R E S E A R C H

The Development and Validation of the Client Expectations of Massage Scale

Karen T. Boulanger, PhD, CMT,[1*] Shelly Campo, PhD,[1] Jennifer L. Glanville, PhD,[2]
John B Lowe, DrPH,[3] Jingzhen Yang, PhD[1]

[1]*Department of Community and Behavioral Health, University of Iowa, Iowa City, IA, USA,* [2]*Department of Sociology, University of Iowa, Iowa City, IA, USA,* [3]*School of Health and Sports Sciences, University of the Sunshine Coast, Sippy Downs, Queensland, Australia*

Background: **Although there is evidence that client expectations influence client outcomes, a valid and reliable scale for measuring the range of client expectations for both massage therapy and the behaviors of their massage therapists does not exist. Understanding how client expectations influence client outcomes would provide insight into how massage achieves its reported effects.**

Purpose: **To develop and validate the Client Expectations of Massage Scale (CEMS), a measure of clients' clinical, educational, interpersonal, and outcome expectations.**

Setting: **Offices of licensed massage therapists in Iowa.**

Research Design: **A practice-based research methodology was used to collect data from two samples of massage therapy clients. For Sample 1, 21 volunteer massage therapists collected data from their clients before the massage. Factor analysis was conducted to test construct validity and coefficient alpha was used to assess reliability. Correlational analyses with the CEMS, previous measures of client expectations, and the Life Orientation Test–Revised were examined to test the convergent and discriminant validity of the CEMS. For Sample 2, 24 massage therapists distributed study materials for clients to complete before and after a massage therapy session. Structural equation modeling was used to assess the construct, discriminant, and predictive validity of the CEMS.**

Participants: **Sample 1 involved 320 and Sample 2 involved 321 adult massage clients.**

Intervention: **Standard care provided by licensed massage therapists.**

Main Outcomes: **Numeric Rating Scale for pain and Positive and Negative Affect Schedule–Revised (including the Serenity subscale).**

Results: **The CEMS demonstrated good construct, convergent, discriminant and predictive validity, and adequate reliability. Client expectations were generally positive toward massage and their massage therapists. Positive outcome expectations** had a positive effect on clients' changes in pain and serenity. High interpersonal expectations had a negative effect on clients' changes in serenity.

Conclusions: **Client expectations contribute to the nonspecific effects of massage therapy.**

KEYWORDS: massage therapy, validity, practice-based research, pain, affect

INTRODUCTION

Although massage therapy is a popular form of complementary and alternative medicine[1], and evidence for its effectiveness is increasing[2-3], little is known of the mechanisms by which massage therapy achieves its effects. There is both theoretical[4-5] and empirical[6-8] support for the importance of studying the relationships between the expected benefits of health behavior and outcomes of care. As no validated measures of client expectations of massage exist, the purpose of this study was to develop and validate a scale to assess client expectations of massage therapy and massage therapists.

Conceptualization

In the health care literature, two types of expectations emerge: outcome expectations and role expectations. In Social Cognitive Theory, outcome expectations are defined as the anticipated consequences of a behavior; they are learned from previous experience, observing or hearing about another's experience, and physiological arousal[1]. Systematic reviews conclude that there is at least moderate evidence of a significant relationship between medical patients' outcome expectations and health outcomes[7-8]. This is echoed in the psychotherapy literature where clients' outcome expectations have been shown to be related to measures of the therapeutic alliance and therapy outcomes[9-10]. Role expectations refer to beliefs about the expected behavior of a person who occupies a particular position; review findings examining the

relationship between role expectations and psychotherapy outcomes are equivocal, largely due to weaknesses associated with poor measurement[9].

Although there are similarities in patient expectations across health care disciplines, they are often discipline-specific. For example, in the psychotherapy literature, outcome expectations refer to beliefs regarding the helpfulness of therapy, the therapy process, and the length of therapy, whereas role expectations may include beliefs about the therapist's expertise and nurturance[9]. Patient expectations of physiotherapy outcomes include pain relief, being cured, receiving advice, and an understanding of the cause of their problem[11]. In addition, medical patients expect medical information, psychosocial support, physical examination, health advice, and therapeutic listening[12]. Finally, patients referred to a British National Health Service outpatient clinic that provides acupuncture, osteopathy, and homeopathy expected relief of symptoms, a holistic therapeutic approach, information to help understand their condition, and self-care recommendations[13].

Mirroring the definitions used in psychotherapy[9], the expectations that massage therapy clients have can be divided into two types: outcome expectations and role expectations. Outcome expectations refer to the expected benefits of massage - what clients expect will happen as a result of having a massage. For example, clients may expect to feel more relaxed after receiving a massage. Role expectations refer to the expected behaviors of the massage therapist - what clients expect massage therapists will do before, during, and after the massage session. For example, clients may expect that their massage therapist will assess their muscles and give them advice about how to take better care of themselves.

In massage therapy research, two studies have included measures of client expectations of massage. In the first study, Bowerman[14] measured expectations using a scale she created called the Massage Expectation Scale (MES). This is a five-point Likert scale with each item having its own specific set of responses ranging from "extremely much" to "not at all". Bowerman did not address role expectations or expectations of a variety of potential outcomes of massage therapy. As a measure of internal consistency, the derived alpha coefficient for the MES was reported as 0.72. Although the MES appeared to have adequate reliability, whether it has more than face validity is subject to question as this was not formally evaluated in her study. The hypotheses that the MES would be positively related to self-reported mood and negatively related to self-reported anxiety postmassage were not supported[14].

In the second study that measured massage expectations, Kalauokalani et al.[15] conducted a subanalysis of a randomized clinical trial of acupuncture or massage for low back pain to assess the relationship of patient expectations to functional outcomes. Prior to randomization, expectations were measured via telephone interviews in four ways: 1) expectation for treatment benefit (from 0–10, how helpful did they believe massage or acupuncture would be for their back problem); 2) relative strength of expected benefit (the difference between the massage and acupuncture scores); 3) average expectation (the average of the massage and acupuncture scores); and 4) general expectations regarding prognosis without reference to either treatment (using a seven-point Likert scale, participants replied to "one month from now, do you expect your back or leg pain to be 1 = completely gone to 7 = much worse). The measures were not validated.

