Author's response to reviews

Title: Effects of mental health self-efficacy on outcomes of a mobile phone and web intervention for mild-to-moderate depression, anxiety and stress: Secondary analysis of a randomised controlled trial

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Author's response to reviews: see over
Dear Mr Chua

We thank the Editor and Reviewers 1 and 2 for their constructive comments on this manuscript. We have addressed each of the suggested revisions, and believe that this has substantially improved our submission to BMC Psychiatry.

Our responses to the comments are outlined below (numbering is as per the reviewers’ comments).

We look forward to your response to these revisions.

Yours sincerely

Janine Clarke PhD (on behalf of the authors)

**REVIEWER 1**

**Points for consideration by the authors**

**Comment 1**
The rationale for developing their measure to assess mental health self-efficacy is not entirely clear; why would existing measures like the one they reference (Carpinello’s) or others like the Recovery Assessment Scale, which has a Domination by Symptoms factor (Corrigan et al., 2004) be unsuitable for people in the mild to moderate range of symptom severity? Do the authors suggest that people who have more severe symptoms constitute a qualitatively different group? This seems inconsistent with the view that symptoms and functioning are dimensional, i.e. everyone gets a rating on some level.

**Response:**
Reviewer 1 poses some interesting questions. However, existing measures of constructs related to mental health self-efficacy (MHSE), including Carpinello et al.’s (2000) Mental Health Confidence Scale and the Recovery Assessment Scale (Corrigan et al., 2004) were developed for use with people with severe mental illness. Many items in the Carpinello et al. measure are irrelevant and/or likely to confuse people with mental health symptoms in the mild-to-moderate range. For example, items on the scale refer to ‘mental illness diagnosis’ (Item 13) and ‘mental health treatment’ (Item 15), however, many people with mild-to-moderate symptoms do not consider themselves ‘ill’, and most have never sought treatment [1]. Corrigan et al.’s (2004) Domination by Symptoms Scale also makes
reference to illness, and does not assess perceived confidence or ability. For example, a person might agree with the statement “My symptoms seem to be a problem for shorter periods each time they occur”, but still feel incapable of effective self-management.

Furthermore, because self-management tasks (and the belief in one’s ability to self-manage) vary between people at different points in the symptom severity spectrum, as reflected in stepped care approaches to depression and anxiety treatment [2], and given the task specific nature of self-efficacy beliefs, we believe that a measure derived for the severely mentally ill is not appropriate for a mild-to-moderately distressed sample. In our view, an approach to measurement of MHSE for common mental health problems that reflects the specific self-care experiences of people with mild-to-moderate symptoms is conceptually appropriate, yet does not imply that they represent a qualitatively different group. For this reason, we feel that our approach is consistent with the popular dimensional approach to measurement of mental health symptoms.

We have amended Paragraph 6 (line 127) to more strongly emphasise that Carpinello et al.’s scale is not appropriate for people with symptoms in the mild-to-moderate range as follows:

“Self-efficacy is a task-specific construct that varies across distinct groups of behaviours [22]. In contrast with the plethora of self-efficacy scales for physical health and lifestyle improvement, we were able to locate only one scale measuring people’s confidence in managing mental health issues [23]. Developed and validated for use in people with severe mental illness, Carpinello et al.’s [23] Mental Health Confidence Scale relies heavily on recovery-related items, including items referring to mental illness diagnosis and treatment, and may be inappropriate for people with symptoms in the mild-to-moderate range who are unlikely to consider themselves unwell, meet diagnostic criteria or seek treatment [24]. Accordingly, in order to investigate the effects of self-efficacy on therapeutic gains in online psychological interventions, we developed and psychometrically evaluated a new measure of MHSE for common mental health problems, the Mental Health Self-Efficacy Scale (MHSES).”

Comment 2
Did the authors verify that participants who were enrolled for the proof of concept study were not also enrolled later on for the RCT? If there is possible overlap between the groups, how would this impact the findings from study 2?

Response:
The randomised controlled trial (RCT) participant database was checked to ensure that there was no overlap with participants in the proof of concept study. In addition, we used a ‘blockout’ procedure to ensure that people enrolled in the proof of concept study were not able to register to use the myCompass program during the randomised controlled trial.

Comment 3
How specifically was consensus achieved in the item reduction phase for Study 1? Agreement among the investigators? Were people with mental health conditions involved?

