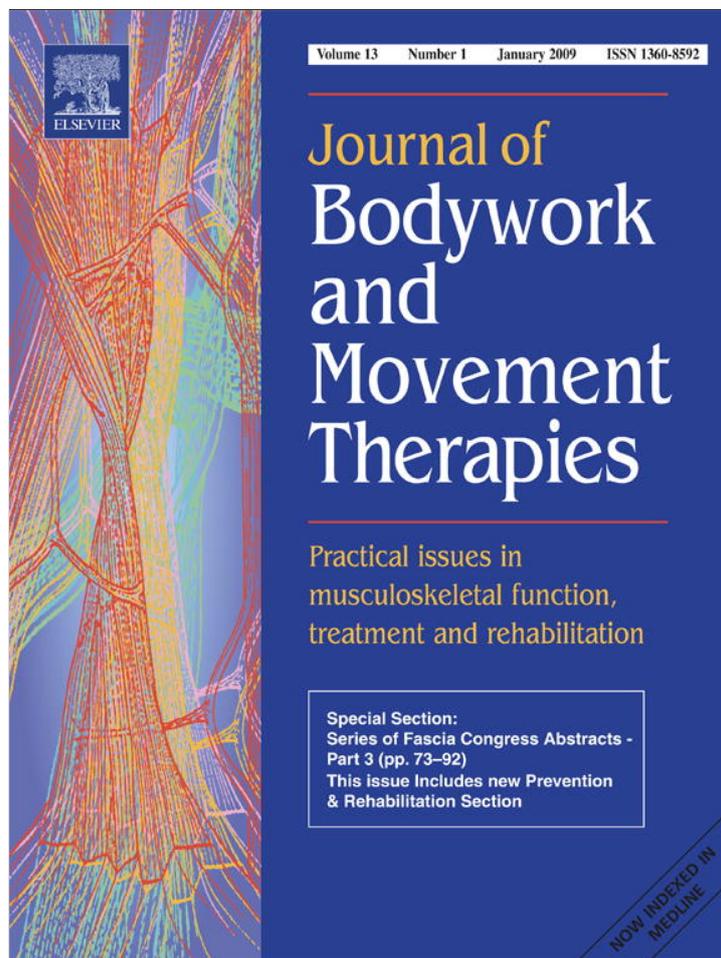


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## RESEARCH INSTRUMENT EVALUATION

# The attitudes toward massage (ATOM) scale: Reliability, validity, and associated findings

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## KEYWORDS

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**Summary** Despite the key role of attitudes in guiding behavior, no systematic examination of attitudes toward massage has been conducted and no standard assessments have been created. We developed the attitudes toward massage (ATOM) scale, a nine-item measure of an overall attitude toward massage that includes two distinct subscales assessing the attitudes of *Massage as Healthful* and *Massage as Pleasant*. These subscales are reliable ( $\alpha > .70$  and  $> .80$ , respectively), covary with major personality traits and dispositional sensitivities, and are positively correlated with broader attitudes toward complementary and alternative medicine. Clinical evidence suggests that these attitudes change in response to receiving massage, though further research is needed. Supplemental items administered with the ATOM illustrate a general preference for female massage therapists while also showing this preference to be stronger in men. Attitudes pertaining to massage and sexual arousal, which may stand in the way of trying massage for some persons, are also examined. With or without the supplemental items, the ATOM scale is an easily administered measure for assessing attitudes toward massage that can be used in research or practice settings.

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## Introduction

Use of massage in the United States is on the rise (American Massage Therapy Association, 2005), and research into its effects is expanding (see Moyer

et al., 2004; Beider and Moyer, 2007; Haraldsson et al., 2006; for quantitative reviews). Despite these trends, there are no standard measures for assessing attitudes toward massage, which is a significant gap given the key role of attitudes in guiding behavior (Ajzen, 2001), including health behavior (Finlay et al., 1997; Ajzen and Timko, 1986). Such a measure would be a valuable research tool that would allow examination of

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preexisting between-groups differences (e.g., do attitudes toward massage vary as a function of personality, gender, age, or experience with massage?) or of treatment effects and interactions (e.g., how do attitudes change in response to receiving massage?), and could also be used to generate subgroups for research by identifying individual attitudes toward massage. Practicing massage therapists may also have uses for a brief standardized measure of massage attitudes. For example, it may be valuable to ascertain massage attitudes prior to a first session, especially with inexperienced recipients.

