

# RELATIONSHIPS AMONG PATIENT HOSTILITY, ANGER EXPRESSION, DEPRESSION, AND THE WORKING ALLIANCE IN A WORK HARDENING PROGRAM<sup>1</sup>

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## ABSTRACT

*Hostility, anger expression, and depression may adversely affect the response of chronic pain patients to pain or functional restoration programs by hampering the development of good working alliances between patients and physical or occupational therapists. Measures of hostility, anger expression, and depression and the Working Alliance Inventory (WAI) were completed by 71 patients with chronic pain (stemming from work-related injuries) prior to starting a "work hardening" program. The physical or occupational therapist acting as any given patient's "program manager" completed the WAI, as well. Hostility and anger expression were correlated negatively only with patient ratings of the working alliance. Therapist ratings were predicted by the interaction of patient anger expression and depression, such that therapists reported their poorest alliances with patients who were both depressed and expressed anger. Results imply that hostility and the propensity to express anger may diminish a pain patient's capacity to foster a collaborative relationship with physical or occupational therapists, while therapists may readily become alienated from depressed and irritable patients.*

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## INTRODUCTION

Anger, hostility, and depressed mood are experienced frequently by patients with chronic pain (1) and are related to pain severity and adjustment among these individuals (2,3). Anger, hostility, and depressed mood may also detrimentally affect patient responses to treatment for chronic pain. According to clinical anecdotes, such patient characteristics interfere with therapists' ability to establish rapport with patients and to secure adherence to treatment regimens. Thus, investigators speculate that one pathway by which anger, hostility, and depressed mood undermine treatment effectiveness is through disruption of the formation of sound working alliances between patient and health care providers (4).

The working alliance between patient and therapist has received extensive attention in the study of the psychotherapy process (5). Bordin (6) elaborated a pantheoretical conceptualization of the working alliance which involves agreement between patient and therapist on specific tasks to be undertaken within sessions, agreement regarding the goals and eventual outcomes of treatment, and the affective bond between patient and therapist. Good working alliances appear to predict favorable outcome in psychotherapy (7). Priel, Rabinowitz, and Pels (8) suggest that the working alliance may be a vital component not only of the psychotherapy process, but of the process of treatment which unfolds in medical and physical rehabilitation settings. Patients with chronic pain who attend treatment programs have short-term goals (e.g. find relief from pain) and perspectives about pain which may differ from those of their therapists. Forging a good alliance may require the therapist to negotiate a connection between the tasks of physical rehabilitation, which may produce pain, discomfort, and fatigue in the short-term, and the patient's desire to reduce pain in both the short- and long-term. Thus, sound relationships between patients and physical or occupational therapists, psychologists, nurses, etc. in pain or functional restoration programs may partly determine how patients respond to the prescribed treatment regimen and whether patients ultimately improve. Some evidence supports this contention. Regarding physical therapy, for example, findings suggest that variables reflecting the quality of the patient-therapist relationship (e.g. frequency of positive feedback from therapist) (9) predict greater compliance with the treatment regimen.

Whether patient hostility, expressed anger, and/or depressed mood adversely affect working alliances in pain or functional restoration programs has not been addressed explicitly, although an assortment of findings about other interpersonal relationships bear indirectly on this question. Regarding hostility, in studies of psychotherapy, patient hostile-dominant interpersonal difficulties have been found to negatively affect the development of the alliance (e.g. 10). Marital dissatisfaction has been linked to hostile attitudes (see 11); hostile individuals report greater anger and blaming of spouses during marital conflict than nonhostile individuals (12); and wives of hostile men show greater physiological arousal during conflict resolution than wives of nonhostile men (13). Moreover, hostile individuals tend not to seek or accept social support (14). Regarding anger expression, findings for patient-physician interactions suggest that patients who are disrespectful of, or express anger and criticism to physicians evoke the greatest negative emotional responses from physicians (e.g. 15). Other

