

Table S1 – Summary of data from 53 studies on informal pain-related social support published between 2000 and 2015 (August).

ID	Authors (year)/country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/Methods	Participants	SS Measures/ SS source	Main findings
1	Alschuler; Hoodin, Murphy, Rice, & Geisser (2011)/U.S.A. [1] <sup>1</sup>	TB- Fear-avoidance, operant and pain models MA – Investigate if: 1.the operant model (significant other solicitous or distraction responses) would be better predictor of physical activity than predictors associated with the fear-avoidance (catastrophizing, kinesiophobia, depression) and pain models (pain intensity and sensitivity).	Received SS: solicitousness and distraction (predictors)	Prospective/ self-report and observational	20 chronic low-back pain patients (55% women). Age (M=46.1; SD=9.35) Pain duration (M=3.4 years; SD=4.3)	West Haven-Yale Multidimensional Pain Inventory (WHYMPI): -solicitous and distraction scales  SS source: Spouse or significant other	-The composite measure of the operant model variables (including solicitous, distraction and punishing responses) was the only significant predictor of physical activity, accounted for 20% of its variance in a model that included fear avoidance and pain models. -Controlling for socio-demographic, pain and fear-avoidance variables, more spousal solicitous responses predicted less physical activity.
2	Boothby, Thorn, Overduin, & Ward (2004)/U.S.A. [3]	TB- Communal coping and operant models MA – Investigate if: 1.patient sex and catastrophizing were associated with received social support from spouse 2.patient sex moderated the relationship between catastrophizing and received social support from spouse 3.solicitousness was associated with negative pain outcomes	Received SS: solicitousness, distraction and general SS (correlates)	Cross-sectional/ self-report	62 adults with chronic pain (67.7% women) Age (M =47.6; SD=12.0) Pain duration (M=7.9 years; SD=9.9) Primary pain sites: multiple and low-back.	WHYMPI: -solicitous, distraction and general support scales  SS source: Spouse or significant other	-Patient sex did not have a significant main effect on received spousal responses nor significantly moderated the relationship between catastrophizing and spousal responses. -Catastrophizing was not significantly related with solicitous or distraction responses -Controlling for patient sex and punishing responses, solicitousness significantly and positively predicted pain severity, pain interference and general spousal support, but did not predict life control, affective distress or activity level.
3	Buenaver, Edwards, & Haythorhwaite (2007)/U.S.A. [4]	TB- Communal coping model MA-Investigate if: 1. Received solicitous responses from significant other mediate the relationship between catastrophizing and pain severity, interference and depression. 2. Pain duration and social support moderate the relationship between catastrophizing and received solicitousness.	Received SS: solicitousness (mediator and outcome)  Received SS: general social support (moderator)	Cross-sectional/ Self-report	1365 chronic pain patients referred to multidisciplinary pain treatment programs (57% women); Primary pain sites: low back and limbs. Age (M= 45.80; SD=13.9) Pain duration (M=4.8 years; SD=6.8)	WHYMPI: -solicitousness and general social support scales  SS source: Spouse or significant other	- After controlling for covariates (pain duration, severity, interference, race, marital status and education), there was no significant relationship between solicitousness and catastrophizing. - Pain duration moderated the association between solicitousness and catastrophizing; stronger positive association among patients with shorter pain durations. - General received SS moderated the association between catastrophizing and perceived punishing responses; a positive association was strongest at lower levels of received SS. -At lower levels of received SS, the association between catastrophizing and depression/pain interference was partially/fully mediated by perceived punishing responses; at high levels of received SS, the mediations were not significant.
4	Campbell, Jordan, & Dunn (2012)/U.K. [5]	TB- Biopsychosocial model MA- Investigate if: 1. key constructs of relationship quality (cohesion, consensus, satisfaction) are associated with pain and disability. 2. spousal solicitousness partially accounts for the associations between relationship quality (cohesion, consensus, satisfaction) and pain and disability.	Received SS: solicitousness (mediator)	Cross-sectional/ Self-report	174 individuals with long term chronic low-back pain (61% women). Age (M = 54.33; SD=7.97)	WHYMPI: solicitousness scale  SS source: Spouse or significant other	- Solicitousness was positively associated with all relationship constructs - Relationship constructs did not significantly predict pain intensity or pain disability. - Among patients with low depression scores, higher solicitousness predicted higher pain disability, above and beyond relationship quality constructs; these relationships were no longer significant among patients with high depression scores. Also, regardless of one’s depression

<sup>1</sup> Corresponding number in the paper’s reference list

3. depression symptoms partially accounted for the associations between relationship quality and pain and disability.

score, solicitousness did not predict pain intensity.

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5	Cano (2004)/U.S.A. [8]	TB: Communal coping model and cognitive perspectives on catastrophizing MA – Investigate if: 1. pain duration moderates the relationship between catastrophizing and spouse support responses 2. distress mediated the previous moderation effect.	Received SS: solicitousness and distraction (outcomes)	Cross-sectional/ Self-report	96 married individuals with musculoskeletal chronic pain all with organic diagnosis (osteoarthritis, degenerative disc disease, scoliosis) (59.8% women); Primary pain sites: low back and knees. Age (M=53.34; SD=13.82) Pain duration (M= 9.56 years; SD=10.96)	WHYMPI: solicitousness and distraction scales  SS source: Spouse	-Higher pain catastrophizing predicted higher perceived solicitous responses, but only among individuals with shorter pain duration; this relationship was not significant among individuals with long-term chronic pain. -Higher catastrophizing showed low positive association with distraction responses, but this relationship was not moderated by pain duration. -Distress did not account for the significant moderation effects.
6	Cano, Leong, Heller, & Lutz (2009)/U.S.A [10]	TB- Communal coping and social support provision models MA-Investigate if: 1. perceived entitlement to support and pain catastrophizing are negatively correlated to spousal support; 2. pain catastrophizing mediated the relationship between perceived entitlement to support and spousal support 3. perceived entitlement to support moderates the association between catastrophizing and spousal support.	Perceived entitlement to pain-related support (Predictor/moderator)  Received SS: solicitousness and distraction (outcomes)  Observed SS: spousal validation responses (outcome)	Cross sectional, dyadic/ self-report and observational	108 married heterosexual couples, with one individual with chronic pain (54.6% women). Primary pain sites: low-back and neck Age of persons with pain (M=52.03; SD=13.40) Pain duration (M=11.71; SD=10.50) Marriage duration (M=21.73; SD= 15.71)	Survey of Pain Attitudes (SOPA): Solicitude sub-scale.  WHYMPI [reported by individuals with chronic pain (ICP)]: solicitousness and distraction scales  Validation and Invalidation Coding System; to assess spousal responses in two 10-min interaction tasks  SS source: Spouse	-Support entitlement was negatively associated with solicitousness and observed spousal validation responses. -Pain catastrophizing was negatively associated with general (not pain-specific) spousal RSS; this relationship was mediated by perceived entitlement to spousal support -Support entitlement moderated the relationship between pain catastrophizing and solicitous responses; with low levels of support entitlement, pain catastrophizing predicts greater solicitous responses; with high levels of support entitlement, pain catastrophizing does not significantly predict solicitous responses.
7	Cano, Leong, Williams, May, & Lutz (2012)/U.S.A. [11]	TB- Communal coping model and models of validation and pain empathy MA – Investigate if: 1. higher ICP distress (e.g., perceived entitlement of support) and ICP reported spousal solicitousness is associated to higher emotional disclosure of pain-related distress. 2. emotional disclosure of pain-related distress is associated with observed spouse validation responses. 3. higher spouse distress is related with less validating responses.	Perceived entitlement to pain-related support (predictor)  Received SS: solicitousness (predictor)  Provided SS: Solicitousness	Cross-sectional, dyadic/ self-report and observational.	95 married heterosexual couples, with one individual with chronic pain (52.6% women). Primary pain sites: low-back Age of ICPs (M=51.67; SD=12.47) Pain duration (M=10.02; SD=9.99) Marriage duration (M=20.77; SD=15.14)	Survey of Pain Attitudes (SOPA): Solicitude sub-scale.  WHYMPI (reported by ICP and spouse): solicitousness scale  Validation and Invalidation Coding System; to assess spousal responses in	-Perceived support entitlement and solicitous responses reported by spouse were not associated with the emotional disclosure of pain-related distress. -Spouses of individuals with chronic pain who disclosed pain-related distress more often (more than 2 disclosures) were more likely to respond with validation than other responses (invalidation or neutral talk). -Spouses of low disclosers were equally likely to respond with validation vs. other responses (invalidation or neutral talk). -Spouse distress and solicitousness (reported by spouse) were not associated with validation responses.

