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Empathic and Nonempathic Interaction in Chronic Pain Couples

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Abstract

Empathy and empathic response are receiving greater attention in pain research as investigators acknowledge that other forms of interaction may impact the pain process. The purpose of this study was to examine validation and invalidation as forms of empathic and nonempathic responses in chronic pain couples. Participants were 92 couples in which at least one spouse reported chronic musculoskeletal pain. Each couple participated in two videotaped interactions about the ways in which the pain has impacted their lives together. Trained raters then coded interactions for each partner's use of validation and invalidation. Couples also completed surveys on spouse responses to pain, marital satisfaction, and perceived spousal support. Correlations demonstrated validation by spouses of persons with pain was associated with punishing, solicitous, and distracting spouse responses to pain, marital satisfaction, and perceived spousal support. In contrast, spouses' invalidation scores were correlated with punishing spouse responses. Exploratory factor analyses were then conducted to determine the extent to which spouses' responses to pain and spouse validation and invalidation loaded on similar factors. Results indicated that validation and invalidation are more closely related to punishing spouse responses than to solicitous or distracting spouse responses. These results have implications for theoretical and clinical work on spouse responding.

A great deal of research has been conducted on the social context of pain, with an increasing focus on couples and marriage. Operant theory 11 has provided a useful framework for understanding the role of marriage in the pain experience. For instance, Romano and colleagues 31,32 have demonstrated that observed solicitous spouse responses to pain behavior often result in increases in pain behavior. Solicitous spouse responses as assessed by the Multidimensional Pain Inventory are also positively related to pain severity and pain behaviors 8. However, Newton-John 29 noted that operant models cannot explain the fact that negative or punishing spouse responses are associated with increased pain behaviors and pain severity 3,22. Recent research suggests that spouse responses may not always serve a reinforcement function 28. The purpose of the current study is to examine spouse responses to pain and other forms of interaction in light of emotion regulation and empathy theories. Specifically, we investigate the extent to which observed validation and invalidation relates to spouse responses to pain and indicators of marital quality in chronic pain couples.

According to emotion regulation theory in couples, both partners may engage in behaviors that affect the emotion regulation of the self and the other 13. Two behaviors that are particularly relevant to emotion regulation theory are validation and invalidation. Validation consists of spouse responses that convey acceptance and attempted understanding of the partner's

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experiences whereas invalidation conveys disrespect, contempt, or nonacceptance of the other partner's experiences 14. Note that these responses may overlap somewhat with the operant concepts of solicitous and punishing spouse responses. While emotion regulation responses and operant spouse responses are likely related to each other, there are important theoretical differences. Spouse responses to pain, as operationalized in operant models, are conceptualized as reinforcers of pain behaviors. Furthermore, these models focus on only one spouse's responses. In contrast, validation is thought to promote intimacy, emotional closeness, and enhanced emotion regulation; invalidation increases emotional distance and emotion dysregulation. Thus, validation and invalidation are not conceptualized as having an operant function with respect to pain behaviors. Furthermore, both partners' responses are evaluated within this model.

Validation can also be conceptualized as an empathic response whereas invalidation can be viewed as a nonempathic response. The concept of empathic response has been discussed in the social psychological literature 6 and is receiving greater attention in pain research. Goubert et al. 16 proposed that knowing the thoughts and feelings of someone in pain impacts an observer's affective and behavioral reactions (i.e., expressions of empathy) to the observed person with pain. Researchers have found a negative association between an intense form of invalidation (i.e., contempt) and marital and psychological adjustment in healthy couples 4, 15. In the pain literature, Johansen and Cano 20 demonstrated that spouses rated the patients' pain as being more severe when patients expressed anger and contempt. Furthermore, in couples where only one partner reported pain, spouses reported greater depressive symptoms when both partners expressed anger and contempt. Although empathic responses such as validation were not coded and these interactions were not focused on pain, the results provide preliminary support for the emotion regulation properties of marital interaction in chronic pain couples.

In the current study, the expression of validation and invalidation in couples discussing the pain problem was examined. We expected that validation and invalidation by both partners would be related to marital satisfaction, perceived spousal support, and self-reported spouse responses. We also conducted an exploratory factor analysis among the spouse responses to pain variables and the spouse validation and invalidation scores to determine the extent to which these variables are empirically similar to one another. Thus, the results will provide preliminary evidence concerning the empathic communication of spouses.