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studies suggest that patients who express anger may engender angry feelings in (16), or elicit critical responses from (2) their spouses. Depressed mood, too, has been shown to exert negative effects on interpersonal relationships (e.g. 17,18). In particular, depressed people have been shown to provoke more negative affect among listeners (17) and to be rejected more by those interacting with them than nondepressed people (18). Thus, patient hostility or anger, particularly when expressed, and depressed mood appear to have deleterious effects on interpersonal relationships. These effects may develop reciprocally (14) in that, for instance, hostile individuals view others with distrust and suspicion, while others see them as querulous and detached. These adverse effects on interpersonal relationships may extend to the therapeutic relationships formed in pain or functional restoration programs. Patients who are consistently hostile, express anger, or who convey depressed affect in the treatment setting may elicit irritation, criticism, and disparagement from therapists. Repeated episodes of aggravating or frustrating interactions with such patients may lead therapists to become alienated from, adopt a critical stance toward, or overtly reject the patient; processes which would undermine agreement on treatment tasks and goals and the development of a positive bond between patient and therapist.

In the present study, we investigated associations among patient hostility, anger expression, depressed mood, and the quality of working alliances in a "work hardening" program. Work hardening refers to multidisciplinary programs which address the physical, functional, occupational, and psychosocial needs of patients with physical and behavioral dysfunctions related to work (19). Patients in work hardening programs generally have sustained musculoskeletal injuries on the job from which they suffer persistent pain and disability. The chief aim of such programs is to increase physical and functional capacities through functional restoration and simulated work activities (19), and so patients spend the vast majority of their time working with physical and/or occupational therapists. The quality of the working alliance between patient and the therapist with which they have the most contact in such a multidisciplinary setting may represent a crucial relationship for the process of physical rehabilitation. In the present study, therefore, we focused on the working alliance between patient and physical or occupational therapist.

We hypothesized that patient hostility, depressed mood, and/or the tendency for patients to express anger would be associated negatively with the working alliance between patient and therapist in a work hardening program. Most research regarding patient characteristics and the working alliance have evaluated the contributions of predictor variables taken individually (e.g. 10,20). In addition to examining such relationships, we sought to identify particularly maladaptive profiles of patient characteristics by testing theoretically meaningful interactions among variables. We proposed that patient hostility and expressed anger may interact with depression to influence the working alliance such that patients who are hostile or express anger and report depressed mood may have the poorest working alliances. Moreover, research on the working alliance suggests that patient and therapist views of alliance quality are at best only moderately correlated because, it is believed, patient and therapist attend to quite different aspects of the therapy process (5). Therefore, we examined whether patient characteristics predicted both patient and therapist accounts of working alliance quality.

TABLE 1  
Descriptive Information

Variables	Statistics			
	<i>M</i>	<i>SD</i>	%	<i>n</i>
Age	39.7	10.9		
Education (yrs)	12.5	1.4		
Pain Duration (mos)	8.6	7.3		
One or more pain-related surgeries			54	40
WAI-Therapist	69.6	10.5		
WAI-Patient	67.7	12.6		
BDI	8.7	6.6		
AOS	15.7	3.5		
Ho	18.2	9.4		

Notes: WAI-Therapist = Working Alliance Inventory, Therapist Version; WAI-Patient = Working Alliance Inventory, Patient Version; BDI = Beck Depression Inventory; AOS = Anger-Out Subscale; Ho = Cook-Medley Hostility Scale.

## METHOD

### Participants

Subjects were 71 male patients who participated in the multidisciplinary work hardening program of Healthsouth (formerly Caremark, Inc.) at two sites (Chicago and Oak Lawn, IL). Patients treated in this program suffer from musculoskeletal pain stemming from injuries sustained on the job. Patients were excluded if they (a) had current alcohol or substance abuse problems, (b) had a history of psychotic or bipolar disorders, or (c) could not read English well enough to complete questionnaires. Forty-eight subjects (67.6%) reported the lower back to be the primary site of pain. Other primary pain sites were leg/knee ( $n = 13$ ) and shoulder/neck ( $n = 10$ ). All subjects were Workers' Compensation recipients. Descriptive information and scale means appear in Table 1.