Kalauokalani et al.[15] found that more patients with higher expectations for benefit from their assigned treatment reported improved back pain than patients with lower expectations. Those with higher expectations also had significantly greater pre-post improvements in back pain. Logistic regression adjusting for possible confounds showed that those with high expectations were 5.3 times more likely to improve than those with low expectations. Although the measure of relative strength of expected benefit was not significantly related to post-treatment functional outcomes, there was a significant interaction between the relative strength of expected benefit and the effect of the treatment (acupuncture or massage) received. In other words, if patients rated massage more positively than acupuncture before the trial and actually received massage in the trial, they improved significantly more than if they received acupuncture. Conversely, the more general (the third measure) and averaged (the fourth measure) expectations for acupuncture and massage were not significantly related to post-treatment functional outcomes.

The most recent study by Myers et al.[16] measured expectations of massage of patients with acute low back pain. General expectations (from 0–10, how much improvement was expected in six weeks) and specific expectations (from 0–10, how helpful would massage therapy be for the current episode of back pain or sciatica) were measured. The mean specific expectation for the helpfulness of massage was considered high, but it was not related to changes in functional status. On the other hand, the general expectation item was related to improvements in functional status. Myers et al.[16] noted that their results were opposite to the Kalauokalani et al. study and recommended the use of standardized measures of expectations in the future.

Although at least one measure of expectations was found to be important in the previous two studies, their results are conflicting. In addition to not using a scale with explicit psychometric properties, previous researchers only measured expectation of helpfulness for one specific outcome: chronic or acute back pain. Their studies did not address role expectations or expectations of a variety of potential outcomes of massage therapy.

Hypotheses

We hypothesize that there are several components to the construct of client expectations of massage (i.e., role and outcome expectations) that reflect the range of clinical and information sharing aspects of the session, as well as the benefits of massage. Second, we hypothesize that there will be positive and significant changes in pain and affect following one massage therapy session and that these changes will be related to client expectations of massage. In addition, client expectations of massage will be at least moderately positively correlated with previous measures of client expectations of massage including the Bowerman MES and the two items from the Kalauokalani et al. study as they likely measure at least a portion of the same construct. Because the goal of this study is to create a scale that measures a distinct construct, we hypothesize that client expectations of massage will be weakly or not correlated with optimism or pessimism.

METHODS

The first step in developing the new scale involved creating a pool of items. Initially, qualitative research was conducted with 30 Iowa-licensed massage therapists in attendance at a massage convention, three Iowa-licensed massage therapists selected for a focused interview due to their range of expertise, and 22 massage therapy clients that volunteered because they were in attendance at a qualitative research workshop given at a national massage therapy research conference. Questions were posed to inquire about the interpersonal elements of massage, including client expectations. Second, a thorough literature review was conducted regarding patient expectations of psychotherapy[9-10], physical therapy[11,17], and medicine[12,18]. Efforts were made to write items that apply to massage therapy clients with a broad range of potential expectations to maximize content validity. Finally, massage therapy researchers and clients reviewed the item pool for clarity and comprehensiveness. After a draft scale was developed, testing began with the participants in this study.

Participants

Two samples of massage therapists were personally recruited at the American Massage Therapy Association (AMTA) Iowa Chapter conventions in September 2006 (Sample 1) and March 2009 (Sample 2), respectively. Massage therapists were eligible to participate if they were licensed to practice massage in Iowa and if they saw at least 20 different clients per month. Each massage therapist was asked to distribute study materials to 20 consecutive eligible clients. To be eligible, clients must have been able to read and write English, be aged 18–70 for Sample 1, be aged 18–64 years (non-Medicare age to reduce the effect of comorbidities) for Sample 2, and be scheduled for at least a 30-minute massage. Massage therapists reported that most clients were willing to participate in the study and a few massage therapists reported that a couple chose not to participate.

Of the 25 massage therapists in Sample 1 who initially volunteered, 21 returned client surveys for a total sample of 367 clients. Some massage therapists did not see 20 clients during the study period as they initially thought they would. Of the 367 cases in the sample, 11 cases were removed because they were ineligible due to age. Of the 25 massage therapists in Sample 2 who initially volunteered, all had clients return surveys for a total sample of 377 clients. One of the massage therapists had only two clients return surveys; the massage therapist and his two clients were dropped from the study. Of the 375 cases in the sample, 12 cases were removed because they were 65 or older (ineligible).

Measures

Characteristics of Massage Therapists

Questions began with massage therapists' gender, age, and training. It proceeded with questions regarding practice setting, client workload, and other employment. The final item asked respondents to report the use of seven techniques (e.g., Swedish massage and trigger point therapy) and seven practices (e.g., stretching recommendations and stress management) using three options (never use the technique/practice, use it with some clients, or use it with majority of clients). This data were collected to provide a contextual description of the usual practice of the massage therapists whose clients participated in the study.

Characteristics of Massage Therapy Clients

Questions included the complaint, symptom, or other reason for the visit, the duration of the complaint, whether and from whom else clients may be seeking care, as well as age, gender, and the number of massages received from their current massage therapist. For Sample 2, an item was added regarding source of payment (i.e., out of pocket, insurance, or gift).

Client Expectations of Massage Scale (CEMS)

The CEMS asks clients to rate their level of agreement with statements about their massage therapist and massage therapy using a seven-response Likert scale (strongly agree – strongly disagree). The scale contained 34 items for Sample 1 and 28 items for Sample 2. Based on the literature review and the first study (Sample 1), four categories of expectations (clinical, educational, interpersonal, and outcome expectations) were included in the measurement model. Examples of clinical expectations are "my

massage therapist may" assess my muscles and have exceptional massage skills. Examples of educational behaviors include discussing the benefits of massage and the various causes of muscular tension. Examples of interpersonal behaviors include being like a friend and discussing personal problems. Finally, examples of outcome expectations are "massage therapy will" decrease pain and be relaxing. The directions and final items for the CEMS are shown in the Appendix.