### Massage attitudes and CAM attitudes

Though a search for prior studies concerned specifically with massage attitudes was not fruitful, attitudes toward complementary and alternative medicine (CAM) more generally have been assessed. Hyland et al. (2003) examined attitudes toward CAM during the development of their 11-item Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ). Factor analysis revealed two underlying constructs measured by associated subscales. The six-item CAM subscale measures belief in the scientific validity of complementary and alternative medicine, while the five-item holistic health (HH) subscale is less well-defined but purported to measure the belief that health is a matter of “balance” including important contributions from nutritional, emotional, and lifestyle factors. In a test of the questionnaire’s discriminant validity, rheumatology patients were found to differ in their full-scale HCAMQ and CAM subscale scores, but not on their HH subscale scores, dependent on whether they had chosen to receive treatment at a conventional hospital or at a complementary medicine clinic. Though such a retrospective assessment cannot rule out competing hypotheses (e.g., cognitive dissonance), this finding is consistent with the likelihood that the patients’ attitudes toward CAM influenced their choices.

Given that massage therapy is often considered a CAM modality (e.g., National Center for Complementary and Alternative Medicine, 2007), a measure such as the HCAMQ may indirectly assess massage attitudes. However, CAM is a heterogeneous category, and not everyone considers massage therapy to be CAM. Therefore, it is desirable to have a measure specific to massage when that is the treatment modality of interest. For these reasons, we endeavored to identify specific massage attitudes and to create a reliable and valid

measure for their assessment. Logically, we expect such massage attitudes will be moderately correlated with more general CAM attitudes such as those assessed by the HCAMQ.

### Massage attitudes and personality

In the course of establishing external validity, we wished to examine whether massage attitudes vary as a function of personality. Assessment of these relationships should improve our understanding of the processes by which people decide whether to try, or come to benefit from, massage. Specifically, we decided to examine massage attitudes in relation to “Big Five” personality traits, the predominant trait model of personality, and to Gray’s Behavioral Inhibition and Activation Systems, the biologically based model of personality that is most directly linked to nervous system functioning.

#### Big Five personality traits

Though the history of psychology has included many models of personality, the modern taxonomy of traits known as the Big Five is considered a milestone for describing people (Roberts and Robins, 2000). As with all trait approaches, the Big Five model is predicated on the existence of personality traits that are (a) relatively stable and therefore predictable over time, (b) relatively stable across situations and therefore capable of predicting behavior across settings, and (c) continuous, rather than categorical (in contrast to theories of personality types). Specifically, the Big Five taxonomy consists of the following traits considered to be present, to a greater or lesser degree, in each individual.

*Extraversion* is a tendency to be sociable, to like people and prefer large groups and gatherings, and to be assertive, active, and talkative. Extraverts are upbeat, energetic, and optimistic. To have a low level of Extraversion (that is, to be an introvert) is to be reserved, independent, and even-paced.

*Agreeableness* is a tendency to be altruistic, sympathetic to others and eager to help them, and to believe that others will be helpful in return. To have a low level of this trait is to be disagreeable, antagonistic, egocentric, skeptical of others’ intentions, and competitive rather than cooperative.

*Conscientiousness* is a tendency to be purposeful, strong-willed, determined, scrupulous, punctual, and reliable. To have a low level of Conscientiousness is to be less purposeful and planful and more lackadaisical in pursuit of goals.

*Neuroticism* is a tendency to experience negative affects such as fear, sadness, embarrassment, anger, guilt, and disgust. To have a low level of Neuroticism is to be emotionally stable, calm, even-tempered, relaxed, and able to face stressors without becoming rattled.

*Openness* is a tendency to be curious about oneself and the world, to entertain novel ideas and unconventional values, and to experience emotions more keenly. To be low on Openness is to be conventional in behavior and conservative in outlook, to prefer the familiar to the novel, and to experience one's emotional responses less keenly (Costa and McCrae, 1992).

These traits are known to be relatively stable across lifespan, to generalize across many different cultures, and to predict a wide variety of outcomes (Roberts and Robins, 2000). Most relevant to the current study is the consistent finding that Conscientiousness is negatively related to taking risks with one's health, such as smoking and drug abuse, and positively related to beneficial health-related behaviors, such as engaging in exercise (Bogg and Roberts, 2004). Despite this, a large-scale ( $n = 3032$ ) US survey found no relationship between Conscientiousness or any other Big Five personality traits and self-reported usage of "manipulative/body-based methods" of CAM, the heterogeneous CAM subcategory that includes massage therapy but also chiropractic and osteopathic manipulation, exercise and movement therapies, and other specific therapies (Honda and Jacobson, 2005). Though this suggests there may be no relationship between personality and attitudes toward massage (which would logically be reflected in usage), a specific assessment of massage attitudes would more precisely assess this relationship.

#### Gray's behavioral inhibition and activation systems (BIS/BAS)

Gray (1982) proposed a physiological model of personality based on the sensitivity of two distinct neurological systems. One is the Behavioral Inhibition System (BIS), sensitive to signals of punishment, nonreward, and novelty, which controls the experience of anxiety and is responsible for the experience of negative feelings in response to anxiety-relevant cues. The other is the Behavioral Activation System (BAS), sensitive to signals of reward, nonpunishment, and escape from punishment, which is responsible for the experience of positive feelings and initiates or furthers a person to move toward goals. The sensitivities of these systems are presumed to be unrelated, such that

any combination of BIS and BAS sensitivities is possible in an individual.