One hundred forty-seven patients were eligible for this study. All patients completed the Beck Depression Inventory (BDI) (21) and the Multidimensional Pain Inventory (MPI) (22) as a routine part of the intake assessment. Subjects were approached during intake assessment about participation in this study, which entailed completing the Cook-Medley Hostility Scale (Ho) (23), Anger Expression Inventory (AEI) (24), and the Working Alliance Inventory (WAI), and 30 patients refused at that time. After agreeing to participate at intake, 9 patients dropped out of treatment and 32 patients withdrew from the study before the WAI was administered. Five patients had missing therapist forms of the WAI.

Analyses of variance (ANOVAs) or  $X^2$  tests were used to compare the final sample of 71 patients to the 41 patients who dropped out of the program or refused to participate further on measures collected at intake. The two groups did not differ significantly on age, years of education, time since injury, number of pain-related surgeries, BDI scores, or the General Activity Subscale of the MPI. However, Pain Severity Subscale (PSS) scores of the MPI were slightly lower for the 71 patients in the study,  $M = 3.20$ ;  $SD = 1.05$ , than for the other 41 patients,  $M = 3.63$ ;  $SD = 1.18$ ;  $F(1, 111) = 4.00$ ;  $p < .05$ . Regarding hostility and anger expression, of the 41 patients who dropped out of the program or refused to participate further, only 20 had fully completed the Ho scale and 18 had fully completed the Anger-Out Subscale (AOS). These subjects were compared to the 71 patients in the study. For the Ho scale, study dropouts,  $M = 17.84$ ;  $SD =$

TABLE 2  
Zero-Order Correlations

Variable	WAI-Therapist	WAI-Patient	BDI	AOS	Ho	Age	Pain Duration	Surgeries	PSS
WAI-Therapist	—	.21*	-.17	-.06	.05	-.08	-.10	.12	-.02
WAI-Patient		—	.01	-.30***	-.29**	.21*	-.06	.14	-.09
BDI			—	.28**	.23**	-.16	.15	-.18	.29***
AOS				—	.44***	-.33***	.01	-.07	.17
Ho					—	-.10	.03	.00	.06
Age						—	-.08	.10	-.23*
Pain Duration							—	.38***	-.18
Surgeries								—	-.29***
PSS									—

\*  $p < .08$ .

\*\*  $p < .05$ .

\*\*\*  $p < .01$ .

Notes: WAI-Therapist = Working Alliance Inventory, Therapist Version; WAI-Patient = Working Alliance Inventory, Patient Version; BDI = Beck Depression Inventory; AOS = Anger-Out Subscale; Ho = Cook-Medley Hostility Scale; Surgeries = number of pain-related surgeries; PSS = Pain Severity Subscale.

10.81, did not differ significantly from study participants,  $F(1, 89) < 1$ . For the Anger-Out Subscale of the AEI, study dropouts,  $M = 14.33$ ;  $SD = 4.50$ , also did not differ significantly from study participants,  $F(1, 87) = 1.34$ ; ns. Thus, the 71 patients of the sample did not differ appreciably on available measures from patients who dropped out or withdrew from the study sometime after intake.

Seven physical or occupational therapists participated at the two sites; six had earned their professional licenses and one was a trainee. All therapists were female, and their ages ranged from 22 to 43 years. Therapists' experience in work hardening programs ranged from 1 to 7 years.