Response:
We have amended the paragraph commencing “Measures: The Mental Health Self-efficacy Scale…” (line 151) to clarify that consensus was achieved by agreement amongst the investigators. Specifically, we have included the following revised statement:

“An initial pool of items derived from Bandura’s theory of self-efficacy and assessing belief in one’s capability to perform behaviours related to mental health self-care was reduced by agreement among the investigators to six items, with each presented as a question (e.g., “How confident are you that you can make your days moderately enjoyable?”).

Comment 4
The authors assume that MHSE is malleable and a viable target for intervention. Correlating the new MHSE measure’s scores with the TIPI, a measure of personality traits (arguably scores would be more stable) seems conceptually counter intuitive.

Response:
Our assumption that MHSE is malleable is based on findings for the MHSES in our proof of concept study (i.e., increased scores following exposure to the myCompass intervention, line 209), a finding that is both consistent with Bandura’s theorising (line 210) and findings of other studies of specific self-efficacy measures (line 89).

We agree with Reviewer 1 that personality factors, as assessed by the TIPI, are likely to reflect more stable dispositions. There is, nevertheless, ample evidence showing relations between self-efficacy and the Big Five personality variables, especially neuroticism [3], which comprises (among other things) a lack of emotional stability and confidence. For this reason, we considered it reasonable to expect that neuroticism would correlate with MHSE, and that the size of the correlation would be moderate, reflecting the different levels of specificity of the constructs. Our finding of a significant moderate correlation ($r = .4$) between MHSE and neuroticism is consistent (both in size and direction) with other correlational studies of specific self-efficacy and personality variables [4].

Comment 5
The Analyses section (line 181) suggests the TIPI’s emotional stability subscale was selected a priori for evaluation—can you explain why?

Response:
We have addressed this comment in our response to Reviewer 1’s Comment 4 (above). To clarify for readers our rationale for including the TIPI, we have amended the final statement of the Analyses section to read as follows (commencing line 180):

“Internal consistency reliability of the MHSES was assessed using Cronbach’s alpha, and construct validity was determined using Pearson’s correlation to relate baseline scores on the MHSES to
theoretically related constructs [9, 15, 19], including baseline measures of symptoms and overall psychological distress (DASS), work and social adjustment (WSAS), and neuroticism, an aspect of personality that comprises a lack of emotional stability and confidence (assessed by the TIPI).”

REVIEWER 2

Major compulsory revisions

Comment 1
In examination of the MHSE items, several concerns may be raised about the face validity of these items:

• Items 1 and 6 appear to assess very similar things. What is the incremental utility of including both of them in the scale?

Response:
Beliefs about one’s ability to minimise the extent of interference caused by mental health symptoms to functioning (Item 1), and beliefs about one’s capacity to manage mental health symptoms per se (Item 6), are qualitatively distinct aspects of MHSE, as seen in people who feel capable of managing the intrusiveness of mental health symptoms on daily functioning, but nevertheless lack confidence in their overall symptom management. A similar distinction is reflected in other specific self-efficacy measures (e.g., Pain Self-efficacy Questionnaire; [5]). Furthermore, we found only 50% shared variation (r = .7) between the scale items, and removal of either item did not improve substantially the internal consistency of the scale (Table 1). For these reasons, we felt it important conceptually to retain both scale items.

• Item 2 is a double-barrelled question and therefore may be endorsed by different subjects for different reasons. Is there potentially a way of assessing this without phrasing it in such a way as to capture dissimilar respondents?

Response:
The terms ‘task’ and ‘activity’ are used interchangeably in the self-care literature to refer to the behaviours performed by individuals in order to stay well [6], and similarly in the self-efficacy literature to refer to the behaviours required to produce specific outcomes [7]. For these reasons, we do not consider that Item 2 is double-barrelled and necessary of re-wording. Similar phrasing of scale items can be seen in other psychometrically sound specific measures of self-efficacy, including the Self-Efficacy for Managing Chronic Disease 6-item Scale (“How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce your need to see a doctor”, [8]), and the Self-efficacy to Manage Hypertension Scale (“How confident are you that you can do the different tasks and activities needed to manage your high blood pressure so as to reduce your need to see a doctor”, [9]).

• Item 5 could be interpreted to not assess behavioural self-efficacy but rather the subject’s belief that he/she will not experience stress, anxiety or depression due to factors other than
his/her self-efficacy (e.g., personal circumstances improving). This difference may account for this item’s lower factor loading.

