Qualitative data collected from the Module 3 exercise include: (1) partners' observed and recorded textual events of their own turning towards/away/against behaviours and their partner's turning towards behaviours, (2) partner A's textual feedback responses to behaviours recorded by Partner B in step one (and vice versa); and (3) partners' textual post-module-feedback to each of the four questions/stems with respect to their perception of liking of and benefitting from (or lack thereof) the module as well as what they may have learned and discovered about their

relationship. For the purposes of this analysis, only data obtained through the third step were analyzed.

Quantitative data collected included participants' ratings on a 5-point Likert scale (ranging from 'Strongly Disagree' to 'Strongly Agree') related to their perceived degree of 'liking' and 'benefitting' from the module.

Data Analysis

Two separate phases of analysis were completed, one using an integrative analytic approach and the other purely qualitative. To describe steps undertaken in the first analysis, I use a series notation that denotes the order of sub-analyses, and whether the sub-analysis was qualitative ('qual') or quantitative ('quant'). To illustrate, *Analysis I* (Quant – qual – Quant) indicates the respective order of quantitative and qualitative steps. The capital 'Q' in 'Quant' indicates that the quantitative phases were emphasized.

To reiterate, the two research questions in the present study were: (1) how do participants engage with the Module 3 exercise, and in what ways do they derive benefit from doing so?; and (2) to what extent is degree of engagement in Module 3 related to change in couples' relationship adjustment? *Analysis I* addressed the second research question because I used qualitative and quantitative data to inform examining the relation between the extent of different measures (approximating engagement and appraisal of the exercise) with a measure of relationship adjustment. *Analysis II* addressed both research questions. It addressed the first research question because qualitative data were examined to derive participants' different engagement processes as well as to understand how they may benefit from engagement. Because participants' comments may convey their perspective or subjectivity on how the exercise influenced or related to their

overall relationship adjustment, Analysis II additionally addressed the second research question in the context of language accounts, not statistical modeling.

In *Analysis I*, each regression analysis used a linear mixed model approach (Flora, 2017) to treat the couple as a unit and to account for non-independence of scores between partners. The 5-point Likert scale variables (indices of ‘liking’ and ‘benefitting’) were treated as continuous predictors in the regression analysis (Rhemtulla et al., 2012). The outcome in each regression analysis is the RDAS difference score, which in this study equates to RDAS collected after completion of the Couplelinks intervention (approximately 8 weeks after time-point one) minus RDAS at time-point one. *Analysis II*, a qualitative thematic analysis, was conducted with periodic consultation with another investigator who reviewed and discussed the findings iteratively. The researchers involved in conducting Analysis II were blind to participant information such as participant IDs, participant characteristics, and quantitative scores.

Analysis I: Quant–qual–Quant

Rationale. The quantitative variables collected from Module 3 participation (*like score* and *benefit score*) were considered appraisals of the exercise that may approximate the degree of participants’ engagement in the module. It was assumed that couples who were motivated to complete the module and who followed the instructions well, would be likely to have higher perceived *like score* and *benefit score*. On the other hand, it was assumed that couples who were not motivated to complete the module and/or who did not follow the instructions well, were more likely to have lower perceived *like score* and *benefit score*. Further, I identified couples with score configurations of relatively higher couple average *benefit score* and couple average *RDAS change score*, as well as couples who have relatively lower configurations. I then compared the qualitative feedback of the two identified groups of couples to determine if there were

distinguishable qualitative differences in the feedback they provided, and to judge whether such differences may lead to adding new variables of interest to the analysis – in an exploratory fashion.

Objectives

1. I sought to examine the extent to which quantitative measures approximating couples' engagement in and appraisal of Module 3 were associated with positive change in relationship adjustment.
2. I sought to examine how couples' qualitative feedback may inform adding a new variable as a predictor in the linear mixed model regression.

Steps

1. [Quant] I conducted a linear mixed model of partners' *like score* and *benefit score* (predictors) by *RDAS change score* (outcome).
2. [Quant] I created a bivariate plot (each point representing one couple) of the couple average *benefit score* by the couple average *RDAS change score*. Upon observing the plot, I independently identified two groups: five couples who have the highest relative outlying configuration of bivariate scores, and five couples who have the lowest relative outlying configuration. The identification process was reviewed by another investigator, and any disagreements were resolved via consensus.
3. [qual] I examined all post-Module-3-textual-feedback for each partner in the identified couples to explore if there were general qualitative differences between the two groups in order to derive possible theme(s) that were specific to the couples with the lowest relative configuration of scores which may hinder their engagement in Module 3. If a theme (or themes) was observed that may distinguish the two groups, I would explore whether

available Module 3 data could be used to create a relevant variable approximating that theme, in order to include it as a predictor in the original regression model.

4. [Quant] This step is conditional on whether a new variable is created within Step 3, in which case I would conduct a linear mixed model regression analysis of partners' *like score*, *benefit score*, and Step-3-derived variable (predictors) by *RDAS change score* (outcome).

Analysis II: Qual

Rationale. *Analysis I* examined how measures approximating engagement within and appraisal of the Module 3 exercise might have related with positive change in relationship adjustment post-intervention, while *Analysis II* examined how participants engaged with the exercise and in what ways they found it to be beneficial or not.

Objective. We sought to examine how participants engaged with the exercise and in what ways they found it to be beneficial or not.

Thematic analysis. Thematic analysis (Braun & Clarke, 2006) is a method used with qualitative data allowing a researcher to examine patterns of meaning in relation to the research question. Using the full collection of participants' post-Module-3-textual-feedback, a thematic analysis was employed to explore how participants engaged with the exercise and in what ways they found it to be beneficial or not. Further, we conducted this analysis while blind to any other participant information, including sex and scores on predictors and outcomes from the quantitative analysis. The thematic analysis method fits our qualitative-descriptive analysis objective as we believe this method is well-suited to examining patterns within relatively 'thin' datasets', as our qualitative data are written responses in limited text boxes, rather than verbal data arising from, for example, an interview method. Consistent with our analysis objective, we

sought to derive a detailed description of the entire dataset instead of deriving a deeper account of a particular theme or sub-theme.

The conduct of our thematic analysis was informed by the methodological practices and contextual decision-making described by Braun & Clarke (2006). Thematic analysis is a flexible method in that the researcher can make certain methodological decisions to fit the study context and emergent findings. We chose to conduct an inductive (vs. deductive) thematic analysis because we are interested in data-driven interpretations. We sought to identify meanings at the semantic (vs. latent) level (Braun & Clarke, 2006), reflecting a focus on meanings that relied less on inference, taking participants' accounts at face value.

We conducted our thematic analysis in the order of the six phases described by Braun & Clarke (2006). The conduct of a thematic analysis is not unidirectional in that a researcher may move back and forth between each of the six thematic analysis phases. After familiarizing ourselves with the data, we began to generate codes linked to the data. A code is a label, ascribed to the most basic segment or element of the data, that meaningfully relates to the research question and context. We then organized and grouped certain codes into potential sub-themes and later, highest level themes. A theme refers to a pattern of meanings in relation to the research question, as informed by grouping of codes interpreted to be related in this way. Next, we reviewed, discussed, and revised the wording and organization of codes, sub-themes, and themes in relation to code-linked data extracts. Our considerations included the coherence *within* themes (internal homogeneity) and the meaningful differences *between* themes (external heterogeneity) as informed by the research question. We subsequently defined themes and sub-themes, and we revised their names/labels as needed. All qualitative analyses were conducted with a qualitative data analysis software, Nvivo (released in March 2020).

Summary of Integration within Analysis

I summarized the points of integration (and potential integration for exploratory steps) under selected headings that represent different proposed types of integration (Creswell & Clark, 2017).

Connecting Data Strands. In *Analysis I*, quantitative data from specific variables were examined, and based on identifying two groups of couples whose score configurations were extreme, those couples were selected for a subsequent analysis of their qualitative data.

Building. In *Analysis I*, an exploratory qualitative phase was used to potentially inform the building of a subsequent quantitative phase involving creating and adding a new variable to original regression analysis.

Transforming Data. In *Analysis I*, a potential newly created variable could be a quantified frequency of entities of qualitative data.

Merging Data. In the Discussion section, quantitative and qualitative analyses were brought together into a narrative. Further, certain themes derived in *Analysis II* helped supplement interpretations of regression results from *Analysis I*. These regression results, in turn, were used to illustrate potential empirical support for certain themes.

Results

Participant and Couple Characteristics

Table 1 shows characteristics of the 60 participants included in analysis. We reported medians (range) of variables for which data were not normally distributed. The median (range) age in years was 38 (27 to 47) for women and 40 (28 to 53) for men. The majority of participants, 25 of 30 participants in each group (women and men), identified as Caucasian. Half

of women reported stage 1 BC, and others reported stage 2 (n = 7) and stage 3 (n = 8) BC.

Regarding treatment period, follow-up care (50% of women) was most common.

Table 1. Participant characteristics. Descriptive statistics are grouped by female or male, with corresponding percentages referring to the proportion of females (n = 30) or males (n = 30), respectively.