4.more solicitousness reported by spouse is associated with more observed validation responses.

(predictor)

Observed SS: spousal validation responses (outcome)

observational task

SS source: Spouse or significant other

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8	Cano, Barterian, & Heller (2008)/U.S.A. [9]	TB- Emotion regulation and empathy models MA- Investigate if: 1.spouse validation is associated with marital satisfaction, perceived spousal support and self-reported spousal responses 2.validation scores are empirically similar to other spouse response to pain variables	Observed SS: spousal validation responses (correlate)  Received SS: solicitousness and distraction (correlate)  Provided SS: Solicitousness and distraction (correlate)	Cross-sectional, dyadic/self-report and observational.	92 married heterosexual couples, with one individual with chronic pain (52.7% women). Primary pain sites: low-back Age of persons with pain (M=52.05 years; SD=13.04) Pain duration (M=11.88 years; SD=10.75) Marriage duration (M=20.34 years; SD=14.12)	Validation and Invalidation Coding System  WHYMPI (reported by ICP and spouse): solicitousness and distraction scales  SS source: Spouse or significant other	-Observed spouse validation responses were positively correlated with solicitous, distraction responses and marital satisfaction (reported by both partners). -A principal axis factor analysis showed that solicitous and distracting responses (reported by spouse and patient) loaded on the same dimension, while validation scores loaded (inversely) on another dimension including punishing and invalidation responses; the first factor was positively correlated with (general) spousal support (by patient) and the second factor was negatively correlated with (general) spousal support (reported by spouse and patient).
9	Cunningham, Hayes, Townsend, Laures, & Hooten (2012)/U.S.A. [14]	TB- Operant model MA- Investigate: 1.the effect of spouse or significant other solicitous responses on morphine equivalent dose among chronic pain patients.	Received SS: solicitousness (predictor)	Cross-sectional/ Self-reports and in-person interview	Individuals attending a Pain Rehabilitation Centre, who had a spouse or significant other and were using opioids on a daily basis (N=466; 70% women). Primary pain sites: back, generalized and head Age of persons with pain (M=48.02 years; SD=13.2) Pain duration (M=9.9 years; SD=10.4)	WHYMPI (reported by patient): solicitousness scale  SS source: Spouse or significant other	-Controlling for age, sex, race, years of education, employment status, pain duration, pain severity and depression, solicitousness significantly predicted opioid dose; every one-point increase in solicitousness was associated with 2.1 mg/day increase in morphine equivalent dose.
10	Davis, Bergeron, Sadikaj, Corsini-Munt, & Steben (2015)/Canada [15]	TB- Social communication model of pain MA- Investigate if, controlling for relationship satisfaction: 1.partner pain-related cognitive variables (catastrophizing and attributions) were associated with patient pain and depression; 2.this effect was mediated by partner solicitousness	Provided SS: solicitousness (mediator)	Cross-sectional, dyadic/self-report	354 women with provoked vestibulodynia and their male partners. Age of persons with pain (M=31.03 years; SD=11.4) Pain duration (M=5.5 years; SD=6.0) Relationship duration (M=6.9 years; SD=7.6)	WHYMPI (reported by partner): solicitousness scale  SS source: Spouse or significant other	-High catastrophizing partners reported more solicitous responses; -Higher partner solicitousness was positively associated with women's pain severity and depression -Partner solicitousness partially mediated the effect of partner catastrophizing on patient pain and depression
11	Fillingim, Doleys, Edwards, & Lowery (2003)/U.S.A.	TB- Not specified MA – Investigate if: 1.patient sex moderates the relationship between spousal solicitousness and pain-related outcomes.	Received SS: Solicitousness (predictor)	Cross-sectional/self-report	317 heterosexual patients from a multidisciplinary pain program (35.96% women). Age (M=40.38 years;	WHYMPI: solicitousness scale  SS source: Spouse or significant other	-Spousal solicitousness showed a positive main effect on pain severity, regardless of patient sex -Patient sex moderated the association between spousal solicitousness and several pain-related outcomes: 1.solicitousness was associated with greater clinical pain

[16] SD=8.58)  
 Pain duration (M=2.25 years; SD=2.03)  
 Primary pain sites: low back (54%), legs, shoulder/arm

(pain diary), but this relationship was stronger among men; also, it was only among men that higher solicitousness was associated with self-reported disability; 2.for women, spousal solicitousness was associated with greater pain interference, lower general activity, poorer performance on functional measures (e.g., walking test) and lower ischemic pain tolerance and increased likelihood of opioid use.  
 -Spousal solicitousness was not significantly associated with affective measures (distress and anxiety), for men and women.

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12	Forsythe, Romano, Jensen, & Thorn (2012)/U.S.A. [19]	TB- Attachment-diathesis model of chronic pain MA- Investigate if: 1.preoccupied and fearful attachment styles (negative model of self) moderate the relationship between received spouse solicitousness and self-reported pain behavior and depression; 2.perceptions of spouse solicitousness mediate the association between attachment style and self-reported pain behavior and depression	Received SS: solicitousness (predictor and mediator)	Cross-sectional/ self-report	182 individuals with chronic headache or musculoskeletal pain (including patients with history of amputation; 58.8% women) Age (M=49.36 years; SD=12.11) Pain duration (M=17.47 years; SD=13.16) Primary pain sites: back, head, leg/foot/ankle Relationship duration (M=20.27 years; SD=13.75)	Spouse Response Inventory (SRI): Solicitous responses to pain behaviors  SS source: Spouse or significant other	-Greater perceptions of spousal solicitousness were associated with higher self-reported pain behavior, pain intensity and disability, but not attachment styles. -Spousal solicitousness significantly predicted higher depressive symptoms and self-reported pain behaviors, over and above pain source, pain intensity and attachment styles; but these relationships were not moderated by attachment styles.
13	Fromage & Goutany (2007)/France [20]	TB- Burnout theoretical models MA- Investigate if: 1.informal carers' emotional state (anxiety) is associated with the social support they report providing to their partners, who suffer from rheumatoid polyarthritis.	Provided SS: solicitousness, distraction and general SS (outcome)	Cross-sectional/ self-report	22 older adults and informal carers of rheumatoid polyarthritis patients (72.7% men) Age (M=70.9 years) Patients pain duration (M=19.9 years)	WHYMPI- Significant other: Solicitousness, distraction and general support scale  SS source: Spouse or significant other	-No significant correlation was found between carers' anxiety and their self-reported solicitous and distraction responses.
14	Giardino, Jensen, Turner, Ehde, & Cardenas (2003)/U.S.A. [21]	TB- Communal coping model MA- Investigates if: 1. the association between catastrophizing and pain is moderated by solicitousness and type of relationship (spouse/partner vs. other).	Received SS: Solicitousness (moderator)	Cross-sectional/ self-report	74 individuals with spinal cord injury (81% male); 49% living with a spouse/partner and 51% living with others (attendants, roommates, friends). Age (M=41.0 years; SD=10.0)	WHYMPI: Solicitousness  SS source: Spouse/ significant other or attendants, roommates, friends)	-Catastrophizing showed a low positive correlation with solicitousness Controlling for depression: -More catastrophizing more sensory pain. This relationship was not moderated by solicitousness but it was significantly moderated by the type of relationship; the association was only significant for people who lived with their spouses/partners. -Solicitousness significantly moderated the positive association between catastrophizing and affective pain; higher solicitousness, stronger the association (regardless of the type of relationship).
15	Ginting, Tripp, Nickel, Fitzgerald, &	TB –Transactional model of health MA – Investigate if: 1.spousal support moderates the association	Received SS: solicitousness and distraction	Cross-sectional/ self-	96 women with interstitial cystitis/painful bladder	WHYMPI: Solicitousness and distraction scales	-No significant correlations were found between solicitous/distraction responses and physical/mental quality of life, depression and pain disability.