We know of no massage-related research that has employed the BIS/BAS model. This is unfortunate; given that many practitioners and researchers view massage outcomes as a function of its direct effects on the nervous system, a consideration of these dispositional sensitivities seems most appropriate. More specific to the current study, we think it is logical to expect attitudes toward massage, a therapy predicated on private interpersonal contact, to vary according to these sensitivities.

#### Hypotheses

We expect that attitudes toward massage will be related to several personality traits and dispositional sensitivities. In particular, we expect significant relationships with Conscientiousness, Openness, Neuroticism, and BIS Anxiety. Because Conscientiousness is generally associated with a pattern of healthy behavior, we expect Conscientiousness will be positively correlated with attitudes toward massage, a therapy commonly considered to be healthful. Because massage can be considered a nonconventional therapy, we also expect Openness will be positively correlated with attitudes toward massage. We expect higher levels of Neuroticism and BIS Anxiety, both of which predispose a person to feelings of fear, nervous apprehension, and anxiety, to be associated with less positive attitudes toward massage, because receiving and benefiting from massage is dependent on not being afraid to place oneself in another's hands, both literally and figuratively. No predictions are made concerning other personality traits and dispositional sensitivities. Finally, we expect that attitudes toward massage will display moderate positive correlations with more general attitudes toward CAM.

#### Method

##### Participants

All participants were students at a large Midwestern US university who were at least 18 years of age and enrolled in an elective undergraduate course in educational psychology. A total of 285 participants, composed of two distinct samples, provided data on massage attitudes. Sample I consisted of 114 undergraduate students enrolled during the Fall 2002 semester. Sample II consisted of 171 undergraduate students enrolled during the Spring 2006

**Table 1** Participant demographics and massage experience.

	Sample I ( <i>n</i> = 114) (%)	Sample II ( <i>n</i> = 171) (%)
Female	65	61
African-American	20	16
Asian-American	7	7
Caucasian-American	65	64
Hispanic-American	4	8
Other	7	5
Message received, lifetime		
None	47	45
One	18	18
Two to five	22	26
Six to ten	5	5
Eleven or more	7	6
Message received, previous 12 months		
None		69
One		19
Two to five	n/a	9
Six to ten		2
Eleven or more		1

Note: Failure of any total to equal 100% is due to rounding.

semester. All participants gave their informed written consent prior to participation, and received credit toward the course research participation requirement upon survey completion. Participant demographics, along with self-reported experience in receiving massage performed by a massage therapist, are displayed by sample in Table 1. Participants' experience receiving massage from a professional massage therapist ranged considerably, and in both samples the proportion of participants who had never had a professional massage was similar to the proportion of participants who had experienced at least one. Though age was not assessed beyond the requirement that participants be at least 18, it is known that the vast majority of participants were between the ages of 18 and 23 due to their undergraduate status.

## Measures

### Attitudes toward massage (ATOM) scale

The first author, a massage therapy researcher and (at that time) a doctoral student in counseling psychology, generated items intended to assess a variety of ways an individual may perceive massage. These included perceiving massage as

(a) pleasant and comfortable, (b) a legitimate therapy for promotion of health, (c) a luxury, (d) energizing, and (e) associated with sexual feelings or arousal. Other items were intended to assess an individual's (f) preferences in a massage therapist and (g) amount of experience receiving massage. All items were written using simple, conventional vocabulary, and were designed to be short and unambiguous in accordance with guidelines given by McDonald (1999). Subsequently, these items were reviewed by a colleague (an educational psychologist) who suggested minor changes to increase clarity that were implemented prior to administration. In responding to these items, all participants were instructed to define massage as "a person having his or her soft tissues manipulated by the hands of another person." ATOM items that were eventually retained and reported on in the current study are shown in the Appendix.

### Big Five personality trait scales

Scales assessing Big Five personality traits were obtained from the International Personality Item Pool (IPIP), a public domain internet "collaboratory" that provides immediate access to psychometrically valid measures of individual differences (Goldberg et al., 2006; International Personality Item Pool, 2007). Internal reliabilities of the IPIP Big Five scales are uniformly high (alphas range from .88 to .91).

### Behavioral inhibition and activation scales

Scales assessing BIS/BAS dispositional sensitivities, including three BAS subfactors (drive, fun seeking, and reward responsiveness; Carver and White, 1994), were obtained from the International Personality Item Pool (Goldberg et al., 2006; International Personality Item Pool, 2007). Internal reliabilities of the IPIP BIS/BAS scales are acceptable (alphas range from .68 to .84).

### Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ)

The HCAMQ (Hyland et al., 2003) was used to assess attitudes toward CAM. The HCMAQ consists of 11 items that yield a full-scale score indicative of a general attitude toward CAM, and two subscale scores. The six-item CAM subscale measures belief in the validity of complementary and alternative medicine, while the five-item HH subscale is purported to measure the belief that health is a matter of balance not accounted for by a reductionist medical model. Scale authors report acceptable internal reliabilities for the full-scale ( $\alpha = .80$ ) and subscales ( $\alpha = .83$  and  $.75$ , respectively).

## Procedures

Sample I completed a 38-item pencil-and-paper survey created to pilot-test items that assessed attitudes toward a variety of health treatment modalities. Fifteen of these items were concerned with attitudes toward massage, and consisted of a stem in the form of a sentence with five ordered category response options that ranged from “strongly disagree” to “strongly agree” with a middle option of “neutral.” Three other items assessed massage experience, race/ethnicity, and gender. Completion of this survey was expected to take a participant no more than 15 min.

Sample II completed an online computer survey totaling 167 items. Components of this survey included the IPIP Big Five scales (100 items), the IPIP BIS/BAS scales (36 items), the HCAMQ (11 items), and a set of items intended to assess attitudes toward massage (16 items). All of these 163 items consisted of a stem in the form of a sentence and five ordered category response options that ranged from “strongly disagree” to “strongly agree” with a middle option of “neutral.” The remaining four items included two open-ended items that assessed experience with massage and two forced-choice items that assessed demographics. Completion of this survey was expected to take a participant no more than 1 h.

All procedures were approved by the Institutional Review Board at the university where data collection took place.

## Analyses

Sample I data, collected by means of pencil-and-paper surveys, were manually entered into a computer database by the first author. Sample II data were collected by means of an internet survey research tool ([www.surveymonkey.com](http://www.surveymonkey.com)) that automatically generates a computer database. In both cases, participants' responses to ordered-category items were converted to values ranging from one to five in a manner consistent with a measure's original design and the presence of any items requiring reverse-scoring. Item means and standard deviations were computed and visually inspected to determine if the measurement properties of specific items were attenuated by floor or ceiling effects; no substantial problems were found. SPSS (2004) statistical software was used to compute covariance and correlation matrices of massage attitude items in preparation for confirmatory factor analyses performed by means of the CONFA computer program (Fraser, 1997), which yields data

on factor structure, item uniquenesses and discrepancies, and model fit indices. All confirmatory factor analyses were performed using maximum likelihood estimation procedures, and internal reliability of scales was quantified by calculating Cronbach's alpha. Descriptive and inferential statistical analyses were performed with SPSS (2004) statistical software. For all analyses, tolerance for Type I error = .05.

## Results

### Construct validity and internal reliability

Psychometric properties of the ATOM are displayed in Table 2. Inspection of means and standard deviations shows that though some items' central tendency was closer to four than to three on a five-point scale, no items were unduly affected by floor or ceiling effects. Separate factor analyses performed on the two samples yield very similar results, and both support a two-factor structure. The first factor is assessed by four items corresponding to the attitude that massage is a legitimate therapy capable of promoting health. The resulting *Massage as Healthful* subscale has acceptable internal reliability ( $\alpha = .71$  and  $.75$  for Samples I and II, respectively). The second factor is assessed by five items corresponding to the attitude that it is pleasant to receive massage and that massage brings about desirable feelings. The resulting *Massage as Pleasant* subscale has good internal reliability ( $\alpha = .86$  and  $.81$  for Samples I and II, respectively). Fit of the two factor model, assessed by Tanaka's goodness-of-fit statistic (.98 for both samples) and by Root Mean Square Error of Approximation (RMSEA; .08 and .07 for Samples I and II, respectively), was superior to a single factor model and is acceptable for both samples (Browne and Cudeck, 1993).

Unsurprisingly, the *Massage as Healthful* and *Massage as Pleasant* factors display a strong relationship. Factor analysis of Sample I data yielded  $r = .71$  while that of Sample II was higher still at  $r = .83$ . It is logical that these factors would be highly correlated as both can be expected to be components of the broader attitude that massage is positive or valuable, and it is reasonable to average all nine items to yield a reliable Global score ( $\alpha = .85$  in both samples) that is indicative of an individual's overall attitude toward massage. Nevertheless, the correlation of the factors is not so high that we should consider them to be indistinct. Even using the higher of the two