### Measures

**Independent Variables:** Current levels of depression were assessed with the BDI (21). The BDI is a commonly-used self-report measure which has well-established psychometric properties (25). Hostility was measured with the Ho scale (23), which was derived from items of the Minnesota Multiphasic Personality Inventory. The Ho scale appears to tap an attitude of cynical mistrust, resentment, and antagonism (26), and its psychometric properties appear quite good (11,26). The tendency to express anger was assessed with the AOS of the AEI (24). Spielberger et al. (24) reported adequate internal consistency for this subscale, and Faber and Burns (27) found that AOS scores predicted the degree of verbally expressed anger during provocation.

**Dependent Variables:** The short form of Horvath and Greenberg's (28) Working Alliance Inventory (29) was used to assess the quality of the working alliance. The WAI short form consists of 12 items which tap the task agreement, goal agreement, and bond development components of Bordin's (6) conceptualization of the therapeutic alliance. While most information on validity for the WAI is based on the original 36-item scale, Tracey and Kokotovic (29) report adequate reliability data for the 12-item WAI which is comparable to reliability coefficients for the longer scale. Patient and therapist versions of the WAI were administered (WAI-Patient and WAI-Therapist, respectively). Patients and therapists completed the WAI during patients' eighth day in the program. The WAI was administered early in treatment because measures of the alliance taken during the developmental phase of alliance forma-

tion appear to predict outcome better than measures taken later in treatment (for review, see 5).

### Procedure

Patients were recruited at intake, gave written informed consent, and completed a questionnaire packet. Patients were told that information from the Ho scale, AEI, and WAI would not be divulged to therapists or other staff, and so therapists were blind to patient anger/hostility status and to patients' appraisal of the working alliance. Therapists, in turn, were told that patients would not learn of their evaluations of the working alliance. Although patients worked to some extent with at least three therapists during the course of treatment, each patient was assigned a program manager. The therapist acting as program manager had the most direct contact with any given patient (i.e. about 60 min/day). This amount of contact represented about 40% of the total time patients had direct contact with therapists, and so the program manager completed the WAI regarding the working alliance from the therapist's perspective.

Patients participated in the structured work hardening program for 5 to 7 weeks. Treatment consisted of daily work simulation tasks, weight training, and aerobic conditioning, which increased from 2 to 4 hours/day in the first week to 5 to 6 hours/day by the second week. Also, 1-hour group cognitive-behavioral therapy and 1-hour vocational rehabilitation meetings were held once per week.

## RESULTS

### Zero-Order Correlations

Correlations among potential covariates, the Ho scale, AOS, BDI, and WAI-Patient and WAI-Therapist were generated (see Table 2). Age, pain duration, and number of pain-related surgeries were not related significantly to WAI-Patient or WAI-Therapist scores, and so they were not used as covariates in regression analyses. Although PSS scores also were not related significantly to WAI-Patient or WAI-Therapist scores, PSS scores were correlated significantly with BDI scores, and so they were used as covariates in all analyses involving the BDI. Results show that Ho scale and AOS scores, but not BDI scores, were correlated negatively with WAI-Patient scores. Contrary to expectations,

WAI–Therapist scores were not related significantly to Ho scale, AOS, or BDI scores. Finally, results showed that patient and therapist evaluations of the alliance were only marginally related. This result is consistent with previous findings which suggest that patient and therapist are concerned with different aspects of the therapeutic relationship (5).

### Unique and Common Contributions

Results in Table 2 show not only that Ho scale and AOS scores were correlated with WAI–Patient scores, but that the two predictors were intercorrelated. Hierarchical regressions were used to determine to what extent Ho scale and AOS scores overlapped in the prediction of WAI–Patient scores. Regressions were performed in which AOS scores were entered first, followed by Ho scale scores, and vice versa. Results showed that after AOS scores were entered ( $r^2 = .09$ ;  $p < .01$ ), Ho scale scores accounted for only 3% of additional variance in WAI–Patient scores, which was nonsignificant ( $p = .13$ ). After Ho scores were entered ( $r^2 = .08$ ;  $p < .02$ ), AOS scores accounted for 4% of additional variance, which was only marginally significant ( $p < .09$ ). Thus, an element common to hostility and anger expression appears to account for associations among these characteristics and the patient's view of the working alliance.