Mayer (2010)/Canada and U.S.A [23]	between pain and patient adjustment variables (health-related quality of life, depression and disability) in women suffering from interstitial cystitis/painful bladder syndrome.	(moderator)	report	syndrome. Age (M=50.6 years; SD=13.8) Time since diagnosis (M=6.2 years; SD=5.9)	SS source: Spouse or significant other	-Solicitousness did not buffer the impact of pain on any outcome measures. -Distraction responses buffered the negative effect of pain on mental quality of life (QoL): at higher levels of distraction responses, pain had no significant impact on women's mental QoL; at moderate levels the relationship was weaker than at lower levels of distraction.
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16	Ginting, Tripp, & Nickel (2011)/Canada [22]	TB- Transactional model of health MA – Investigate if: 1.spousal support moderates the association between pain and patient adjustment variables (health-related quality of life, depression and disability) in men suffering from chronic prostatitis/chronic pelvic pain syndrome.	Received SS: solicitousness and distraction (moderator)	Cross-sectional/self-report	188 men with chronic prostatitis/chronic pelvic pain syndrome. Age (M=48.4 years; SD=10.8) Time since diagnosis (M=6.2 years)	WHYMPI: Solicitousness and distraction scales  SS source: Spouse or significant other	-No significant correlations were found between solicitous/distraction responses and depression and mental QoL; solicitous/distraction responses were negatively correlated with physical QoL and positively correlated with pain disability. -Solicitousness amplified the negative relationship between pain severity and disability; at higher levels of solicitousness the negative impact of pain severity on pain disability was stronger -Distraction responses buffered the negative effect of pain severity on pain disability; the association was stronger at lower levels of distraction responses.
17	Grant, Long, & Willms (2002)/Canada [24]	TB: not specified  MA: Investigate if: -women who perceive their spousal responses as distracting or solicitous would report more negative mood and pain intensity that same day.	Received SS: solicitousness and distraction (predictor)	Prospective/self-report, daily diary	88 women with chronic low back pain Age (M=46.83 years; SD=11.9) Pain duration (M=16.69; SD=12.78)  Years since pain was experienced on daily basis (M=10.75; SD=10.46)	WHYMPI: Solicitousness and distraction scales  SS source: Spouse or significant other	-Controlling for coping strategies and appraisals (catastrophizing, control, self-efficacy): -More spousal distracting responses were significantly related to increased anxious mood -Spousal solicitous responses showed no significant associations with negative mood or pain intensity.
18	Griffin, Friend, Kaell, & Bennet (2001)/U.S.A. [25]	TB- Not specified MA – Investigate if: 1.received solicitous and distraction responses are associated with pain coping strategies, psychological distress and changes in disease status (rated by doctor) among rheumatoid arthritis patients.	Received SS: solicitousness and distraction (predictor)	Prospective/self-report and expert diagnosis	42 rheumatoid arthritis patients (64% women). Time since diagnosis Age (M=12 years; SD not reported; range 16 - 89) At baseline, 93% of the patients were classified in the moderate or severe stages of the disease.	WHYMPI: Solicitousness and distraction scales  SS source: Spouse or significant other	At baseline (T1): - higher solicitousness was associated with higher engagement in active coping and less behavioral disengagement; no significant association was found with negative affect; - distraction responses were not significantly related with coping or negative affect. -Higher solicitousness (T1) predicted a significant decrease in disease status 9 months after (at T2), controlling for baseline negative affect and disease status.
19	Hanley, Jensen, Ehde, Hoffman, Patterson, & Robinson (2004)/U.S.A. [26]	TB- Biopsychosocial and operant models  MA- Investigate if: 2. Significant-other solicitous responses at 1-month post-amputation predicted higher pain interference and depression 12 and 24 month post-amputation.	Received SS: Solicitousness (predictor)	Prospective/Self-report	70 individuals with lower-limb amputations (73% male) Age (M=44.7 years; SD not reported; range 16- 89) 63% married or living with a partner. Most common causes of amputation: trauma and chronic diseases	WHYMPI: Solicitousness  SS source: Spouse or significant other	Controlling for phantom limb pain, catastrophizing, pain-contingent rest, pain control and general PSS at 1-month post amputation: -partner solicitous responses at 1 month predicted greater worsening of pain interference (but not depression) from 1 to 12 and to 24 month post-amputation.

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20	Holtzman, Newth, & Delongis (2004)/Canada [27]	TB- Not specified MA- Investigate if: 1.satisfaction/disappointment with SS were associated with decreases/increases in pain severity across the course of a day, respectively; 2.satisfaction with SS was associated with higher levels of adaptive coping. 3.disappointment in SS was associated with higher levels of maladaptive coping. 4. Perceptions of support interact with coping to increase or decrease pain.	SS Satisfaction (predictor)  Disappointment in SS (predictor)	Prospective/Self-report, daily diary	73 individuals with rheumatoid arthritis (77% women; 68% married). Age (M=56.2 years; SD=13.12) Time since diagnosis (M=10.91 years; SD=9.87)	Satisfaction with SS (1 item; “Who was helpful to you in dealing with your arthritis pain this morning (or afternoon)-(…)?)  Disappointment in SS (1 item; “Who disappointed you in helping you deal with your arthritis pain this morning (afternoon)?”)  Source of SS: Spouse, significant other, family members, friends, neighbors, co-workers	Morning satisfaction/disappointment with/in SS were not significantly associated with pain severity in the evening, but showed indirect effects through associations with coping (controlling for morning pain severity): -Morning satisfaction with SS significantly associated with more engagement in cognitive reframing, emotional expression and problem solving in the evening -Morning disappointment in SS was significantly associated with more emotional expression and problem solving in the evening - Morning satisfaction with SS influenced the effectiveness of coping; greater use of stoic distancing in the morning predicted less evening pain, only when morning satisfaction was present; when it was absent, higher stoic distancing was associated with higher pain severity in the evening.
21	Issner, Cano, Leonard, & Williams (2012)/U.S.A. [29]	TB- Models of empathy MA-Investigate if: 1.different empathy variables (accuracy, tendencies and responses) correlated with spousal solicitous responses 2.the relationship between empathic responses (validation and invalidation) and spousal solicitous responses was stronger under a relationship empathic climate (spouse with empathic tendencies, personal pain experience, satisfying relationship).	Provided SS: solicitousness (predictor)	Cross-sectional, dyadic/self-report	57 married heterosexual couples: 30 in which one partner had chronic musculoskeletal pain and 27 in which both partners suffered from chronic pain (57.9% female patients). Patient/Spousal age (M=53.25/53.47 years; SD=12.64/13.41) Patients pain duration (M=10.85 years; SD=9.71) Primary pain sites: Low back, knee and hip Relationship duration (M=21.54 years; SD=15.77)	WHYMPI (reported by spouse): solicitousness scale  SS source: Spouse	-Patient pain severity and interference were positively correlated with spousal solicitous responses -Spousal empathic concern and perspective taking were positively correlated with solicitousness -The relationship between spousal solicitousness and validation (but not invalidation) responses was moderated by marital satisfaction; at lower levels of marital satisfaction the relationship was not significant but at higher levels, higher solicitousness predicted lower validation responses. -The relationship between spousal solicitousness and (in)validation were not moderated by spouse empathic tendencies or personal pain experience).
22	Jensen, Ehde, Hoffman, Patterson, Czerniecki, & Robinson (2002)/U.S.A [30]	TB- Biopsychosocial and operant models MA- Investigate if: 1.significant other solicitousness was positively associated with phantom limb pain severity, interference and depression. 2.significant other solicitousness at 1-month post-amputation predicted subsequent changes in pain interference and depression 6 month post-amputation.	Received SS: Solicitousness (predictor)	Prospective/Self-report	61 individuals with lower-limb amputations (69% male). Age (M=45.7 years; SD=13.3) 64% married or living with a partner. Most common causes of amputation: trauma and	WHYMPI: solicitousness  SS source: Spouse or significant other	-Significant other solicitous responses (and perceived general social support) did not significantly predict phantom limb pain intensity, interference or depression at 1-month post-amputation. It also did not significantly predict change in pain intensity from 1 to 6-month post amputation. -Controlling for pain intensity, catastrophizing, pain contingent resting, pain control and general PSS, lower levels of solicitous responses at 1-month post-amputation

