Psychological impairment in patients urgently referred for prostate and bladder cancer investigations: the role of trait emotional intelligence and perceived social support

Samuel G. Smith, Bruce Turner, Jhumur Pati, K. V. Petrides, Nick Sevdalis & James S. A. Green

Springer

Springer

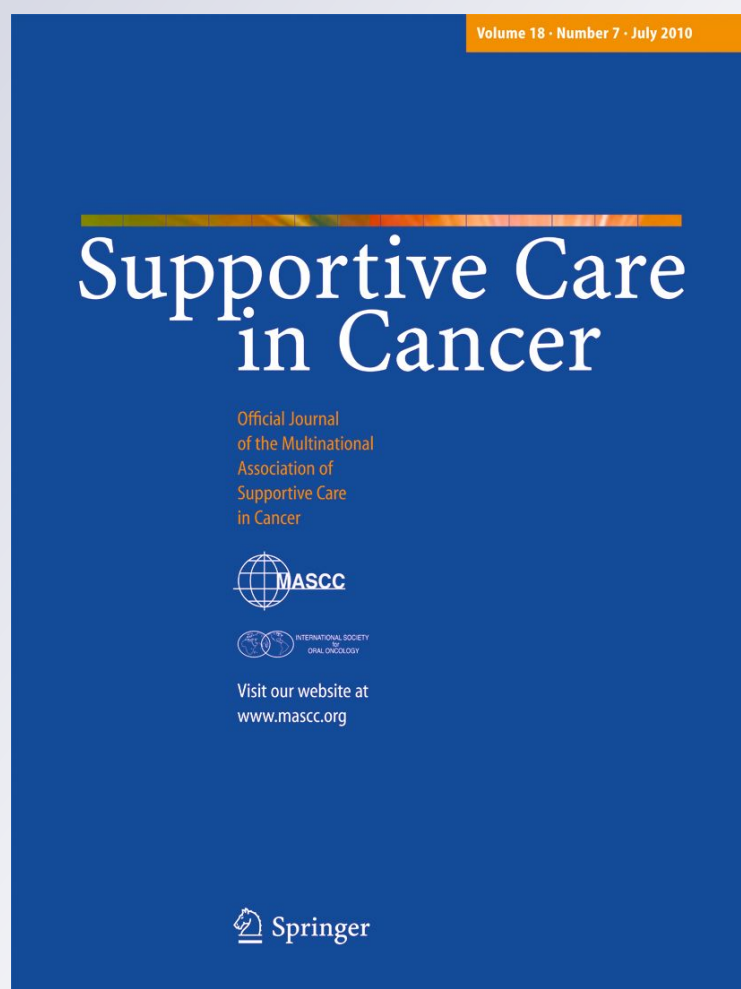ORIGINAL ARTICLE

Psychological impairment in patients urgently referred for prostate and bladder cancer investigations: the role of trait emotional intelligence and perceived social support

Samuel G. Smith · Bruce Turner · Jhumur Pati · K. V. Petrides · Nick Sevdalis · James S. A. Green

Abstract

Purpose We aimed to assess the influence of trait emotional intelligence (trait EI) and perceived social support on psychological impairment in a sample of patients urgently referred for prostate and bladder cancer investigations.

Methods Eighty seven patients (mean age=62.92; SD=13.23) were recruited prior to undergoing an investigative procedure for either prostate (n=45) or bladder (n=42) cancer. Patients completed measures of psychological impairment (state anxiety and worry) and 82 also competed measures of trait EI and perceived social support. Multivariate linear regression was used to predict the direct and moderated effects of trait EI and perceived social support on psychological impairment.

Results Thirty one percent of patients were considered to be suffering from clinical levels of state anxiety. Trait EI was a significant predictor of state anxiety, worry regarding the appointment, worry regarding the outcome of the appointment and perceived social support. In contrast, perceived social support was not predictive of psychological impairment on any measure and did not moderate the relationship between trait EI and psychological impairment.

Conclusions Patients urgently referred for urological cancer investigations are a group at risk of psychological impairment and may benefit from healthcare professional support. High trait EI was associated with less state anxiety, less worry and higher perceived social support. There were few consistent effects of perceived social support on psychological impairment. Consideration should be given to the inclusion of trait EI in future models of trauma adaptation.