### Interaction Models

Hierarchical multiple regressions were used to test hypotheses that anger expression and hostility interacted with depressed mood to influence the quality of the working alliance. Interaction terms were computed by multiplying relevant variables. Separate models were tested which combined BDI scores with AOS and Ho scale scores and which employed WAI–Patient and WAI–Therapist scores as dependent variables. For instance, to evaluate whether BDI scores interacted with Ho scale scores to affect WAI–Patient scores, a hierarchical regression was performed in which PSS scores were entered in the first step, the main effect terms (BDI, Ho) were entered in the second step, and the two-way interaction term (BDI  $\times$  Ho) was entered in the final step.

The BDI  $\times$  AOS term accounted for variance in WAI–Therapist scores ( $p < .01$ ) after PSS, BDI, and AOS scores had been entered. This result suggested that the association between BDI and WAI–Therapist scores depended on different levels of AOS scores (see Table 3). To further analyze the BDI  $\times$  AOS interaction, AOS values were divided at the median to form Low and High AOS groups. For each group, hierarchical regressions were performed in which BDI scores were entered after PSS scores were entered. As shown in Table 3, BDI scores were related negatively to WAI–Therapist scores among subjects in the High AOS group, but were not related significantly to WAI–Therapist scores among those in the Low AOS Group. Figure 1 displays the regression lines for each AOS group. Results imply that patient depressed mood and anger expression may interact to affect therapist views of the alliance such that alliances are judged poorest for patients who are both depressed and tend to express anger.

The BDI  $\times$  AOS interaction did not predict WAI–Patient scores, nor did the BDI  $\times$  Ho interaction predict either WAI–Patient or WAI–Therapist scores.

## DISCUSSION

Hostility, anger expression, and depressed mood adversely affect patient adjustment to chronic pain. These factors may influence adjustment by hampering the development of good

**TABLE 3**  
Summary of Hierarchical Regression Analyses for Variables Predicting WAI–Therapist Scores

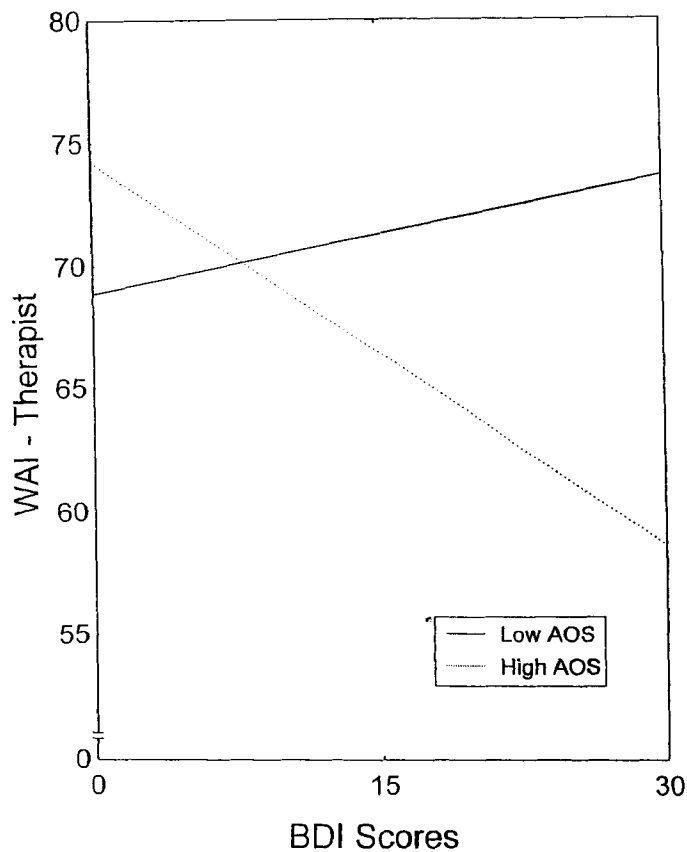
Variable	B	SE B	Beta	R <sup>2</sup>	Significance of R <sup>2</sup> Change
Whole Sample ( $N = 71$ )					
Step 1					
PSS	-.19	1.20	-.02	.00	ns
Step 2					
BDI	-.28	.21	-.18		
AOS	-.04	.38	-.01	.03	ns
Step 3					
BDI $\times$ AOS	-.16	.06	-.31	.09	$p < .01$
Low AOS Group ( $n = 33$ )					
Step 1					
PSS	-.38	1.82	-.04	.00	ns
Step 2					
BDI	.22	.41	.10	.01	ns
High AOS Group ( $n = 38$ )					
Step 1					
PSS	.09	1.70	.01	.00	ns
Step 2					
BDI	-.50	.23	-.35	.11	$p < .04$