Massage Expectation Scale

As discussed earlier, Bowerman[14] developed a five-point Likert scale consisting of seven items, each with its own specific set of responses ranging from "extremely much" to "not at all". Example items include "how much do you anticipate you will enjoy this procedure" and "how much do you think you know about the massage treatment you are about to receive."

Expectations of Massage

The two questions from the Kaluaokalani study[15] were modified to reflect "current problem" instead of "low back problem" to allow relevance to a broader array of problems that massage therapy clients present for care. In this study, the questions read, "from 0–10, with 0 being not at all helpful and 10 being extremely helpful, how helpful do you believe massage would be for your current problem?" and "one month from now, do you expect your problem to be: completely gone, much better, moderately better, a little better, about the same, a little worse, or much worse?"

Life Orientation Test–Revised (LOT-R)

Of four reviewed measures of hope and optimism, Steed[19] concluded that the Life Orientation Test was "marginally superior to the other scales" on the basis of its stable factor structure. The LOT has since been revised to focus more solely on the expectations of good versus bad outcomes; the Cronbach's alpha was reported as an acceptable 0.78[20]. Respondents were asked to rate their level of agreement using a five-point Likert format (4 = I agree a lot, 0 = I disagree a lot) with ten items. The LOT-R contains three positively worded phrases (optimism), three negatively worded phrases (pessimism), and four fillers.

Pain

The numeric rating scale for pain (NRSP) consists of eleven numbers ranging from 0–10 displayed horizontally, anchored on the left with "no pain" and on the right with "worst pain possible". Clients were asked to check the box that corresponds to their level of pain. A NRSP was used pre- and post-massage in a previous study that detected significant changes in postoperative patients[21]. The validity and reliability of this type of rating scale has been supported[22]. Two-point changes have been considered clinically important in previous studies[23-24].

Positive and Negative Affect Schedule– Expanded Form

The original Positive and Negative Affect Schedule (PANAS) is a 20-item self-report scale that is composed of a series of mood descriptors that participants rate the extent to which they have felt from 1 (very slightly or not at all) to 5 (extremely)[25]. Examples of negative affect items include "irritable, jittery, and scared" and positive affect items include "excited, enthusiastic, and determined". Various time instructions have been tested; "right now, at the present moment" was used in this study[25]. The PANAS-X contains additional subscales; serenity was used for this study. The serenity subscale contains three words ("calm", "relaxed", and "at ease") that are rated in the same fashion[26]. The reliability of all three subscales is very good. The following coefficient alphas have been reported for the "moment" time instructions: 0.89 for Positive, 0.85 for Negative, and 0.74 for Serenity (this scale has only three items). The correlation between Positive and Negative Affect is very low (-0.15 for the "moment" instructions)[26].

Procedures

Massage therapists in both samples were asked to complete a form that included items on demographics, practice characteristics, and expectations of massage therapy. They were also asked to distribute client forms until 20 eligible clients participated or until the five-week data collection period ended. Sample 1 clients were asked to complete a form containing personal characteristics, the first draft of the Client Expectations of Massage Therapy Scale (CEMS), Bowerman's MES[14], an adaptation of the two expectation questions used in the Kalauokalani et al. study[15], and the Life Orientation Test – Revised[20] before their massage and to return it to their massage therapist in a sealed envelope. Sample 2 clients were asked to complete an Iowa Massage Therapy Client Survey (before massage). This included client characteristics, the numeric rating scale for pain (NRSP), the Positive and Negative Affect Schedule–Revised (PANAS-X)[26], and the revised CEMS. Immediately after their massage, clients were asked to complete an Iowa Massage Therapy Client Survey (after massage) which included the NRSP and the PANAS-X. They were instructed to return both forms using a stamped envelope addressed to the researcher. The two forms were printed on different colors to facilitate their identification. Each client received a pen with the Massage Therapy Foundation logo as a token of appreciation for participation. All procedures were approved by the university's institutional review board.

Analyses

Analyses were conducted to test for the scale's reliability, structure, convergent validity, discriminant

6

validity, and predictive validity[27]. In order to avoid burdening one sample of massage clients with many scales to complete and to allow for scale revision and reassessment, two samples were used to assess the different types of validity. Sample 1 data were tested to determine the components of the scale (i.e., subscales), convergent validity, discriminant validity, and reliability. Sample 2 data were used to confirm the structure of the revised scale, and to assess reliability and predictive validity.

Sample 1

To test for convergent validity, a correlation analysis was conducted with the CEMS subscales, the Bowerman MES, and the two questions used in the Kalauokalani et al. study[15]. Because the CEMS and other variables aim to measure a similar construct (massage expectations), the CEMS should correlate with them if it has good convergent validity. To test for discriminant validity, a correlation analysis was conducted with the CEMS subscales and the two subscales from the LOT-R. Because the CEMS is hypothesized to measure a construct other than optimism and pessimism, the correlations should be low to nonexistent if it has good discriminant validity. Finally, after redundant and invariable items were removed, an exploratory factor analysis using the Kaiser criteria and varimax rotation was conducted on the CEMS to assess construct validity. Scale reliability was assessed using coefficient alpha.

Sample 2

A paired *t* test using SPSS Grad Pack tested the hypothesis that there would be positive and significant changes in pain and affect following one massage therapy session. To examine the construct validity of the CEMS, Mplus[28] was used to conduct a confirmatory factor analysis on the items in the scale that were retained for substantive reasons. As shown in Figure 1, the latent variables (clinical, educational, interpersonal, and outcome expectations) were allowed to correlate. As the distribution of the data was negatively skewed, the MLM estimator (Satorra Bentler chi-square and robust standard errors) was used to correct for the non-normal nature of the data.