Method

Participants

Participants were 92 couples who participated in the first phase of an ongoing 3-phase longitudinal study of chronic pain couples. Over 50% of the persons with pain were female (52.7%, *n*=56). The mean age of Persons with pain was 52.05 (SD = 13.04), and the mean age of spouses was 52.87 (SD = 15.17). The sample was diverse: African Americans comprised 47.3% (n = 44) of Persons with pain, followed by Caucasians (45.2%, n = 42), and persons self-identifying with other races (3%, n = 3). Caucasians comprised 46.2% (n = 43) of the spouses, followed by African Americans (45.2%, n = 42), and members of other groups (2%, n = 2). Four Persons with pain (4.3%) and 7 spouses (7.5%) did not report their race. The average education level for patients was 14.28 years (SD = 3.05) and for spouses was 13.82 years (SD = 2.52). The marriage duration was 20.34 years (SD = 14.12). Mean household income was $45,547 (SD = $26,416) and was obtained by retrieving block-level group income for each couple from the U.S. Census. The most common chronic pain problems were back problems (e.g., herniated disc, pain from spinal fusion; n = 46, 50%) and osteoarthritis (n = 22, 24%). Persons with pain reported a mean pain duration of 11.88 years (SD = 10.75). They

also reported an average pain intensity score of 5.29 (SD = 2.04) on a 4-item measure (current, average, worst, least pain; α = .89) using a numerical rating scale (0 - 10 scale).

Measures

The Validation and Invalidation Behavior Coding System 12 was used to code empathy in marital interaction. The VIBCS was developed from an emotion regulation perspective of couples' interactions 13. Each couple participated in two 10-minute marital interactions about the impact of pain on their lives together to ensure that both spouses were able to express their thoughts and feelings and to obtain improved measures of agreement of codes with two sets of observations. Each spouse was rated on two dimensions: validation and invalidation. Validation consists of empathic responses to a partner's emotional expressions and can include reflective statements and questions designed to fully understand the thoughts and feelings of the partner. Invalidation consists of nonempathic responses to a partner's emotional expressions including inattentiveness to a partner's emotion, missed opportunities for validation (e.g., changing the subject), telling the spouse what they should be thinking or feeling, or putting the spouse down. Raters code validation on a Likert-type scale ranging from 1 (no validation above basic attention) to 7 (only validation). Invalidation is coded on a similar scale from 1 (no invalidation) to 7 (only invalidation). Counts of validation and invalidation were not made; rather, the empathic climate was assessed during observation as we were not investigating reinforcement where counts and sequences are important. Margolin et al. 26 noted that an advantage of global methods of coding marital interaction such as the method used in the current study is that such systems allow for the simultaneous observation and coding of different dimensions of interaction (e.g., quantity and quality, non-verbal and verbal). Several teams have used global rating scales to demonstrate the extent to which marital interaction is related to satisfaction and other outcomes 19,30,36.

Each interaction was coded by 4-6 raters, all of whom were trained by the first author. Training sessions consisted of 5 weeks of instruction in basic couples observational issues, review of the training manual, in-session and practice coding of videotapes from a previous study, and demonstrated agreement with other coders. Coders were not blind to the identity of the person with pain because the topic of discussion was the impact of pain but coders were blind to the couples' survey responses. Coders viewed each interaction three times. During the first viewing, coders got an impression of the style of interaction including baseline facial expressions and personal styles of interaction. During the second viewing, coders focused on rating one of the spouses and in the third viewing, they rated the other spouse. Coders were allowed to watch the tapes as many times as was necessary to make confident coding decisions.

Within group inter-rater agreement was assessed with the $r_{wg(j)}$ statistic, which is calculated from observed and expected variances across coders and items 18. Note that we chose to measure agreement, not reliability, because the latter is a measure of proportional consistency. Inter-rater reliability indicates consistency in proportional differences between raters even if the raters are quite different in their ratings 17,23. Similar to other measures of agreement used with continuous variables, $r_{wg(j)}$ accounts for random measurement-error variance; however, $r_{wg(j)}$ also accounts for that portion of systematic variance that reflects rater response bias. Moreover, $r_{wg(j)}$ is used when there are *j* parallel items for each measure as is the case in the present study (i.e., $j = 2$ ratings because there were two interactions). James et al. 17,18 demonstrated that other measures of agreement or consistency on continuous variables such as intra-class correlation, % agreement, and correlation-based estimates between raters are inappropriate measures of agreement in data such as ours because they do not allow for restriction of range as when a coder rates validation of the spouse similarly across the two discussions or a group of raters agrees on spouse invalidation ratings across the two interactions. Similarly, other measures assess absolute agreement or consistency in

proportions, or do not allow parallel measures across raters, as was the case in this study (i.e., 2 interactions).