Notes: PSS = Pain Severity Subscale; BDI = Beck Depression Inventory; AOS = Anger-Out Subscale.

working alliances between patient and therapist in pain or functional restoration programs. We examined whether patients who are hostile, express anger, or suffer from depressed mood have weak working alliances in a work hardening program, as defined from the perspectives of patients and physical or occupational therapists. We hypothesized that not only would such characteristics correlate negatively with alliance quality, but that depressed mood in combination with hostility or anger expression may constitute especially maladaptive profiles which dispose patients to form very poor alliances. These hypotheses were partly supported. Hostility and anger expression were related negatively to alliance quality, but only from the patient's perspective. Depressed mood and anger expression interacted to predict therapist alliance ratings, such that therapists reported their poorest alliances with patients who were both depressed and expressed anger.

Research suggests that hostile individuals, as defined by the Cook–Medley Ho Scale, are mistrusting, resentful, and prone to anger, and they perceive others as contemptible and possessed of malevolent intent (see 11). Such a hostile attitude may elicit criticism and irritation from others in return, which, in a reciprocal fashion, may confirm and perpetuate a hostile person's conviction that others are inherently untrustworthy and malicious. Consistent with these notions, our results showed that both hostility and anger expression were associated negatively with patient accounts of alliance quality. Mistrust, antagonism toward others, and proneness to anger may serve to diminish a pain patients' capacity to perceive or foster a collaborative relationship with physical or occupational therapists.

Contrary to expectations, however, patient hostility, anger expression, and depressed mood were not related directly to therapists' views of the working alliance. Instead, we found that anger expression and depressed mood interacted to identify a subset of patients for whom therapists reported particularly poor alliances. Results showed that among patients who were inclined to express anger, depressed mood was related negatively to therapists' views of the working alliance. Among patients who



**FIGURE 1:** Regression lines predicting Working Alliance Inventory-Therapist Form (WAI-Therapist) scores from Beck Depression Inventory (BDI) scores among subjects scoring high and low on the Anger-Out Subscale (High AOS, Low AOS, respectively).

tended not to express anger, however, depressed mood was virtually unrelated to therapists' accounts of the working alliance. Our findings are consistent with those of Coyne (17) who found that depressed people may elicit rejection and negative evaluation from and induce negative affect in others, but our results suggest further that these effects may be most acute for depressed people who also freely express their irritation, frustration, and general distress. It may be that only when patient depressed mood and anger expression combine do therapists' opinions of the alliance suffer. Physical or occupational therapists may find depressed patients who express anger quite difficult to work with not only because these patients may frequently voice complaints, frustrations, and emotional distress to therapists, but because patients' depressed mood may interfere with active involvement in the therapy regimen.

Some caution must be taken in interpreting our results. First, this was a cross-sectional and correlational study. Although our model emphasizes that patient hostility, anger expression, and depressed mood predict quality of the working alliance, our analyses do not firmly establish these particular causal chains, nor do our analyses preclude alternative explanations. Second, we assessed the working alliance only once and relatively early in treatment. Thus, we do not know whether patient hostility, anger expression, and depressed mood have similar effects on alliance quality later in treatment. Third, we assessed only the relationship between patient and program manager. Patients may develop different kinds of relationships with different therapists, and vice

versa. Future research in such multidisciplinary settings will need to examine the quality of alliances across therapists. Fourth, we relied exclusively on self-report. With regard to patient reports, some of the effects among hostility, anger expression, and the working alliance may be accounted for by shared method variance. Finally, the generalizability of our findings may be limited due to the high refusal and dropout rate. Although study participants and dropouts did not differ appreciably on available measures, undetected systematic differences may still exist. Thus, links between our independent variables and the WAI may not entirely extend to the population of patients in work hardening.

Despite these limitations, our results illuminate the potential importance of the working alliance, which has received scant empirical attention in the chronic pain literature. The working alliance appears to be an active and potent therapeutic ingredient common to diverse psychotherapy approaches (30). The alliance also seems to be an active ingredient of treatment which involves patient-therapist relationships which are of a less intense nature and which are not deliberately nurtured to the same degree as those found in psychotherapy, such as relationships which emerge in pharmacological treatment for depression (e.g. 31). If the working alliance does indeed represent an active ingredient of pain or functional restoration programs, then the quality of the working alliance and patient characteristics which systematically affect it will have implications for treatment outcome. Patient hostility, expressed anger, and depressed mood may detrimentally affect outcome and future adjustment, in part, because these characteristics have adverse consequences for the ability of patients and therapists to agree on tasks and goals and to develop affective bonds. If this is indeed the case, then such patient characteristics not only will need to be routinely assessed, but therapists will need to direct attention toward ameliorating the pernicious effects that patient anger/hostility and depressed mood have on therapeutic relationships. As implied by Priel et al. (8) and Krupnick et al. (31), however, health care providers other than psychotherapists are not typically trained to recognize and cultivate the therapeutic relationship as an important aspect of treatment. Our results, therefore, also introduce the possibility that a psychotherapeutic approach for understanding the patient-therapist relationship may need to be made explicit in the training of physical and occupational therapists, physicians, and nurses.

## REFERENCES

- (1) Wade JB, Price DD, Hamer RM, Schwartz SM, Hart RP: An emotional component analysis of chronic pain. *Pain*. 1990, 40:303-310.
- (2) Burns JW, Johnson BJ, Mahoney N, Devine J, Pawl R: Anger management style, hostility, and spouse responses: Gender differences in predictors of adjustment among chronic pain patients. *Pain*. 1996, 64:445-453.
- (3) Kerns RD, Rosenberg R, Jacob MC: Anger expression and chronic pain. *Journal of Behavioral Medicine*. 1994, 17:57-67.
- (4) Fernandez E, Turk DC: The scope and significance of anger in the experience of chronic pain. *Pain*. 1995, 61:165-175.
- (5) Horvath AO: Research on the alliance. In Horvath AO, Greenberg LS (eds), *The Working Alliance: Theory, Research, and Practice*. New York: Wiley, 1994.
- (6) Bordin ES: The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research, and Practice*. 1979, 16:252-260.
- (7) Horvath AO, Symonds BD: Relations between working alliance and outcome in psychotherapy: A meta-analysis. *Journal of Counseling Psychology*. 1991, 38:139-149.