To assess the predictive validity of CEMS, a structural equation model (see Figure 2) in which the CEMS subscales are hypothesized to predict changes in positive affect, negative affect, serenity, and pain was tested. Structural equation modeling was chosen because it allows multiple indicators of the same construct and controls for measurement error[29]. The latent exogenous variables representing outcome, interpersonal, clinical, and educational expectations—as well as positive affect, negative affect, serenity, and pain—have been described earlier. The errors of the endogenous variables were allowed to correlate
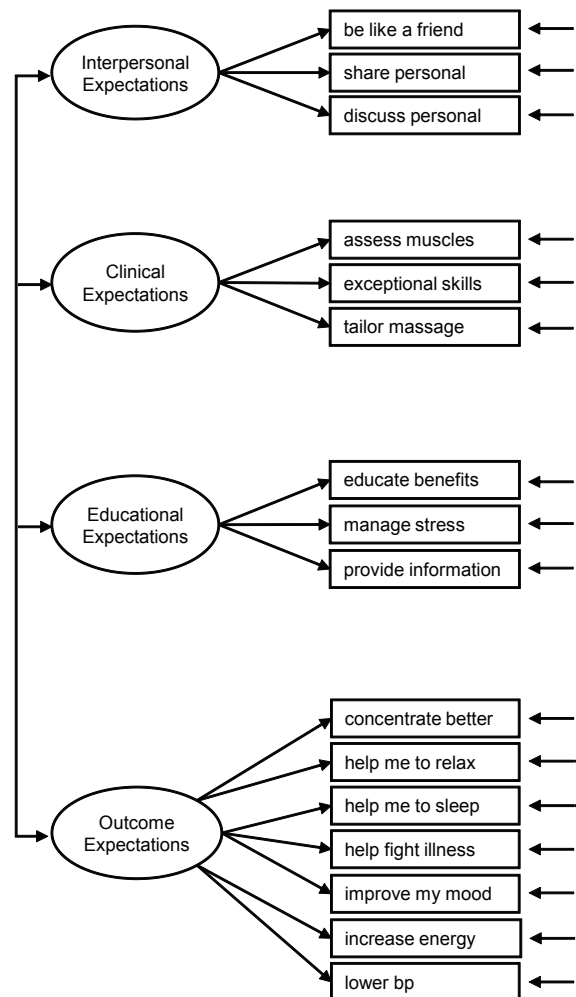

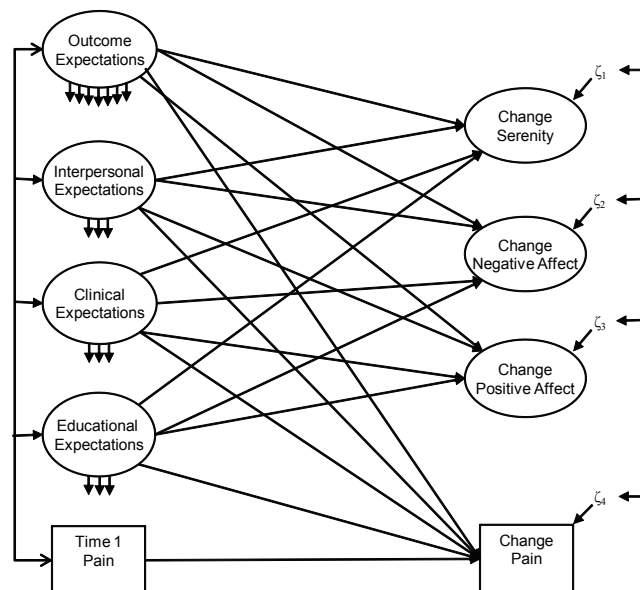FIGURE 1. *Final measurement model for client expectations of massage.*

FIGURE 2. *Initial model testing predictive validity of CEMS.*

because they likely share variance unexplained by the model. A correction was made for the clustering of standard errors within each massage therapist.

Because there is not one agreed measure of overall model fit, four indices will be reported: the root mean square error of approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and chi-square (degrees of freedom and *p* value). The recommended cut-offs are .06 for the RMSEA and .95 for the TLI and CFI[30]. Component fit for the measurement model was assessed by examining the statistical significance of the coefficients (factor loadings), the statistical significance of the correlations among the latent variables, and the explained variances of the indicators.

RESULTS

Characteristics of Massage Therapists

Table 1 provides the demographic and practice characteristics of Sample 1 and 2. Study massage therapists were mostly female, middle-aged, and about half of them practiced solo. Massage therapists in Sample 2 had more hours of initial training, were in practice longer, worked more hours as a massage therapist, and were less likely to have another job, compared to Sample 1. This is likely due to the fact that greater discernment was used in accepting volunteers for the second sample to ensure that massage therapists had enough unique clients to

participate in the project within the study timeline. It is also important to mention that massage therapists in Iowa are required to have at least 600 hours of initial training in order to apply for licensure, and must have 12 hours of continuing education annually to maintain licensure. Table 2 presents the common techniques and practices used by the massage therapists in this study.

Characteristics of Massage Therapy Clients

The mean age of clients was 47.7 years (SD = 12.9) for Sample 1 and 46.1 years (SD = 12.0) for Sample 2. Most of the clients sought massage for specific

TABLE 1. Massage Therapists' Characteristics

Characteristic	Sample 1[a]	Sample 2[b]
Percent female	85.7	79.2
Mean age	47.4	45.9
Mean hours of initial training program	694.4	717.3
Mean years since completion of initial training	6.6	9.6
Mean hours spent in direct patient care in a typical week	15.8	24.8
Percent that practice alone (vs. with others)	47.6	50.0
Percent employed in a job other than as a massage therapist	47.6	16.7

[a]n = 21.
[b]n = 24.