Variable	Participants (n = 60)
Female, <i>n</i> (% of 60 participants)	30 (50)
Age in years, <i>median</i> (<i>range</i>)	
Females	38 (27 to 47)
Males	40 (28 to 53)
Ethnicity, <i>n</i> (%)	
Caucasian	
Females	25 (83.3)
Males	25 (83.3)
Asian	
Females	3 (10.0)
Males	0 (0)
Other	
Females ^a	2 (6.7)
Males ^b	5 (16.7)
Highest education level	
High-school	

Females	1 (3.3)
Males	3 (10)
College/university	
Females	24 (80.0)
Males	26 (86.7)
Post-graduate	
Females	5 (16.7%)
Males	1 (3.3)
Age at diagnosis, <i>median (range)</i>	37.5 (26 to 45)
BC stage	
Stage 0	0 (0)
Stage 1	15 (50)
Stage 2	7 (23.3)
Stage 3	8 (26.7)
Treatment period, <i>n (%)</i>	
Recently diagnosed	1 (3.3)
Starting active treatment soon	1 (3.3)
Active treatment	9 (30)
Recently completed active treatment	4 (13.3)
Follow-up care	15 (50)

^aOne participant identified as Metis, and one participant identified as Latin American.

^bAmong five participants, one participant each identified as African Canadian, Jewish, Middle Eastern, East Indian, or Latin American, respectively.

Displayed in Table 2 are characteristics of participants included in analysis as grouped by couple (n = 30 couples). Most couples were married (n = 24). Over half of the couples (n = 19) had at least one child. The median (range) relationship length in years was 13.25 (2 to 30).

Table 2. Couple characteristics. Percentages refer to the proportion of couples (n = 30 couples).

Variable	Participants (n = 30 couples)
Marital status, <i>n</i> (%)	
Dating/engaged	0 (0)
Common-law	6 (20)
Married	24 (80)
With child/children, <i>n</i> (%)	19 (63.3)
Relationship length in years, <i>median</i> (<i>range</i>)	13.25 (2 to 30)
Marriage length in years, <i>median</i> (<i>range</i>)	11 (1 to 22)

Statistical Analysis and Respective Mixed-Methods Integration Steps

Initial Linear Mixed Model Regression

Results of the linear mixed model regression of partners' *like score* and *benefit score* (predictors) by *RDAS change score* (outcome) are shown in Table 3. Although both predictors are scored on 5-point Likert scales, we additionally ran the regression with scaled-and-centred predictors and outcome in order to interpret standardized estimates, and to use such estimates to evaluate potential statistical suppression. The variance inflation factor for both *like score* and *benefit score* ($VIF = 1.66$) is not unusually larger than one (Mansfield & Helms, 1982), so

multicollinearity was not deemed to be an issue. The fixed effect of the *like score* ($t(28) = -0.34$, $p = 0.736$, $\beta_1 = -0.26$, 95% CI [-1.86, 1.33]) indicates that the mean *RDAS change score* is predicted to decrease by 0.26 points per a one-unit increase in *like score*, while holding *benefit score* constant. It is unexpected that this relationship would be negative, as we believe that degree of liking the exercise would be positively associated with degree of positive relationship adjustment. The standard errors of both the *like* and *benefit score* variables are large and very close in magnitude. While the standard error of the *benefit score* is very close in magnitude to this variable's regression estimate, the standard error of the *like score* is three times the magnitude of the corresponding regression estimate.

The fixed effect of the *benefit score* ($t(28) = 0.89$, $p = 0.379$, $\beta_2 = 0.67$, 95% CI [-0.86, 2.19]) indicated that the mean *RDAS change score* is predicted to increase by 0.67 points per a one-unit increase in *benefit score*, while holding *like score* constant. With respect to effect sizes, the regression estimate for *benefit score* effect is more than three times larger than that for *like score* effect. We accordingly interpret that the *benefit score* variable is a stronger predictor of *RDAS change score* than the *like score* variable. The fixed effects of both *like score* and *benefit score* were non-significant ($p > 0.05$).

Regarding the fixed effect of the *scaled like score* ($\beta_1 = -0.06$, 95% CI [-0.41, 0.30]), the mean *RDAS change score* is predicted to decrease by 0.06 standard deviation for a one standard deviation increase in the *scaled like score*, while holding the *scaled benefit score* constant. The fixed effect of the *scaled benefit score* ($\beta_2 = 0.15$, 95% CI [-0.20, 0.50]) indicates that the mean *RDAS change score* is predicted to increase by 0.15 standard deviation for a one standard deviation increase in *scaled benefit score*, while holding *scaled like score* constant.

Table 3. Results of initial linear mixed model regression. Couples were each treated as a unit in analysis (n = 30 couples).

Fixed effects	<i>Estimate</i>	<i>SE</i>	<i>Scaled estimate</i>	<i>Scaled SE</i>	<i>t</i>	<i>p</i>
Mean intercept	-0.75	2.50	0.00	0.14	-0.30	0.765
<i>Like score</i> effect	-0.26	0.78	-0.06	0.17	-0.34	0.736
<i>Benefit score</i> effect	0.67	0.74	0.15	0.17	0.89	0.379

Given the unexpected negative relationship between *like score* and *RDAS change score*, we investigated whether statistical suppression effects were present. According to Martinez Gutierrez & Cribbie (2021), “Suppressors are variables that remove irrelevant variance from other predictors included in a model, thereby increasing the predictive validity of the variable(s) that had their irrelevant variance suppressed” (p. 480). Statistical suppression was assessed by comparing for each predictor: (1) correlations between average couple score on predictor and average couple change in RDAS score, and (2) scaled predictor regression estimates of the regression (see Table 4). Average couple *RDAS change score* was computed by subtracting the average couple RDAS score at baseline from average couple RDAS score at post-treatment. For each predictor, the regression estimate is smaller than the corresponding correlation with outcome, which shows that ‘absolute suppression’ and ‘mutual suppression’ were not present. However, the correlation between the *scaled like* predictor and outcome is positive, while the regression estimate for the *scaled like* predictor differs with a negative sign, which is potentially indicative of ‘negative suppression’. The change in sign between correlation and regression

estimate occurred for the *scaled like variable*, which indicated that the *scaled benefit variable* was a negative suppressor. It may be the case that the high standard error of the *like score* and *benefit score* variables, relative to corresponding regression estimates, contributed to the statistical suppression, possibly meaning that we cannot interpret the statistical suppression with confidence.

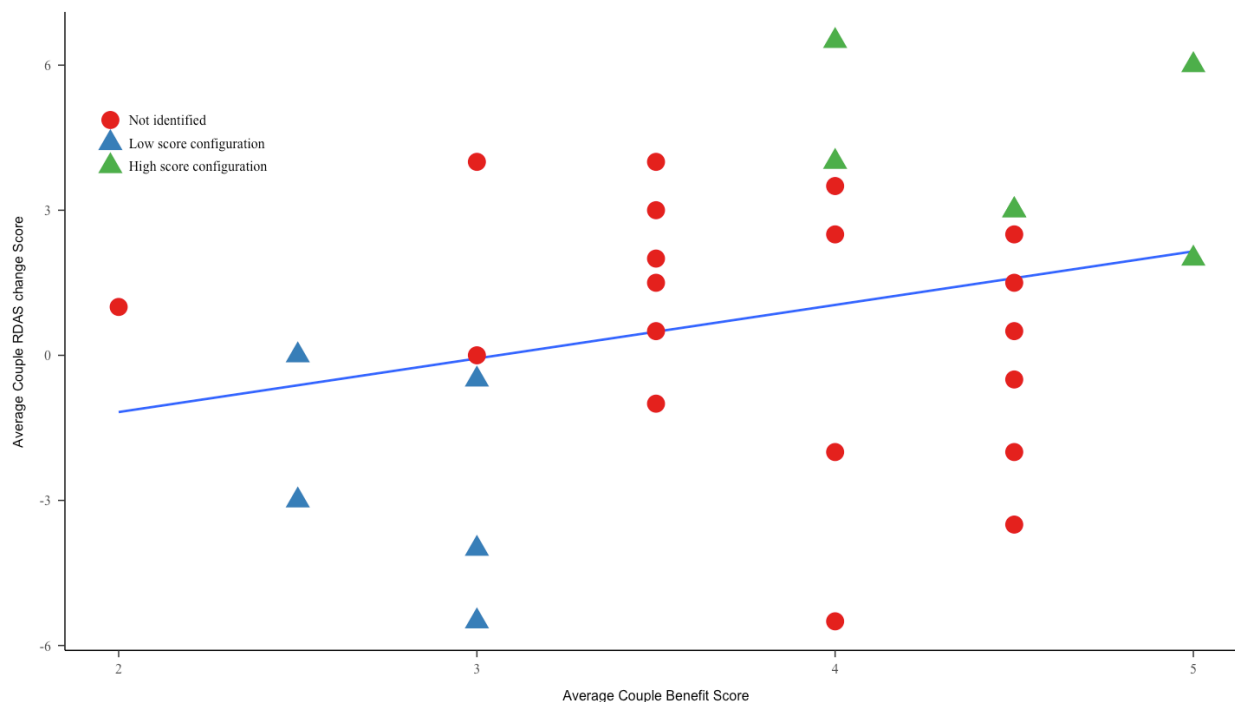
Table 4. Evaluating possible statistical suppression in the initial linear mixed model regression.

Predictor	Correlation between average couple scores on predictor & average RDAS change	Scaled predictor regression estimate
<i>Scaled like score</i>	0.15	-0.06
<i>Scaled benefit score</i>	0.28	0.15

Identifying Two Subsets of Couples with Extreme Score Configurations

Figure 1 shows a plot of the couple average *benefit score* vs. couple average *RDAS change score*. Each point on the plot represents one couple's score configuration. The five blue points refer to five couples who were deemed to have the lowest relative configuration of the aforementioned scores, while the five green points refer to six couples with the highest relative configuration, since one of these points refers to two couples who had the same score configuration (average *benefit score* = 4.5, average *RDAS change score* = 3).