Keywords Cancer · Social support · TEIQue · Emotional Intelligence · Anxiety · Worry

Introduction

Psychological distress and state anxiety are prevalent among patients diagnosed with either prostate [1] or bladder [2] cancer. Emerging research has also found increased anxiety during earlier stages of the prostate cancer pathway when patients are undergoing prostatic investigation in response to positive screening tests [3] or referrals due to elevated prostate-specific antigen tests or abnormal digital rectal exams [4]. This suggests that some patients in the pre-diagnostic stage may experience anxiety as a result of the processes involved in this part of the diagnostic pathway. However, little is known about the levels of psychological impairment experienced by pre-diagnostic bladder cancer patients. Although the majority of these patients will ultimately not be diagnosed with cancer, their psychological wellbeing at this stage of the pathway needs to be documented to ensure that it is not unduly affected by the small possibility of a cancer diagnosis. While not all pre-diagnostic patients will experience excessive levels of psychological impairment, further investigation of the predisposing and contributing factors

S. G. Smith (✉) · K. V. Petrides
University College London,
London WC1E 6BT, UK
e-mail: samuel.smith@ucl.ac.uk

B. Turner · J. S. A. Green
Whipps Cross University Hospital,
London E11 1NR, UK

J. Pati
Homerton University Hospital NHS Foundation Trust,
London E9 6SR, UK

N. Sevdalis
Imperial College London,
London SW7 2AZ, UK

is required in order that interventions can be designed for those that require them.

According to cognitive processing models [5], individuals experiencing traumatic events (e.g. a cancer diagnosis) employ cognitive coping strategies in order to bolster self-esteem and regain a sense of control. Such strategies include searching for meaning in the situation, comparing them-selves to others in less favourable situations and reinterpret-ing negative information in positive ways. As noted by social-cognitive processing (SCP) theory [6, 7], such cognitive processing can be assisted by the presence of supportive interpersonal relationships (e.g. family, friends and significant others [8]) or the absence of socially constrained relationships, as this can promote suitable discussion and decrease rumination in relation to the trauma [9]. In turn, this can lead to more positive experiences following cancer diagnoses [10] and reduced psychological disturbance [6, 7].

Individual differences in the processing of trauma-related stimuli may also explain differences in adaptation under stressful circumstances. In particular, there has been increased interest in trait emotional intelligence (trait EI), which has been defined as 'a constellation of emotional self-perceptions located at the lower levels of personality hierarchies' [11]. Simply put, trait EI concerns people's self-perceptions of their emotional abilities. In experimental studies with non-patient populations, trait EI has been associated with increased initial responsiveness to negative affective stimulation [12], but also quicker recovery from it [13]. Higher trait EI may therefore encourage cognitive processing which in turn reduces psychological impairment caused by traumatic life events or experiences.

Trait EI may be particularly useful at promoting discussion among supportive others. For example, in a student sample, trait EI was linked to greater satisfaction with social relationships including more positive relation-ships with immediate family and fewer negative interac-tions with close friends [14]. Trait EI may be positively associated with perceptions of social support because emotions serve key communicative functions, such as conveying one's thoughts and feelings and appraising those of others [15]. Individuals with high trait EI who are better at self-regulating their feelings and at interpreting social cues can engage in more successful social relationships and are generally more readily accepted by others [7, 16].

At present, few studies have attempted to observe the associations between trait EI, social support and psycho-logical impairment within a cancer context. One notable exception is that of Schmidt and Andrykowski [17]. Using the Trait Meta-Mood Scale (TMMS) which captures certain specific aspects of trait EI, the authors observed that socially toxic environments (characterised by either high levels of social constraints or low levels of social support)

and low trait EI were independently related to increased distress in breast cancer patients. Furthermore, trait EI moderated the effect of the social environment on distress, such that individuals with high levels of trait EI were 'buffered' against the adverse effects of a socially toxic environment.

These findings suggest that not only does high trait EI enhance one's ability to cope with the emotional aspects of a trauma (e.g. a cancer diagnosis), but it also encourages the provision of social support from others and protects against the impact of poor social support. In light of this evidence, we examined the effects of trait EI and perceived social support on psychological impairment in a sample of pre-diagnostic prostate and bladder cancer patients referred for urgent investigation due to cancer-related signs and symptoms. High levels of trait EI and perceived social support were hypothesised to be associated with lower levels of psychological impairment. High levels of trait EI were also hypothesised to be associated with high levels of perceived social support. A moderated effect was hypoth-esised such that high trait EI was predicted to act as a 'buffer' in the relationship of low perceived social support with state anxiety and worry.