TABLE 2. Sample 1[a] and Sample 2[b] Massage Therapists' Percent Use of Techniques and Practices with Clients

	% Never Use		% Use with Some (<50%)		% Use with Most (50%+)	
Technique	1	2	1	2	1	2
Swedish massage	4.8	4.2	19.0	29.2	76.2	66.7
Trigger Point therapy	9.5	0	38.1	33.3	52.4	66.7
Stretching during session	9.5	0	38.1	37.5	52.4	62.5
Reflexology[c]		37.5		45.8		16.7
Neuromuscular therapy	23.8	20.8	38.1	33.3	38.1	45.8
Reiki or therapeutic touch	66.7	66.7	23.8	20.8	9.5	12.5
Craniosacral therapy[c]		70.8		20.8		8.3
Practice						
Encourage increased water intake	0	4.2	4.8	0	95.2	95.8
Heat application (hot pack, heating pad)	4.8	12.5	38.1	16.7	57.1	70.8
Stretching recommendations for home/work	4.8	0	33.3	20.8	61.9	79.2
Stress management	14.3	0	57.1	41.7	28.6	58.3
Exercise counseling (for general health)	19.0	0	38.1	41.7	42.9	58.3
Aromatherapy	57.1	33.3	23.8	33.3	19.0	33.3
Ice or cold application	28.6	33.3	52.4	50.0	19.0	16.7

[a]n = 21.
[b]n = 24.
[c]This technique was not included on the form for Sample 1.

8

complaints (e.g., back, neck, and shoulder pain) that were chronic in nature (Table 3).

Construct Validity and Internal Reliability

Sample 1

The exploratory factor analysis resulted in a four factor solution: clinical, educational, and interpersonal (role) expectations and outcome expectations. Of the initial 22 items in the role expectations section, nine were retained and one was revised. Of the initial 12 items in the outcome expectations section, two were deleted and two were reworded.

As Table 4 demonstrates, all of the Cronbach's alphas were adequate (.70–.92). The lower alphas are a function of the low number of items for interpersonal (2 items) and educational (3 items) expectations; additional items were added for the final draft of the scale.

Sample 2

The confirmatory factor analysis of the CEMS revealed an excellent model fit (RMSEA = .03, CFI = .98, TLI = .97, chi-square = 135.7, df = 97, p = .00) for four factors, three of which refer to role expectations, and one of which refers to outcome expectations. Each of role expectation factors was measured by three items, and the outcome expectation factor was measured by seven items. In addition, all of the

factor loadings (range = .56 to .82) and the correlations among the latent variables (range = .19 to .59) were significant (see Table 4). The amount of variance explained in the items (R^2) ranged from .31 to .68. The reliabilities of the revised CEMS subscales used in Sample 2 improved from the reliabilities of the subscales used in Sample 1.

The first factor, clinical expectations, describes the role of the massage therapist as one who is skilled, assesses muscles, and tailors the massage to meet individual client needs. This subscale had good reliability (alpha = .77). The second factor, educational expectations, describes the role of the massage therapist as an educator who teaches clients about the benefits of massage, stress management, and how to take better care of themselves. This subscale had good reliability (alpha = .84). The third factor, interpersonal expectations, describes the role of the massage therapist as a friend who shares personal aspects of their life and discusses clients' personal problems with them. This subscale had good reliability (alpha = .78). The fourth factor, outcome expectations, describes the range of benefits that clients expect after a massage therapy session. These include improvements in concentration, relaxation, sleep, immunity, mood, energy, and blood pressure. This subscale had very good reliability (alpha = .89).

Convergent Validity

Sample 1

Table 5 shows that the correlations between the CEMS subscales and the MES were all moderate and significant, displaying good convergent validity. The CEMS shows similar significant correlations with the item "from 0 to 10, with 0 being not at all helpful and 10 being extremely helpful, how helpful do you believe massage would be for your current problem?" (from the Kalauokalani study[15]), but low correlations with that study's second item, "one month from now, do you expect your problem to be:" completely gone (1) to much worse (7).

Discriminant Validity

Sample 1

When compared to the subscales of the LOT-R, the CEMS had good divergent validity. As predicted, CEMS subscales were not related to pessimism and weakly correlated with optimism, suggesting that the CEMS measures a construct distinct from optimism or pessimism (see Table 5).

Sample 2

Analysis in Sample 2 also showed good discriminant validity. Although the correlations among the four latent variables are all at least moderate to high, they nonetheless establish discriminate validity among the constructs. In addition, when all of

TABLE 3. Characteristics of Massage Therapy Clients

	Sample 1[a] (%)	Sample 2[b] (%)
Female	77.5	78.5
Reason for the visit		
Complaint-based	76.7	71.9
Relaxation or wellness	23.1	28.1
Duration of complaint		
Acute	18.8	17.4
Chronic	62.2	59.5
Seeking care from another provider (yes)	39.4	36.1
Source of payment[c]		
Out of pocket	-	86.6
Insurance	-	2.2
Gift	-	10.9
Number of massages received from this massage therapist		
None, first massage	16.6	19.3
1	6.9	0.6
2-4	13.4	19.0
5 or more	63.1	61.1

[a]n = 320 included in analysis after list-wise deletion.
[b]n = 321 included in analysis after list-wise deletion.
[c]This item was not included on the form for Sample 1.

TABLE 4. Items in Analysis, Means, Standard Deviations, Factors, Factor Loadings, and Reliabilities

Variable	Mean[a]		SD		Factor loading[b]		alpha[c]	
	S1[d]	S2[e]	S1	S2	S1	S2	S1	S2
Clinical							.69	.77
Tailor their massage approach to suit my individual needs	6.7	6.5	0.7	0.7	.72	.80		
Have exceptional massage skills	6.7	6.7	0.7	0.6	.67	.78		
Assess my muscles to understand my condition	6.7	6.5	0.6	0.8	.63	.65		
Educational							.70	.84
Give me ideas on how to manage my stress[f]	-	5.7	-	1.3	-	.82		
Educate me on the benefits of massage therapy	6.3	5.7	1.1	1.5	.70	.81		
Provide me with information I need to take better care of myself	5.8	5.7	1.4	1.3	.77	.75		
Interpersonal							.70	.78
Share personal aspects of their life with me[f]	-	3.9	-	1.7	-	.82		
Discuss my personal problems with me	4.5	3.6	1.8	1.9	.79	.78		
Be like a friend to me	6.0	4.9	1.3	1.6	.83	.64		
Outcome							.87	.89
Help my body's ability to fight illness[f]	-	5.4	-	1.5	-	.81		
Increase my level of energy	6.2	5.8	1.0	1.1	.80	.81		
Improve my mood	6.3	5.8	1.0	1.3	.78	.80		
Lower my blood pressure[f]	-	5.1	-	1.5	-	.75		
Help me to concentrate better on a task	5.8	5.4	1.3	1.4	.78	.73		
Help me to sleep better at night	6.3	6.0	1.0	1.2	.69	.70		
Help me to relax	6.6	6.4	0.9	0.8	.71	.56		

[a]Scale responses were 7=strongly agree to 1=strongly disagree.
[b]All factor loadings are significant ($p < .05$).
[c]Coefficient alpha of subscale.
[d]n = 321 included in analysis after list-wise deletion.
[e]n = 320 included in analysis after list-wise deletion.
[f]This item was not included on the form for Sample 1.

TABLE 5. Correlations of Client Expectations of Massage Scale Items with the Massage Expectations Scale (MES), the Kalauokalani et al. items (K1, K2), and the two subscales of the Life Orientation Test (Optimism and Pessimism)

CEMS Subscale	MES	K1[a]	K2[b]	Optimism	Pessimism
Clinical	-.53	.36	-.11	.22	.04
Educational	-.38	.48	-.23	.15	-.04
Interpersonal	-.40	.36	-.17	.11	-.06
Outcome	-.65	.49	-.22	.26	.01

Notes: n = 320 included in analysis after list-wise deletion; correlation for columns MES, K1, K2, and Optimism is significant ($p < .05$, 2-tailed).
[a]K1 = "From 0 to 10, with 0 being not at all helpful and 10 being extremely helpful, how helpful do you believe massage would be for your current problem?"
[b]K2 = "One month from now, do you expect your problem to be" 1 (completely gone) to 7 (much worse).

the indicators were tested as one latent variable, the model had a very poor fit (RMSEA = .12, CFI = .70, TLI = .66).

Predictive Validity

As predicted, the mean change in pain (2.9) was both statistically and clinically significant (see Table 6). In addition, significant improvements were observed for the serenity and negative affects subscales of the PANAS-X, but not for positive affect.

Structural equation modeling revealed that the data fit the model well (RMSEA = .04, CFI = .96, TLI = .95). The chi-square was 278.3 (df = 164, $p = .00$). Controlling for clinical, interpersonal, and educational expectations and initial pain score, outcome expectations predicted changes in serenity and pain (Figure 3). Controlling for outcome, clinical, and educational expectations and initial pain score, interpersonal expectations predicted changes in serenity.

10

TABLE 6. Outcome measures before and after one massage session

Measure	Premassage Mean	Postmassage Mean	Average Difference	t Test Statistic
Pain[a]	4.3	1.4	-2.9	24.5[c]
Serenity[b]	2.8	4.3	1.5	-27.0[c]
Negative affect[b]	1.5	1.1	-0.4	-13.7[c]
Positive affect[b]	2.9	2.9	0.0	-0.8

Note: n = 321 included in analysis after list-wise deletion.
[a]Numeric rating scale for pain (0 = "no pain" and 10 = "worst pain possible").
[b]PANAS-X subscale (1 ="very slightly or not at all" and 5 = "extremely).
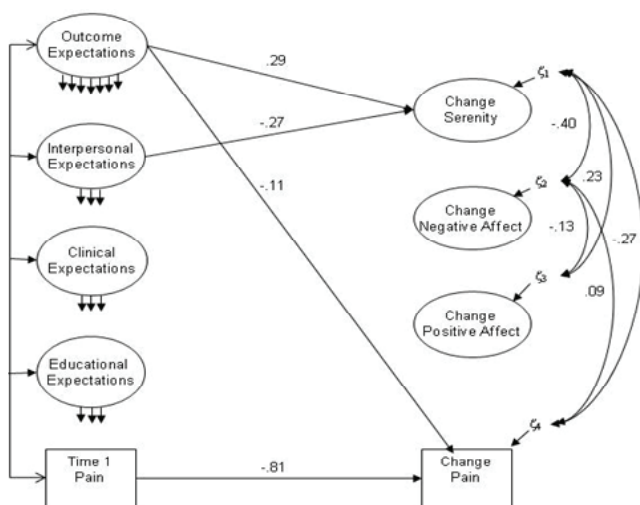[c]Paired t test, p < .05.

FIGURE 3. Significant paths of the model testing predictive validity of CEMS.

Consistent with the initial confirmatory factor analysis of the CEMS, the correlations among the latent expectation variables were significant and ranged from .19 to .60. With the exception of changes in positive affect with changes in pain, all of the correlations among the errors of the endogenous variables were significant (Figure 3).

DISCUSSION

This study aimed to develop and validate a scale that measured the range of client expectations of massage therapy. Factor analyses on two samples supported a four-factor structure consisting of expectations related to the role of the massage therapist as a person, clinician, and educator, as well as the outcomes of massage therapy. The scale had good convergent validity, as evidenced by its positive correlations with previous measures of client expectations. Regarding the low correlations of the

CEMS subscales with the second Kalauokalani et al. study item ("one month from now, do you expect your problem to be: completely gone, much better, moderately better, a little better, about the same, a little worse, or much worse?"), it is possible that the second item measured patient perceptions of their problem versus their expectations of massage specifically. The CEMS also had good discriminant validity as evidenced by its weak associations with optimism and nonsignificant correlations with pessimism.

Regarding predictive validity, clients' interpersonal, clinical, educational, and outcome expectations varied in their relationship to the massage therapy outcomes measured in this study. Higher outcome expectations resulted in more positive changes in serenity and pain. On the other hand, higher interpersonal expectations were related to lower changes in serenity. Neither clinical nor educational expectations were related to any of the outcomes measured in this study. Specific findings will be discussed below.

Client Expectations of Massage and Pain

The outcome expectation subscale had good predictive validity with changes in pain; decreases in pain were predicted by higher client expectations of benefit from massage therapy. This is consistent with the Kalauokalani et al.[15] study and a randomized controlled trial of acupuncture[31], as well as Social Cognitive Theory[4]. Pain is a symptom that is often measured in clinical trials involving massage therapy[2,32]. To further our understanding of the psychological mechanisms of massage therapy effects (also called placebo effects[33]), it is important for researchers to incorporate a measure of outcome expectations to help explain any observed changes in pain.