Figure 1. Plot of couple average *benefit score* vs. couple average *RDAS change score*. Each point reflects the score configuration of one couple. We identified two subsets of couples who have relatively low score configurations (blue points) and high configurations (green points).



Integration Step: Exploring Potential Distinguishing Engagement Processes of the Two Subsets of Identified Couples

For each of the 11 couples identified based on quantitative data, we reviewed and compared the collection of their qualitative data in search of patterns of engagement in the exercise that were potentially distinguishing of the two groups. Based on qualitative data, there was a distinct theme of inadequate effort put into the exercise in four of the five couples with relatively low score configurations. For example, a partner from one of these couple stated, “We didn’t keep track well enough” (303, F). A partner in another couple mentioned, “In a perfect world I would have kept track of these incidents and plugged them in as I noticed them instead of

trying to think back and remember them all in one shot. I need better organizational skills I guess!!” (305, M). Further, a partner in another couple conveyed “[I] Wasn’t able to afford the time to go in the few times it required, but I do see the value of the communication aspect of it” (203, F). Conversely, only one of the five couples with relatively high score configurations reported a lack of effort. A partner in that couple stated, “It was hard to manage my time with working and keeping this up to date. Would have been better if I did it daily like you suggested” (211, M). However, interestingly, the other partner from this dyad indicated that effort into the exercise was worthwhile: “It was a little more work than I first expected, but in the end was very useful tool to discuss our feelings” (211, F). Because effort seemed to be a meaningful consideration in relation to exercise engagement and benefitting from it, we operationalized this construct and created a partial proxy variable for it by counting each participant’s number of responses tracked/entered onto an online platform. Their tracked responses comprised incidents of turning towards and turning away as well as responses (own thoughts and/or feelings) to their partner’s tracked incidents. This ‘effort’ variable is a relatively more direct measure of exercise engagement versus the *like score* and *benefit score* which are appraisals of the exercise. This variable pertains to effort involved specifically in the tracking of responses, in which I assume that the more tracked responses, the more effort expended by the participant, but it does not wholly encapsulate effort in the Module 3 exercise. Overall, through comparing qualitative data between the two identified groups of couples, the potentially distinguishing theme of ‘inadequate effort’ was observed and had informed creating a quantitative, partial proxy variable of ‘effort’. In the next step, this variable was added as a predictor to the original regression analysis.

Integration Step: Refined Linear Mixed Model Regression

Results of the refined linear mixed model regression of partners' *benefit score*, *like score*, and *number-of-tracked-responses* (predictors) by *RDAS change score* (outcome) are shown in Table 5. Since the Likert scale predictors use different scales than *number-of-tracked-responses*, we additionally ran the regression using both scaled-and-centered predictors and scaled-and-centered outcome. Multicollinearity was not deemed to be an issue because the variance inflation factor was not unusually larger than one for each of the predictors: *like score* ($VIF = 1.66$), *benefit score* ($VIF = 1.75$), and *number-of-tracked-responses* ($VIF = 1.10$). Regarding the fixed effect of *like score* ($t(27) = -0.35, p = 0.726, \beta_1 = -0.28, 95\% CI [-1.87, 1.32]$), the mean *RDAS change score* is predicted to decrease by 0.28 units for a one-unit increase in *benefit score*, while holding *benefit score* and *number-of-tracked-responses* constant. Regarding the fixed effect of *benefit score* ($t(27) = 0.70, p = 0.492, \beta_1 = 0.53, 95\% CI [-1.04, 2.10]$), the mean *RDAS change score* is predicted to increase by 0.53 units for a one-unit increase in *benefit score*, while holding *like score* and *number-of-tracked-responses* constant. Regarding the fixed effect of *number-of-tracked-responses* ($t(27) = 0.85, p = 0.406, \beta_2 = 0.15; 95\% CI [-0.22, 0.52]$), the mean *RDAS change score* is predicted to increase by 0.15 units for an increase of one tracked response, while holding *like score* and *benefit score* constant. The fixed effects of *like score*, *benefit score*, and *number-of-tracked-responses* were each non-significant ($p > 0.05$).

Regarding the fixed effect of *scaled like score* ($\beta_1 = 0.06, 95\% CI [-0.42, 0.29]$), the mean *RDAS change score* is predicted to increase by 0.06 standard deviation per one-standard-deviation increase in *scaled like score*, while holding *scaled benefit score* and *scaled number of tracked responses* constant. Regarding the fixed effect of *scaled benefit score* ($\beta_1 = 0.12, 95\% CI [-0.24, 0.48]$), the mean *RDAS change score* is predicted to increase by 0.12 standard deviation per a one-standard-deviation increase in *scaled benefit score*, while holding *scaled like score* and

scaled number of tracked responses constant. Regarding the fixed effect of *scaled number-of-tracked-responses* ($\beta_1 = 0.12$, 95% CI [-0.17, 0.41]), the mean *RDAS change score* is predicted to increase by 0.12 standard deviation per a one-standard-deviation increase in *scaled number-of-tracked-responses*, while holding *scaled like* and *scaled benefit score* constant. We interpreted these results as indicating that while the variable *like score* is a weak predictor of the outcome, the variable *number-of-tracked-responses* is as good a predictor as the variable *benefit score* in the prediction of *RDAS change score*. Although the fixed effects are non-significant, we interpret the regression estimates of both *benefit score* and *number of tracked behaviours* to be meaningful in the context of this thesis because both magnitudes indicated a small positive effect size, or a small positive relationship between the respective predictor and *RDAS change score*. We cannot draw causal conclusions from the present statistical analysis. However, as this analysis was intended to be interpretive and not confirmatory, we inferred that there is a discernible (but not strong) link between *RDAS change score* and each of the predictors (1) quantified perception of benefit from the exercise, and (2) number of tracked responses involved in exercise participation. In other words, we inferred a trending towards a small positive relationship between each of these predictors (*benefit score* and *number-of-tracked-responses*) and the *RDAS change score* outcome. Regression and corresponding statistical analyses were conducted with a statistical computing software, R (R Core Team, 2016).

Table 5. Results of refined linear mixed model regression. Couples were each treated as a unit in analysis (n = 30 couples).

Fixed effects	Estimate	SE	Scaled estimate	Scaled SE	t	P
Mean intercept	-1.70	2.70	0.00	0.14	-0.63	0.535
<i>Like score</i> effect	-0.28	0.78	-0.06	0.17	-0.35	0.726
<i>Benefit score</i> effect	0.53	0.77	0.12	0.18	0.70	0.492
<i>Number-of- tracked-responses</i> effect	0.15	0.18	0.12	0.14	0.85	0.406

Thematic Analysis

Our thematic analysis of engagement processes resulted in four main themes, 17 sub-themes, and 51 lowest order codes. Table 6 presents themes and their sub-themes. The first main theme, “Receptivity to exercise,” addressed factors that precluded participants’ engagement with the Module 3 exercise as well as factors that facilitated such engagement. Most participants, including many of those whose receptivity to the exercise could be improved, reported meaningful changes in how they notice, learn, and act in their relationship. The second main theme, “Shifting how I *attend* in relationship,” addressed how and what participants observed in their self and their partner. Changing how one notices can introduce opportunities for learning about relationship behaviours and dynamics. “Generated insight,” the third theme, is comprised of two types of insight. The first type, “Object of insight” focused on the participant’s learning about their relationship, or their own or partner’s participation in it. The second type, “Quality of insight”, focused on (1) learning about behaviours that enhance or potentially disrupt their

relationship, and (2) bringing to the fore their feelings about each other and ideas of ‘what works’ in their relationship. Changes in (or adjusting) how one attends or knows in relationship are linked with changes in how one acts in relationship. Accordingly, the final main theme, “Shifting how I *engage* in relationship,” referred to participants acting to increase relationship-enhancing behaviours over relationship-eroding behaviours, including promoting dialogue.

Table 6. Themes and sub-themes derived in thematic analysis.

Theme	Sub-theme
Receptivity to exercise	Gave me a lens/vocabulary Worthwhile exercise Life circumstances interfered Difficulty with exercise procedure Made unfavourable behaviours more salient Unpleasant exercise Not life changing
Shifting how I <i>attend</i> in relationship	Attending to self Attending to partner Attending to relationship Slowing down my thinking in relationship
Generated insight	Object of insight Quality of insight
Shifting how I <i>engage</i> in relationship	Consciously adapting behaviour Acting to bring us closer together Approaching (vs avoiding) problems Dialoguing about relationship

Receptivity to Exercise

Gave me a lens/vocabulary. Definitions and examples of turning towards and turning away behaviours were provided for participants upon introducing the Module 3 exercise. In the responses of many participants (n = 24), they used the language of ‘turning toward’ and ‘turning away’ to describe their relationship behaviours, which was the second most-common code in the

sample (tied with ‘attending to the good’). A couple of these participants commented on the benefits of using such language. One participant expressed that the exercise “provided a specific, objective language with which to discuss behaviours” (315, F). Another reported a preference for the vocabulary of turning toward and away: “It’s an interesting way to classify behaviours as it is less pejorative than other terminology” (113, F).