$R_{wg(2)}$ values approaching 1.0 indicate excellent agreement. An advantage of the $r_{wg(j)}$ statistic is that agreement estimates are obtained for each case. $R_{wg(2)}$ was excellent for validation in persons with pain (mean $r_{wg(2)}$ = .92) and in spouses (mean $r_{wg(2)}$ = .88). Agreement was also excellent for invalidation in persons with pain (mean $r_{wg(2)}$ = .91) and in spouses (mean $r_{wg(2)}$ = .88). Agreement was poor for 8 codes across 7 individuals ($r_{wg(2)}$ < .60). Therefore, mean scores for these individuals were deleted and not used in further analyses. Mean scores were relatively low in Persons with pain (validation M = 1.82, SD = .53; invalidation M = 1.70, SD = .83) and spouses (validation M = 2.44, SD = .71; invalidation M = 1.89, SD = .85). While some validation and invalidation occurs during these interactions, the low scores suggest that other interaction may be occurring that was not coded. Spouses were significantly more validating and invalidating than persons with pain (validation t (88) = 8.96, p < .0001; invalidation t (87) = 2.18, p < .05). This makes sense since spouses had more opportunities to respond to the emotional expressions of the person with pain because the discussion was about the pain of the person with pain.

The Multidimensional Pain Inventory (MPI) 21 and the Multidimensional Pain Inventory-Spouse Version (MPI-S) 8 were used to measure each spouse's perceptions of spouse punishing (4 items), solicitous (6 items), and distracting (4 items) responses to pain. The MPI has been shown to have good construct and discriminant validity, internal consistency, and test-retest reliability (8,21). Inter-item reliability was fair to good for all 3 spouse response subscales for Persons with pain (punishing α = .83, solicitous α = .82, distracting α = .70) and spouses (punishing α = .69, solicitous α = .69, distracting α = .68).

Two other measures of relationship quality were assessed. Marital satisfaction was assessed with the 32-item Dyadic Adjustment Scale 35. Possible scores range from 0-151 with higher scores indicating greater marital satisfaction. The romantic partner-specific support scale 5 was used to measure perceived spousal support. Items ranged from 1 (disagree strongly) to 5 (agree strongly) with higher scores indicating greater perceived spousal support. Both measures were highly reliable in persons with pain and spouses (αs ranged from .86 to .95).

Procedure

Upon receiving institutional review board approval, this study was advertised in local newspapers and online to university employees. Telephone screenings were used to determine their eligibility. To be included in the study, the couple was currently married or living together for at least 2 years, both partners were at least 21 years old, did not have psychotic symptoms, denied terminal illness, and if over the age of 60, passed a telephone-adapted version of the Mini-Mental Status Examination 10. At least one spouse reported a chronic musculoskeletal pain condition of at least 6 months duration and denied autoimmune disease (e.g., Rheumatoid Arthritis, Lupus), cancer or other terminal illness, or other pain condition that was not musculoskeletal in nature and denied DSM-IV 2 somatoform/somatization symptoms. If both partners reported chronic musculoskeletal pain, the spouse with the more severe or disabling pain by both partners' reports was designated as the person with pain.

Eligible couples completed consent forms and several questionnaires at home after which they attended a 3-hour lab session consisting of individual interviews with each spouse (not addressed in the current study) and the two 10-minute marital interaction tasks. Prior to the marital interaction, trained interviewers spoke individually with each spouse for approximately 5 minutes to elicit their thoughts and feelings about how the pain affected their joint and individual activities as well as their relationship with each other. After this brief discussion, participants were escorted to a video observation room where the interviewers instructed the

couple to discuss these thoughts and feelings. Odd-numbered couples were instructed for the husband to initiate the first discussion; even-numbered couples were instructed for the wife to initiate the second discussion. Couples were encouraged to act as natural as possible and that both partners should be engaged in the discussions. Upon completion of this session, all couples were debriefed, compensated $100 for their time and effort, and were given a list of referrals for individual and couple therapy. The list of referrals was distributed to all couples and it was made clear at recruitment that the study did not involve treatment.