chronic diseases.

were significantly associated with greater improvement in both pain interference and depression over the next 5 months.

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23	Kerns, Rosenberg, & Otis (2002)/U.S.A. [33]	TB- Transactional model of stress and coping, Cognitive Behavioral Transactional Model of Chronic Illness & SS stress buffering model MA – Investigate if: 1.higher pain-related SS is associated with higher levels of pain and disability and lower levels of depression; 2.pain-relevant SS buffers the influence of self-appraised problem-solving on depression.	Received SS: solicitousness, distraction and general SS (predictor and moderator)	Cross-sectional/ Self-report	234 individuals with chronic pain referred to a Pain Management Center, who identified a significant other (91% men). Age (M=50 years; SD=13.8) Primary pain sites: Low back, head or neck Pain duration (M=11.4 years; SD=11.9)	WHYMPI: composite measure of pain SS, including the general support, solicitousness and distraction scales  SS source: Spouse or significant other	-Higher pain SS was associated with higher pain severity but lower depression - pain SS predicted pain severity and pain disability over and above socio-demographic and self-appraised problem solving, but did not moderate the relationship between self-appraised problem solving and pain severity/disability. -pain SS buffered the effect of self-appraised problem solving on depression.
24	Martire, Keefe, Schulz, Ready, Beach, Rudy, & Starz (2006)/ U.S.A. [37]	TB- Models on social support transactions in families MA – Investigate if: 1.concordance between spouse and patient pain ratings, compared with under/overestimation, would be associated with less spousal solicitous responses, more distracting responses and higher patient satisfaction with received support.,	Received SS: Solicitousness and distraction (outcomes)  SS satisfaction: Instrumental and emotional (outcome)	Cross-sectional, dyadic/ Self-report	137 married couples; 51% with one patient with osteoarthritis (OA) and 49% with both individuals with OA. 70% of patients were female. Patient age (M=69 years; SD= 7.1) Illness duration (M=14.2 years; SD = 10.8) Common sites of OA: Knees, hands, spine.	WHYMPI (reported by ICP): Solicitousness and distraction scales  Satisfaction with spousal assistance scale (after Krause, 1995)  Satisfaction with spousal emotional support item	Controlling for marital satisfaction (of patient and spouse), recent pain severity and physical function, patient-spousal concordance: - did not significantly predict solicitous or distraction responses; -predicted satisfaction with spousal emotional support; in comparison with the concordant group, patients whose spouses overestimated their pain in a log carrying task reported lower satisfaction with emotional support.
25	Martire, Schulz, Keefe, Rudy, & Starz (2008)/ U.S.A. [38]	TB-Not specified MA- Investigate if: -OA patients in a couple-oriented intervention reported greater improvements of spousal general support and distraction responses and greater reductions on solicitous responses, as compared to patients in a patient-oriented intervention.	Received SS: Solicitousness, distraction and general SS (outcomes)	Secondary analysis of a randomized clinical trial /Self-report	126 married couples, 41% with one patient with OA of the hip or knee and 59% also with spouse self-reported OA/chronic pain (71.5% women). Patient age (M=68.85 years; SD=7.8) Duration of patient OA (14.3 years; SD=10.55) Relationship duration (M=40.15 years)	SS Source: Spouse WHYMPI (reported by ICP): Solicitousness, distraction and general SS scales  SS Source: Spouse	-Patient-oriented intervention did not change spouse support, but patients at couple-oriented intervention reported an increase in spouse general support from pre-intervention to 6-month follow-up. -A similar trend (p=.07) was found for distraction responses, from pre to post intervention. -The interventions had no effect on solicitous responses
26	Martire, Stephens, Mogle, Schulz, Brach & Keefe	TB- Self-determination and social control theories MA- Investigate if: 1.more spousal support for autonomy would predict higher physical activity of individuals	Received SS: Autonomy support (predictor)	Prospective, dyadic/Self-report, daily	141 couples with one individual with knee OA (43% male patients) Patients age (M=65.4 years; SD=9.8)	Activity-related autonomy support scale (3 items; reported by patient)	-No sex-related differences in spousal autonomy support Controlling for daily relationship quality, patient age, daily pain, employment status, physical comorbidity and accelerometer wear time: 1. on days when spousal autonomy support was more

(2013)/U.S.A. [39] with knee OA, that same day; 2.patient sex moderates the previous relationship

diary

Duration of OA (M=12.7 years; SD=11.3)  
Relationship duration (M=34.0 years; SD=16.7)

SS source: Spouse or significant other

than usual patients spent, on average, 5 more minutes in moderate physical activity and took 373 more steps.  
2. Patient sex did not significantly moderate this relationship.  
-No lagged effects of spousal support on patients' physical activity on the next day were found.