Worthwhile exercise. Many participants (n = 16) expressed seeing the value or the helpful potential in the exercise as a whole, with one participant going as far to say that she “thought this was the most helpful of the modules so far” (201, F). Another participant expressed, in response to a prompt about what they learned from the exercise: “That there are things I didn’t know about [partner’s name]. I mean, REALLY know. This exercise provided a new skill for HOW to go about noticing the littlest details about the other person. It is like discovering them for the first time again. Really neat” (501, M). A few participants (n = 3) recognized the value in ongoing practice of the exercise in the future as one participant stated, “We have talked about continuing to do this exercise periodically as it brings up good discussion points” (501, F). Another few (n = 3) participants commented that the considerable time and effort it takes to engage in the exercise was worthwhile. Others noted the value of components of the exercise such as the tracking of behaviours/events or their reviewing and discussing with their partner their collection of tracked responses. Almost 20% (n = 11) noted the value of writing down “on paper” their observations, including thoughts and feelings, to later share with their partner. Two such participants expressed that this ‘tracking to share later’ component was crucial to derive benefit from the exercise. Another two participants connected the tracking to increasing their attention to relationship interactions. The other seven participants expressed how this component deepened their relationship understanding. One such participant indicated,

“There is always more going on in our heads than we can ever hope to verbalise [verbalize]. It was nice to get thoughts down on paper” (301, M). Another participant expressed how the tracking enabled her to communicate more effectively about her own turning away behaviour: “It was easier to write out my thoughts, especially with the turning away. I find it hard to sometimes explain why I may turn away” (211, F). Related to seeing positive potential in the ‘tracking to share later’ aspect, several participants (n = 9) indicated that they liked or found helpful to discuss their respective perceptions of specific relationship incidents, or the meanings each attributed to the collection of relationship behaviours. As one participant put it, “The tracking aspect of the exercise provided the opportunity to reflect on the week, the time we shared together and how we support each other” (501, F). Another participant conveyed, with respect to her negative relationship behaviours, how writing down observations on her own in order to discuss later was a helpful or less threatening way to warm up to dialogue about her perspective on the behaviour of interest.

Life circumstances interfered. Participants were asked to engage in Module 3 on their own time across the course of a week. They were encouraged to set aside time daily to record tracked behaviours. However, for a handful of participants, life responsibilities got in the way of their fully embracing the exercise. Some participants found it difficult to carve enough time out of their schedule to allocate to the exercise. (n = 6). Others (n = 4) had difficulty putting in substantial effort into the exercise or could not ‘give it their all’ because the week they allocated for it turned out to be a “hard” or “bad week” for other reasons. One participant conveyed in a straightforward manner their difficulty with the exercise, “It was very challenging in a challenging time during our lives right now” (307, F).

Difficulty with exercise procedure. In addition to life circumstances being a factor that impeded exercise engagement, many participants experienced challenges with respect to the effort or tasks required within the exercise procedure itself. There were several common challenges reported by a subset of participants (n = 19), including difficulty with: putting in time or effort to track behaviours, remembering behaviours to record them, partners not being around each other often in the week to allow many behaviours to be tracked, or adjusting to the exercise instruction. For some participants (n = 5), observing their relationship behaviours with the intention of tracking them had seemed forced or unnatural. Other participants had an issue not so much with the process of observing, but with the tracking and documenting of behaviours. One participant found the tracking to be redundant: “I already knew how we interacted and what we'd end up recording, so having to record it just seemed superfluous” (321, M). A few participants (n = 3) were challenged by having to choose which set of behaviours to record among many possible behaviours that could be tracked. One participant uniquely reported a preference related to the structure of the exercise. Instead of partners tracking their own behaviour independent of each other followed by a discussion at the end of the exercise, this participant reported they preferred the exercise to include conversation about tracked behaviours as they occurred (and were tracked) throughout the week.

Made unfavourable behaviours more salient. Participants are asked in the Module 3 exercise to track their own, but not their partner's, turning away behaviours. The exercise was designed this way to prevent conflict around pointing to their partner's behaviours that were perceived to be distancing or as slights, and instead to promote taking ownership of their own turning away behaviour. Still, for some participants, the tracking of their own turning away behaviour led to making those behaviours more salient which sometimes caused distress for the

participants. Regarding the tracking portion of the exercise, one participant conveyed that their own turning away behaviours “stood out more” than the turning towards behaviours by either partner. Further, three participants expressed having negative reactions in their relationship during the final step of the exercise where, at the end of the week, participants review and discuss their turning towards and away entries with one another. For example, one participant’s reaction concerned their partner’s lack of turning towards behaviours, while another participant described about her own behaviours, “I did like to think of the nice things, but it made me feel guilty/sad about the bad ones” (327, F). Another participant expressed, with respect to their own tracked turning away behaviour, that their partner had a negative reaction to the particular episode she had referenced. Consistent with negative reactions associated with reviewing tracked responses, three participants expressed facing challenges in discussing the collection of their turning away behaviours.

Unpleasant exercise. Few ($n = 3$) participants were displeased with the exercise. A couple of participants conveyed broadly speaking that they did not find the exercise was helpful. One such participant who reported having a negative response also stated that he saw the value of the exercise for others but not in regard to his own relationship, having expressed, “The program could be very helpful for some couples; I have no doubts about this. I just feel like it’s several steps behind us” (321, M). Another participant attributed her negative feeling upon completing the exercise to a conflict that arose during the review of each other’s responses: “It’s too bad I’m left with a bit of a bitter taste in the end based on our conflict around a few topics” (337, M).

Not life changing. Other participants’ responses demonstrated they did not find the exercise to be constructive to a significant degree ($n = 14$). This group indicated they did not

derive anything new from the exercise, which they often attributed to their already being aware of how they interact with their partner. For example, one participant expressed: “No, I didn't really discover anything new. [Partner's name] and I are very aware of who we are and who we are married to in this regard” (321, F). In contrast, one participant reported not learning anything new, yet increasing their awareness: “It tended to make me more aware of the things I do and how [my behaviour] affects the way we get along on a daily basis. Nothing new, just more awareness” (205, M). In addition, a few participants (n = 4) were not enthused with the exercise, which was reflected in either their giving a tepid comment about the exercise, or expressing that they did not get much out of it. Another participant, in response to a prompt about what he may have discovered about their relationship, reflected passively hoping for change “Not really, but I do hope for a change in both of us, for the better” (107, M).

Shifting How I Attend in Relationship

Attending to self. Many participants (n = 13) indicated that the exercise provoked an increased attention to oneself while interacting with their partner. One participant reported, “It tended to make me more aware of the things I do and how [that] affects the way we get along on a daily basis” (205, M). Comments of five participants made reference to actively seeing their own behaviour ‘through their partner's eyes,’ or interpreting one's own behaviours as the other would interpret them. One participant described this reflexive perspective-taking straightforwardly: “Paid more attention to my own behaviour and how it would be construed” (321, M). For another participant, knowing the other is attending to her own behaviours engendered a feeling of greater accountability, as she indicated: “It makes you more accountable for your behavior when someone is actually paying attention to you” (107, F). Regarding seeing oneself from their partner's perspective, one participant acknowledged the potential value of his

partner communicating her interpretation negative behaviour of which he may not be aware: “Maybe in future [partner’s name] can make me aware of non-verbal cues that feed negative energy so that I can be more aware of my behaviour” (335, M). Other participants reported changing how they see their self in relationship in terms of classes of behaviours. For a sizable number of participants (n = 10), engaging in the exercise led to noticing their own more unfavourable or negative relationship behaviours, including turning away behaviours. For example, one participant conveyed the exercise stimulated “a reminder to what [watch] your negative behaviors a little more closely” (107, F). In addition to noticing one’s own unfavourable behaviour, the responses of two participants indicated that they became more attuned to their partner’s negative behaviours, even though participants were asked in the exercise to track their own but not their partner’s turning away. Those two participants adopted a more balanced perspective on their partner, one that emphasized attending more to positive aspects/behaviours of their partner while still acknowledging the negative, instead of over-attending to the negative. One such participant, in realizing they were focusing on their partner’s turning away behaviour more than they would like, recounted, “I learned that I spend too much things [time] on the negative (what I perceive to be [partner’s name] turning away) and not enough time appreciating the positive ([partner’s name] turning towards)” (327, M).

Attending to partner. In addition to responses pertaining to changes centered on one’s self-awareness, a subset of participants (n = 6) indicated they were prompted to pay attention to their partner’s perspective or needs. As one male participant expressed, “... I could greatly improve my attention skills when it comes to things [partner’s name] is interested in, like shoes” (305, M). Another participant actively considered her partner’s feelings about their relationship, which spurred their collaborative agreement to increase their time together alone. She stated:

[Partner's name] feels very sad about the lack of time alone as a couple.. So I finally agreed with him in setting up a schedule of certain activities (time to work, time to talk about ourselves in a coffee shop or some grown ups place :), time to have sex, etc). I have always liked spontaneity, but I know that many times we have no time nor energy to do couple-things spontaneously.. So we agreed that we will set up a schedule for a month and see how it goes :) (if having a pre-set schedule takes away the magic (327, F).

Attending to relationship. This sub-theme refers to changes in how one observes their relationship, or their self and partner together. The exercise introduced participants to a way of classifying their responses to one another in their daily life. Ten participants endorsed this notion - that the exercise provided a framework through which to observe their self and partner. The merit of this 'way of seeing' was conveyed by one participant in this way: "This exercise provided a new skill for HOW to go about noticing the littlest details about the other person" (501, M). Using this framework inevitably incites participants to make their relationship interactions the focus of attention. Relatedly, several participants (n = 15) mentioned that that they were prompted to pay more careful attention to their relationship. One participant linked this increased attention to noticing behavioural cues: "I found it beneficial because it really made me more aware of our behaviours, and if there are any triggers to the way we act towards each other" (119, F) According to another participant, practicing the exercise paved the way for such mindful awareness to become more automatic or habitual: "Doing this exercise over a longer period of time provided an opportunity for this kind of awareness to become habit forming" (501, M).