Results

Correlations

Analysis of skewness and kurtosis demonstrated that invalidation was negatively skewed whereas perceived spousal support was positively skewed. Because the results were similar with untransformed and transformed variables, we present analyses with untransformed variables for ease of interpretation.

Table 1 shows the correlations between validation and invalidation with spouse responses and other relationship variables. One-tailed tests of significance were used because it was expected that negative and positive aspects of relationships would be inversely associated whereas relationship aspects sharing similar valence would be positively correlated.

There are several observations that can be made from this correlation matrix. First, measures assessing the same construct and sharing the same method were consistently correlated with each other. Validation scores of both spouses were significantly correlated as were both spouses' invalidation scores ($r = .46$, $p < .001$ and $r = .55$, $p < .001$). Similarly, self-report variables assessing the same target's behaviors were significantly correlated (reports of punishing spouse responses $r = .47$, $p < .001$; reports of spouse solicitousness $r = .50$, $p < .001$; reports of distracting spouse responses $r = .46$, $p < .001$).

Second, there were some correlations for variables assessing positive and negative aspects of interaction but sharing the same method and target. Validation and invalidation by spouses were significantly negatively correlated ($r = -.38$, $p < .001$) whereas validation and invalidation by persons with pain were not significantly related. Furthermore, one partner's validation was not associated with the other person's invalidation. With respect to self-reports of spouse responses, the correlations between negative and solicitous spouse responses and between negative and distracting responses as reported by persons with pain were also significant ($r = -.30$, $p < .01$ and $r = -.20$, $p < .05$). However, the correlations between spouses' self-reports of negative responses with solicitous and distracting responses were not significant.

Third, a pattern of relationships between the observed and self-reported interaction was observed. Validation and invalidation were most consistently correlated with punishing spouse responses to pain, with invalidation and punishing spouse responses sharing approximately 9% of shared variance. Spouses' validation was also related to solicitous and distracting spouse responses. Validation in the person with pain was not significantly associated with any of the spouse response variables, perhaps because of restricted range in that validation score.

Last, observed and self-report spouse responses were associated with other domains of relationship functioning. Validation, invalidation, and the spouse response variables were consistently and significantly correlated with marital satisfaction in both partners, perceived spousal support in persons with pain, and to a lesser extent, perceived spousal support as reported by spouses.

Exploratory Factor Analysis

An inspection of the correlation matrix does not provide enough information regarding the extent to which observed and self-report pain interaction variables concerning spouse interaction are more or less related to each other. Therefore, an exploratory factor analysis was conducted on spouse validation and invalidation and both partners' reports of spouse responses. Principal factors extraction was chosen because this method is better suited to providing theoretical solutions that are unbiased by unique and error variance (unlike principal components analysis). The 8 indicators of spouse interaction were included in the analysis. Validation and invalidation expressed by persons with pain were not included in the factor analysis because there were no parallel self-reports for responses of persons with pain.

Exploratory factor analysis was chosen over confirmatory factor analysis because there was not enough theory to make firm predictions about factors. Oblique rotation (Direct Oblimin) was applied because it was expected that positive and negative interaction would be inversely related. Mean replacement was used for participants missing a validation or invalidation code.

Eigenvalues of 1 or greater indicated that there were 2 factors that accounted for 57% of the variance whereas visual inspection of the scree plot suggested 3 factors that accounted for 69% of the variance in the variables. The third factor in this solution had an eigenvalue approaching 1 (.96). However, an attempt to extract 3 factors failed because the communality of one of the variables exceeded 1. The analysis was re-run with principal components extraction; however, the 3-factor solution resulted in two of the three factors with only 2 variables each. As indicated by Tabachnick and Fidell [34], interpreting such factors is risky. Therefore, we present the principal factors solution with two factors, which was stable across extraction methods.

Pattern rather than structure matrices are displayed in Table 2. The values in a pattern matrix show the unique contribution of each factor to each variable whereas structure matrix values are inflated by correlations between factors 37. Loadings of .30 or greater are typically interpreted, with larger loadings indicating that the variable is a better indicator of the factor. As shown in Table 2, solicitous and distracting spouse responses loaded on the same dimension whereas punishing spouse responses, spouse validation, and spouse invalidation loaded on the other dimension. The 2 factors were weakly correlated (r = -.17), with approximately 3% shared variance. Given the loading patterns, one might label Factor 1 as Solicitous Responding and Factor 2 as Nonempathic Responding.