Materials and methods

Patients and procedure

Patients were recruited from two London hospitals prior to an appointment for either trans-rectal ultrasound of the prostate or flexible cystoscopy of the bladder. Patients were urgently referred via a 2-week pathway for cancer diagnosis due to presentation of signs and symptoms indicative of either prostate or bladder cancer. All prostate appointments were conducted within 'one-stop' clinics, thus patients were assessed using digital rectal examination, prostate-specific antigen testing and trans-rectal ultrasound within the same appointment. Patients attending for flexible cystoscopy participated either immediately prior to their investigation or prior to a preparatory clinic on the day of the investigation. An independent National Health Service ethics committee gave full approval to the study. One hundred and twenty nine patients were approached by one of the researchers (SS) in the waiting area of the clinic prior to their appointment. All patients who were urgently referred to one of the clinics were eligible for the study. However, due to limited time prior to their appointment, not all eligible patients were approached. Patients who agreed to participate in the research were asked to complete a consent form prior to completing the measures outlined below. Assistance was available from the researcher if the patient required help with reading or understanding the

questions. Eighty two (63.57%) of the patients approached provided complete data on all variables in the study.

Measures

State anxiety was assessed using the short form (six items) of the State-Trait Anxiety Inventory (STAI-SF) [18]. A mean score is calculated and multiplied by 20 to reflect the original scale whence the short form was derived [19]. Scores range from 20 to 80. A cut-off score of 44 was used to classify individuals as reaching clinical levels of state anxiety [1]. Cronbach's alpha in the present sample was 0.85.

Worry was assessed using two 100-mm visual analogue scales (VAS) [4]. The extremities were anchored at 'not worried at all' and 'extremely worried' in relation to the appointment and results of the appointment.

Trait EI was assessed using the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue-SF)[20]. The scale comprises 30 statements and provides valid, reliable and rapid assessment of individual differences in global trait EI [11, 20, 21]. Cronbach's alpha for global trait EI scores in the present sample was 0.87.

Perceived social support was measured using the Multi-Dimensional Scale of Perceived Social Support (MSPSS) [8]. This instrument comprises 12 questions and has been successfully used in cancer samples [22]. The scale yields a global score of perceived social support and subscale scores of perceived support from a partner or spouse (significant others), from immediate relatives (family) and from members of one's core network (friends). Cronbach's alpha in this sample was 0.94 for the total scale and 0.93, 0.89 and 0.93 for the 'significant others', 'family' and 'friends' subscales, respectively.

Demographic details including age, gender, ethnicity, education, marital status and employment status were also collected.

Statistical analyses

Descriptive and frequency statistics were produced in order to identify participants exceeding the state anxiety and worry thresholds. Analyses of variance and t tests were used to assess socio-demographic and clinical group differences in mean worry and state anxiety scores. Pearson product-moment correlations were computed between the key study variables. Trait EI, perceived social support (measured with all three subscales as well as the total score) and their cross-product (trait EI×perceived social support) were used to predict state anxiety and worry in moderated multiple regressions. All predictors were centred through mean score subtraction in order to prevent multicollinearity among the predictors [23]. Cases with fewer than 50%

missing data on the trait EI and perceived social support scales were imputed using the expectation maximisation method [24].

Results

The mean age of patients was 62.92 years (SD=13.23), with 44.2% in full or partial employment, 58.3% educated to the minimum age or less, 58.6% married or living with a partner, 59% of white ethnic background and 83.9% male. There were no significant differences between any socio-demographic group on any measure of psychological impairment. Furthermore, there were no significant differences between prostate and bladder cancer patients on any outcome measure. Although more bladder patients (35.7%) met the clinical threshold of state anxiety than prostate patients (26.7%), this difference was not significant. The two clinical groups were, therefore, collapsed and all analyses carried out on the whole sample.

Levels of psychological impairment

Mean state anxiety scores were considered high (mean= 40.96; SD=15.12), and 31% of the total sample reached clinical levels of state anxiety. Patients were significantly more worried about the results (mean=4.77; SD=3.14) than they were about their first appointment with a specialist [mean=4.14; SD=3.12; $t(86)=3.01$, $p<0.01$].