Given that participation in the exercise included tracking of one's own and their partner's turning towards behaviours, it is fitting that a substantive proportion of participants (40%, n = 24) commented positively on their 'attending to the good' (second-most common code applied among participants, tied with 'gave me a lens/vocabulary') or caring behaviours enacted by each other, including the variety of ways in which they turn towards each other, as well as comments about attending to their own or partner's perspective about those caring behaviours. As one participant expressed, "If anything, I learned that [partner's name] is genuinely appreciative of the things I do for him, and he knows I am extremely happy with the things he does for me (big or small)" (207, F). Another participant connected their 'attending to the good' to enhancing their relationship: "It's easy to forget, but remembering the good times reaffirms our loving relationship" (503, F).

Slowing down my thinking in relationship. Seven participants reported realizing they had previously interacted with their partner in a less attentive way. This newfound awareness is complementary to other participants (n = 9) who reported having stepped back from rote relating leading them to slow down and examine their relationship in a more careful way, which often spurred enhanced understanding. As one participant expressed, "[I] turned off the cruise control and made sure we knew where we were going" (401, M). Slowing down one's thinking seemed to impact how participants acted in their relationship. Two participants conveyed how they attended to their thinking in order to subsequently act in a way that helped to mitigate unfavourable (or negative) behaviours. One such participant expressed, "We can stop negative behaviors if we filter our thoughts before we act" (107, M).

Generated Insight

Object of insight. Participants conveyed (1) ‘insight into self’, (2) ‘insight into partner’, or (3) ‘insight into relationship’. The most common ($n = 6$) insight into self pertained to learning about what influences one’s own turning away behaviours. For example, one participant expressed: “... many times when we turn away, it is usually due to a misunderstanding in our communication” (119, F). Another participant recounted their reasoning that was driving their turning away behaviour: “When I turn away I realize I rationalize it as being too much trouble or not worth sharing or something that [partner’s name] wouldn’t be interested in” (123, F). More generally, the responses of a couple of participants indicated that the exercise prompted a deeper consideration of the thoughts that led to a given interaction. As one participant put it, “I thought it was good to think about how I think when I interact with [partner’s name]” (123, F). Additionally, a few participants ($n = 3$) reported insights about the frequency of their own positive or unfavourable relationship behaviours. A couple of participants reported that they do not turn away much from their partner. For example, one participant wrote, “The hardest thing to come up with was definitely when I turned away from [partner’s name]. I think I am very aware of what behaviour [partner’s name] has but it’s sometimes difficult tracking my own [turning away] behaviour” (305, F). On the other hand, another participant reported that they turn towards their partner enough. Another participant-specific insight related to one partner living with BC who, despite ongoing hormonal therapy, learned she was not as emotionally reactive as she had expected.

The most common meaning derived in the dataset among participants pertained to increased insight into the other partner’s perspective (approximately 40% of sample, $n=26$), including discovering one’s partner’s thoughts and feelings in particular situations. The type of insight participants experienced varied widely. In describing the positive behavioural intentions

of one's partner, for example, one participant reported, "I learned that [partner's name] is continually trying to be understanding of me and support me through whatever we may encounter" (311, M). Other participants expressed insight into how their partner views their caring behaviours. As one participant put it, "it was good to hear the things [partner's name] liked that I did for her" (213, M). Conversely, as an example of describing one's partner's perspective on a potential conflict or unfavourable behaviour, one participant noted, "I learned that [partner's name] felt I was being very critical toward him this week" (303, F). Another participant contrasted their own perspective with their newfound understanding of their partner's perspective: "It seems that a lot of things are not about me at all. Of course I know that intellectually, but it's good to be reminded of it anyway. Don't take things personally" (201, F). Furthermore, a couple of participants found their partner's way of perceiving specific interactions during the debrief to be surprising or unexpected. One such participant stated, "The turning away examples [partner's name] put down took me by surprise. Looking back it wasn't that obvious she felt that way" (123, M). One other insight stemming from the debrief portion of the exercise pertains to one participant who became aware that their partner did not have many examples of turning towards them.

In addition to insight focused on oneself and one's partner, participants expressed insight into their relationship. With respect to the most common relationship insight ($n = 11$), the exercise highlighted how well partners understand one another. One participant indicated a good mutual understanding of their behaviours and the relationship as a whole: "This is comforting to see that we are both on the same level about how we treat each other and our relationship" (311, F). Another participant expressed, "I learned that we are very in tuned with each other and our feelings" (503, M). Related to good mutual understanding, four participants curiously noted that

both partners identified the same tracked event(s). For one such participant, tracking the same event was a 'call to action': "I learned that although we both identified the same incident for turning away from our partner we have some work to do on resolving the situation" (311, F). In contrast to 'good mutual understanding', the exercise also led a couple of participants to view that their perspectives on a particular relationship episode differed. As one participant expressed, "I really do think that I give [partner's name] enough attention or that I 'turn towards' him enough - I just think he struggled to remember these times" (305, F). Further, a couple of participants, through the exercise and reduced reactivity, were able to recognize and accept differences rather than feel threatened by these. One participant described this insight as "agree to disagree," while the other participant indicated, "As for turning away, we can't always be on the same page, but there is a good reason for it" (211, F).

With respect to other relationship insights, there were two insights about the very occurrence of certain behaviours. First, a few participants ($n = 3$) described noticing that certain tracked behaviours over the course of the week had also occurred in the past. Second, for four participants the exercise underscored the degree of negative relationship interaction relative to positive interaction. For example, one participant expressed, "It was reassuring to me to see that we had many more positive than negative interactions." Another participant reflected on an insight s/he achieved while noting the ratio of positive to negative interactions using the language of turning towards and away: "That I am putting up barriers and turning away more rather than turning towards [partner's name]" (307, F). Besides learning about the occurrence of specific interactions, six participants indicated that the exercise underscored how there is more going on beneath one's behaviours (e.g., thoughts, feelings, motivations, differing interpretations of events, etc.) than one may be aware of at the time of occurrence. As one participant put it,

“That the turning away behaviours can have a bigger impact than I might have thought” (315, M). Akin to a ‘lifting of the curtain,’ another participant succinctly reported, “Not all is what it seems” (123, M). Related to gaining new understanding, for several participants (n = 7), the exercise reinforced their awareness or knowledge of how they interact in their relationship. For instance, one participant expressed, “Mostly a re-emphasis on the behaviours I already know make [partner’s name] happy or frustrated” (209, M). Another participant expressed, “I guess I learned something that I already knew. We have great communication between us and don't turn away or against each other out of spite. We talk things through and figure out a course of action if there are any problems” (207, M). Similarly, some participants (n = 6) commented on the value of communication in their relationship and how the exercise helped improve their communication as one stated, “I knew that we were good at communicating, but I think I was able to see that we are learning new and effective frameworks for our already robust communication” (315, F). Lastly, for one participant, the exercise led them to realize, “The cancer has not just affected me, it has affected us” (215, F).

Quality of insight. While the sub-theme ‘Object of insight’ reflected a diverse set of learning points mainly oriented to self, partner, or relationship, the sub-theme ‘Quality of insight’ described three areas of learning: (1) ‘Honouring us’, (2) ‘Improved understanding of relationship problems’, and (3) ‘Avenues for togetherness’. Regarding ‘Honouring us’, participants’ responses pointed to a quality of reverence for their partner or their relationship, the most common (n = 12) being a recognition that their relationship is functioning well. As one participant expressed, “It's easy to forget, but remembering the good times reaffirms our loving relationship” (503, F). This participant also reflected on how the difference in viewpoints of herself and partner holds potential for relationship growth: “Reaffirmed our strong bond. Our

disagreements are something that we can work on to to learn from & form an even stronger relationship”. For another group of participants (n = 8), completing the exercise spurred a feeling of gratitude for their partner’s presence in their life, or accentuated their love for their partner. As one participant expressed, “It made me reflect on the interaction we had had which, for the most part refreshed my feelings of love for my partner” (301, M). On the other side, half as many participants (n=4), reported how the exercise supported their seeing clearly how loved or valued they are by their partner as one participant put it: “How I was touched by [partner’s name] feedback. Got teary eyed from some of his sweet comments” (503, F). For another couple of participants, completing the exercise had provoked their gratitude for their relationship. One participant commented on a quality of their partner: “I learned that I am lucky that [partner’s name] is so easy-going” (401, F). Two idiosyncratic meanings in the ‘Honouring us’ area of learning entailed noting aspects of relationship interactions which were very positive and uncommon: “I did however feel like we do have glimmers of really great hope and we have examples of some really positive stuff that perhaps is not common, but definitely is not to be taken for granted” (337, M). While another participant expressed appreciation for their partner’s acceptance of their own unfavourable behaviours: “I was very relieved that even though I was not on my best behaviour towards [partner’s name] (stress) he didn't hold it against me” (401, F).

‘Improved understanding of relationship problems’ includes becoming more aware of potential or existing problems, as well as furthering one’s understanding of them. A handful of participants (n = 5) realized their own lack of turning towards their partner, which has the potential to become conflictual. As one participant conveyed, “I usually just go thru the days in a spin and rush... not realizing that I don't turn to him very often... I just keep going and don't stop or slow down enough to let him in...” (205, F). Another participant expressed their lack of

turning towards in the context of missing their partner's solicited bids: "For example, where [were] there times when my partner was turning towards and I didn't notice?" (501, F).