We then conducted correlation analyses on the two factor scores, marital satisfaction, and perceived spousal support. As shown in Table 3, both factors were significantly correlated with these indicators of marital quality with the exception of spouses' perceived spousal support. Furthermore, Fisher's r to z transformations demonstrated that the Nonempathic Responding factor was significantly more strongly correlated than the Solicitous Responding factor with perceived spousal support ($z = 2.59$, $p < .01$) and marital satisfaction ($z = 2.58$, $p < .01$) in persons with pain. No significant differences were found for correlations with spouse marital quality variables.

Taken together, these results provide preliminary evidence suggesting that spouse validation and invalidation are distinct from solicitous and distracting spouse responses and that validation and invalidation share the most variance with punishing spouse responses.

Discussion

While research has demonstrated the importance of operant conceptualizations of spouse responses to pain 32,33, other theories may also explain the role of spouse communications 28,29. The goals of this study were to examine spouse communication from an emotion

regulation and empathy framework and to evaluate the extent to which observations of validation and invalidation during couples' discussions about pain are related to spouse responses to pain and marital quality. We found that validation expressed by the spouse was consistently related to spouse responses to pain by both partners' reports. Validation by persons with pain was not related to perceived spouse responses. This result suggests that there is some overlap between the variables of spouse responses and spouse validation, as one would expect given that both sets of variables focus on spouse communications in the context of pain.

Furthermore, validation by both partners was correlated positively with marital satisfaction in both partners and perceived spousal support in persons with pain. Because validation involves empathic responses, this type of interaction may contribute to healthy emotion regulation within the couple 13,14. In fact, Newton-John & Williams 28 demonstrated that the frequency with which female patients and their spouses talked about pain was correlated positively with satisfaction with general marital communication. Perhaps, couples who talk more about pain also express more validation. In contrast, significant correlations between invalidation expressed by spouses and spouse responses to pain were limited to both partners' reports of punishing spouse responses. More will be said about the overlap between these concepts in the discussion of the factor analysis below. Invalidation by both partners was also negatively correlated with both partners' marital quality, perhaps because such expressions convey disrespect and a lack of empathy for the partner 13,14,16.

The smaller correlations between the observed and self-report variables (as opposed to correlations between variables assessed with the same method) should not be surprising as similar results have been presented by other researchers 27,30. It has been demonstrated that systematic method variance and measurement error contribute to the attenuation of associations between self-reports and observations of similar behaviors 25. As research accumulates on observed empathic interaction in chronic pain couples, it will be necessary to conduct confirmatory factor analyses that account for various sources of error. In addition, researchers may wish to develop self-report measures of the responses of *persons with pain* in pain contexts. To our knowledge, no such measure exists so it is not yet possible to test models for persons with pain that includes both observed and self-report interaction variables.

The exploratory factor analysis was conducted to identify a theoretical solution that best accounted for the variance in validation and invalidation expressed by spouses and both partners' reports of spouse responses. The analysis demonstrated that distracting and solicitous spouse responses loaded on one factor, which we called the Solicitous Responding factor in keeping with the tradition in the operant pain literature. Both partners may interpret solicitous and distracting spouse responses as "helpful" responses. Interestingly, the Nonempathic Responding factor contained items assessed with different methods (i.e., observation and self-report) and also one item with a different valence (i.e., validation). This may explain why the loadings are somewhat smaller on this factor than on the Solicitous Responding factor, which contains items of the same valence and assessed by the same survey. We labeled this second factor as Nonempathic Responding because of the combination of invalidation, lack of validation, and negative emotional reactions. The wording of the punishing spouse response scale suggests that the spouse is expressing negative emotion toward the person with pain and does not attempt to understand the pain experience. The fact that validation did not load on the Solicitous Responding Factor suggests that validation and solicitousness are tapping different constructs. Solicitousness may be interpreted as pain-specific support 3 whereas validation may be conceptualized as an empathic response that generally builds intimacy. Another possible reason for the differentiation is that researchers have shown that solicitous responses may not always be delivered in an empathic manner 28,34. The two factors were allowed to correlate but in fact, shared little variance. Future research is necessary to determine the stability

of these factors in other samples. Loading patterns may change if observations of spouse responses during a pain behavior task are also included.