Relationship between trait EI, perceived social support and psychological impairment

Table 1 presents the correlations between the key study variables. State anxiety was positively related to both measures of worry. Trait EI was significantly correlated with all psychological impairment measures, as well as with perceived social support. High trait EI individuals experienced less state anxiety, less worry in relation to the results and less worry in relation to their first appointment. They also experienced greater social support overall, in particular from significant others and family. Perceived social support was not associated with any psychological impairment measure.

Table 2 reports the moderated multiple regressions with psychological impairment as the criterion and trait EI, perceived social support and their cross-product as the predictors. Trait EI was a consistent significant predictor of state anxiety and worry. The sub-scale of the MSPSS 'significant others' was a significant predictor of worry in relation to the results of the appointment. However, this was not in the predicted direction; thus, higher levels of perceived social support were related to higher levels of

Table 1 Correlations between the key variables in the study

	State anxiety	Worry—appointment	Worry—results	Trait EI	Total MSPSS	Significant others	Family	Friends
State anxiety	1							
Worry—appointment	0.699**	1						
Worry—results	0.601**	0.808**	1					
Trait emotional intelligence	−0.391**	−0.412**	−0.392**	1				
Total MSPSS	−0.131	−0.039	0.022	0.369*	1			
Significant others	−0.104	−0.044	0.107	0.361*	0.879**	1		
Family	−0.160	−0.025	−0.027	0.332*	0.866**	0.740**	1	
Friends	−0.015	−0.009	0.005	0.217	0.798**	0.480**	0.502**	1

MSPSS Multi-Dimensional Scale of Perceived Social Support

*$p<0.01$, **$p<0.001$

worry (see Table 2, model 1). Trait EI did not moderate the relationship between perceived social support and psychological impairment.

Discussion

Trait EI was found to be independently predictive of both state anxiety and worry, while there were few consistent effects of perceived social support in this sample of pre-diagnostic prostate and bladder cancer patients. Thirty one percent of patients reached clinical levels of state anxiety

and there were no significant differences between clinical groups in this respect. Levels of worry were greatest in relation to the results of the appointment, adding support to previous research findings [4]. The high levels of state anxiety in this sample are in line with previous research conducted with pre-diagnostic prostate cancer patients [3, 4], although, to our knowledge, this is the first study to assess the psychological wellbeing of patients prior to flexible cystoscopy.

Our findings suggest that trait EI is a strong predictor of psychological adaption in pre-diagnostic cancer patients. In this regard, our results are fully in line with a comprehen-

Table 2 Moderated multiple regressions with psychological impairment as the criterion

	State anxiety			Worry—appointment			Worry—results		
	B	SE	β	B	SE	β	B	SE	β
Model 1									
Trait EI	−0.248	0.068	−0.403**	−0.060	0.014	−0.469**	−0.065	0.014	−0.504**
Significant others	0.303	0.316	0.114	0.087	0.065	0.157	0.178	0.064	0.320*
Trait EI×significant others	0.020	0.011	0.196	0.002	0.002	0.086	0.002	0.002	0.082
Model 2									
Trait EI	−0.223	0.069	−0.362*	−0.057	0.014	−0.445**	−0.055	0.014	−0.424**
Family	−0.048	0.374	−0.015	0.072	0.076	0.109	0.077	0.077	0.117
Trait EI×family	0.009	0.014	0.074	−0.001	0.003	−0.041	0.000	0.003	0.008
Model 3									
Trait EI	−0.254	0.067	−0.409**	−0.059	0.014	−0.452**	−0.055	0.014	−0.427**
Friends	0.121	0.287	0.046	0.045	0.060	0.082	0.050	0.060	0.090
Trait EI×friends	0.021	0.014	0.161	0.001	0.003	0.044	0.001	0.003	0.045
Model 4									
Trait EI	−0.252	0.068	−0.408**	−0.061	0.014	−0.477**	−0.061	0.014	−0.479**
Social support	0.074	0.119	0.070	0.033	0.025	0.151	0.047	0.025	0.215
Trait EI×social support	0.008	0.005	0.191	0.000	0.001	0.053	0.001	0.001	0.063

SE standard error, *EI* emotional intelligence

*$p<0.01$, **$p<0.001$

sive meta-analysis by Martins et al. [25], who found that trait EI, and the TEIQue specifically, is a very strong predictor of mental health that should be included in future models of psychological adaptation to trauma.