ID	Authors (year)/country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/ Methods	Participants	SS Measures/ SS source	Main findings
27	McCracken (2005)/U.K. [40]	TB-Not specified MA-Investigate if: 1. significant other solicitousness and distraction responses were negatively associated with pain acceptance.	Received SS: Solicitous and distraction (predictors) and general SS (control)	Cross-sectional/ Self-report	228 chronic pain patients (66.7% women; 56.6% married). Age (M=47.3 years; SD= 2.1) Primary pain sites: Low back and lower limbs	WHYMPI: solicitousness, distraction and general SS scales.  SS source: Spouse or significant other	Controlling for age, education, pain level and general support: -Higher solicitousness predicted lower pain acceptance (activity engagement and pain willingness); -Distraction responses did not significantly predict pain acceptance
28	McWilliams, Higgins, Dick, & Verrier (2014)/ Canada [41]	TB- Not specified MA- Investigate if: 1.Pain support preferences predicted pain disability (explore suppression and interaction effects); 2.patients with stronger preferences for solicitous support would show poorer responses to a group-based psychoeducation program, as compared to patients with stronger preferences to activity direction support. 3.pain support preferences changed after the intervention program.	SS preferences: Solicitousness, activity direction and suppression (predictors and outcome)	Prospective/self-report	45 chronic pain patients (73.3% women), 68.9% married or in a relationship. Age (M=47.38 years; SD=11.25) Pain duration (M=12.49 years; SD=12.41) Common pain types: neuropathic, musculoskeletal, fibromyalgia.	Pain response preference questionnaire (PRPQ): Solicitousness, Activity Direction and Suppression.  SS source: Spouse or significant other	-Cross-sectional data: higher preferences for solicitude predicted higher pain disability, but this effect was stronger at low preference for activity direction and high preference for suppression. -There were no significant differences in preferences for support before and after the intervention. - Support preferences were not associated with treatment outcomes
29	Papas, Robinson, & Riley III (2001)/U.S.A. [46]	TB- not specified MA- Identify sub-groups of perceived spouse responsiveness to pain and associated pain-related outcomes.	Received SS: Solicitousness and distraction (correlate)	Cross-sectional/ self-report	774 married pain patients (46.5% women). Age (M=44.62 years; SD=12.61) Pain duration (M=8.25 years; SD=10.33). Main pain sites: Low back and head	WHYMPI: solicitousness, distraction and general SS scales.  SS source: Spouse	1. Three groups of patients were identified: (1) positively attentive (high solicitous and distraction and low punishing; 64.7%); (2) negatively attentive (high punishing but moderate to low solicitousness and distraction; 19.6% of patients, with more females than expected by chance); (3) inattentive (low responses overall; 15.6%); 2. Patients from the negatively attentive group reported lower general SS than patients in the positively attentive group; although both groups reported high scores of pain, interference, depression and low scores on activity level and life control, the negatively attentive group presented slightly worse pain outcomes. 3. Pain interference best distinguished between the negatively attentive and the inattentive; patients from the latter group reported the lowest scores on pain, interference and depression and the highest scores on activity and life control. These patients were also older, slightly more educated and pain for less time. -At a group level, there was no disagreement in solicitous and distraction responses.
30	Pence, Cano, Thorn, &	TB-not specified MA- Investigate:	Received SS: Solicitousness and	Cross-sectional,	108 individuals with chronic pain (59.8%	WHYMPI (reported by ICP and spouse):	

Ward (2006)/ U.S.A. [47] 1.the agreement between patient and spouse perceptions on spouse responses to pain; 2.the association between agreement on spouse social responses and agreement on pain severity and interference ratings; 3. marital satisfaction, depression and catastrophizing would predict patient and spouse ratings on social responses and pain outcomes and patient-spousal agreement.

distraction (correlate/outcome) Provided SS: Solicitousness and distraction (correlate/outcome)

dyadic/Self-report women) and their spouses. Patient age (M=53.2 years; SD=13.2) Pain duration (M=9.45 years; SD=10.33) Main pain sites: Low-back and knee. Relationship duration (M=20.31 years; SD=16.44)

solicitousness and distraction scales. SS source: Spouse

-At a dyadic level, the correlations between patient and spouse report on solicitousness and distraction responses were positive but low. -For individuals with CP, catastrophizing predicted solicitousness and marital satisfaction predicted solicitousness and distraction; -Patient catastrophizing (but not spouse marital satisfaction) predicted solicitousness and distraction reported by spouse. -Depression, marital satisfaction, and catastrophizing did not account for patient-spousal (dis)agreements in solicitousness or distraction.

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31	Pence, Thorn, Jensen, & Romano (2008)/U.S.A. [48]	TB-operant and cognitive-behavioral models MA-Investigate if, controlling for marital satisfaction, patient-reported: 1. spouse facilitative responses to patient well-behaviors were associated with less pain behaviors and lower pain interference. 2.spouse solicitous responses to patient pain behaviors were associated with more pain behaviors, higher pain severity and interference.	Received SS: Facilitative responses to well-behaviors and solicitousness (correlate/predictor)	Cross-sectional/self-report	64 individuals with chronic headaches (73.4% women; 92.2% heterosexual). Age (M=42.53 years; SD=10.17) 53.1% reported another chronic pain condition (e.g., arthritis, back and neck pain). Years living together (M=15.30; SD=10.90)	Spouse Response Inventory: Solicitous responses to pain behaviors and facilitative responses to well-behaviors SS source: Spouse or significant other	1.patient-reported spouse facilitative responses to well-behaviors were not significantly associated with any of the pain-related outcomes. 2.patient-reported spouse solicitous responses to pain behaviors were positively associated with pain behaviors, pain interference and depressive symptoms.
32	Raichle, Hanley, Jensen, & Cardenas (2007)/ U.S.A. [50]	TB- Biopsychosocial model MA- Investigate if: 1.different indices of social support are associated with mental health and pain interference and pain in persons with spinal cord injuries (SCI), over and beyond clinical and sociodemographic variables.	Received SS: Solicitousness (predictor) Solicitous beliefs (predictor)	Cross-sectional/self-report	127 patients with SCI (72.4% men), 69% married or living with partner. Age (M= 48.5 years; SD=11.7) Years since SCI (M= 16.6; SD=10.6) Common pain sites: shoulder and lower back	WHYMPI: Solicitousness scale Survey of Pain attitudes (SOPA): Solicitousness scale SS source: Spouse or significant other, family member or friend.	-Psychosocial variables accounted for 46% of mental health, over and above pain intensity. General perceived social support predicted better mental health, the belief that others should offer assistance when in pain predicted poorer mental health and solicitousness (as measured by the WHYMPI) was not significantly associated with mental health. -Psychosocial variables accounted for 41% of pain interference, over and above pain intensity but none of these variables were related to SS. However, significant zero-order correlations showed that higher pain interference was associated with lower perceived social support, higher solicitousness and solicitous beliefs.
33	Raichle, Romano, & Jensen (2011)/ U.S.A. [51]	TB- Operant model MA- Investigate if: 1. patient-reported spouse responses to pain and well behaviors were associated with pain behavior, disability and depression; 2. Marital satisfaction moderated the previous relationships. 3. patient-reported spouse responses as measured by the SRI were associated with spouse responses measures by the WHYMPI.	Received SS: Solicitousness and facilitative responses to well behaviors (predictors) Distraction General SS (correlates)	Cross-sectional/self-report	94 patients with chronic pain, at a 3-month follow-up of a multidisciplinary pain treatment (55% female). Age (M=43.16; SD=9.97) Pain duration (M=4.84; SD=7.88)	Spouse Response Inventory (SRI): Solicitous responses to pain behaviors and facilitative responses to well behavior scales WHYMPI: Solicitousness, distraction and general	-Solicitous responses to pain behaviors (SRI) were positively correlated with marital satisfaction, pain intensity and disability. -Facilitative responses to well-behaviors (SRI) were positively correlated with marital satisfaction and negatively correlated with depression -Controlling for sex, age and pain intensity: 1.Spouse SS responses to pain/well behaviors did not significantly predict depression or physical disability nor marital satisfaction moderated these relationships; 2. facilitative responses to well behaviors predicted lower

Primary pain sites: lower back and/or leg	SS scales	pain behaviors and solicitous responses to pain behaviors
Relationship duration (M=14.54 years, SD=11.83)	SS source: Spouse or significant other	predicted higher pain behaviors; marital satisfaction did not significantly moderate these relationships.

