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We are in this together – Aren't we?

Congruence of Common Dyadic Coping and Psychological Distress of Couples facing Breast Cancer

Running title: CONGRUENCE OF COMMON DYADIC COPING

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Abstract

Objectives: Breast cancer (BC) can be understood as a we-disease, which affects the couple as a unit and requires coping as a unit (e.g., *common dyadic coping*, CDC). However, partners can be incongruent in their perception of CDC, for example due to misunderstandings, lack of mutuality or conflict, which may likely be associated with greater distress. Thus, this paper examines the effect of CDC congruence on individual psychological distress in cancer patients and their partners.

Methods: Seventy mixed-sex couples in which the woman had non-metastatic BC completed self-report questionnaires at two weeks, three months, and one year after cancer surgery. *CDC congruence* measured the difference between patients' and partners' CDC perceptions, while controlling for CDC itself.

Results: Multilevel modeling showed negative associations between couples' CDC and psychological distress. Beyond this effect, female patients' psychological distress was associated with CDC congruence with an interaction showing that psychological distress was greater when couples were congruent with low rather than a high CDC.

Conclusion: Less congruence was associated with greater psychological distress in BC patients but not their male partners - especially if the couple reported low CDC. Health professionals should identify and address diverging perceptions, so that additional distress can be minimized for BC patients.

Keywords: breast cancer, cancer, congruence, couples, dyadic coping, oncology, psychological distress

Background

A breast cancer (BC) diagnosis may create substantial psychological distress in women and their partners [1]. As the global prevalence of BC is rising [2], more couples experience distress over a significant period of time [3]. Within close relationships, psychological distress can spill over from one partner to the other [4]. As defined by the Systemic-Transactional Model (STM) [5], distress affects both partners directly and indirectly because of their interdependence [6]. Furthermore, the illness negatively affects not only patients (e.g. fatigue, insomnia, psychological distress) [7], but also their partners, who experience significant caregiver burden [8]. Therefore, BC can be understood as a shared stressor.

We-Disease and common dyadic coping

Shared stressors affect couples as a system rather than individuals [9]. One couple coined the term "we-disease" in a study of ten couples facing non-metastatic BC [10]. The two major parts of a we-disease are a shared appraisal of the disease ("It is not your disease, it is our problem") and shared efforts to cope with the disease ("We deal with it together"). Couples also react as a system. Shared illness appraisals are linked with collaborative coping, which entails working together as a team and pooling resources to solve problems together [11].

The STM defines collaborative coping as common dyadic coping (CDC), which occurs when both partners are feeling stressed [5]. In the context of cancer, CDC would be characterized by shared information seeking, and shared decision-making and planning, exchanging worries, and efforts to calm down. The agent of these coping behaviors is not one partner but the couple. Different from supportive or delegated dyadic coping, where one partner provides support to the other, CDC represents shared dyadic coping of shared stress. Collaborative coping strategies have been shown to be particularly effective for couples' adaption to cancer [12]. In a sample of 538 patients assessed during the first months after BC

surgery, CDC outperformed all other forms of dyadic coping regarding psychological distress [13].

Congruence in coping perceptions

Although collaborative coping such as CDC is important for couples' adaptation to cancer [13,14], partners may differ in their perceptions of CDC. Research on healthy couples shows that perceptions of support provision and reception are often incongruent [15]. However, no study has examined congruence in CDC and we do not know it role in the context of cancer management.

Congruence can be conceptualized in two ways. One conceptualization is the *similarity* of both partners' individual coping (i.e., they use the same coping strategies, e.g., rumination). Similarity of individual coping strategies has been associated with higher marital satisfaction among couples with chronic illness [16]. However, couples facing multiple sclerosis, showed *greater* depressive symptoms when showing more similar individual problem-focused coping efforts [17]. Therefore, complementary rather than similar individual coping strategies may be beneficial [18]. For example, if one partner avoids information seeking about the illness while the other applies this strategy, this incongruent coping may be effective because the avoidant person knows that the partner gets the needed information.

A second conceptualization of congruence is the degree to which partners agree on how they cope dyadically, known as *perceptual congruence of dyadic coping* [19]. Among healthy couples, partners who report greater congruence in their perceptions of dyadic coping showed greater relationship satisfaction [19,20] but not higher individual well-being [20]. To our knowledge, only two studies have analyzed the role of perceptual congruence among couples facing cancer. The first study [21] found associations of marital satisfaction but not psychological distress with perceptual congruence of patients and theirs partners on spousal support provided by the partner to the patient (not the other direction). The second study found significant but unexpected associations of psychological distress with congruence of

support provision by patients and partners (in both directions) in couples facing blood cancers [22]: Congruence in dyadic coping was associated with greater psychological distress among patients and, to a lesser extent, among their partners.

