Original article

Two new scales for integrative medical education and research: confidence in providing calm, compassionate care scale (CCCS) and self-efficacy in providing non-drug therapies (SEND) to relieve common symptoms

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Abstract

Introduction: Training in integrative medicine aims to promote compassionate, patient-centered care, including non-pharmaceutical therapies to reduce common symptoms. Although specific competencies have been identified, few tools are available to assess clinician confidence in providing integrative care. We evaluated two instruments to address this gap.

Methods: We assessed face validity with focus groups. We assessed internal reliability (Cronbach’s alpha) and convergent validity in a survey of 213 health professionals, correlating the new instruments to each other and to standard measures of mindfulness, compassion, empathy, training, and practice.

Results: The two measures each had 10 items with scores ranging from 0 to 100, and had good face validity. Cronbach’s alpha was 0.87 for the calm, compassionate care scale (CCCS) and 0.95 for self-efficacy in providing non-drug therapies to relieve common symptoms (SEND). Scores for CCCS were significantly correlated with measures of mindfulness, compassion, empathic concern, and perspective-taking as well as training and practice (p < 0.05 for each). Scores for SEND were similarly correlated with CCCS, compassion, empathic concern, and perspective-taking as well as training and practice (p < 0.05 for each).

Conclusion: These two new tools, CCCS and SEND, have good psychometric properties and may be useful to educators and researchers evaluating clinicians’ confidence in providing calm, compassionate care and self-efficacy in using non-drug therapies to relieve common symptoms.

Keywords: Integrative; Complementary; Compassion; Mindfulness; Empathy; Mind-body; Education; Confidence; Self-efficacy; Training; Psychometric; Questionnaires.

Introduction

Based on the growing use of complementary and alternative medical (CAM) therapies by the American public, a growing number of academic health centers have developed training programs in integrative medicine [1–3]. Specific competencies for physicians practicing integrative medicine have been identified [4–7].

Ultimately, the goal of training is to improve the quality of care and patients’ lives, but the vast majority of medical education focuses on intermediate steps thought to contribute to these outcomes (acquisition of knowledge and confidence). The most commonly measured outcomes are changes in knowledge as these are readily and reliably assessed with easily scored multiple choice questions. A few programs have also measured changes in attitudes [8], but these often reflect attitudes
about complementary therapies themselves and the value of
the clinician–patient relationship, e.g., the CAM Health Belief
Questionnaire and the Integrative Medicine Attitudes Question-
naire [9–12].

Self-efficacy is the strength of one’s belief in one’s own abil-
ity to complete tasks and achieve goals; it is highly predictive
of trainees’ motivation and learning as well as the ability to ini-
tiate, persist in, and succeed with a task [13]. Bandura’s social
cognitive theory posits that self-efficacy develops from external
experiences and observations, and suggests that those with high
self-efficacy are more likely to view a difficult task as some-
ting to be mastered rather than something to be avoided [14].
Theoretically, four major factors affect self-efficacy: a) expe-
rience of mastery (success); b) seeing someone else succeed
(modeling); c) encouragement (social persuasion); and d) inter-
preting physiologic responses to stress (such as higher heart rate,
swimming, and fatigue) as normal and unrelated to ability [15].
Self-efficacy is strongly linked to behavior change [16,17]; it is
also linked to mood and social support among family caregivers
[18]. Self-efficacy includes an affirmation of a capacity and the
strength of that belief, whereas self-confidence is a more gen-
eral concept that might include, for example, confidence that one
will fail at a task. Self-efficacy is a critical factor in taking the
step from new knowledge about integrative medicine to offer-
ing integrative care in practice. However, few training programs
have measured self-efficacy among diverse health profession-
als using integrative, complementary, or non-drug therapies to
relieve common symptoms [19,20].

Although self-report scales may over- or under-estimate
actual performance, they are often used because in general, self-
reported self-efficacy and self-reported behavior have significant
 correlations with actual behaviors [21–24], and they are less
expensive to administer and score than observational methods
or focus groups. In the field of mind-body health, self-report
instruments are widely used to measure stress [25], mindfulness
[26–28], empathy [29,30], and self-compassion [31].