Client Expectations of Massage and Affect

Although there were statistically significant decreases in negative affect, none of the CEMS subscales predicted these changes. However, the clients in this study did not have much room for improvement; the mean score premassage was 1.5 (potential scores range from 1-5).

Significant and more meaningful increases in serenity were observed in the massage therapy clients. These positive changes in serenity were predicted by higher outcome expectations, supporting the predictive validity of the outcome expectations subscale for changes in serenity. On the other hand, higher interpersonal expectations were associated with lower improvements in serenity. In other words, the more a client expected their massage therapist to share personal aspects of their life, be friendly, and discuss clients' personal problems, the less improvement in serenity they reported after the massage. It is possible that for some clients, conversation during massage interferes with their ability to relax and be at ease.

11

Although the PANAS has been used in acupuncture[34], homeopathy[35], and yoga[36] studies, this is the first study to use the PANAS-X as an outcome measure with massage therapy clients. Similar to this study, others have failed to find significant changes in positive affect[34-35], while studies involving yoga[36] and group-based exercise[37] found significant improvements. In addition, de Valois et al.[34] questioned the value of using the positive affect subscale in future CAM research due to high missing values (12.2%) and negative feedback from research participants. Similarly, there was a high proportion of missing values for positive affect in this study (8.5%), and some negative feedback received from research participants. It is understandable that massage clients could be confused on how to rate, for example, how alert, excited, and enthusiastic they feel after a massage. For these reasons, we recommend against using the positive affect subscale in future research with massage therapy clients.

Limitations

This study involved volunteer massage therapists from a single geographic location and their clients that may not be representative of all massage therapy clients. In addition, it is possible that the responses of the massage therapy clients were subject to social desirability (i.e., they may have rated the massage therapist in a more favorable way). However, another study reported high patient expectations of massage[16], and changes in the NRSP in this study were similar to those observed in postsurgical patients (from 4.65 premassage to 2.35 postmassage)[21]. Finally, the participants in this study likely held a favorable bias toward massage therapy as they were approached after their decision to actively seek massage therapy. This study cannot be generalized to potential clients that have no previous experience with massage therapy.

Implications for Massage Therapists

This study demonstrated that massage therapy clients have four categories of expectations which include expectations about their massage therapist as a person, clinician, and educator, and about massage therapy. As outcome expectations were related to changes in pain and serenity, massage therapists should be aware of these relationships to promote better outcomes. On the other hand, if a massage therapist is aware that a client has unrealistic expectations at the start of a session, the therapist can realign the expectations to prevent disappointment in the results of the session. In addition, as high interpersonal expectations were associated with lower changes in serenity, massage therapists should question their clients as to whether talking during the massage is perceived as relaxing or distracting, and modify the amount of conversation if necessary. As suggested by Expectancy Violation Theory[38], having reasonable expectations met or low expectations exceeded results in better communication outcomes than when high expectations are not met.

Suggestions for Future Research

This study measured expectations of clients presenting with a variety of conditions and for relaxation. Items included in the analysis therefore aimed to be relevant to all clients. However, for clinical trials addressing a specific condition, it would appear prudent to add and test items addressing the expectations for symptom-specific improvement (e.g., reducing pain, decreasing muscle tension, and improving range of motion in low back pain patients).

Future research should also examine expectations in populations unfamiliar with massage, in order to attempt to increase the variability of responses to the CEMS. Another research opportunity with unfamiliar populations involves investigating the process by which expectations may affect other behaviors, such as choosing to receive massage. For example, outcomes expectations and role expectations may have separate and direct influences on getting a massage, or role expectations may moderate the potential effect of outcomes expectations on the behavior of getting a massage. In addition, the association of the CEMS to other outcome measures used in massage therapy research (e.g., anxiety and depression) is needed.

The massage therapist–client relationship and the link between communication patterns and outcomes in particular, need to be explored. When training massage therapists, it would be valuable to understand how conversation may accentuate or impede the psychological benefits of massage.

CONCLUSION

In general, the massage therapy clients in this study had high expectations regarding the benefits of massage. These high expectations were associated with improvements in serenity and pain. This study enhances our understanding of the nonspecific effects of massage therapy.

CONFLICT OF INTEREST NOTIFICATION

The authors declare there are no conflicts of interest.

COPYRIGHT

REFERENCES

1. Barnes PM, Bloom B, Nahin RL. *Complementary and alternative medicine use among adults and children: United States, 2007*. National health statistics reports, no 12. Hyattsville, MD: National Center for Health Statistics; 2008.

2. Moyer CA, Rounds J, Hannum JW. A meta-analysis of massage therapy research. *Psychol Bull*. 2004;130(1):3–18.

3. Moyer CA, Dryden T, Shipwright S. Directions and dilemmas in massage therapy research: a workshop report from the 2009 North American Research Conference on Complementary and Integrative Medicine. *Int J Ther Massage Bodywork*. 2009;2(2):15–27.

4. Bandura A. *Social Foundations of Thought and Action: a Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall; 1986.

5. Baranowski T, Perry CL, Parcel GS. How individuals, environments, and health behavior interact. p. 165–184. In: Glanz K, Rimer BK, Lewis FM, editors. *Health Behavior and Health Education: Theory, Research, and Practice,* 3rd edition. San Francisco, CA: Jossey-Bass; 2002.

6. Costantino MJ, Arnkoff DB, Glass CR, et al. Expectations. *J Clin Psychol*. 2011;67(2):184–192.

7. Crow R, Gage H, Hampson S, et al. The role of expectancies in the placebo effect and their use in the delivery of health care: a systematic review. *Health Technol Assess*. 1999;3(3):1–96.

8. Mondloch MV, Cole DC, Frank JW. Does how you do depend on how you think you'll do? A systematic review of the evidence for a relation between patients' recovery expectations and health outcomes. *Can Med Assoc J*. 2001;165(2):174–179.