**Table 2** Psychometric properties of the ATOM scale.

	Sample I (n = 114)		Sample II (n = 171)	
<i>Message as healthful (Hltfl) subscale (Mean, SD)</i>				
	Factor loadings			
	Hltfl	Plst	Hltfl	Plst
Receiving massage is as good for the mind as it is for the body (3.74, .80)	.77	.54	.78	.65
Receiving regular massage would be good for promoting health and well-being (4.07, .73)	.77	.55	.74	.61
Massage is a serious form of therapy (4.00, .89)	.49	.34	.59	.48
Massage should be covered by health insurance (3.57, 1.07)	.57	.40	.52	.43
	Subscale reliabilities			
Cronbach's alpha	.71		.75	
<i>Message as pleasant (Plst) subscale (Mean, SD)</i>				
	Factor loadings			
	Hltfl	Plst	Hltfl	Plst
I like to be massaged (3.93, .91)	.65	.92	.66	.80
Receiving massage is relaxing (4.25, .71)	.57	.80	.65	.78
Receiving massage would improve my mood (3.98, .70)	.57	.81	.59	.72
Receiving a massage would make me nervous (reversed, 3.00, .89)	.52	.73	.49	.59
I like to be touched by other people (4.02, 1.05)	.39	.55	.45	.55
	Subscale reliabilities			
Cronbach's alpha	.86		.81	
	Model properties			
Tanaka's goodness-of-fit	.98		.98	
RMSEA	.08		.07	
Correlation of factors	.71		.83	

Note: Each item is followed by its mean and SD, based on a five-point scale beginning with one. Higher scores represent a more favorable attitude toward massage. Item means and SDs are those observed in Sample II.

correlation estimates as the starting point for calculations, it can be shown that more than 30% of the variance in either factor is unaccounted for by the other. If these factors are seen to be differentially correlated with other measures, as will be examined in the sections that follow, this would further support their distinctiveness. (It should also be noted that the correlation of participants' actual subscale scores is lower than the correlation computed during factor analysis, as the subscales do not measure the underlying constructs perfectly. For example, the correlation of subscale scores in Sample II was  $r = .59$ , substantially lower than the correlation between the factors that the subscales assess. This is a function of necessarily imperfect measurement, and is not further evidence the factors' distinctiveness.)

**Convergent validity: relation of massage attitudes to CAM attitudes**

Table 3 displays the relationships between the HCAMQ and the ATOM. Lower scores on the HCAMQ and its subscales, representative of more positive attitudes toward CAM, were consistently associated with higher scores on the ATOM and its subscales (all at least  $p < .05$ ), suggesting that a positive attitude toward CAM is associated with a positive attitude toward massage. Among the CAM and HH subscales, the stronger correlations observed between massage attitudes and holistic health attitudes, which are practically indistinguishable from those observed between massage attitudes and the full-scale HCAMQ, suggest that valuing a holistic approach to health may contribute to positive ATOM.

**Discriminant validity**

**Big Five personality traits**

Massage attitudes frequently varied in relation to Big Five personality traits. These relationships are displayed in Table 4. Higher ATOM Global scores, representing a positive attitude toward massage generally, were predicted by higher levels of Extraversion ( $p < .01$ ), Agreeableness ( $p < .01$ ), Conscientiousness ( $p < .01$ ), and Openness ( $p < .05$ ), while higher levels of Neuroticism predicted a more negative general attitude toward massage ( $p < .05$ ). The ATOM subscales displayed different patterns of results, adding further support to the assertion that they are distinct. The attitude that massage is healthful was associated with higher levels of Agreeableness ( $p < .01$ ) and Conscientiousness ( $p < .01$ ) but not with other Big Five traits. The attitude that massage is pleasant was positively correlated with Extraversion, Agreeableness, and Openness, and negatively correlated with Neuroticism (all  $p < .01$ ).

In contrast with these findings, but consistent with the findings of Honda and Jacobson (2005), participants' self-reported experience receiving massage from a trained massage therapist was uncorrelated with any Big Five personality traits. This was true for massage received in the last 12 months and for massage received in one's lifetime,

and did not change whether massage experience was assessed as a continuous (number of massages indicated) or categorical (no experience versus any experience) variable.

**BIS/BAS dispositional sensitivities**

Table 5 displays relationships between BIS/BAS dispositional sensitivities and massage attitudes. Higher BIS Anxiety scores are associated with a less favorable Global attitude toward massage ( $p < .01$ ), and a less favorable attitude that massage is pleasant ( $p < .01$ ), but are not associated with the attitude that Massage is Healthful. This pattern of results, including the magnitude of correlations, is very consistent with the relationship between Neuroticism and massage attitudes. This is logical as BIS Anxiety and Neuroticism are similar constructs that are highly correlated ( $r = .77$  in the current sample).

Higher scores on all three BAS subscales are uniformly predictive of a more positive attitude toward massage generally ( $p < .01$ ), and of the attitude that Massage is Pleasant ( $p < .01$ ), but unassociated with the attitude that Massage is Healthful. Though the specificity of BAS subscales may be important in other areas of research, in

**Table 3** Correlations of ATOM scores with scores on the Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ) ( $n = 166$ ).