Regarding participants more explicitly addressing problems in their relationship, the exercise led eight participants to recognize these problems, whether a disagreement or a standing issue that has not yet been resolved. One participant offered the following as an example of a standing issue: "That we both need to listen to each other - completely, giving the other our full attention and we haven't been doing that (perhaps more me), but I'm not sure how to go about making that a part of our everyday lives on a continuous basis" (307, F). Beyond becoming more aware of relationship problems, some participants changed the way they see the problems. A few participants ($n = 4$) for example described beginning to see issues in the relationship as less daunting, less overwhelming, or more workable. As one participant acknowledged: "We both know there are things that we need to work on, but that's part of being in a relationship" (209, F). Because a key component of the exercise was one's noticing of their self and partner, this participant also conveyed the value of such ongoing awareness: "We may not always get it right but we try hard to take notice of how we are treating each other". Related to this recognition of 'knots' in the relationship, for a few participants ($n = 3$), the exercise led to improving their understanding of a relationship issue. As one participant put it, "It allowed us to reflect on what was a difficult issue at the time and get a better perspective on how [partner's name] was feeling during what could have been an unpleasant discussion" (315, M).

The sub-theme of 'Avenues for togetherness' involves the many different ways that participants learned they could become closer to their partner. Considering that participants were asked to attend to moment-to-moment relationship interactions in daily life, almost one-third of participants ($n = 19$) recognized the value of becoming more cognizant of seemingly small

behaviours in the relationship. As one participant put it, “This exercise made me think about how small, seemingly insignificant behaviours/events can add up to affect the strength and happiness of the relationship” (331, F). Some participants described learning that one’s small acts of care are noticed by their partner, as well as learning to notice their partner’s small acts of care towards them. For example, one participant conveyed, “We both appreciate the little things that we do for each other and putting more effort into making a point to maximize the good behaviours and minimize the frustrating ones should be a priority” (209, M). In terms of turning towards behaviours more generally, a handful of participants (n = 5) saw the range of opportunities in which they can turn towards their partner. As one participant put it, “I actively thought about ways I could reach out to him during the day. Or try and do something nice for him” (113, F). One other participant expressed how the exercise prompted them to see their partner’s “vies”, while another participant expressed:

It made me realize how many interactions we have over the course of an ordinary day, and how nearly anything that passes between us could be a chance for closeness. I am not sure why we seem to choose for forfeit this closeness so often, when we could simply reach out and take it and have it (201, F).

Furthermore, a large number of participants (n = 16) indicated the value in partners’ sharing what they were thinking or feeling with respect to relationship behaviours, which is an example of a turning towards behaviour. One participant expressed the importance of their partner sharing his or her perspective:

It does not add to my stress when he lets me know what he is thinking. When I can tell that something is bothering him and he does not tell me, I usually can come up with worse scenarios in my head than what is actually going on (331, F).

On the other hand, another participant expressed the value of sharing their own perspective:

That even though I'm the one prodding [partner's name] to talk about how she's feeling to help her feel better about her concerns I can still be surprised at how much talking about my feelings and concerns with [partner's name] can make me feel better (315, M).

Regarding another avenue for togetherness, a few participants (n = 3) indicated recognizing that there are alternative, potentially more constructive ways to act in particular relationship situations. As one participant put it, "I learned that I often react with anger when [partner's name] is angry instead of keeping my feelings more neutral and giving him the time to deal with his anger" (315, F).

Shifting How I Engage in Relationship

Consciously adapting behaviour. As a result of attending to interactions with their partner, a fairly large proportion (20% of sample, n = 12) of participants conveyed their intention to adjust their behaviours more actively or be more responsive in their relationship. One participant stated, "This exercise provided a way to become more intentional in one's noticing of the other person, which has helped me turn down the volume on passivity and making things less commonplace" (501, M). More specifically in relation to observing own's own behaviour, three participants relayed that paying attention to one's own turning towards behaviours changes their behaviour. However, two of these participants found this observation to be more positive.

According to one, the exercise "Actually may have made me a bit nicer during the week. I was a bit more conscious of my behaviour - which is a good thing" (335, F).

Acting to bring us closer together. Noticing and learning about turning towards behaviours led one-third ($n = 20$) of participants to become more motivated to act with care towards their partner, which was the fourth-most common code in the sample. One participant conveyed their intention to engage in different kinds of turning towards behaviours, “I found myself trying to do more things to try to turn towards [partner’s name]. I actively thought about ways I could reach out to him during the day. Or try and do something nice for him” (113, F). Another wrote about “... putting more effort into making a point to maximize the good behaviours and minimize the frustrating ones should be a priority” (209, M). Specifically, a few participants ($n = 3$) commented on ways to favour turning towards over turning away or against. One participant expressed: “I found I had learned to back off from a turning against reaction in order to turn towards” (315, F). Two participants remarked on the value of both partners mutually turning towards each other after they both turn away from each other. In this way, one partner’s turning towards is only half the story. As one participant put it: “I learned that we both really pull back when the stress level hits really high but at the same time we both need the other to pull us back together to make it work well” (101, M).

Approaching problems. For a small number of participants ($n = 3$), the exercise provided a context in which participants addressed problems in their relationship. One participant’s description indicated they felt compelled to talk about a relationship problem: “Sometimes we need to be prodded to talk about what is bothering us. This activity was that prod” (331, M). One other participant commented on collaborating with their partner to find new ways of interacting in relation to “bad behaviours”: “It helps us talk about nice and bad behaviors and try to find new ways of doing things :). I believe we are both good persons, and that we usually mean well, but still we do stuff that hurt each other” (327, F).

Dialoguing about relationship. In the final step of the exercise, a conversation is naturally elicited when participants review together all of their tracked responses over the course of the week. Moreover, for a considerable number of participants ($n = 8$), the exercise sparked a constructive dialogue about their relationship that occurred beyond the final ‘review’ step of the exercise. One partner indicated their continuing to practice the exercise beyond research participation since it “brings up good discussion points”. In addition to the exercise prompting participants to talk about relationship problems, others demonstrated a range of perspectives on engaging in conversation. One participant expressed learning to prioritize asking his partner questions in order to further understand her: “... I have to be understanding of [partner’s name] and support what I understand. and ask about what I don't” (119, M). Another participant viewed increasing dialogue as relationship-enhancing: “I learned that spending more time talking and understanding each other will the strengthen the relationship” (211, M). Also, one participant expressed how conversation is helpful to bring forth mutual understanding: “That we sometimes are not sure what we want from each other but are both persistent enough to make it work and force a conversation when needed to get us back on track” (101, M).

Discussion

On the whole, we examined how engagement in a self-in-relationship observation exercise may influence positive relationship adjustment in the context of a larger intervention for young women living with BC and their male partners. Our analyses broadly involved assessing the extent to which scores approximating exercise engagement and appraisal were related to couples’ positive change in relationship adjustment, and identifying engagement processes and ways in which participants benefitted or not based on their language accounts. Our mixed-

methods integrative study entailed two analytic phases. Braiding of quantitative and qualitative data occurred in the first phase, while the second phase was entirely qualitative.

Phase I began with a linear mixed model regression analysis between predictors of couples' exercise engagement (with indices of 'liking' and 'benefitting' presumed to be a reflection of 'engagement') and the outcome of change in RDAS score. Next, we used couple-average scores on *benefit score* and *RDAS change score* to select subsets of couples each for 'low' and 'high' score configurations. We then compared qualitative data between these two groups of participants and discerned that extent of effort dedicated to the exercise seemed to distinguish the 'low configuration' group from the 'high configuration' group. This observation led to the inclusion of a new predictor variable, *number-of-responses-tracked-in-exercise*, as a proxy for effort (based on the assumption that the more behavioural incidents documented, the more effort being expended by the participant). We interpreted results of *Analysis I* to reflect, in the prediction of couples' change in RDAS score, that our measure approximating couples' effort was as good a predictor of engagement as couples' perception of benefit. We cannot draw causal or confirmatory conclusions in our interpretive regression analysis, particularly based on such factors as the lack of proximity in time between collection of predictors (in Module 3) and the outcome (after completion of the full Couplelinks program several weeks later), large standard error (and variance) in these single-item predictors within the regression models, a small sample size of 30 couples, and control group not included in the analysis. Nonetheless we interpreted the similar, small positive fixed effect sizes of both the *benefit* and *proxy of effort* predictors to reveal a possibly meaningful, trending towards a small positive relationship with a measure of relationship adjustment, which we believe supported our undertaking of a *Analysis II* broadly

involving a closer examination of participants' language-based, qualitative accounts of their experiences in completing the exercise.

In *Analysis II*, we conducted a thematic analysis to identify exercise engagement processes among participants (i.e., to increase understanding of how couples engaged with the exercise and what they got out of it, if anything). With respect to the lack of proximity between collection of predictor (Module 3) and outcome (*RDAS score* collected before and after completion of the full Couplelinks program), one of our approaches to determining that the exercise *may* have positively impacted relationship functioning more broadly was to examine participant self-reports. Indeed, the corresponding thematic analysis results revealed a number of ways in which participants found the exercise to be enhancing of their relationship, including how they improved their approach to relationship issues more specifically. Given my agreement with Marecek's (2003) assertion that a qualitative stance holds "language as key to people's subjective worlds" (p. 59), we drew on the qualitative data in order to supplement our interpretations of *Analysis I* results. *Analysis II* added meaning and 'texture' to participants' ratings of liking and benefitting, and to a partial proxy variable of effort (i.e., frequency count of episodes tracked and responses to partner's tracked episodes). We believe that our adding of the variable *number-of-responses-tracked-in-exercise* to the regression analysis was supported by our qualitative findings particularly with respect to participant reports about 'life circumstances interfering' with the Module 3 exercise (factors impeding effort or tracking responses) as well as about 'worthwhile effort' (factor promoting effort or tracking of behaviours). Furthermore, *Analysis II* expanded upon *Analysis I* by identifying beyond the three previously quantified engagement processes (benefitted, liked, and effort expended), a comprehensive set of qualitatively derived engagement processes stemming from participants' language accounts. In

our thematic analysis, we interpreted four main themes pertaining to engagement in Module 3 and how participants did or did not derive benefit in doing so: (1) “Receptivity to exercise,” (2) “Shifting how I *attend* in relationship,” (3) “Generated insight”, and (4) “Shifting how I *engage* in relationship.” The first theme about receptivity addressed the ways in which the various exercise parts, or the exercise as a whole did or did not ‘fit’ with participants’ preferences or capacity, and their degree of engagement in the exercise. The other three themes addressed what partners gleaned from participating in the exercise in terms of changes in their awareness/attention, learning or behaviour in the relationship, respectively.