9. Glass CR, Arnkoff DB, Shapiro SJ. Expectations and preferences. *Psychotherapy*. 2001;38(4):455–461.

10. Meyer B, Pilkonis PA, Krupnick JL, et al. Treatment expectancies, patient alliance, and outcome: further analyses from the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *J Consult Clin Psychol*. 2002;70(4):1051–1055.

11. Grimmer K, SheppardL, Pitt M, et al. Differences in stakeholder expectations in the outcome of physiotherapy management of acute low back pain. *Int J Qual Health Care*. 1999;11(2):155–162.

12. Dawn AG, Lee PP. Patient expectations for medical and surgical care: a review of the literature and applications to ophthalmology. *Surv Ophthalmo*. 2004;49(5):513–524.

13. Richardson J. What patients expect from complementary therapy: a qualitative study. *Am J Public Health*. 2004;94(6):1049–1053.

14. Bowerman SB. The effects of empathic touch and expectations on mood change during a therapeutic massage treatment [Doctoral dissertation]. California School of Professional Psychology - Los Angeles. *Dissertation Abstracts International*. 1989;50(10).

15. Kalauokalani D, Cherkin DC, Sherman KJ, et al. Lessons from a trial of acupuncture and massage for low back pain: patient expectations and treatment effects. Spine. 2001;26(13):1418–1424.

16. Myers SS, Phillips RS, Davis RB, et al. Patient expectations as predictors of outcome in patients with acute low back pain. *J Gen Intern Med*. 2008;23(2):148–53.

17. George SZ, Hirsh AT. Distinguishing patient satisfaction with treatment delivery from treatment effect: a preliminary investigation of patient satisfaction with symptoms after physical therapy treatment of low back pain. *Arch Phys Med Rehabil*. 2005;86(7):1338–1344.

18. Kravitz RL. Measuring patients' expectations and requests. *Ann Intern Med*. 2001;134:881–888.

19. Steed LG. A psychometric comparison of four measures of hope and optimism. *Educ Psychol Meas*. 2002;62(3):466–482.

20. Scheier,MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J Pers Soc Psychol*. 1994;67(6):1063–1078.

21. Wang HL, Keck JF. Foot and hand massage as an intervention for postoperative pain. *Pain Manag Nurs*. 2004;5(2):59–65.

22. Jensen MP, Turner JA, Romano JM, et al. Comparative reliability and validity of chronic pain intensity measures. *Pain*. 1999;83(2):157–162.

23. Childs JD, Piva SR, Fritz JM. Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine*. 2005;30(11):1331–1334.

24. Farrar JT, Young J P, LaMoreaux L, et al. Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. *Pain*. 2001;94(2):149–158.

25. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol*. 1988;54(6):1063–1070.

26. Watson D, Clark LA. *The PANAS-X: Manual for the Positive and Negative Affect Schedule – Expanded Form*. Iowa City, IA: University of Iowa; 1994.

27. Clark LA, Watson D. Constructing validity: basic issues in objective scale development. *Psychol Assess*. 1995;7(3):309–319.

28. Muthén LK, Muthén BO. *Mplus Statistical Analysis with Latent Variables. User's Guide*. Los Angeles, CA: Muthen & Muthen; 2009.

29. Bollen KA. *Structural Equations with Latent Variables*. New York, NY: John Wiley and Sons; 1989.

30. Hu L, Benter PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equation Modeling*. 1999;6(1):1–55.

31. Linde K, Witt CM, Streng A, et al. The impact of patient expectations on outcomes in four randomized controlled trials of acupuncture in patients with chronic pain. *Pain*. 2007;128(3):264–271.

32. Cherkin DC, Sherman KJ, Kahn J, et al. A comparison of the effects of 2 types of massage and usual care on chronic low back pain. *Ann Intern Med*. 2011;155:1–9.

33. Finniss DG, Kaptchuk T J, miller F, et al. Biological, clinical, and ethical advances of placebo effects. *The Lancet*. 2010;375(9715):686–695.

34. de Valois BA, Young TE, Melsome E. Assessing the feasibility of using acupuncture and moxibustion to improve quality of life for cancer survivors with upper body lymphoedema. *Eur J Oncol Nurs*. 2012;16(3):301–309.

35. Hyland ME, Lewith GT, Wheeler P. Do existing psychologic scales measure the nonspecific benefit associated with CAM treatment? *J Altern Complement Med*. 2008;14(2):185–189.

36. Vadiraja HS, Raghavendra Rao M, Nagarathna R, et al. Effects of yoga program on quality of life and affect in early breast

cancer patients undergoing adjuvant radiotherapy: a randomized controlled trial. *Complement Ther Med*. 2009;17(5):274–280.

37. Brown AK, Liu-Ambrose T, Lord SR. The effect of group-based exercise on cognitive performance and mood in seniors residing in intermediate care and self-care retirement facilities: a randomised controlled trial. *Brit J Sport Med*. 209;43(8):608–614.

38. Burgoon JK, Hale JL. Nonverbal expectancy violations: model elaboration and application to immediacy behaviors. *Communication Monogr*. 1988;55(1):58–79.

Corresponding author: Karen T. Boulanger, PhD, CMT, Department of Community and Behavioral Health, College of Public Health, N400 CPHB, 105 River St., University of Iowa, Iowa City, IA, 52242,USA

E-mail*:* drkarenboulanger@gmail.com

APPENDICES

Appendix 1: Directions and Final Items for the Client Expectations of Massage Scale

Please tell us about the expectations you have of your massage therapist by rating how much you agree or disagree with the following statements using this scale:

7 = Strongly agree   4 = Neither agree nor disagree
                       3 = Slightly disagree
6 = Agree   2 = Disagree
5 = Slightly agree   1 = Strongly disagree

I expect that my massage therapist may:

Clinical Expectations Items

Tailor their massage approach to suit my individual needs.

Have exceptional massage skills.
Assess my muscles to understand my condition.

Educational Expectations Items

Give me ideas on how to manage my stress
Educate me on the benefits of massage therapy.
Provide me with information I need to take better care of myself.

Interpersonal Expectations Items

Share personal aspects of their life with me.
Discuss my personal problems with me.
Act like a friend to me.

15