Integrative care requires at least two related aspects of self-
efficacy: a) clinicians’ ability to provide calm, compassionate,
relationship-based care and b) their confidence in using non-drug
therapies to relieve common symptoms and achieve patients’
unique health goals. To assess the first of these, when teaching
a medical student elective on Therapeutic and Healing Touch,
one of us (KK) developed a questionnaire to measure changes
in students’ sense of self-confidence in providing calm, com-
passionate, comforting care [32]. Although this scale showed
expected improvements from before to after the course, it has
not been formally evaluated for its psychometric characteristics.

Interprofessional training programs to educate health pro-
essionals to use an integrative approach to address patients’
symptoms may benefit from another instrument to assess cli-
nicians’ sense of self-efficacy. Accordingly, we developed a
self-efficacy scale focusing on confidence in using non-drug
therapies to help relieve common symptoms: pain, anxiety, nau-
sea, insomnia, coping, stress (PANICS), and fatigue. Though
similar to the first instrument, the second focused more explicitly
on self-efficacy in relieving symptoms and less on the clinician’s
internal state of calm and compassion.

Before using these new tools to evaluate training programs,
we wished to assess their psychometric properties. Specifically,
our three goals were: 1. describe their face validity and internal
reliability by discussing them in focus groups and measuring
Cronbach’s alpha; 2. describe their convergent validity by ex-
amining correlations between scores on these measures with
established measures; and 3. describe the relationship between
scores on these measures and training and experience in mind-
body therapies.

Methods

Face validity

Two of us (KK and GG) provided workshops in April and
May, 2014, on outcome measures in integrative medicine for
interprofessional groups of researchers, students, clinicians, and
teachers both at our institution in the Midwestern USA and at
the International Research Congress on Integrative Medicine and
Health in Miami, FL. Both workshop discussions included these
measures and over a dozen other outcome measures for multiple
domains of health. Discussion topics included conceptual foun-
dations, ease of use, face validity, reliability, correlations with
other instruments, and general impressions.

Reliability and convergent validity

These constructs were assessed in a cross-sectional pre-
training survey of participants registered for online training
programs in integrative care.

Subjects

Participants included trainees and practicing professionals in
nursing, medicine, dietetics, and social work. Participants were
eligible if they agreed to participate in a study evaluating a new
online curriculum in integrative medicine. Recruitment occurred
by email. Our goal was to recruit 200 diverse participants within
the three months prior to the start of the 2014 fall semester.

The administrative offices of the Deans of the Colleges of
Medicine, Social Work, and Nursing, the Director of the PhD
Program in Human Nutrition and Dietetics; as well as the Pro-
gram Directors for Pediatrics, Family Medicine, and Palliative
Care at OSU sent emails to incoming graduate students, resi-
dents, and fellows in May and June of 2014 inviting them to
participate in the project with a link to the pre-training survey.
The last page of the survey included a link to register for an online
course on herbs and dietary supplements (HDS) or mind-body
skills training (MBST) for resilience, effectiveness, and mind-
fulness. Approximately 450 individuals received a direct email
inviting them to participate; we did not count email “bounces”
or returns, though there were a substantial number since many
trainees were moving from other institutions. A few faculty and
staff who heard about the project also asked to participate so they
could review the curriculum and better advise trainees. Partici-
pants who completed the survey were eligible to receive $10

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for completion. Identifying information was removed prior to analysis.

**Demographic measures**

Demographic items used to describe the survey sample included age, gender, and profession.

**Two scales of interest**

Confidence in providing calm, compassionate, comforting care was assessed using a scale developed for a training program aimed at increasing clinician’s capacity to provide calm, compassionate care (calm, compassionate care scale, CCCS) [32,33]. The original scale had nine items, two of which asked how important it was to be calm and offer calm compassionate care, and the other seven asking how confident or how often clinicians engaged in behaviors reflecting this kind of care. Because there was almost no variability in the responses to the questions about whether clinicians thought it was important to be calm and offer compassionate care (mean scores on both items were >9.5 out of 10 possible), these two items were omitted from the final scale. Three new items were added with the hope of finding 10 items that could be included in a scale with a range from 0 to 100, a Cronbach’s alpha greater than 0.75, and moderate correlation with mindfulness, compassion, self-compassion, and empathy. See Appendix A for final 10 items on the calm, compassionate care scale (CCCS).

The scale to measure self-efficacy in providing non-pharmacologic (non-drug) therapies to relieve common symptoms contained 10 items reflecting clinicians’ confidence in relieving common symptoms such as pain, anxiety, nausea, insomnia, coping, stress (PANICS) and fatigue. As with the CCCS, the goal for this scale (self-efficacy in providing non-drug therapies, SEND scale) was to have a good (>0.75) Cronbach’s alpha on a scale that was easily scored (each item scored on a 0, 10 scale, for a total range of 0, 100 for the 10 items), had some correlation with the CCCS and measures related to compassion and empathy, and correlated with training and practice in CAM. See Appendix A for final items on the CAM Self-Efficacy Scale.