ID	Authors (year)/ country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/ Methods	Participants	SS Measures/ SS source	Main findings
34	Romano, Jensen, Turner, Good & Hops (2000)/ U.S.A. [52]	TB - Operant model MA- Investigate if: 1. observed partner solicitous behaviors were associated with higher patient pain behaviors (verbal and non-verbal) 2.this relationship was moderated by depression, sex, pain level and relationship satisfaction.	Observed SS: Solicitousness (predictor) Received SS: solicitousness and distraction (predictor) Provided SS: Solicitousness and distraction. (predictors)	Cross-sectional, dyadic/ Self-report and observational	121 patients with chronic musculoskeletal pain (55% females) & spouses/partners (3 same sex couples).  Patient age (M=42.18; SD=9.84) Pain duration (M=4.59 years; SD=7.08) Primary pain site: low back, neck, head, face, legs/hips, Length of cohabitation (M=13.29; SD=11.41)	Living in Family Environments (LIFE) observational coding system: Spouse solicitous responses.  WHYMPI (reported by patient and spouse): Solicitousness and distraction.  SS source: Spouse or significant other	-Rate per minute of partner solicitous behavior was positively associated with observed patient verbal and non-verbal behaviors and with partner reports of solicitous and distraction responses (but not with patient reports). -A score representing partner immediate solicitous responses to patient verbal behaviors was positively associated with the rates of observed patient verbal behaviors. -Controlling for age, sex and pain intensity: 1. higher rate per minute of partner solicitous responses predicted more patient verbal and non-verbal pain behaviors; 2.depression moderated the relationship between partner solicitous responses and patient verbal pain behaviors; this relationship was significant only for patients with low depression scores. 3.sex, pain level and relationship satisfaction did not significantly moderate such relationships.
35	Romano, Jensen, Schmalting, Hops, & Buchwald (2009)/U.S.A. [53]	TB - Operant model MA- Investigate if: 1. significant other solicitous responses would be associated with higher levels illness behaviors and disability and lower levels of depression among patients with Chronic fatigue syndrome (CFS) and unexplained chronic fatigue (CF). 2.significant other facilitative responses of well behaviors would be associated with less pain/illness behaviors and lower levels of disability and depression. 3.these relationships would be stronger in coupled (spouse/partner) than in uncoupled (parent/roommate) dyads.	Observed SS: Solicitousness and facilitative responses to pain behaviors (predictor) Received SS: solicitousness and distraction (predictor)	Cross-sectional, dyadic/ Self-report and observational	117 patients with CFS /CF (93% females) Age (M=44.4; SD=10.5)  75% married or with partner and 22% identified parents, friends or roommates as significant others.  Primary pain site: not specified	Living in Family Environments (LIFE) observational coding system (n=37 dyads only): Spouse solicitous and facilitative responses to pain/illness behaviors.  WHYMPI (reported by patient and spouse): Solicitousness and distraction.  SS source: Spouse or significant other	-Observational findings did not show significant associations between partner solicitous and facilitative responses and patient outcomes. -Self-report findings showed patient reported solicitous and distraction responses were positively associated with pain behaviors (reported by patient and significant other) and negatively associated with physical functioning. -Controlling for pain, fatigue, coupled status and other patient reported significant other responses: 1. patient reported solicitousness predicted more patient reported pain behaviors. 2.patient reported distraction predicted pain behaviors (reported by the significant other). 3.these relationships were not moderated by coupled status. 4.received SS responses were not related to depression or physical functioning nor these relationships were moderated by coupled status.
36	Rosen, Bergeron, Leclerc, Lambert, & Steben (2010)/ Canada [55]	TB - Operant model MA – Investigate if: 1.partner solicitous responses to pain experiences of women with provoked vestibulodynia (PVD) are associated with women’s sexual satisfaction, sexual function, and pain intensity; 2.the comparative influence of solicitous responses perceived by partner vs. patient on health-related outcomes.	Received SS: solicitousness (predictor) Provided SS: Solicitousness (predictor)	Cross-sectional, dyadic/ self-report	191 heterosexual couples where woman had PVD.  Patient Age (M=33.28 years; SD=12.07)  Pain duration (M=6.50 years; SD=6.99) Primary pain: vestibulodynia	WHYMPI (reported by ICP and spouse/partner), adapted for PVD: Solicitousness scale  SS source: Spouse or significant other	-Controlling for depression, higher woman and partner-perceived solicitous responses significantly predicted higher levels of women’s vulvovaginal pain intensity. -Controlling for sexual function, depression and dyadic adjustment, higher woman-perceived solicitousness (but not partner-perceived) predicted greater sexual satisfaction.



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37	Rosen, Bergeron, Glowacka, Delisle, & Baxter (2012)/ Canada [56]	TB- Operant model  MA –Investigate if: 1.higher solicitous partner responses were associated with higher pain and sexual satisfaction in women with PVD 2.higher facilitative partner responses were associated with lower pain and higher sexual satisfaction.	Received SS: solicitousness and facilitative responses to well behaviors (predictor)	Cross-sectional/ self-report	121 heterosexual women with PVD Age (M=30.6 years; SD= 10.53) Pain duration (M=5.42 years; SD=5.71)  Primary pain: vestibulodynia	WHYMPI (reported by ICP), adapted for PVD: Solicitousness scale  SRI, adapted for PVD: Facilitative responses  SS Source: Spouse or significant other	-Solicitous and facilitative responses were positively correlated and facilitative (but not solicitous) responses were positively correlated with avoidance behaviors. - Controlling for trait anxiety and avoidance, higher solicitous responses and lower facilitative responses were associated with higher vulvovaginal pain intensity. -Controlling for trait anxiety, avoidance, and sexual function, higher facilitative (but not solicitous) partner responses were associated higher sexual satisfaction.
38	Rosen, Bergeron, Sadjak, Glowacka, Delisle, & Baxter (2014)/ Canada [57]	TB- Operant model  MA- Investigate if: 1.controlling for partner-reported responses, women with PVD would report better sexual functioning in sexual interactions where they perceived higher partner facilitative and lower solicitous responses; 2.controlling for woman-perceived partner responses, women would report better sexual functioning in sexual interactions where the male partner reported more facilitative and less solicitous responses.	Received and provided SS: solicitous and facilitative responses to well behaviors (predictors)	Prospective, dyadic/semi-report, daily diary	66 heterosexual couples with a woman with PVD (42% married). Patient age (M=27.91 years; SD=5.94) Pain duration (M=5.72 years; SD=4.30) Relationship duration (M=5.67 years; SD=5.32)  Primary pain: vestibulodynia  (* same study sample population as Rosen et al. (2015).	WHYMPI (reported by ICP and partner), adapted for PVD: Solicitousness scale  SRI, adapted for PVD (reported by ICP and partner): Facilitative responses  SS Source: Spouse or significant other	-Controlling for partner responses reported by men, women reported better sexual functioning on days when partner solicitous responses were less frequent (as reported by women and partner) and partner facilitative responses were more frequent (as reported by women).
39	Rosen, Muise, Bergeron, Delisle, & Baxter (2015)/ Canada. [58]	TB- Operant model  MA- Investigate if: 1.women with PVD would report higher sexual and relationship satisfaction on days with greater partner facilitative and lower solicitous responses to painful intercourse (perceived by woman and partner).	Received and provided SS: solicitous and facilitative responses to well behaviors (predictors)	Prospective, dyadic/semi-report, daily diary	69 heterosexual couples with a woman with PVD (55% married). Patient age (M=28.46 years; SD=6.66) Pain duration (M=5.90 years; SD=4.57) Relationship duration (M=5.95 years; SD=5.39)  Primary pain: vestibulodynia  (* same study sample population as Rosen et al. (2014)	WHYMPI (reported by ICP and partner), adapted for PVD: Solicitousness scale  SRI, adapted for PVD (reported by ICP and partner): Facilitative responses.  SS Source: Spouse or significant other	-Controlling for sexual function, on days of sexual intercourse: 1. when women perceived greater facilitative partner responses they reported higher sexual and relationship satisfaction; 2.when men reported greater solicitous responses, women reported lower sexual satisfaction and when they reported greater facilitative responses women reported marginally higher relationship satisfaction.