SCP theory postulates that a socially constrained environment may prevent the cognitive and emotional processing that is required in order to adapt to a traumatic experience [6, 7]. Although we found no evidence to support the relationship between perceived social support and psychological impairment in this sample of pre-diagnostic cancer patients, perceptions of social support were strongly related to levels of trait EI, thus reinforcing the assertion that individuals high in trait EI are more adept than their low trait EI peers at attracting the support of others and at building social networks [14]. Our study suggests that emotion-related self-perceptions should be given full consideration when investigating social relationships in stressful circumstances.

The lack of any consistent associations between perceived social support and psychological impairment may be explained by the high levels of support that are often offered in the early stages of the cancer pathway. As the individual then continues through to diagnosis and the treatment stages, this support diminishes because they have fewer opportunities to engage in activities that encourage social interaction and emotional disclosure [26]. For example, an individual may receive high levels of social support during their initial diagnosis, but their continued absence from familiar social environments (e.g. work, family gatherings and social events) during and after treatment may reduce the potential for social engagement leading to a perception of low social support.

The one exception to the lack of association between perceived social support and psychological impairment was the finding that high levels of perceived support from 'significant others' (usually interpreted as a spouse or partner) was correlated with higher levels of worry in relation to the appointment. Although this was not in the predicted direction, it is an intriguing result that warrants further attention. One explanation may be that there was a high degree of spousal or partner distress as has been noted in a previous review of psychosocial adjustment in female partners of prostate cancer patients [27]. Given that 'significant others' are likely to be the primary relationship for older groups [28], the psychological wellbeing of the partner is likely to directly affect that of the patient. In support of this account, Banthia and colleagues found in a sample of recently diagnosed prostate cancer patients and their partners that when partners reported greater physiological arousal following a cancer diagnosis this directly affected patient-reported distress [28]. In dyadic relationships where both patient and spouse are struggling to adjust, perceived support

from a distressed partner may be less effective or even detrimental to psychological wellbeing [29].

Our study is not without limitations. Time restrictions prevented us from including a measure of social constraints in our design. Consequently, while our methodology was informed by SCP theory, we did not explicitly test all of its assumptions. Although some have observed strong correlations between social constraints and social support [17], Lepore has argued that they are two distinct constructs [30]. It is therefore conceivable that the MSPSS was not sufficiently sensitive as a measure of socially constrained environments, thus explaining why the interaction between trait EI and perceived social support did not reach statistical significance for either state anxiety or worry. In addition, the study was limited by its cross-sectional design and therefore we cannot know the causal direction of the observed associations or the duration of psychological impairment.

Our results suggest that patients attending for flexible cystoscopy and prostatic biopsy constitute groups at risk of psychological impairment and may therefore benefit from professional psychological support. Our finding that perceived social support was not predictive of psychological impairment in a pre-diagnostic population is intriguing and needs to be replicated in other pre-diagnostic cancer populations. The strong association between trait EI and psychological impairment suggests it may be a valuable construct to incorporate in models of psychological adjustment to trauma. Further testing of the relationship between trait EI and perceived social support may also lead to improvements in the provision of psychosocial support to cancer patients.

References

1. Korfage IJ, Essink-Bot ML, Janssens ACJW, Schroder FH, de Koning HJ (2006) Anxiety and depression after prostate cancer diagnosis and treatment: 5-year follow-up. Br J Cancer 94:1093–1098

2. Palapattu G, Haisfield-Wolfe M, Walker J, Brintzenhofeszoc K, Trock B, Zabora J et al (2004) Assessment of perioperative psychological distress in patients undergoing radical cystectomy for bladder cancer. J Urol 172:1814–1817

3. Macefield RC, Metcalfe C, Lane JA, Donovan JL, Avery KNL, Blazeby JM et al (2010) Impact of prostate cancer testing: an evaluation of the emotional consequences of a negative biopsy result. Br J Cancer 102:1335–1340

4. Awsare NS, Green JSA, Aldwinckle B, Hanbury DC, Boustead GB, McNicholas TA (2008) The measurement of psychological

distress in men being investigated for the presence of prostate cancer. Prostate Cancer Prostatic Dis 11:384–389