- (8) Priel B, Rabinowitz B, Pels RJ: A semiotic perspective on chronic pain: Implications for the interaction between patient and physician. *British Journal of Medical Psychology*. 1991, 64:65-71.
- (9) Sluijs EM, Kok GJ, van der Zee J: Correlates of exercise compliance in physical therapy. *Physical Therapy*. 1993, 73:771-782.
- (10) Muran JC, Segal ZV, Samstag LW, Crawford CE: Patient pretreatment, interpersonal problems, and therapeutic alliance in short-term cognitive therapy. *Journal of Consulting and Clinical Psychology*. 1994, 62:185-190.
- (11) Smith TW: Hostility and health: Current status of a psychosomatic hypothesis. *Health Psychology*. 1992, 11:139-150.
- (12) Smith TW, Sanders JD, Alexander JF: What does the Cook and Medley Hostility Scale measure? Affect, behavior, and attributions in the marital context. *Journal of Personality and Social Psychology*. 1990, 58:699-708.
- (13) Smith TW, Brown PC: Cynical hostility, attempts to exert social control, and cardiovascular reactivity in married couples. *Journal of Behavioral Medicine*. 1991, 14:581-592.
- (14) Houston BK, Vavak CR: Cynical hostility: Developmental factors, psychosocial correlates, and health behaviors. *Health Psychology*. 1991, 10:9-17.
- (15) Smith RC, Zimny GH: Physicians' emotional reactions to patients. *Psychosomatics*. 1988, 29:392-397. \*
- (16) Lane C, Hobfoll SE: How loss affects anger and alienates potential supporters. *Journal of Consulting and Clinical Psychology*. 1992, 60:935-942.
- (17) Coyne JC: Depression and the response of others. *Journal of Abnormal Psychology*. 1976, 85:186-193.
- (18) Hammen CL, Peters SD: Interpersonal consequences of depression: Responses to men and women enacting a depressed role. *Journal of Abnormal Psychology*. 1978, 87:322-332.
- (19) Lechner DE: Work hardening and work conditioning interventions: Do they affect disability? *Physical Therapy*. 1994, 74:471-493.
- (20) Gaston L, Marmar CR, Thompson LW, Gallagher D: Relation of patient pretreatment characteristics to the therapeutic alliance in diverse psychotherapies. *Journal of Consulting and Clinical Psychology*. 1988, 56:483-489.
- (21) Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J: An inventory for measuring depression. *Archives of General Psychiatry*. 1961, 4:561-571.
- (22) Kerns RD, Turk DC, Rudy TE: The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). *Pain*. 1985, 23:345-356.
- (23) Cook W, Medley D: Proposed hostility and pharisaic-virtue scales for the MMPI. *Journal of Applied Psychology*. 1954, 238:414-418.
- (24) Spielberger CD, Johnson EH, Russell SF, et al: The experience and expression of anger: Construction and validation of an anger expression scale. In Chesney MA, Rosenman RH (eds), *Anger and Hostility in Cardiovascular and Behavioral Disorders*. Washington, DC: Hemisphere Publishing, 1985.
- (25) Beck AT, Steer RA, Garbin MG: Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*. 1988, 8:77-100.
- (26) Smith TW, Frohm KD: What's so unhealthy about hostility? Construct validity and psychosocial correlates of the Cook and Medley Ho scale. *Health Psychology*. 1985, 4:503-520.
- (27) Faber SD, Burns JW: Anger management style, degree of expressed anger, and gender influence cardiovascular recovery from interpersonal harassment. *Journal of Behavioral Medicine*. 1996, 19:31-53.
- (28) Horvath AO, Greenberg LS: Development and validation of the Working Alliance Inventory. *Journal of Counseling Psychology*. 1989, 36:223-233.
- (29) Tracey TJ, Kokotovic AM: Factor structure of the Working Alliance Inventory. *Psychological Assessment*. 1989, 1:207-210.
- (30) Horvath AO, Luborsky L: The role of the therapeutic alliance in psychotherapy. *Journal of Consulting and Clinical Psychology*. 1993, 61:561-573.
- (31) Krupnick JL, Sotsky SM, Simmens S, et al: The role of the therapeutic alliance in psychotherapy and pharmacotherapy outcome: Findings in the National Institutes of Health Treatment of Depression Collaborative Research Program. *Journal of Consulting and Clinical Psychology*. 1996, 64:532-539.