Our finding of a small positive relationship between two predictors of engagement process (in a relationship-oriented mindful awareness exercise) with a measure of relationship adjustment is relevant to empirical work addressing mindfulness and its possible link with positive relationship outcomes. A systematic review of mindfulness-based couple interventions (n = 16 studies) supported the potential of such interventions to positively influence relationship quality (Winter et al., 2021). In addition to interventions, three studies, for example, found that degree of mindfulness at the level of partner or couple was positively associated with increased relationship satisfaction (Barnes et al., 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007). Although research examining potential mechanisms of the link between mindfulness and relationship adjustment is limited (Kozlowski, 2013), one literature review (Block-Lerner et al., 2007) provided evidence suggestive of a possibly meaningful link between mindfulness and empathic responding. For example, a study of 40 women found that level of mindfulness was significantly related to levels of both perspective taking and empathic concern (Block-Lerner et al., 2004). Participant reports in our study potentially supported this link given their being prompted to attend to their partners perspective or needs. As one participant put it: “I learned that

spending more time talking and understanding each other will strengthen the relationship” (211, M). Further, to see the world as another sees it, or to ‘take on’ the perspective of another, implies that attending to one’s partner involves or is circularly related to attending to oneself. Reflexive-perspective taking in our study was indicated by a handful of participants’ whose accounts conveyed their seeing their own behaviour through their partner’s eyes.

The sub-theme ‘Honouring us’ reflected ways in which participants found the exercise to facilitate their valuing or affirming of their relationship bond, which is consistent with empirical work on the possible association between mindfulness training and measures of relationship quality or bond. For example, a study using a randomized wait-list controlled design found an effect of a mindfulness-based relationship enhancement intervention on couples’ degree of ‘closeness’ and ‘relatedness’ (Carson et al., 2004). In addition to the outcome of relationship bond, Atkinson (2013) reviewed observational and neuroscientific research addressing that mindfulness training/meditation may improve empathy, as well as outcomes measuring physical, emotional, and attention regulation. Taken together, these results are suggestive of how enhanced closeness with partner, as well as becoming more mindful and regulated in one’s relationship, may be attributed to partners’ having adopted a mindfulness practice.

The theme “Receptivity to exercise” addresses a range of participant reports about what may have impeded or enhanced their engagement in the present study’s couple-based mindfulness exercise. Factors which potentially impeded exercise engagement included: life circumstances ‘getting in the way,’ the exercise feeling as ‘not life changing’ or not substantively relationship enhancing, difficulties with the procedural aspects of the module, the exercise making unfavourable behaviours more salient, and an unpleasant experience or impression of the exercise. Despite such factors, many participants conveyed, sometimes concurrently, that

participating in the exercise was worthwhile or constructive. Specifically, they referred to the value of writing down their relationship observations, and of reviewing and reflecting together on the collection of tracked responses at the end of the exercise. Further, considering the introduction of the language of ‘turning towards’ and ‘turning away’ in the exercise, the most common finding in regard to receptivity among participants (40% of sample) pertained to using these very terms to describe their relationship incidents. It provided for participants a lens with which to see their relationship interactions and a vocabulary to think and speak about these. It may be that many participants’ receptivity to this language was facilitated by its experiential or embodied grounding in space. Lakoff & Johnson's (2008) discussion of ‘orientational metaphors’ includes their suggesting a general receptivity to such metaphors in that “Most of our fundamental [metaphorical] concepts are organized in terms of one or more spatialization metaphors” (p. 17).

Participants’ observing and understanding their relationship through the conduit of ‘turning towards’ and ‘turning away’ language, is also relevant to Wittgenstein’s concept of ‘language games’ (Cavell, 1962), which asserts that language is a crucial activity in relation to meaning-making. In Wittgenstein’s view, the meaning of a word is not fixed, but can take on any of a multiplicity of meanings depending on how it is used in language. Based on how the terms of ‘turning towards’ and ‘turning away’ were used in the Module 3 exercise, including in reviewing and discussing their tracked responses, both partners came to have a new way to construe and mutually understand their relationship interaction. Consider that depending on the situation, a participant’s speaking of ‘turning towards’ their partner refers to different (yet related) actions, for example: responding to the other’s ‘bids’ (Gottman, 2011) for company, verbalizing appreciation to partner, sharing what one is thinking or feeling, asking a question to

learn about partner's perspective, smiling towards partner, and so forth. In this dynamic view of language, couples generated meanings through participating *in* the 'turning towards/away' language. We interpret participant reports as highlighting the strong interconnection between language and action in that participants were acting with and through the lens/vocabulary of 'turning towards/away'.

In the current study, participants attended to their own behaviour or the behaviour of their partner in the context of their relationship. Correspondingly, there were a variety of engagement processes focused on the self or partner (in relationship), such as noticing one's own unfavourable behaviours. However, by attending to their own or their partner's moment-to-moment behaviours, participants' accounts revealed engagement processes in a way that framed both partners' together, rather than more focused on either partner or self, independent of the other. Attending to self in relation to partner (the relationship) is not unexpected as one partner's turning toward or away necessarily involves the other partner in context, so participants may relate their own action to their partner's perspective or action. Participants' attending to their relationship in this manner is reminiscent of Acitelli's (2002) concept of relationship awareness, which refers to a "person's focusing attention on interaction patterns—comparisons or contrasts between partners in the relationship" (p. 96) and includes awareness of the relationship as a whole. Our qualitative findings suggested that the exercise, by prompting participants to attend to their relationship, had in turn facilitated their further thinking and speaking about their relationship – both of which, according to Acitelli (2002) are a "manifestation of relationship awareness" (p. 96). Comparably, feedback from participants in the present study indicated that the exercise prompted partners to dialogue about their relationship. Our study speaks to the value of partners taking a 'bird's-eye view' or meta-perspective on their relationship, as several

participants expressed they enjoyed or ‘got something’ out of the ‘debrief portion’ in which participants reviewed together and, importantly, discussed the collection of their tracked responses. Although participants in our study were not asked to attend to a relational conflict, multiple participants reported attending to relationship problems, gaining insight into them, and/or approaching them in a constructive fashion rather than avoiding them. This finding is in keeping with the growing body of empirical work supporting how shifting the object of conversation from one partner to the relationship can help ameliorate conflict. To illustrate, a study of 120 married couples by Finkel et al. (2013) found a positive effect of a writing-based intervention, wherein participants reappraised an interpersonal conflict from a third-party perspective, on marital quality over time, and this association was mediated by reduced conflict-related distress. Additionally, in a large-sample study of couples coping with lung cancer, Badr et al. (2008) found that couples’ amount of ‘relationship talk’ in the context of cancer was associated with decreased distress and increased marital adjustment across time.

With respect to the value of enhancing relationship awareness of couples coping with BC in particular, Manne et al. (2014) found that partners who scored higher in cancer-specific relationship awareness generally enacted more talking about their relationship. Cancer-specific relationship awareness, in brief, refers to one’s focusing their attention on their relationship and thinking about how they may maintain their relationship quality and coping as a couple (or a ‘team’) in the context of cancer (Manne et al., 2014). Although participants in the present study were asked to attend to their relationship interactions in general instead of in the cancer-context specifically, one participant conveyed an insight that makes clear her cancer-specific relationship awareness: “I learned that [partner’s name] is really trying to be supportive as well, I am trying to be supportive. The cancer has not just affected me, it has affected us” (215, F). Her insight

speaks to the notion of a couple's mutual identity or sense of 'we-ness' (Ahmad et al., 2017; Fergus, 2015).

Our findings also demonstrated that engaging interpersonal awareness might contribute to changes in how one knows their relationship, which we believe contributes to one's 'relational schema', a concept denoted by Baldwin (1995) with respect to schemas and cognition in close relationships. 'Relational schema' describes one's representations of their self, and their partner, in their experiencing of the relationship. Such representations take an 'if-then' structure and stem from typical interaction patterns between self and partner. In an examination of social psychological research on relational schemas that uses methods informed by learning theory, Baldwin (2006) showed that particular contextual cues activated relationship schemas, and that new associations between cues and part of a relationship schema can be experimentally affected. In the context of our study, paying attention to how oneself and their partner interact in the relationship can lead to new observations about the relationship, which in turn can support or challenge existing relational schemas and can, for instance, revise them to be more flexible or differentiated. Regarding one participant who indicated insight into her relational schema, she wrote: "We talk a lot, say thank you for when we see each other go out of our way to make the other happy, we cuddle for intimacy and support..." (207, F).

We identified a variety of engagement processes in Module 3 that appeared to pose potential opportunities for strengthening of partners' relationship quality or bond through changes in how they attended, learned, and acted in relationship. Two such sub-themes, 'Avenues for togetherness' and 'Acting to bring us closer,' represented how participants learned and acted, respectively, to turn towards their partner. Notably, one-third of participants conveyed their motivation to turn towards their partner more often. The relationship-enhancing potential of

turning towards behaviours was supported by one longitudinal study of couples which found that enacting more turning towards behaviours in the relationship was associated with greater longevity of the relationship (Gottman, 2011). Additionally, there is a growing foundation of literature with respect to couples coping with cancer, showing a potential association of degree of supportive or engaging-together behaviours with relationship satisfaction (e.g., (Hagedoorn et al., 2011)).

One sub-theme, ‘Slowing down my thinking in relationship,’ revealed a possible route through which relationship mindfulness in Module 3 may prompt participants to think about and engage more (or more consciously) in turning towards their partner. A sizable proportion of participants in our study reported recognizing their having interacted with their partner less attentively in the past and/or stepping back from rote relating to observe or examine their relationship more carefully, often influencing insight or acting with the intention of closeness. As one participant expressed: “I would like to turn toward each other more often. We just rush thru days, busy with work and [son’s name], our son. I don't make time for myself, which follows I don't make time for us as a couple very often” (205, F). The value in slowing down one’s processing may lead to partners becoming more consciously responsive and less reactive in their relationship. For instance, a longitudinal study of 58 couples coping with colorectal cancer had measured three components of responsiveness (understanding, validation, caring), of which, interactions between patient’s need for emotional expression and each partner’s level of understanding and validation predicted level of the patient’s depressive symptoms, above and beyond the effect of relationship satisfaction (Dagan et al., 2014).

Given that turning towards behaviours are generally relationship enhancing, there was a prominent pattern of partners focusing on the ‘good’ in their relationship (indicated by 40% of

participants), as opposed to focusing on the negative. They appreciated the many ways in which they showed care for each other both verbally and non-verbally. A subset of participants reported that emphasizing the good held constructive value for their relationship, including their realizing they took specific acts of turning towards in their relationship for granted prior to undertaking the exercise. A focus on the 'good' is consistent with empirical literature showing how recognizing or a 'counting of one's blessings' may be related to positive emotion and well-being. For example, Emmons & McCullough (2003) conducted a series of three experimental studies that, together, lend support for a possible positive association between level of gratitude and positive affect or optimism. Research further suggests gratitude can facilitate relationship maintenance in intimate relationships (Gordon et al., 2012). These results supported a reciprocal relation between both partners' attending to the 'good' in that one participant's level of feeling appreciated *by* their partner was positively related to participant's feeling appreciative *of* their partner. The evolutionary influence of perceptual biases to threatening cues has been documented (LoBue & Rakison, 2013), and we interpret the focusing of many participants on the 'good' in their relationship as a possible way to counter-act or counter-balance such negative perceptual biases. Besides generally attending to the 'good,' another prominent pattern across participant accounts pertained to participants' recognizing that *small* acts/gestures of care were a clear avenue to bring partners closer together (indicated by almost one-third of participants). As one participant put it, "This exercise made me think about how small, seemingly insignificant behaviours/events can add up to affect the strength and happiness of the relationship" (331, F). Moreover, within this sample, positive appraisal of the 'small caring acts' led to an interest in enacting more of such 'small turning towards' behaviours. Related to participants' noticing and recognizing value in seemingly small verbal or non-verbal acts, with respect to non-verbal acts,

one study (n = 255 undergraduate students) asked participants to provide possible reports of situations in which a non-verbal cue (e.g., facial expression), by their self or another person in a relationship, had introduced a noticeable change in the relationship (Docan-Morgan et al., 2013). Participant reports reflected changes classified into four groups: relational, perceptual, affective, and behavioural. Interestingly, participants' judgement of the non-verbal cue's valence was associated with their judgments of their self, partner, or respective relationship with the person involved in the event.

Implications and Potential Future Research Directions

The present thesis holds implications for online mindfulness-based couple interventions. First, while we cannot make inferences in our study about the participation of solely one partner and how it may influence the other partner and their relationship, our qualitative results reflect positive, potentially relationship-enhancing experiences regarding partners learning from each other's mutual participation. Further, our findings related to the theme 'Receptivity to exercise' indicated different factors that may impede or facilitate participants' engagement with aspects common to online mindfulness-based couple interventions as well as aspects specific to the Module 3 exercise. In addition to asking participants to practice mindful awareness of their own and their partner's behaviour, what is uniquely interesting about this exercise is that mindfulness is enacted through the framework of turning towards and away behaviours. The findings support the potential to add this 'turning towards/away' framework to future online couple-based mindfulness interventions to further examine its influence on relationship outcomes. In the context of couples coping with cancer, our study showed that a mindfulness-based couple intervention using the 'turning towards/away' framework could be completed successfully by

young women with BC and their male partners, with much (but not all) of the present sample having expressed positive appraisal or utility of the exercise.

To examine more closely the relation between couples' processes involved in Module 3 exercise engagement and change in RDAS score, one possible future direction would involve developing a coding system based on participant feedback and specifically the themes arising from this analysis, to derive quantitative scores of the degree of 'engagement process' of each participant's language data involved in the present analysis. These scores, quantized from language accounts (Sandelowski et al., 2009), would function as a proxy measure of engagement processes that is closer to participants' experiences than predictors in the current analysis. Such scores could be used as a predictor in a linear mixed model regression analysis with the outcome of change in RDAS score. In another potential project, given participants' expressions of the value and utility of the Module 3 exercise, a brief couple mindfulness intervention involving couples tracking of turning towards and turning away behaviours could be developed and studied, but with the advantage of proximal outcome measures (i.e., collected before and immediately after completion of this couple mindfulness intervention), as well as administering of validated measures of intervention engagement to incorporate as predictors in regression analysis (vs. single item predictors).

Limitations

There are several limitations to the present investigation. First, the primary measure of relationship adjustment was collected before and after the whole intervention, but not collected immediately after Module 3. Consequently, the relationship adjustment score is influenced by participation in *all* modules in the intervention. In other words, the effect of Module 3 participation on relationship adjustment scores is not isolated. As the qualitative and quantitative

data collected from participation in Module 3 are ‘closer’ in time to the actual experience of engaging in Module 3 (vs. outcome collected after completion of full Couplelinks program), another way of discerning a possible connection between exercise engagement and improved relationship adjustment was to examine qualitative data collected upon exercise completion. We also examined the qualitative data for patterns in engagement processes within subsets of couples whose perception of benefit and relationship adjustment change were both relatively high or low in the dataset. More generally, quantitative and qualitative data can be viewed as complementary in that qualitative findings have been used to complement and build upon quantitative findings, but our qualitative analysis does not account for or address limitations in statistical analysis.

Second, one limitation concerns the possibility that participants who expended substantial effort in the Module 3 exercise may have also allocated substantial effort to the rest of the modules, thereby possibly influencing their improved RDAS change score upon completion of the whole Couplelinks program. Our study did not control for such couples who may have generally ‘given it their all’ to most or all modules. Considering the two aforementioned limitations, we cannot determine whether the quantitative analysis was mainly influenced by a ‘Module 3 effect’ and/or a ‘couple effect’.

Third, given that two predictors in *Analysis I* were scored on a single Likert scale variable (indices of ‘liking’ and ‘benefitting’), there was a relatively high variability of these variables in the regression models, which increased the likelihood of a Type I error. Fourth, with respect to quantitative analysis, a limitation is that ‘sex’ and ‘patient vs. caregiver’ were not analyzed as independent variables because they are confounding in the present sample. Third, statistical power is low due to the small sample size ($n = 30$ couples). Finally, given that the qualitative data were ‘thin’ in the sense that they were based on a brief online questionnaire administered following Module 3 completion and not, for example, interviews, the themes

derived from themes and their potential for richness have been limited by the depth of the dataset.

Conclusion

Taken together, engagement in a self-in-representation mindful awareness exercise by young women with BC and their male partners provided opportunities to potentially improve their relationship adjustment. Couples' degree of effort involved in recording relationship observations as well as perception of the exercise benefit seemed to each trend towards a small association with improved relationship adjustment. These small statistical associations related to language reports of extent of effort involved as well as reports of how the exercise broadly led to enhancing participants' relationship. Their accounts further revealed that key to couple receptivity to the exercise was its introducing a lens or vocabulary through which they filled these terms with various meanings specific to the idiosyncratic relationship interactions they observed. In the process of acting with and through the shared language of 'turning towards and away,' participants reported experiencing a range of possible relationship-enhancing changes in their attending, knowing/understanding, and acting in the relationship. As participants were asked to attend to relationship interactions and to track them, they reported slowing down how they pay attention in their relationship. Particularly prominent was participants' learning of the various ways in which they can act to 'get closer together' with their partner, as well as participants' corresponding enforced motivation to turn towards their partner more often. While each participant attended to both their own unfavourable and favourable behaviours in relationship and learned how those affected their partner and the relationship, the exercise prompted many participants to focus on the 'good' in their relationship, especially through realizing the significance of seemingly small acts of care enacted by each other. Our results

supported a possible link between mindfulness of relationship interaction and general relationship enhancement in a sample of young women with breast cancer and their male partners, with many participants having positively appraised the exercise according to language accounts. Because engaging in this self-in-representation observation exercise may influence an enhancing of relationship, it may further influence alleviation of couple distress associated with BC as well as influencing an improvement in couples' process of coping with BC.

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