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40	Rosen, Bergeron, Lambert, & Steben (2013)/Canada [54]	TB- Communal coping model  MA – Investigate if: 1. catastrophizing and self-efficacy independently mediated the association between partner solicitousness and pain intensity in women with PVD; 2. dyadic adjustment mediated the association between partner solicitousness and women’s sexual satisfaction.	Received and provided SS: solicitousness (predictors)	Cross-sectional, dyadic/ self-report	175 heterosexual couples where woman PVD (75% cohabiting). Patient age (M=32.18; SD=11.31) Pain duration (M=6.16 years; SD=6.66)  Primary pain: vestibulodynia	WHYMPI (reported by ICP and partner), adapted for PVD: Solicitousness scale  SS Source: Spouse or significant other	-Controlling for depression and partner perceived solicitousness, catastrophizing (but not self-efficacy) partially mediated the association between women’s perceived solicitousness and pain severity. -Controlling for depression and women’s perceived solicitousness, catastrophizing (but not self-efficacy) partially mediated the association between higher partner-perceived solicitous responses and pain. -Controlling for depression, sexual function, and partner perceived solicitousness, dyadic adjustment partially mediated the association between women perceived solicitousness and sexual satisfaction.
41	Silvermark, Källmén, Portala, & Molander (2008)/Sweden [61]	TB- not specified  MA – Investigate the association between responses to the WHYMPI and a measure of life satisfaction (LiSat-11).	Received SS: Solicitous and distraction (correlates)	Cross-sectional/ Self-report	294 patients with long-term non-malignant pain (66% women).  Age (M=38.1 years; SD=9.4)  Pain duration (M=6.42 years; SD=6.20)  Primary pain sites: neck, shoulder/arm	WHYMPI: Solicitousness, distraction and general SS scale  SS Source: Spouse or significant other	-Solicitousness was positively correlated with satisfaction with partner relationship -Social support (general) was positively correlated with satisfaction with partner relationship and family life. - The group of dysfunctional patients scored significantly higher than other two groups of patients (interpersonally distressed and adaptive copers) on general SS, solicitousness and distraction; -The group of interpersonally distressed patients scored significantly lower on general social support, solicitousness and distraction responses than patients from the other two groups.
42	Skomo, Desselle, & Berdine (2006)/U.S.A. [62]	TB- not specified MA- Investigate: 1. the association between physician-consulting behaviour and social support differs amongst three groups of migraineurs (never-consulters, lapsed-consulters, current-consulters).	Received SS: Active involvement and acceptance (correlates)	Cross-sectional/ self-report	100 participants who suffered from headaches (76% female) 82% suffered from migraines; 18% other headache type  Age range: 18-69 (no mean provided)  Pain Duration: (not provided)  Primary pain site: headache (migraine)	Headache Social Support Scale : (Adapted from the Berlin Social Support Scale: 10 items) Perceived active involvement by others, acceptance by others (reaction to migraineur’s headaches)  SS source: Spouse or significant other, family member, friend LIFE coding system: solicitous and facilitative behaviors  SS source: Spouse	-Controlling for participants’ sex, age, use of medication/nondrug therapy, migraine disability, locus of control and attitudes towards medication: 1. migraineurs who perceived significant others as actively involved were more likely to be in the current-consult group versus the never-consulters and lapsed-consulter groups; 2. migraineurs who perceived higher significant other acceptance were less likely to be part of the current-consulters group
43	Smith, Keefe, Caldwell, Romano, & Baucom (2004)/U.S.A. [63]	TB- Social communication model of pain  MA- Investigate if: 1. patient pain behaviors are sequentially related to spouse solicitous or facilitative behaviors. 2. there are any sex-related differences in partner solicitous or facilitative behaviors.	Observed SS: solicitousness and facilitative responses to well behaviors (predictors/ outcomes)	Cross-sectional, dyadic/ observational	50 married heterosexual patients with osteoarthritis of the knees (50% female).  Patients age (M=61.17 years; SD not provided).  Duration of disease	SS source: Spouse	-Spouse facilitative behavior preceded and followed patient pain behavior more often than spouse solicitous behavior. -Wives were more likely to show facilitative behavior preceding and following patient pain behavior compared to husbands. -No sex-related differences for solicitous behaviors preceding or following patient pain behaviors.

(M=11.18 years; SD not provided)

Primary pain site: knees

ID	Authors (year)/country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/Methods	Participants	SS Measures/ SS source	Main findings
44	Sorbi, Peters, Kruise, Maas, Kerssens, Verhaak, & Bensing (2006)/ The Netherlands [64]	TB- Operant model MA- Investigate if: 1. spousal solicitous responses predict pain intensity 2. spousal solicitous responses have a differing effect for patients with chronic, recently chronic, and pre-chronic pain.	Received SS: solicitousness and reinforcement of well-behaviors (predictors)	Prospective/Self report, daily diary, electronic momentary assessment.	80 patients (71% women) Age (M=40.6 years; SD= 6.7) Pain duration in <i>months</i> Group 1 (M=4.3; SD=0.8) Group 2 (M=8.9; SD=2.5) Group 3 (M=125.6; SD=88.9)	Daily diary questions related to SS: 1. solicitous behaviors based on WHYMPI 2. reinforcement of well behaviors  SS source: Spouse or significant other	-No difference between the 3 groups of participants (based on pain duration) and solicitous responses or facilitating well behaviors -Spousal reinforcement of pain behavior positively predicted pain intensity -Spousal reinforcement of well behaviors negatively predicted pain intensity
45	Stephens, Martire, Cremeans-Smith, Druley, & Wojno (2006)/ U.S.A. [65]	TB- support deterioration theories of stress MA- To investigate the moderating effects of pain expression on the relationship between pain and spousal (husband) SS	Received SS: supportive communication and empathic understanding (outcomes)	Prospective/self-report and in-person interviews	101 women over 60 years old with OA and their husbands Patient age (M=69.1 years; SD=5.7)  Pain duration: (M=19.7 years; SD=15.3)  Marriage duration (M=42.0; SD=12.9)	SS measure adapted for study from Stephens & Clark (1996) to capture received emotional support (supportive communication and empathic understanding) from husband ("listened to your talk about how you feel")	At high levels of (verbal and non-verbal) pain expression (but not at low levels), there was a negative relationship between wives' pain and received husband emotional support at baseline.
46	Stroud, Turner, Jensen, & Cardenas (2006)/ U.S.A. [66]	TB- Operant model MA- Investigate the extent to which psychosocial factors (partner responses to pain behaviors) are associated with pain-related activity interference and depressive symptom severity among individuals with spinal cord injury (SPI) and chronic pain.	Received and Provided SS: solicitousness and distraction (predictors)	Cross-sectional, dyadic/Self-report	70 adults with SCI and pain (64% men) and their spouse/partners.  Patient age (M=46.0 years; SD=11.7)  Time since SCI (median 8.1 years; range .55 - 38).  Duration of marriage/cohabitation (median 12 years; range 0.58-56)	SS source: Spouse WHYMPI (reported by ICPs and partners): solicitous and distraction scales  SS Source: Spouse or significant other	-participant and partner rated distraction responses did not have a significant bivariate correlation with pain intensity, pain related interference, or depressed mood. -participant (but not partner) rated solicitous responses correlated positively with pain interference but not pain intensity or depressed mood. -controlling for demographics, SCI characteristics, and pain intensity, higher levels of partner perceived spousal distraction (but not solicitousness) was associated with higher depressed mood scores.

Primary pain site: not

provided.