For the first time, we examine CDC congruence, which we define as the degree to which both partners agree on their CDC. As the couple is the agent, CDC congruence measures both the similarity of the couple behavior and the agreement of both partners on the couple behavior.

The current study

The current study examines how CDC itself and CDC congruence is predictive of psychological distress among mixed-sex couples three time points after BC surgery. We hypothesize that greater CDC congruence will be associated with lower psychological distress for female patients and their male partners at all three time points, beyond the beneficial effect of CDC itself. To examine whether the direction of the congruence plays a role (i.e., who perceives greater CDC), we use difference scores as linear and curvilinear predictors. Furthermore, we analyze whether there is an interaction between CDC and CDC congruence. We hypothesize that congruent couples with frequent CDC will show lower psychological distress than congruent couples with infrequent CDC.

Methods

Recruitment

This study is a part of a larger study on couples' adjustment to BC [23]. Couples were recruited at the Breast Cancer Centre of the University Hospital of Lausanne (Switzerland). Participants were included in the study if the patient had a diagnosis of non-metastatic BC that required surgery, and could read and speak French. This was a convenience sample without prior power calculation. For these secondary analyses, data of patients with participating partners recruited during the predefined time were used. Of 167 eligible patients, 125 (75%) agreed to participate. From the 125 participating patients, 98 (78%) said that they

were in a stable relationship with a male partner and 70 of those partners (71%) agreed to participate. These mixed-sex couples constitute the sample for the analyses. Patients with responding vs. non-responding partners did not differ in any demographic, medical or main study variable but relationship satisfaction.

Procedure

Couples were recruited during a routine consultation with a nurse one to two weeks before the scheduled surgery. Partners were invited directly during the consultation if present or asked by the patients. Participants signed consent forms. Patients and partners were asked to complete self-report questionnaires at home, independently, at three times: two weeks (T1), three months (T2) and one year (T3) after surgery. Self-addressed stamped envelopes were provided, with instructions to return questionnaires within a month. Three couples returned T1 questionnaires over 12 weeks after surgery, so we used their T2 and T3 questionnaires only. The Ethics Committee of the State of Vaud (Switzerland) approved the study (protocol number 228/11).

Measures

Psychological distress was measured with the Brief Symptom Inventory (BSI-18; [24]), which assesses symptoms along three dimensions (depression, anxiety, and somatization). Items are rated on a five-point Likert scale from 0 (not at all) to 4 (very much). A summed score was computed from all 18 items (Cronbach's α: patients: T1 = .91; T2 = .94; T3 = .91; partners: T1 = .87; T2 = .81; T3 = .81).

CDC was measured with the CDC subscale of the Dyadic Coping Inventory [25], which focuses on ways a couple copes with stressors that affect both partners. Participants respond on a 5-point Likert scale from 1 (very rarely) to 5 (very often) on five items such as 'We try to cope with the problem together' or 'We help one another to put the problem in perspective' (Cronbach's α patients: T1 = .82; T2 = .83, T3 = .85; partners: T1 = .85; T2 = .87; T3 = .78). To obtain a dyadic index for CDC, we used the average of patients' and partners' CDC.

CDC congruence was measured with the average differences between patients' and partners' ratings on each of the five items. Congruence scores closer to zero indicate higher congruence. For example, if the patient says that they often help each other relax when they're both stressed (4) and the partner says the same (4), they show the smallest possible difference (0). If this is the case for all items, the average difference is 0, the highest possible congruence score. If the patient says they very often help each other relax (5), but the partner says that they very seldom do that (1), they received the lowest possible congruence score with a positive value (4), which indicates that the female patient perceives more CDC than her male partner.

Relationship satisfaction, a covariate, was measured with the Relationship Assessment Scale (RAS) [26] with seven items on a 5-point Likert scale from 1 (low satisfaction) to 5 (high satisfaction) (Cronbach's α patients: T1 = .93; T2 = .94; T3 = .99, partners: T1 = .85; T2 = .90; T3 = .92).

Socio-economic status (SES), another covariate, was measured with the weighted cross-product of the level of education (4 times 1 (university/higher education) to 7 (lower than mandatory education)) and profession (7 times 1 (executive/manager) to 7 (unqualified employee)) categorized into lower (>59), lower-middle (50-59), middle (40-49), upper-middle (30-49) and upper SES (1-29) based on the Hollingshead index [27].