5. Taylor SE (1983) Adjustment to threatening events—a theory of cognitive adaptation. Am Psychol 38:1161–1173

6. Lepore SJ (2001) A social-cognitive processing model of emotional adjustment to cancer. In: Baum A, Anderson B (eds) Psychosocial interventions for cancer. APA, Washington, pp 99–118

7. Lepore SJ, Revenson TA (2007) Social constraints on disclosure and adjustment to cancer. Social Person Psychol Compass 1:313–333

8. Zimet GD, Dahlem NW, Zimet SG, Farley GK (1988) The multidimensional scale of perceived social support. J Pers Assess 52:30–41

9. Lepore SJ, Ragan JD, Jones S (2000) Talking facilitates cognitive-emotional processes of adaptation to an acute stressor. J Pers Soc Psychol 78:499–508

10. Lepore SJ, Kernan WD (2009) Positive life change and the social context of illness: an expanded social-cognitive processing model. In: Park CL, Lechnew SC, Antoni MG, Stanton AL (eds) Positive life changes in the context of medical illness. American Psychological Association, Washington, pp 139–152

11. Petrides KV, Pita R, Kokkinaki F (2007) The location of trait emotional intelligence in personality factor space. Brit J Psychol 98:273–289

12. Petrides KV, Furnham A (2003) Trait emotional intelligence: behavioural validation in two studies of emotion recognition and reactivity to mood induction. Eur J Pers 17:39–57

13. Sevdalis N, Petrides KV, Harvey N (2007) Trait emotional intelligence and decision-related emotions. Pers Indiv Differ 42:1347–1358

14. Austin EJ, Saklofske DH, Egan V (2005) Personality, well-being and health correlates of trait emotional intelligence. Pers Indiv Differ 38:547–558

15. Keltner D, Haidt J (2001) Social functions of emotions. In: Mayne T, Bonanno GA (eds) Emotions: current issues and future directions. Guilford, New York, pp 192–213

16. Mavroveli S, Petrides KV, Sangareau Y, Furnham A (2009) Exploring the relationships between trait emotional intelligence to objective socio-emotional outcomes in childhood. Brit J Educ Psychol 79:259–272

17. Schmidt JE, Andrykowski MA (2004) The role of social and dispositional variables associated with emotional processing in adjustment to breast cancer: an Internet-based study. Health Psychol 23:259–266

18. Marteau TM, Bekker H (1992) The development of a 6-item short-form of the state scale of the Spielberger State Trait Anxiety Inventory (STAI). Brit J Clin Psychol 31:301–306

19. Spielberger CD, Goruch I, Lushene RE (1970) Manual for the state-trait anxiety inventory. Consulting Psychologists, Palo Alto

20. Petrides KV, Furnham A (2006) The role of trait emotional intelligence in a gender-specific model of organizational variables. J Appl Soc Psychol 36:552–569

21. Cooper A, Petrides KV (2010) A psychometric analysis of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue-SF) using item response theory. J Pers Assess 92:449–457

22. Cicero V, Lo Coco G, Gullo S, Lo VG (2009) The role of attachment dimensions and perceived social support in predicting adjustment to cancer. Psycho-Oncol 18:1045–1052

23. Aiken LS, West SG (1991) Multiple regression: testing and interpreting interactions. Sage, Newbury Park

24. Tabachnick BG, Fidell LS (2007) Using multivariate statistics. Pearson Education, Boston

25. Martins A, Ramalho N, Morin E (2010) A comprehensive meta-analysis of the relationship between emotional intelligence and health. Pers Indiv Differ 49:554–564

26. Bloom JR, Kessler L (1994) Emotional support following cancer—a test of the stigma and social activity hypotheses. J Health Soc Behav 35:118–133

27. Couper J, Bloch S, Love A, Macvean M, Duchesne GM, Kissane D (2006) Psychosocial adjustment of female partners of men with prostate cancer: a review of the literature. Psycho-Oncol 15:937–953

28. Revenson TA (1994) Social support and marital coping with chronic illness. Ann Behav Med 16:122–130

29. Banthia R, Malcarne VL, Varni JW, Ko CM, Sadler GR, Greenbergs HL (2003) The effects of dyadic strength and coping styles on psychological distress in couples faced with prostate cancer. J Behav Med 26:31–52

30. Lepore SJ (1992) Social conflict, social support, and psychological distress: evidence of cross-domain buffering effects. J Pers Soc Psychol 63:857–867