	HCAMQ		
	Full scale	CAM	HH
ATOM Global	-.46**	-.25**	-.43**
ATOM Healthful	-.34**	-.17*	-.33**
ATOM Pleasant	-.48**	-.28**	-.43**

\* $p < .05$ .  
\*\* $p < .01$ .

**Table 5** Correlations of ATOM scores and Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS) dispositional sensitivities ( $n = 171$ ).

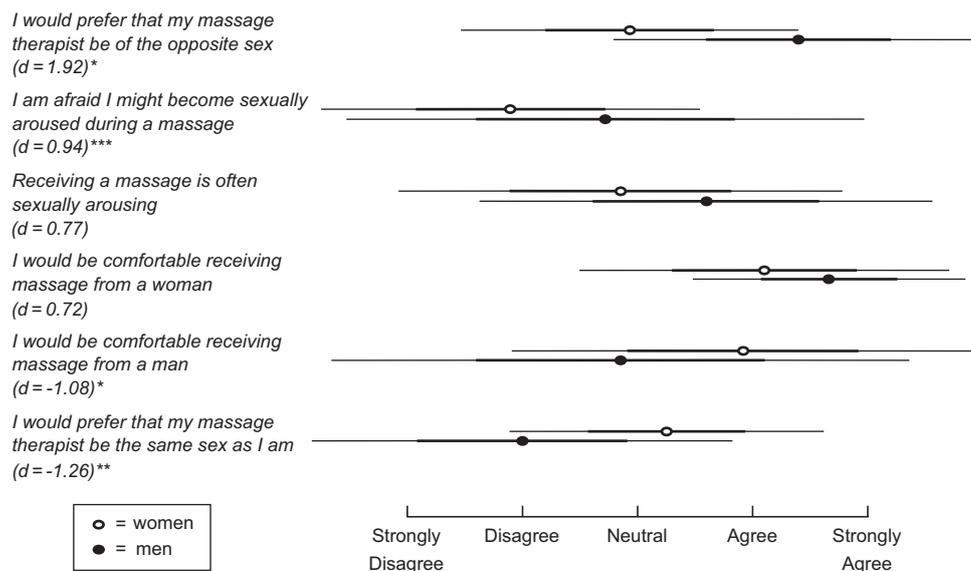
	BIS Anxiety	BAS Drive	BAS Fun	BAS Reward
ATOM Global	-.17*	.21**	.20**	.21**
ATOM Healthful	-.07	.12	.04	.08
ATOM Pleasant	-.23**	.26**	.32**	.30**

\* $p < .05$ .  
\*\* $p < .01$ .

**Table 4** Correlations of ATOM scores and Big Five personality traits ( $n = 171$ ).

	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
ATOM Global	.24**	.27**	.20**	-.18*	.17*
ATOM Healthful	.10	.21**	.27**	-.07	.10
ATOM Pleasant	.33**	.27**	.08	-.25**	.20**

\* $p < .05$ .  
\*\* $p < .01$ .



**Figure 1** Men's ( $n = 67$ ) and women's ( $n = 104$ ) mean responses,  $\pm 2$  SD, on ATOM supplemental items pertaining to sexuality and gender. For each item, men's and women's mean responses are different (all  $p < .001$ ). Standardized mean differences are quantified by  $d$  (positive values arbitrarily indicate stronger item endorsement by men). Asterisks indicate that, in addition to means, men's and women's variances were also different for these items (\* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ ).

judging their relation to massage attitudes there appears to be little need to make such distinctions. It appears appropriate to support the simpler and broader conclusion that overall BAS sensitivity is associated with certain massage attitudes.

### External validity: findings from a clinical study

Subsequent to our data collection from Samples I and II, the ATOM was administered in a longitudinal clinical study<sup>1</sup> that examined the effect of five 60-min massage sessions on a community sample of 30 persons (23 women) exhibiting clinical levels of psychological distress (Moyer, 2007). Recipients completed the ATOM approximately 1 week prior to the beginning of massage sessions, and again approximately 1 month after the fifth and final massage session. Following the fourth session of massage, recipients reported their perceived level of therapeutic bond with their therapist by means of a standardized measure commonly used in psychotherapy research (Saunders et al., 1989).

Given the substantial time between administrations (2–3 months) and the inclusion of an intervention, test–retest reliability was acceptable for the ATOM Global scale ( $r = .68$ ) and for the Healthful ( $r = .65$ ) and Pleasant ( $r = .56$ ) subscales.

<sup>1</sup>The clinical study discussed in this section was funded by a research grant from the Massage Therapy Foundation.

Recipients' Global attitude toward massage (paired  $t(29) = 4.34$ ,  $r = .68$ ,  $p < .001$ ), as well as their attitude that massage is Healthful (paired  $t(29) = 4.51$ ,  $r = .65$ ,  $p < .001$ ) and Pleasant (paired  $t(29) = 2.54$ ,  $r = .56$ ,  $p < .05$ ), tended to improve.

Across the sample, higher levels of therapeutic bond were positively correlated with increases in the Global ( $r = .45$ ,  $p < .05$ ) and Pleasant ( $r = .49$ ,  $p < .05$ ) attitudes, but not with changes in the Healthful ( $r = .20$ ) attitude. Possibly, the existence of a good therapeutic relationship increases the likelihood that one's attitudes in relation to massage being good and pleasant will be positively influenced. However, this is speculative given the correlational nature of these data, and other interpretations are also possible.

### Massage attitudes pertaining to sexuality and gender

Though they were not a part of confirmatory factor analysis applied to the nine items that constitute the ATOM's healthful and pleasant subscales, we also explored findings associated with six supplementary ATOM items pertaining to sexuality and gender that were completed by Sample II participants. Figure 1 displays the mean and variability of these items separately by participants' gender, to illustrate the extent to which men and women diverged in their responses to these items (in contrast to their mean scores on the *Massage as*

*Healthful* and *Massage as Pleasant* subscales, which did not differ by gender in either sample). Considered together, several items appear to indicate a general preference for female massage therapists, though this preference is much stronger in men. Women were more likely to prefer a therapist of the same sex over one of the opposite sex (paired  $t(103) = 2.50$ ,  $r = .70$ ,  $p < .05$ ), but their comfort in receiving massage from a woman was not significantly greater than their comfort in receiving massage from a man (paired  $t(103) = 1.84$ ,  $r = .39$ ,  $p = .07$ ). Men strongly preferred that a massage therapist be of the opposite sex than of the same sex (paired  $t(66) = 12.55$ ,  $r = .68$ ,  $p < .001$ ) and expressed greater comfort in receiving massage from a woman than from a man (paired  $t(66) = 11.47$ ,  $r = .13$ ,  $p < .001$ ). Men's response variation was significantly greater than women's for three of these four items, the exception being "I would be comfortable receiving massage from a woman." Men were more likely than women to think that "massage is often sexually arousing" ( $t(169) = 4.98$ ,  $p < .001$ ) and more likely to be afraid they "might become sexually aroused during a massage" ( $t$ -test for unequal variances ( $110.66) = 5.21$ ,  $p < .001$ ). Across men and women, being afraid of becoming sexually aroused during a massage was correlated with Neuroticism ( $r = .21$ ,  $p < .01$ ). In women, this attitude bore no relationship to experience having received massage, whereas men who had more massages in the previous 12 months (but not in their lifetime) tended to have lower levels of this fear ( $r = -.24$ ,  $p < .05$ ).

Possibly, men's and women's attitudes about massage and sexual arousal are mediated differently by other massage attitudes. Women were less likely to think that massage is often sexually arousing, and less likely to be afraid of becoming sexually aroused during a massage, if they held the attitude that *Massage is Pleasant* ( $r = -.25$ ,  $p < .05$ , and  $r = -.40$ ,  $p < .001$ , respectively). Women were also less likely to fear sexual arousal during massage if they held the attitude that *Massage is Healthful* ( $r = -.26$ ,  $p < .01$ ). Conversely, men's perception of massage as sexually arousing and their fear of becoming sexually aroused during a massage were unrelated to their perceptions of massage as pleasant or healthful.

One of the supplemental items ("massage therapy is often sexually arousing") was also administered in the aforementioned longitudinal clinical study. Test-retest reliability for this item, across the 2–3 month interval that included massage therapy treatments, was acceptable ( $r = .58$ ). During the study, participants' perception that

massage is often sexually arousing tended to decrease (paired  $t(29) = 3.04$ ,  $r = .58$ ,  $p < .01$ ), a change that was unassociated with level of therapeutic bond ( $r = -.02$ ).

## Discussion

Based on a small number of items that make it quick and easy to administer, the ATOM is capable of assessing a Global attitude, positive or negative, toward massage. Two subscales more specifically assess the degree to which a person holds the attitudes that massage is healthful, and pleasant. The measure exhibits satisfactory reliability, and factor analysis support its construct validity. Support for external validity comes from desirable changes in research participants' ATOM scores following treatment in a longitudinal clinical study, including differential change associated with therapeutic bond.

### Massage attitudes and CAM attitudes

Attitudes toward massage are correlated with more general attitudes toward CAM. However, the specific nature of this relationship is difficult to interpret given the heterogeneous nature of CAM. Possibly, slightly stronger correlations observed between massage attitudes and a preference for holistic health approaches mean that some proponents of massage see it as an alternative to therapies they consider to be overly reductionistic.