**Other measures for convergent validity**

Mindfulness was assessed using the 10-item Cognitive and Affective Mindfulness Scale, Revised, CAMS-R) [34], which has a four-point summative rating scale (1 = rarely or never at all, 5 = almost always), and one reverse-coded item, with a typical total mean score of 31 ± 5.

Compassion was measured using the five-item Santa Clara Brief Compassion Scale which uses a seven-point summative rating scale (1 = not at all true of me and 7 = very true of me), and has a typical mean score of 30, with a range from 9 to 35 [35].

Self-compassion has three key components: mindfulness, self-kindness, and common humanity [36,37]. Self-compassion is distinct from self-esteem, self-pity, and self-indulgence in that it focuses on kindness toward self as a human being, not better or worse than others. It is distinct from mindfulness by including an additional construct, and it is distinct from but closely related to compassion in its focus on self. Self-compassion was assessed using the 12-item Neff’s self-compassion scale, which has six reverse-scored items rated on a 0 = “never” to 5 = “always” scale and a mean score among undergraduate students of 36 ± 7 and a median of 37 [31].

Two subscales were administered from the Interpersonal Reactivity Index: the seven-item empathic concern scale (ECS) and the seven-item perspective-taking (PT) scale which are widely used to measure empathy in health professionals [29,30,38–43]. Both scales use a five-point summative rating scale where 0 = “does not describe me well” and 4 = “describes me well”; both the ECS and PT scales have normative median scores of 24. We chose these measures rather than the Jefferson Scale of Physician Empathy because our participants included diverse health professionals, not just physicians [39].

**Training and practice**

Because the primary focus of our larger, ongoing study was evaluating a course on mind-body skills, the questions about training and practice focused on this topic. One question asked about training in mind-body practices (“In which of the following have you had formal training in the past 3 years?”) Over 10 practices were listed; and answers were scored as the number of practices (0 to 10) in which the participant had received formal training in the past three years. Another question asked about frequency of mind-body practice; answers included 0 (never), 1 (once or twice a month), 2 (two to three times monthly), 3 (weekly), 4 (three to five times weekly), and 5 (six to seven times weekly). We hypothesized that those with more training and more ongoing personal practice would have higher scores on both new scales.

Surveys were completed online using Survey Monkey®. Data were de-identified and cleaned by a research assistant blind to the study question, exported into a spreadsheet and exported into Statistical Program for the Social Sciences (SPSS 22®) for scoring. Univariate analysis (e.g., percentages, mean, and standard deviation) was employed to evaluate the distribution of each variable including demographic variables and then questionnaire scores. Cronbach’s alpha was used to assess internal reliability, and Pearson or sample correlation coefficients were calculated to assess convergent validity.

This study was approved by the OSU Office of Research Institutional Review Board (2013B0611).

**Results**

The focus groups were attended by a range of participants including students, faculty, and staff in medicine, nursing, public health, dietetics, and social work. Participants found the scales easy to read, score, and interpret, and suggested no additions or deletions to the two instruments.
Table 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean ± SD or N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=213</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>28.3 ± 8.8 years</td>
</tr>
<tr>
<td>Gender</td>
<td>155 (73%) female</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
</tr>
<tr>
<td>Dietetics/nutrition</td>
<td>24 (11%)</td>
</tr>
<tr>
<td>Nurses</td>
<td>30 (14%)</td>
</tr>
<tr>
<td>Physicians</td>
<td>81 (38%)</td>
</tr>
<tr>
<td>Social workers</td>
<td>52 (24%)</td>
</tr>
<tr>
<td>Other (psychologist, public health, other)</td>
<td>26 (12%)</td>
</tr>
<tr>
<td>Mind-body training in past 3 years (NONE)</td>
<td>114 (54%)</td>
</tr>
<tr>
<td>Frequency of mind-body practice</td>
<td>89 (42%) never</td>
</tr>
<tr>
<td></td>
<td>39 (18%) once/month</td>
</tr>
<tr>
<td></td>
<td>31 (15%) 2–3/month</td>
</tr>
<tr>
<td></td>
<td>23 (11%) 1–2/week</td>
</tr>
<tr>
<td></td>
<td>15 (7%) 3–5/week</td>
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<tr>
<td></td>
<td>4 (2%) 6–7/week</td>
</tr>
</tbody>
</table>

Scores on questionnaires

Responses to the study questionnaires are shown in Table 2. Scores for mindfulness, compassion, self-compassion, and empathy are similar to those reported in other studies of health professionals and trainees.

For the CCCS, scores ranged from 12 to 100 with a mean score of 61.7 and a standard deviation of 19.2. The Cronbach’s alpha measure of reliability for the CCCS was 0.87.

For the SEND scale scores ranged from 0 to 100; the mean score was 46.9, the standard deviation was 24.8, and Cronbach’s alpha was 0.95.

Table 3

<table>
<thead>
<tr>
<th>Instrument</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CCCS</td>
<td>1</td>
<td>0.68***</td>
<td>0.16*</td>
<td>0.29***</td>
<td>0.24**</td>
<td>0.18*</td>
<td>0.23**</td>
</tr>
<tr>
<td>2. SEND</td>
<td>1</td>
<td>ns</td>
<td>0.15*</td>
<td>0.21**</td>
<td>0.16*</td>
<td>0.21**</td>
<td></td>
</tr>
<tr>
<td>3. Mindfulness CAMS-R</td>
<td>1</td>
<td>0.63***</td>
<td>–</td>
<td>–</td>
<td>0.24**</td>
<td>–</td>
<td>0.31***</td>
</tr>
<tr>
<td>4. Self-Compassion</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.31***</td>
</tr>
<tr>
<td>5. Compassion</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.7***</td>
<td>0.28***</td>
</tr>
<tr>
<td>6. Empathic Concern</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.20***</td>
<td></td>
</tr>
<tr>
<td>7. Perspective Taking</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001.

Correlations with other measures

Correlations with standard measures are shown in Table 3. The conceptually-related CCCS and SEND scales for which items on both focused on confidence) were strongly correlated with each other (Table 3; r=0.68, p<0.0001). Scores on the CCCS were significantly correlated with scores for mindfulness, compassion, self-compassion, empathy, and perspective-taking (p<0.05 for each). Scores on the SEND were also significantly correlated with compassion, self-compassion, empathy, and perspective-taking. Scores on both new scales were also significantly correlated with the number of trainings and the frequency of practice of mind-body skills (Table 4, p<0.05 each).

Discussion

This is the first study to describe two new scales to measure clinicians’ confidence and self-efficacy in providing integrative care: 1) confidence in providing calm, compassionate care and 2) self-efficacy in providing non-drug therapies to relieve common symptoms. In this sample, both scales showed good face validity, internal reliability, and meaningful correlations with other measures, as well as training and practice experience. Not surprisingly, since both scales measured the closely related concepts of confidence in providing calm, compassionate care and self-efficacy in relieving common symptoms, they were also significantly correlated with one another.

The participants in this study had similar scores to expected normative values on the standardized scales of compassion [35], empathy [38,39], perspective-taking [38], and self-compassion [44], supporting the generalizability of these findings. The
Table 4
Correlations between CCCS, SEND, training, and practice frequency.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Number of mind-body trainings in past three years</th>
<th>Frequency of mind-body practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calm, compassionate care scale</td>
<td>0.25***</td>
<td>0.21**</td>
</tr>
<tr>
<td>Non-drug self-efficacy scale</td>
<td>0.27***</td>
<td>0.18*</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001

participants in this study had slightly lower scores on mindfulness (27.7) than the normative scores on this scale (31), which might be expected among trainees who planned to register for a course on mind-body skills training [34].

The most obvious use of these new scales is to evaluate training programs, but they could be useful in other settings as well, particularly with additional testing. For example, self-efficacy in providing non-drug therapies could be compared among traditionally trained biomedical clinicians (medical doctors and nurses) and clinicians trained in complementary therapies (naturapathic doctors, chiropractors, acupuncturists, massage therapists, and others) as well as before and after training programs focusing on integrative care. SEND could also be used to compare different types of training programs drawing on different components of self-efficacy, e.g., comparing a training program in which trainees practiced a new behavior vs. training that simply modeled the behavior or encouraged the behavior or a combination of components. Confidence in providing calm compassionate care could be compared among practitioners working in different settings (emergency room or intensive care unit compared with primary care). In addition, these new scales could be used to identify specific learning needs among both trainees and practitioners, and to design training programs to meet those needs as well as measuring outcomes.

Although this study answered our primary questions, it has several limitations. It was done at one academic health center that has a strong program in integrative health and wellness, and the questionnaires may not perform the same way in a community setting. This is the case for many questionnaires whose psychometric characteristics are defined initially in a university setting. Similarly, our study population was primarily trainees, and results may differ for experienced clinicians. The observed correlations were statistically significant, but tended to be somewhat lower than in our earlier studies among samples in a similar population [45,46]; we attribute these differences to expected sampling differences since the variation in individual variables was similar. The modest correlations with other factors such as mindfulness, compassion, self-compassion, and empathy suggest that these new instruments capture unique characteristics not identical to other widely used scales. Our sample, though representing diverse professions, was predominantly young and female, and results may differ in a group of older and/or male physicians. Although we tested the instruments against several standard measures, we did not compare them to observed practices, and the sense of self-confidence and self-efficacy may over- or under-estimate actual practice. Additional research is necessary to determine how scores on these scales of self-confidence are related to scores on knowledge, and how both are impacted by training.

Despite these limitations, these new instruments do appear to have solid psychometric characteristics that encourage their use as new tools to assess the impact of training programs in integrative health. While self-reports are imperfect proxies for actual performance, it is important to measure attitudes and confidence as well as knowledge and observable skills when assessing training programs, and these instrument could fill an important niche.

Conclusions

Two new scales, a) self-confidence in providing calm, compassionate care (calm, compassionate care scale, CCCS) and b) self-efficacy in providing non-drug therapies to relieve common symptoms (SEND scale) have good face validity, are easily scored, and have good convergent validity with standard measures of related constructs as well as with training and experience. Additional research is needed to confirm their correlation with actual performance in diverse practitioners and settings, but they appear to be a valuable addition to the tools used to identify training needs, and design and evaluate training programs in integrative health care.

Conflicts of interest statement

The authors declare no actual or potential conflicts of interest. This work has not been published previously, is not under consideration for publication elsewhere, and, if accepted, will not be published elsewhere in the same form without the written consent of the copyright holder.

Authors’ roles

All research was done by the authors.

KK conceived of the study, designed the questionnaires, collected the data, conducted the final analysis of the data, and wrote and edited the drafts of the manuscript.

GG co-led the focus groups, conducted the initial analysis and interpreted the data, and assisted in editing and revising the manuscript.

JM recruited participants, interpreted the data, and assisted in drafting and revising the manuscript.

All approve the final version of the submitted manuscript.

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Appendix A. Appendix

Confidence in providing calm, compassionate care scale
For each of the following three statements, please select the number that reflects how confident you feel today (0–100% in increments of 10%; for scoring, 10% = 1, 20% = 2, and so on with 100% = 10).

1. In what percentage of your patient encounters do you practice centering (being peaceful and focused)?
2. In what percentage of your patient encounters do you trust your intuition?
3. In what percentage of your patient encounters do you use non-drug therapies to help a patient feel better?

For each of the following seven statements, please select the number that reflects how confident you feel today (0, not confident—10, very confident):
4. I can be peaceful and focused (centered) when my body is quiet and still, and it is quiet in my environment.
5. I can be peaceful and focused (centered) when my body is moving or there is noise in the background.
6. I regularly practice non-verbal, non-pharmacological approaches to calming and reassuring patients.
7. I am confident in being calm, peaceful and focused (centered) before and during patient encounters.
8. I can describe the major risks and benefits of mind-body therapies for patients.
9. I can describe the major risks and benefits of mind-body therapies for myself and other clinicians.
10. I can extend kindness, peace and compassion to patients, colleagues, and myself.

Self-efficacy scale for using non-drug therapies to relieve common symptoms

1. I am confident in being calm, peaceful, mindful, and compassionate (centered) before and during patient encounters.
2. . . . patients who are in pain using non-drug therapies.
3. . . . anxious or worried patients using non-drug therapies.
4. . . . patients or colleagues feel more relaxed.
5. . . . patients with nausea or vomiting using non-drug therapies.
6. . . . patients with insomnia or sleep problems using non-drug therapies.
7. . . . patients cope using non-drug therapies.
8. . . . patients who are stressed using non-drug therapies.
9. . . . patients prepare for a surgery or a procedure using non-drug therapies.
10. . . . patients who are fatigued using non-drug therapies.

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