ID	Authors (year)/ country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/ Methods	Participants	SS Measures/ SS source	Main findings
47	Thieme, Spies, Sinha, Turk, & Flor (2005)/ U.S.A., Germany, Austria [69]	TB - Operant model MA - Investigate if: -Spouse solicitousness predicts more pain behaviors in patients with dysfunctional Fibromyalgia Syndrome (FMS), compared to participants who are adaptive copers or are interpersonally distressed.	Received SS: solicitousness and distraction (predictors)	Cross sectional/ Observational.	140 women with FMS and 30 pain-free women (control group) and their spouses  ICPs age: (M=46.71 years; SD=10.58)  Duration of pain (M=10.53 years; SD=9.74)  Primary pain site: not specified	WHYMPI (reported by ICPs): solicitousness and distraction scales  Observed spousal behavioral responses during a window washing task: Solicitousness and distraction  SS Source: Spouse	-A cluster analysis identified the predicted clusters of patients: dysfunctional group (DYS; 27.86%), the adaptive copers group (AC; 38.57%) and the interpersonally distressed group (ID; 33.57%); DYS showed more pain behaviors in general and in the presence of spouse than IC or AC. -Pain behaviors of patients from the DYS group were positively correlated with solicitous spouse responses and negatively related with distracting spouse behavior (reported by patient); patient perceived spouse responses accounted for 45.2% of the variance of pain behaviors. -Observed spouse responses did not significantly predict pain behaviors. -Spouse responses (observed or reported by patient) were not significantly related to patient pain behaviors for the IC or AC groups.
48	Tripp, Nickel, Wang, Litwin, McNaughton-Collins, Landis, Alexander, Schaeffer, O'Leary, Pontari, Fowler Jr., Nyberg, & Kusek (2006)/ U.S.A. [71]	TB – Biopsychosocial model MA - Investigate if: 1. Solicitous responses from significant other predict pain and pain related disability in men with chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS).	Received SS: solicitousness (predictor)	Cross sectional/ Self-report	253 men with CP/CPPS 70% living with partner  Age (M=45 years; SD=11.3)  Time of diagnosis (M=1.6 years; SD not reported)  Primary pain site: pelvic area	WHYMPI: Solicitousness scale  SS Source: Spouse or significant other	- Solicitous responses were positively correlated with pain severity, pain-related disability, pain-contingent resting and general perceived social support.  -In the presence of other biopsychosocial variables solicitous behaviors by one's significant other did not predict pain disability, affective and sensory pain, or pain severity.
49	van Koulil, van Lankveld, Kraaimaat, van Riel, & Evers (2010)/The Netherlands [76]	TB- not specified MA-Investigate if: 1. solicitousness predicted psychological distress in patients with fibromyalgia (FM) at 9 month follow up.	Received SS: solicitousness (predictor)	Prospective/ Self-report	78 patients with FMS (95% female) Age (M=42.9 years; SD=11.2)  Pain duration: (M=7.0 years; SD=6.1)  Primary pain site: not specified	WHYMPI: Solicitousness scale  SS source: Spouse or significant other	-Solicitousness at baseline did not correlate with changes in psychological distress at 9-month follow up.

ID	Authors (year)/country	Theoretical Background (TB) / Main Aims (MA)	Pain SS concepts (factor role)	Design/Methods	Participants	SS Measures/ SS source	Main findings
50	Waxman, Tripp, & Flamenbaum (2008)/Canada [77]	TB - Biopsychosocial model MA- Investigate if: 1. received partner social support mediates the relationship between pain and relationship satisfaction in patients with chronic lower back pain (CLBP).	Received SS: solicitousness and distraction (mediators)	Cross-sectional/ Self-report	54 individuals with CLBP (24 men, 30 women), either married or living with significant other. Age (M=50.5;SD=10.85) Pain duration (M=13.2;SD=10.47) Relationship duration (M=22.67 years; SD=14.6) Primary pain site: lower back	WHYMPI: solicitousness and distraction scales  SS Source: Spouse or significant other	-received partner solicitous and distracting responses were not significantly associated with relationship satisfaction nor mediated the relationship between pain and relationship satisfaction.
51	Widerström-Noga, Duncan, & Turk (2004)/U.S.A. [78]	TB- not specified MA- Investigate: 1.if there are subgroups of people with pain associated with Spinal Cord Injury (SCI) based on psychosocial and behavioral characteristics and patterns of adjustment; measured by the WHYMPI (adapted for SCI).	Received SS: solicitousness, distraction and general SS (correlates)	Cross-sectional/ Self-report	120 participants with SCI with chronic pain (78.3% men) Age (M=42.1years;SD=12.1) Time since injury (M=9.8 years; SD=5.2) Pain duration (M=8.9 years; SD=5.3)  Primary pain site: neck/shoulder; legs/feet	WHYMPI (adapted for SCI): Solicitousness, distraction and general SS scales  SS Source: Spouse or significant other	-Based on the responses of the WHYMPI, two clusters of patients were identified: Adaptive Copers (AC; 57.5%) and the Dysfunctional (DYS) -AC reported lower pain severity and interference, lower affective distress, higher life control, less general SS, and significant other solicitous and distraction responses than the DYS.
52	Widerström-Noga, Felix, Cruz-Almeida, & Turk (2007)/U.S.A. [79]	TB- not specified MA – To replicate 1. the findings of Widerström-Noga et al. (2004), namely, to confirm the sub-groups of people with pain and SCI based on their responses to the WHYMPI(adapted for SCI).	Received SS: solicitousness, distraction and general SS (correlates)	Cross-sectional/ Self-report	190 people with SCI who experienced chronic pain (84.7% men) Age (M=41.7 years; SD=13.4) Time since injury (M=9.4 years ;SD=9.6) Pain duration (M=8.2 years; SD=7.7)  Primary pain site: not specified	WHYMPI (adapted for SCI): Solicitousness, distraction and general SS scales  SS Source: Spouse or significant other	Based on the responses of the WHYMPI, three clusters of patients were identified: Adaptive Copers (AC; 32.4%), the Dysfunctional (DYS; 34.6%) and the Interpersonally Supported (IS; 33.0%): -The DYS cluster had higher levels of pain severity, interference and affective distress, and moderate levels general SS and distracting/solicitous responses; -The AC cluster showed higher levels of life control and the lower levels of pain severity, interference, affective distress, general SS and partner solicitous and distraction responses; -The IS cluster had moderately high pain severity but high life control, high levels of activity and the highest levels of general SS and partner, distracting and solicitous responses. -Levels of pain-related support were greatest in the IS, while AC scored the lowest
53	Wilson, Martire, Keefe, Mogle, Stephens, & Schulz (2013)/	TB- Social communication model of pain MA- To investigate if 1.greater patient nonverbal pain expressions on a given day (as reported by the spouse) would be associated with more empathic and solicitous responses, regardless of verbal pain	Received SS: solicitousness and empathic responses (outcomes).	Prospective, dyadic/ Self-report, daily diary	144 individuals with osteoarthritis (OA; 43% males) and their spouses/partners Relationship duration (M=34.3;SD=16.6) OA severity	WHYMPI (adapted for daily diary, reported by ICPs): solicitousness  3-item index adapted from measure of	Controlling for previous day spouse responses, patient sex, pain severity, negative affect and marital tension and enjoyment: -nonverbal and verbal pain responses independently predict same day spouse empathic and solicitous responses; -When spouses reported more frequent nonverbal pain

U.S.A. [80]	expressions; 2.greater patient verbal pain expressions on a given day (as reported by the spouse) would be associated with more empathic and solicitous responses, regardless of nonverbal pain expressions; 3.the relationship between nonverbal pain expressions and spousal responses would be stronger on days when the patient verbally disclosed pain more than usual.	(M=36.54;SD=15.42) Patients age (M=65.6;SD=9.8), Duration of OA (M=12.6;SD=11.3) Primary pain site: knee	empathic spouse responses to pain (Stephens et al., 2006)  SS Source: Spouse or significant other	expression from patients they were perceived as more empathic/solicitous; these relationships were significant in days when patients verbally shared their pain more than usual but they were not significant in days when patients verbally disclosed their pain less than usual;
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