Statistical analyses

Given the nested structure of the data (time in person and person in dyad) we used the multilevel package (nlme) version 2.6 [28] in R Studio version 0.99.903. A two-level approach was chosen [29] where level 1 represented person's variability over time and level 2 variability between couples. The double-random-intercept-and-slope model did not fit the data better than the double-random-intercept model (p = .996). Accordingly, we used the latter and only reported fixed effects. Estimates reflect correlations at each time point controlled for the nested structure of the data.

We disentangled the effect of CDC congruence from CDC by using both as predictors. For interpretability of the estimates, we choose meaningful zero points [29] by mean-centering (CDC, CDC congruence, relationship satisfaction, SES), dummy coding (chemotherapy, radiotherapy, hormonal therapy, mastectomy) and time starting at 0 (with intervals in months of 0.5 [T1)], 3 [T2] and 12 [T3]). Age and time since surgery/diagnosis were not included as they showed no significant associations with psychological distress at any time point.

We created an interaction term by multiplying the mean-centered CDC and CDC congruence scores. To analyze curvilinear associations, we used the squared CDC congruence score as predictor. If the squared predictor showed significant associations, congruence would be associated with psychological distress independent from direction (linear predictor = effect of *who* perceives more CDC). Model comparisons were made starting from the simplest model with only random intercepts (Model 0), adding the predictors time (Model 1), CDC (Model 2) and CDC congruence as a linear (Model 3) and a squared predictor (Model 4), and finally, the interaction term (Model 5).

Through model comparisons using the chi square test, Model 5 fit the data best. Therefore, we report findings of Model 5 only (see electronic supplement for all models). To interpret the interaction effect, we conducted a response surface analysis [31]. The unstandardized coefficients from our double-intercept multilevel were added to an excel sheet available online [31], which created a three-dimensional figure (Figure 1), with a line of congruence (back to front corner) along which the effects of low CDC (back corner) versus high CDC (front corner) are visible. The second line shows the effects of direction on psychological distress, i.e., when partners (left corner) or patients (right corner) perceive higher CDC.

Results

Sample characteristics

Seventy couples completed questionnaires at T1, 63 (90%) at T2 and 58 at T3 (83%). As shown in Table 1, the sample was middle-aged, with mainly middle to upper SES and the majority of the sample was in a long-term relationship, married, and had children.

Most of the sample was diagnosed with invasive (vs. *in situ*) BC (83%), was Stage I or II, and had received a mastectomy (Table 1). At T1, 55% were receiving treatment (10% chemotherapy, 20% radiation, 25% hormonal therapy) and at T2, 72% (10% chemotherapy, 9% radiation, 53% hormonal therapy). At T3, one woman was being treated with radiation, none with chemotherapy, and 74% with hormonal therapy.

Descriptive statistics of CDC and bivariate correlations

Patients' and partners' CDC ratings did not differ significantly at any time point (paired t-tests T1: $t(64) = -0.08$, $p = .934$; T2: $t(54) = -0.85$, $p = .400$, T3: $t(49) = 2.11$, $p = .065$). Beta-coefficients of growth curve analyses (Table 2) showed that psychological distress decreased, while CDC and CDC congruence did not change over time.

Bivariate correlations showed no linear correlations between CDC congruence and any of the main study variables. When using absolute differences, CDC congruence and CDC were correlated moderately positive at all time points (T1: $r = .398$, $p = .001$; T2: $r = .436$, $p = .001$, T3: $r = .297$, $p = .037$), which indicates relatedness yet reasonable independence.

CDC and psychological distress

There were significant negative associations of CDC with patients' and partners' psychological distress (Table 3, row 3). Thus, the first hypothesis was confirmed.

CDC congruence and psychological distress

The second hypothesis expected CDC congruence to be negatively associated with psychological distress and yield effects beyond those of CDC itself. As predicted, CDC congruence showed significant curvilinear associations with patients' psychological distress

as visible by the significant coefficient for the squared CDC congruence predictor (Table 4, row 5). For patients, lower differences between patient and partner's CDC ratings meant lower distress and distress increased with increasing distance from zero (lower congruence) in either direction. In contrast, CDC congruence was not significantly associated with partners' distress neither in a linear nor curvilinear manner.

Interaction between CDC and CDC congruence

The third hypothesis examined the interaction of CDC and CDC congruence. Congruent with our hypothesis, congruence was more beneficial on high compared to low CDC as visible by the significant beta-coefficient of the interaction predictor of CDC times CDC congruence (Table 3, row 6). As shown in Figure 1, alongside the line of congruence, female patients showed lower psychological distress when they agreed on high CDC (back corner) compared to low CDC (front corner). In contrast, partners only showed effects of high CDC itself (back corner), not CDC congruence.

Discussion

Consistent with earlier work on BC [10,13], patients and partners reported lower psychological distress when the couple engaged frequently in CDC. However, among patients, this effect was smaller and less robust than the effect of congruence. It is possible that the effects of CDC itself on psychological distress may differ along the cancer trajectory. As we were studying couples during the first year after cancer surgery, patients were dealing with treatable cancer; by T3 many had ended treatment and transitioned to survivorship. CDC may lose its importance over time, when couples cope with chronic but not life-threatening diseases such as multiple sclerosis or rheumatic arthritis [17,18], where disengagement and individual coping can become more important [32].

Patients' and partners' perceptions of how they are coping as a couple may differ, which, in turn, may influence psychological distress. In this study, high CDC congruence was related to lower psychological distress among female patients, but not their male partners.

This finding mirrors the positive associations between relationship satisfaction and perceptual congruence in healthy couples [19]. In contrast, congruence of dyadic coping has not been consistently associated with individual outcomes in healthy couples [20]. However, CDC differs from other forms of dyadic coping, as it assesses how the couple copes together rather than how partners support each other. CDC does not indicate whether one partner provides more CDC than the other or whether one partners' perception is more accurate than the others. Instead, CDC congruence assesses couples' agreement on how they cope as a couple.

Couples' agreement on their CDC appears to be beneficial for the female patients but not for their male partners. Among female patients, CDC congruence seemed to be more important than CDC itself. Uncoordinated or even conflicting dyadic coping might have a stronger toll on female patients than partners, as patients might be feeling a greater need to be emotionally and cognitively connected with their partner because of their illness but also their social or gender role. When female patients perceive that their partners are not "on the same page", distress may increase. Thus, a shared perspective may be more important for BC patients than for their male partner [33]. The only study that examined congruence in dyadic coping in the cancer context also found larger associations with patients' than partners' psychological distress [22]. It may be that partners use more protective buffering (not disclosing negative thoughts and feelings), which was found to be more detrimental to patients (two-thirds male) after stem cell transplantation [34]. Nonetheless, patients' showed lower distress when couples were congruent on high on CDC. While a study of couples with multiple sclerosis found congruence and dyadic coping itself to be independent constructs [17], they seem to be interdependent predictors for BC patients' psychological distress.

Study limitations

There are several study limitations. First, we cannot disentangle the effects of gender and patient-partner role, as all patients were female and all partners were male. CDC might be essential for male partners' adaption, which in turn affects female patients, who were found to

have a greater risk for poorer adjustment to cancer [35]. Furthermore, in studies of healthy couples, dyadic coping congruence mattered more for women than men [19,20]. And although gender differences in dyadic coping are usually small [36], they amplify under stress [9]. Accordingly, future research is needed to clarify the precise relationship between CDC, congruence, cancer and gender. Second, we focused on individual psychological distress as the outcome. Even though relationship satisfaction was included as a covariate, future analyses should examine in more detail the role of CDC congruence for relationship quality. Third, we may have selective bias in the sample. Those patients whose partner did not participate in the study reported lower relationship satisfaction than women whose partners agreed to participate. Unfortunately, selection problems are frequent when recruiting couples for clinical [37] and cancer research [38]. Forth, these are secondary analyses of a convenience sample for which no a priori power calculation was made. Post-hoc power analyses are hardly feasible due to a lack of existing programs for dyadic longitudinal models and because we do not have any existing literature to obtain reasonable estimates. Based on recent literature on the power struggles with multilevel data [39], we can only assume that we found effects despite our study being underpowered and acknowledge the need for replication.

The study has also several strengths. First, we examined dyadic coping among couples coping with recently diagnosed BC using a longitudinal design. This allowed for the analysis of psychological distress and CDC at a particularly important phase for BC patients and their partners, from surgery moving toward survivorship. Second, reports of CDC from both patients and partners were included in analyses, which allowed testing for congruence in a novel way. Third, we investigated not only CDC itself, but also CDC congruence, which was done for the first time.

Clinical implications

Cancer affects both members of a couple and both members of the couple need to cope with cancer as a unit. CDC might just be understood as a ‘we-coping’ that matches the ‘we-

disease'. Practitioners could foster CDC by first of all including patients and partners. Second, installing the concept of we-disease by describing cancer as a common problem for the couple rather than the patients. Third, congruent CDC can be fostered by first, measuring CDC as perceived by patients and partners using questionnaires or filmed conversations and second, discussing perceptions, intentions and needs of both partners. CDC can also directly be trained with elements of the couples' coping enhancement training [40]. Patients and partners should be part of conversations about distress and coping with cancer.

Conclusion

This study goes beyond including both partners by considering both partners' perceptions of CDC. When cancer is viewed as a shared disease by the couple, shared coping efforts are likely to be effective in reducing distress. At the same time, the members of the couple are individuals who may differ in their perceptions of their engagement in dyadic coping. Given our results, it matters for BC patients that couples agree, how they cope as a 'we'.

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Conflict of interest statement

The authors declare no conflict of interest with respect to the research, authorship and/or publication of this article.

Data availability statement

Data is available on request due to privacy/ethical restrictions.

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Table 1	
Sample characteristics	
	M (SD)
Age patients (years)	52.6 (11.7)
Age partners (years)	54.4 (12.7)
Relationship duration (years)	23.5 (16.8)
	N (%)
Married (yes)	43 (61.4%)
Children (yes)	40 (58.0%)
SES	
Upper	20 (28.6%)
Middle-upper	12 (17.1%)
Middle	22 (31.4%)
Middle-lower	8 (11.4%)
Lower	5 (7.1%)
	M (SD)
Weeks since diagnosis	13.0 (8.27)
Weeks since surgery	5.87 (3.50)
	N (%)
Mastectomy	48 (69%)
Lumpectomy	22 (31%)
Stage 0	12 (17%)
Stage I	27 (39%)
Stage II	21 (30%)
Stage III	9 (12%)
Chemotherapy (yes)	7 (10.8%)
Radiotherapy (yes)	14 (21.5%)
Hormonal therapy (yes)	18 (26.5%)
Mastectomy (yes)	38 (54.3%)
Note. SES = socio-economic status	

Table 2

Description of main study variables

	Individual psychological distress		CDC	
	Patients (female)	Partners (male)	Couple average	Couple congruence
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
T1	17.21 (11.90)	8.08 (7.54)	2.63 (0.74)	0.02 (0.79)
T2	15.12 (14.19)	4.40 (4.58)	2.61 (0.76)	-0.11 (0.92)
T3	13.42 (10.62)	4.65 (4.99)	2.51 (0.71)	0.20 (0.76)
β	-0.24*	-0.21**	-0.01	0.01

Note. CDC = Common dyadic coping, T1 = Time 1; T2 = Time 2; T3 = Time 3. β = unstandardized estimates of growth curve analyses. * $p < .05$, ** $p < .01$

Table 3

Psychological distress predicted by CDC and CDC congruence

	Patients (female)				Partners (male)			
	β	*SE*	*t*	*p*	*β*	*SE*	*t*	*p*
Intercept	21.81	3.44	6.33	<.001	7.89	1.81	4.36	<.001
Time	-0.30	0.11	-2.85	.005	-0.37	0.17	-2.21	.028
CDC	-2.72	1.30	-2.09	.037	-1.80	0.81	-2.24	.027
CDC congruence (linear)	2.10	1.02	2.14	.033	0.77	0.79	0.98	.327
CDC congruence (quadratic)	2.08	0.57	3.63	<.001	-0.62	0.45	-1.37	.172
CDC x CDC congruence	6.02	1.23	4.89	<.001	0.40	0.89	0.45	.657

Note. *β* = unstandardized estimates, SE = Standard errors, Fit Indices: -2 log likelihood = -962.82; Akaike Information Criteria = 1981.63; Bayesian Information Criteria = 2082.49.

Figures

Figure 1. Psychological distress predicted by CDC and CDC congruence. CDC = Common dyadic coping. Results of response surface analysis: Diagonal line from back to front corner shows line of congruence between male partners' and female patients' CDC perception. For female patients, psychological distress is higher the further away from the line of congruence the couple's perceptions are, independent whether male partners perceive higher CDC than female patients (left corner) or male partners perceive lower CDC than female patients (right corner). In case of congruence, psychological distress is higher when the couple is congruent with low CDC (front corner) than with high CDC (back corner). In male partners, psychological distress is only associated with CDC, independent from CDC congruence.