Last, correlations conducted with the factor scores demonstrated that each factor was correlated with marital quality in both partners. However, the Nonempathic Responding factor was more strongly correlated with marital satisfaction and perceived spousal support in persons with pain. Empathic and nonempathic responding may be an important but understudied concept. Fekete et al. 7 found that perceptions of the spouses' tendency to respond empathically mediated the relationship of perceived support to marital satisfaction and depressive symptoms. However, few researchers have investigated multiple methods of assessing empathic responding. At this time, it appears that the Nonempathic Responding, rather than pain-specific support, is more important to the marital quality of persons with pain. Given that spouses are often involved in the care of their partners 24, interventions aimed at addressing nonempathic responding may be best suited to helping spouses be better advocates for their partners.

There are several potential limitations of this study that must be addressed. One possible limitation is that the interaction coding system was not developed specifically for couples with pain. Different interaction coding schemes may produce different results 9 but the choice of a coding scheme depends on the researchers' questions 26. In this study, we were interested in the empathic climate, not on reinforcement contingencies, so the chosen coding system fit our research questions. However, an exploration of how empathy might or might not reinforce verbal and non-verbal pain behaviors would provide additional knowledge regarding interaction processes in chronic pain. Finally, it is likely that validation requires mindfulness, tolerance, and acceptance of one's own emotions as well as the emotions of the partner 13. Additional research is needed to investigate how these processes influence validation and invalidation.

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Table 1

Correlations between observed empathic and nonempathic responses, self-reported spouse responses to pain, marital satisfaction, and perceived spousal support

I-PP	I-S	V-PP	V-S	PR-PP	PR-S	SR-PP	SR-S	DR-PP	DR-S	DAS-PP	DAS-S	PSS-PP	PSS-S
I-PP --	.55**	-.16	-.08	.23*	.19*	-.15	-.01	-.16	.06	-.21*	-.26**	-.44**	-.30**
I-S	--	.09	-.38**	.30**	.31**	-.07	-.01	-.14	.07	-.17	-.28**	-.27**	-.16
V-PP		--	-.46**	-.10	-.05	.03	.00	-.00	-.03	.19*	.18*	.20*	-.01
V-S			--	-.18*	-.26**	.30**	.21*	.19*	-.00	.24*	.24*	.16	-.01
PR-PP				--	.47**	-.30**	-.06	-.20*	.08	-.48**	-.36**	-.39**	-.34**
PR-S					--	-.15	.11	-.07	.00	.26**	-.43**	-.25**	-.34**
SR-PP						--	.50**	.70**	.36**	.49**	.21*	.33**	.16
SR-S							--	.34**	.63*	.20*	.11	.08	.13
DR-PP								--	.46**	.41**	.24*	.28**	.10
DR-S									--	.18*	.21*	.06	.19*
DAS-PP										--	.57**	.60**	.37**
DAS-S											--	.39**	.50**
PSS-PP												--	.42**
PSS-S													--

Note:

I-S = Invalidation by Spouse, V-S = Validation by Spouse, V-PP = Validation by Person with Pain, I-PP = Invalidation by Person with Pain. For the following variables, PP = Report by Person with Pain; S = Spouse Report: PR = Punishing Responses, SR = Solicitous Responses, DR = Distracting Responses, DAS = Dyadic Adjustment Scale, PSS = Perceived Spousal Support

* $p < .05$

** $p < .01$.

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Table 2

Pattern Matrix for Exploratory Factor Analysis on Self-Report Spouse Responses and Observations of Validation and Invalidation

Variable	Factors[a]	
	1	2
Solicitous Spouse Responses-Spouse Report	**.74**	.12
Solicitous Spouse Responses- PP Report	**.71**	-.27
Distracting Spouse Responses-Spouse Report	**.71**	.15
Distracting Spouse Responses-PP Report	**.66**	-.18
Punishing Spouse Responses-Spouse Report	.11	**.65**
Punishing Spouse Responses-PP Report	-.08	**.58**
Invalidation Expressed by Spouse	.06	**.54**
Validation Expressed by Spouse	.13	**-.44**
Factor Correlations with Marital Quality Variables		
Marital Satisfaction-PP	.40**	-.47**
Marital Satisfaction-Spouse	.22*	-.46**
Perceived Spousal Support-PP	.29**	-.52**
Perceived Spousal Support-Spouse	.17	-.31**

[a] Solution accounts for 57% of the variance. The correlation between factors = -.17. PP = Person with Pain.

* $p < .05$.

** $p < .01$.