### Massage attitudes and personality

Despite the fact that personality traits and dispositional sensitivities were uncorrelated with having received massage, many relations between personality and massage attitudes were observed. (This illustrates the fact that assessing usage of a therapy is only an indirect assessment of attitudes toward that therapy. For example, even a person with a very positive attitude toward massage may be prevented from receiving it due to financial considerations, or the unavailability of massage in the person's location.) Two findings particularly stand out. The first is that personality traits and dispositional sensitivities are differentially related to seeing massage as healthful and to seeing massage as pleasant. This supports the distinctiveness of these attitudes, and may also have ramifications for influencing inexperienced persons to try massage. Using Neuroticism as an example, we see that this trait has little to no influence on the attitude that massage is healthful, but is

related to the attitude that massage may not be pleasant. If we wished to persuade neurotic persons to try massage, then, appeals focused on its healthfulness are unlikely to move such persons past their concern that it may not be pleasant.

The second finding that stands out is that the traits and dispositional sensitivities most associated with vulnerabilities to anxiety and depression (Neuroticism and BIS Anxiety) are also predictive of less positive attitudes toward massage. Though not unexpected, this is unfortunate, for massage shows considerable promise as a therapy for anxiety and depression (Moyer et al., 2004). As in the example just given, it may be of particular importance to develop honest and persuasive strategies and informational materials to help neurotic and anxious persons overcome their attitude that massage may not be pleasant if the potential of massage to treat these conditions is to be fully realized.

### Massage attitudes pertaining to sexuality and gender

Though many massage recipients and practitioners may prefer not to discuss them, attitudes pertaining to sexuality and gender appear important in relation to massage. The finding that people generally prefer a female massage therapist may reflect the stereotypes by which we tend to think of women as more sensitive, caring, and nurturant than men, and parallels the finding that people generally prefer female therapists for talk therapies (Kaplan, 1996; Stampler et al., 1991), though in the case of massage there is probably more than just these stereotypes to be considered. In particular, the observations that men's preference for female massage therapists is very strong, while their comfort receiving massage from a man is often not very high, probably reflect socially reinforced sex roles related to touching. A result of these attitudes is that male massage therapists may be underutilized and encounter unique career challenges (Van Meter, 2007). Finally, though the majority of participants, and especially women, indicated they were not afraid of becoming sexually aroused during a massage, the range of responses indicates that this concern may still act as a barrier to trying massage for some persons. More research on attitudes pertaining to sexuality, gender, and massage is certainly needed.

### Limitations

Of course, this study is not without limitations. Our main samples were drawn from a college student

population that, in the absence of data from other populations, limits the generalizability of the findings. Further, because we could not be sure if a sufficient proportion of the participants in those samples would have experience with professionally administered massage therapy, we instructed them to define massage as "a person having his or her soft tissues manipulated by the hands of another person," which logically includes receiving massage in non-professional contexts. Instructing participants to define massage in this way could yield different results than if we had asked them to base their responses only on their experience receiving massage therapy from a trained provider. Both of these threats, however, are somewhat offset by the satisfactory performance of the ATOM in our clinical study of massage therapy for psychological distress, which featured a nonstudent community sample and trained massage therapists for the provision of treatment. In any case, this study should be seen as an initial effort at assessing attitudes toward massage. While we have identified distinct attitudes concerning the healthfulness and pleasantness of massage, there are likely other important attitudes, and possibly subfactors of those attitudes, that remain unidentified.

### Conclusion

Despite its limitations, we believe that the results of the current study are an important step in recognizing attitudes toward massage, and hope that the ATOM proves to be a valuable tool for massage therapy researchers and practitioners. Its adoption by other researchers will advance the understanding of attitudes toward massage, and address necessary limitations of the present study related to characteristics of the main samples. Will the attitudes measured by the ATOM be similar for persons in other locations, or for persons who are not students? Does experience receiving massage consistently change massage attitudes? Perhaps most notably, do interventions that change massage attitudes increase the likelihood of trying massage, or of benefiting from it? We look forward to learning the answers to these questions.

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## Appendix

ATOM items reported upon in the current study, for which participants were instructed to define massage as “a person having his or her soft tissues manipulated by the hands of another person”:

### Massage as Healthful items

Receiving massage is as good for the mind as it is for the body.

Receiving regular massage would be good for promoting health and well-being.

Massage is a serious form of therapy.

Massage should be covered by health insurance.

### Massage as Pleasant items

I like to be massaged.

Receiving massage is relaxing.

Receiving massage would improve my mood.

Receiving a massage would make me nervous (reverse-scored).

I like to be touched by other people.

### Supplemental items

Please estimate the number of massages, performed by a trained massage therapist, that you have received in your lifetime.

Please estimate the number of massages, performed by a trained massage therapist, that you have received in the previous 12-month period. I would prefer that my massage therapist be of the opposite sex.

I am afraid I might become sexually aroused during a massage.

Receiving a massage is often sexually arousing.

I would be comfortable receiving massage from a woman.

I would be comfortable receiving massage from a man.

I would prefer that my massage therapist be the same sex as I am.

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