Response:
We agree with Reviewer 2 that this interpretation is possible. However, the item assesses an optimistic self-belief in regard to mental health outcomes and therefore remains consistent with the theoretical construct of perceived self-efficacy for mental health [10].

Comment 2
Despite the clarity of the contributions identified above, the authors’ justification for the studies is presented in the introduction as a case for the utility of online interventions. Because the ultimate focus of the manuscript is somewhat different, it would be clearer for readers if the introduction made an argument for examining the concept of mental health self-efficacy and its role in therapeutic interventions.

Response:
We apologise for any lack of clarity here. Our argument for examining the concept of mental health self-efficacy and its role in therapeutic interventions is as follows:

1. Online interventions can improve symptoms by facilitation behaviour change.
2. A key factor influencing the degree to which programs produce behaviour change is perceived self-efficacy.
3. Therefore, the effectiveness of online interventions can be maximised by specifically assessing and targeting self-efficacy.

This argument is presented in paragraphs 2 (commencing line 81) and 3 (commencing line 93) of the Background.

Comment 3
Related to this, it is not initially clear why the authors chose to examine only one mechanism of intervention action (i.e., MHSE) in the evaluation of the online intervention. Author’s state, “Understanding how, why and for whom interventions affect symptom change is critical for maximising clinical potency and cost effectiveness of online public health interventions for common mental disorders.” Yet only one such mechanism of action is examined in the paper. Were other mechanisms of action investigated? If so, why were they not mentioned in this manuscript.

Response:
We present findings of a secondary analysis of data from a large RCT of a mobile phone and web-intervention. The study was a public health trial, therefore we aimed to limit the number of primary and secondary self-report assessments administered at each time point so as to minimise participant burden as well as curtail study attrition [11].

Mental health self-efficacy was the only mediating variable assessed in the trial. Our rationale for examining MHSE as a potential mechanism is set out in the Background section, namely, specific self-efficacy has been repeatedly identified as a key factor explaining treatment gains and behavioural change in studies of health promoting behaviours (including smoking cessation, reducing alcohol and
drug use, weight loss, and chronic disease self-management; Line 89), and the construct appears especially relevant for understanding therapeutic outcomes of self-guided online mental health interventions (Line 97).

Bandura’s theory also specifies clearly the self-efficacy determinants (including antecedent processes and information cues) that can be targeted to improve intervention efficiency and efficacy. To more clearly emphasise the latter point, we have amended the final statement in paragraph 2 of the Background (Line 89) as follows:

“Findings show that higher levels of pre-treatment self-efficacy and increased self-efficacy over the course of treatment are important predictors of therapeutic success, and suggest that precise targeting of self-efficacy antecedent processes and information cues may assist in honing treatment efficiency and efficacy [9].”

Comment 4
Authors present an argument that MHSE is related to the concept of general self-efficacy, identified by Bandura as an important factor for therapeutic outcomes of psychological interventions; however, no other measures of self-efficacy were used in the validation of the MHSE measure. Presumably, given the importance of self-efficacy to intervention outcome as identified by Bandura, other measures of self-efficacy exist and would be important to examine in the validation of a novel measure of this closely related construct.

Response:
Theoretical descriptions of self-efficacy [e.g., 12; 13] propose that associations between self-efficacy scale items and symptoms and behavioural outcomes demonstrate the validity of the construct. For this reason, and in the interest of minimising participant burden (see response to Comment 4 above), we felt it unnecessary to use a measure of general self-efficacy in validation of the MHSES. Furthermore, for conceptual and pragmatic reasons, existing measures of constructs related to MHSE were considered inappropriate for use in our mild-to-moderately distressed sample (see our response to Reviewer 1, Comment 1).

Comment 5
Additionally, it is unclear why the authors chose to include the TIPI in the validation of the MHSE scale. More discussion of how personality may be related to MHSE in the introduction would provide the necessary support for the inclusion of this measure.

Response:
See our response to Reviewer 1, Comment 4.

Minor essential revisions
Comment 1
Grammatical errors (e.g., unnecessary commas in lines 59, 93, 130; unnecessary words such as “on” in line 92; and incorrect use of the word “less” in line 175) should be corrected.

Response:
Thank you for highlighting these grammatical errors. They have been corrected.

References: