Author’s response to reviews

Title: An Asian Study on Clinical and Psychological Factors Associated with Personal Recovery in People with Psychosis

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Dear BMC Psychiatry Reviewers,

Resubmission of BPSY-D-19-00777

To all reviewers, thank you for your comments. They have been helpful for us to improve on the manuscript. We have given consideration to each of your comments and made substantial revisions to the revised manuscript; please see below (in blue text) for our point-by-point replies.

Reviewer reports:

Randolph C. H. Chan, Ph.D. (Reviewer 1): Thank you for the opportunity to review and comment on this paper entitled: "Clinical and Psychological Factors Associated with Personal Recovery in People with Psychosis using the QPR-15". The study fills in a significant gap by conducting a psychometric validation of the QPR-15 in people with psychotic disorders in an Asian setting. Recovery is an important and emerging area of research, and given that one might expect cultural differences between Asian and Western understandings of mental illness and recovery, it is essential that these differences are explored, and that the measures used to explore such differences are appropriately validated in the samples that they are to be used. While the
manuscript investigates important issues in the field, there are some theoretical and methodological concerns in the study.

Major recommendations:

1. The sample size of the study is inadequate for performing factor analysis. A commonly used rule-of-thumb for exploratory factor analysis is having a participant-to-item ratio of 10:1 (Costello & Osborne, 2005). Without a sufficiently large sample size, the analysis is likely to be underpowered and the results are thus highly unreliable and non-generalizable. The researchers are suggested to increase the existing sample size in order to yield robust and valid results.

Thank you for this comment. We have read Costello & Osborne (2005)’s Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most from Your Analysis again, and revised our approach.

We recognise that our sample size is too small for common factor analysis. This approach is however, ideal. Firstly, a confirmatory factor analysis is appropriate to answer the question of whether the QPR-15 has the same factor structure in our population group. Furthermore, factor analysis is able to answer if there is any latent variable (personal recovery) that is causing the manifest variables to covary. What the second reviewer’s (Dr. Kanahera) team did was to carry out both an EFA and CFA, whereas the third reviewer’s (Dr. Eklund) team had carried out a PCA followed by an EFA. Since our sample size is small, neither the CFA nor EFA would give reliable and valid results as you have also mentioned. Hence, we were only able to obtain the initial factor structure via screeplot, through PCA (same as Dr. Eklund’s team) without looking at the variance accounted for as it might be inflated.

We had erroneously written EFA (maximum likelihood) instead of PCA in this submission but have since revised the manuscript that this is a PCA and the aim was to obtain the initial factor structure.

We apologise that we have been unclear in the aims of our paper, which made it seem that the main focus was to validate the QPR-15 in an Asian socio-culture setting. This has also been raised by Dr. Eklund (Reviewer 3). We have edited and clarified this in our revised manuscript, which mentions that one of the aims of the study was to examine the relationship between personal recovery and psychological and clinical factors. To address this aim, the reported sample size seems adequate to detect models with large effect sizes ($f^2 \geq 0.35$).
2. It is theoretically arguable to identify clinical factors for personal recovery. By definition, personal recovery is "a way of living a satisfying, hopeful, and contributing life even with limitations caused by illness" (Anthony, 1993). It involves the development of new meaning and purpose in life with or without the presence of clinical symptoms. The implication of having clinical factors for personal recovery is the need for clinical stability (i.e., lower level of psychotic symptoms) to achieve personal recovery. This goes against the essence of personal recovery. Instead of suggesting that there are clinical factors, these constructs (e.g., PANSS, CDSS) should be considered as indicators of clinical recovery, which is a separate but related domain of recovery. Although they should not be seen as factors of personal recovery, they can still be used for evaluating the convergent validity of the QPR-15.

We thank the reviewer for raising this interesting point. Although conceptually, clinical and personal recovery appear to be different, in clinical practice, the two are not totally unrelated and independent.

Indeed, some have found that they are related [1] while some have not [2] or that it varies according to certain factors [3]. The personal recovery movement has also advocated that personal recovery can take place without clinical recovery. This is similar to the argument of when symptoms are reduced, life is less disrupted and function can increase, but we do not necessarily see this unfold consistently in clinical practice. Hence, they can be complementary but not mutually exclusive. In our manuscript, similar to Law et al. [4], we had input clinical recovery indicators to the stepwise multiple regression model to imply that clinical recovery do make contributions to personal recovery but that this might not be the key factor, as seen with the significant F change amongst the three stage models.

On the point on using clinical recovery indicators to evaluate the convergent validity of the QPR-15, since convergent validity is testing that measures that should be related are correlated, we agree with you that they can be used for the evaluation of convergent validity of the QPR-15. We have proceeded to indicate this in our manuscript.

3. Some of the psychological factors (e.g., hope, empowerment) examined in the study are the defining criteria of personal recovery. For example, hope has been identified as a key component of personal recovery in many recovery frameworks and studies (e.g., SAMHSA, 2012). Also, empowerment was one of the elements of CHIME (Leamy et al., 2011). This means that constructs like hope, empowerment, and personal recovery are actually overlapping constructs, which are evidenced by high correlations shown in the study ($r = .62$ and $r = -.53$). Therefore, hope and empowerment should not be considered as factors of personal recovery. Instead, they are parts of personal recovery.
We are employing the CHIME personal recovery framework to evaluate the validity of QPR-15 as there is no gold standard for personal recovery measure at present. Additionally, personal recovery has been found to be a latent construct of the CHIME components, evident by QPR studies that have done EFA or CFA, finding that there is a higher order latent construct. Hence, it is inevitable for hope and empowerment measures to be used. Furthermore, the QPR-22 was originally created following the three main themes of rebuilding life; rebuilding self; and hope for a better future [5] and this is as described in our methods. Thus, it is necessary that we are able to show QPR-15 is indicative of the CHIME components. Although hope and empowerment are components of CHIME personal recovery framework, the QPR-15 has a total score of 15 items on its own, while hope has a total score of 12 items on the Herth Hope Index and empowerment has a total score of 28 items on the Empowerment scale. Theoretically speaking, they are variables on their own.

4. While the validation of the QPR-15 in an Asian socio-cultural setting was the main purpose of the study, the applicability and relevance of the QPR-15 to Asian cultures have not been sufficiently discussed. It is suggested to elaborate more on this point to speak to the potential cultural issues.

Singapore is a unique country with a multi-ethnic and predominantly Asian society, but with English as the main language of communication. Hence, unlike the other three countries [6-8], we have neither translated the QPR-15 into a different language (non-English) nor done factor analysis. Based on our results, the psychometrics of QPR-15 seems similar to previous findings in the UK [4, 9] and Sweden [7], and can be said to be appropriate for use in our socio-cultural setting. We have since discussed this more in our revised manuscript, p5 line 17-23, p6 line 1-4, p20 line 5-9, p24 line 21-28.

Other specific recommendations:

1. The introduction section can be enriched by describing more about the background of the QPR, for example its psychometric properties (e.g., how QPR was related to other clinical and psychological constructs in the previous studies) and original factor structure (e.g., the 2-factor solution: intrapersonal and interpersonal subscales, and what do they represent).
This comment has been helpful. We have added previous finding of other QPR studies, with regards to how other psychological and clinical constructs are related to the QPR in the introduction. Please see p6 line 7-15. As per your suggestion, we have elaborated more on the intrapersonal and interpersonal subscales. Please see this at p7 line 7 to p8 line 3.

2. The paper raises an interesting question on how culture shapes the "conception and needs of recovery" on p. 4. This question is important and relevant to the recovery literature. It is suggested to elaborate more on (1) how personal recovery is conceptualized and understood in the Asian/Singaporean context, and (2) how the Asian conception of recovery may affect the validity and application of QPR-15 in local settings.

Thank you for the comment. This is closely related to Dr. Eklund’s (reviewer 3) comment for the same paragraph (introduction). We have relooked at this and agree that this paragraph requires rewording and more elaboration to be more coherent. We have proceeded to do so. Please refer to the revised manuscript p5 line 17 to p6 line 4.

In terms of how personal recovery is conceptualized or understood in Singapore, the scope of this manuscript is not able to answer due to reasons as stated previously (non-translated version). Follow-up qualitative studies, beyond the scope of the present study, will need to be conducted to understand how personal recovery is conceptualised in Singapore. We have also stated in our limitations that we have made an assumption that the CHIME Personal Recovery Framework fits our socio-cultural context but further studies are required to help us validate this framework in our socio-cultural context.

3. A total 66 participants were recruited in the study. Did all of them complete both baseline and two-week follow-up? Please describe the attrition rate of the study.

All 66 participants completed both the baseline and two-week follow up assessments for this study.

4. For the empowerment scale, it is stated that higher scores represent lower endorsement of empowerment. It is suggested to recode the score for empowerment, with higher scores representing high level of empowerment. This can enhance the readability of the results.
Thank you for this comment. We agree that recoding can enhance the readability of the results and have proceeded to do this.

5. While the scree plot indicates one-factor solution, it is suggested to use multiple methods (including eigenvalue and parallel analysis) to determine the appropriate number of factors to retain.

We have tried eigenvalue and it indicates 2 factor solution, with the second component having poor loadings. Eigenvalue has also been criticized to be the least accurate method for selecting the number of factors to retain.

We had taken up your suggestion to use two more methods, Velicer’s MAP criteria and parallel analysis, and both results indicated for 2 components to be retained. However, PCA shows only item 4 (I feel part of society rather than isolated) has higher loading on component 2 (.653 loading on component 2 versus .525 loading on component 1). As there are fewer than 3 items on component 2 (Costello & Osborne, 2005), component 2 is not retained. We have added in the manuscript about the decision to retain 1 component instead of 2, please see p17 line 2-6.

6. Item 4 and 15 show a relatively low factor loading, compared with other items. What are the criteria for retaining an item? In other words, under what circumstance will the item be removed from the scale? Please elaborate the criteria that are employed to determine item retention.

The criteria for retaining an item was indicated in the methods under statistical analysis (section 2.4): Items were considered redundant if the item-total correlation was < 0.6 or if items on deletion would increase the Cronbach alpha substantially (> 0.5).

Even though the item-total correlation for item 4 and 15 were below 0.6, the removal of them did not contribute to substantial improvement of the Cronbach alpha. Hence, we did not deem them as redundant. This was explained in results, section 3.2 (reliability): There were no items that had negative correlations but the corrected item-total correlation of 3 items (Item 2, 4 and 15) fell below 0.6. However, none of the items, if removed, would lead to a substantial improvement of the Cronbach’s alpha of the measure as a whole (Items 4 and 15: increase of α by 0.001). Hence, no items were considered redundant.
Akiko Kanehara, MPH (Reviewer 2): The authors evaluate the psychometric properties of the QPR-15 in an Asian socio-cultural setting and its associations with clinical and psychological factors. The findings revealed the higher predictive value and associations of psychological factors, compared to clinical factors, and importance the distinction of personal recovery from clinical recovery. Generally, it is a well-written manuscript, but I have some concerns and suggestions as follows:

1) The authors had not mentioned whether the items of QPR are subjectively relevant to people who live in Singapore. I wonder the authors ask the patients what they think about the items. We had not qualitatively collected this information. However, in the conduct of this study, we did receive feedback from the participants that they felt that this was important to them and yet they had not felt like the mental health service they have received thus far had cared about these aspects. One of them even requested for us to update his or her care team on his or her responses on the questionnaire. These anecdotal feedbacks seem to support the face validity of the items in the QPR-15.

2) Both clinical recovery and personal recovery are important in the recovery of people with psychosis. Some studies have indicated that clinical recovery and personal recovery are related. The author should also explain the hypothesis about the relationship between clinical recovery and personal recovery in patients with psychosis in the section of Introduction.

Thank you for this comment. We have received comments on this from all three reviewers and have taken action to clarify and elaborate on this, including the hypothesis in the introduction of the manuscript. Please see p6 line 5-17.

3) I think that it was also possible to perform an exploratory factor analysis by conducting a survey using 22 items version of QPR and then develop a unique short version of Singapore. Why did not the authors do that?

We agree that this was something we could do. However, as we already had many measures to complete for the study, including the clinical interviews, we had selected brief measures to reduce the assessment burden. A shorter version is also more feasible for clinical use. On top of
that, several studies had found problems with the full version. Lastly, we had wanted to evaluate the QPR-15 instead of QPR-22 as Shank and colleagues’ evaluation of QPR on the personal recovery that most closely maps the CHIME framework, was carried out QPR-22. Hence, it is not known if the QPR-15 still does.

Mona Eklund, PhD (Reviewer 3): Re Manuscript number BPSY-D-18-00777

Thank you for the opportunity to read and review this paper. It describes a generally well-designed study to address psychometric properties of QPR-15 in an Asian socio-cultural context. It needs substantial revision, however, before it can be considered for publication.

The different parts of the paper are below addressed in order of the manuscript.

Title:
- It could possibly be included that the study was conducted in an Asian setting.

We agree that this should be added and have proceeded to do as per your suggestion. It has been amended to: An Asian study on Clinical and Psychological Factors Associated with Personal Recovery in People with Psychosis

Abstract:
- The results part of the abstract is hard to follow. Was QPR-15 the dependent variable in the multiple regression analysis? Which were the independent variables? Only psychological and clinical? Was it a linear regression analysis?

Thank you for pointing out that the abstract results is hard to follow and for the specific comments that brought up which information were missing. We have since revised the abstract’s method and results to make this clearer.
- The last sentence is unclear. I guess the brackets refer to the two time points, but the first bracket should be moved so it comes after 'time point 1'.

Thank you for pointing out the error that we have missed out. We have since corrected this.

- Comparing correlations ('higher than') without testing if there is indeed a statistically significant difference is not correct, which is further commented on below (results part).

Thank you for pointing out that our statement requires a z-test to justify. We have since taken up your suggestion (at results) to just state the range of the correlation coefficients. Please refer to the revised manuscript (abstract results, p3 line 1-3).

- Related to this, but also to a vague rationale for the second part of the aim, the last part of the conclusion (the longer last sentence) does not hold.

We agree that the sentence might not be appropriate and we have since removed it, as well as revised our conclusion. We have also elaborated more on the rationale for the second part of the aim in the introduction of both the abstract and manuscript. For abstract, please see p2 line 6-7 and for manuscript, p6 line 5-17.

Introduction:

- The introduction is short but relevant.

- Page 4, line 9 says QPR-15 was only validated in the UK. But a very similar version was arrived at in the Swedish study you refer to as #21.

Thank you pointing out the Swedish study. We have since revised the relevant statements. Please refer to p5 line 6-8 of the revised manuscript.

- Line 16-17 - strange wording here.
- Line below - what does 'All of these' refer to?

This paragraph has also been commented by Dr. Chan (reviewer one) for its lack of elaboration on cultural aspects and we are aware of our lack of clarity in our presentation of the points made. We have since re-written this. Please refer to the revised manuscript, p5 line 17 to p6 line 4.

- The first part of the aim expressed on page 4 is clear. But the rationale for examining associations between personal recovery and clinical and psychological factors is not clear.

This has been commented by all three reviewers and we have since elaborated and restructured the two aims, rationale and hypothesis of the study. Please refer to the revised manuscript, p6 line 5-17.

Methods:

- The study is principally well designed. I applaud that you selected validation measures for all CHIME aspects. You also used a smart design to avoid exhaustion of participants. I cannot see any problems with the fact that some analyses build on baseline data and some on T2. But that should be better clarified, which I return to below.

- Page 6, line 21 - maybe IT should be inserted (and IT proves to be…)?

We agree that “it” should be added and have proceeded to do so.

- Line 38 - should it be 'different SYMPTOM severity'?

Thank you for pointing this out, we have added “symptom”.
- Pages 6-8 - generally, for all measures, please clarify if you used sum scores, subscales etc.

We apologise this has been unclear and have clarified this in the statistical analyses section. Please see p10 line 25 to p11 line 2.

- Page 8 - regarding WHOQOL-BREF it was not clear to me when reading this section if you used only item 6. Please describe this clearer.

Only item 6 was used, we have added “single” to clarify this.

- Line 22 - please substitute 'will be used' with some other wording.

We have reworded to “were used”.

- Regarding statistics, you explain why you used Pearson correlations for the test-retest, but not why you used Spearman for other associations. You also have used multiple linear regression. Thus mix of parametric and non-parametric statistics seems a bit puzzling.

Thank you for pointing this out, we have clarified the reason for using Spearman correlation instead of Pearson. Please refer to the revised manuscript, p11 line 2-3. As for hierarchical multiple linear regression, the assumptions of multivariate normality are for the residuals. Hence, there was a mix of parametric and non-parametric statistics when different variables were used at each time (the only parametric statistics: Pearson’s R was used for test-retest reliability as QPR-15 at both time-points were of normal distribution).

- Still on page 8, lines 50-54 - please reference the source(s) for the criteria mentioned here.

This has been referenced, please refer to the revised manuscript, p11 line 9.
- Page 9, regarding the factor analysis - rotation with only one factor does not seem adequate. Please explain further.

- The sample is too small for a factor analysis. This is acknowledged among the methodological concerns in the discussion, but still makes this analysis problematic.

This is in relation to Dr. Chan (Reviewer 1)’s comment and have been addressed previously (see above). We have revised our manuscript to change this to initial factor structure using principal component analysis, obtaining scree plot and using of two additional tests to examine the number of components.

- You should describe how data from T1 and T2 were used, other than for the test-retest. Table 2 is informative in this respect, but it should be clarified in the text outlining the statistical analyses.

We have added this information, please see p11 line 20-24.

- You should also specify in the statistical analysis section which independent factors were entered in the regression model. And I assume you used linear regression? This is not said anywhere, and if I have misunderstood, that indicates you really must be more explicit with the methods you used. Did you use enter model for both steps? Or some method for eliminating variables? That could also be clarified.

Thank you for pointing this out and we have since elaborated more to be clearer in this area. Please see p11 line 20-26. More explicit explanations was initially written in results- section 3.4 factors -associated with QPR-15, p17 line 17-21.

Results:

- Page 9, line 28 - I assume 'sample' should be deleted.

We noted the redundancy and have deleted it.
- Page 10, Table 2 - not clear why you present both means and medians, which seems redundant. Since you have used what I perceive as linear regression model and Pearson correlations it would be logical if you stick to parametric statistics throughout. I agree that non-parametric statistics should generally be used for ratings scales, but a mix between statistical approaches, without a clear rationale for why, seems worse than choosing parametric tests here. Especially since opinions on the preferred statistics when using rating scales tend to vary.

Median statistics are reported when distribution of the data is non-normal. Explanation for using of parametric and non-parametric statistics have been explained at the comments in method (above).

- Not sure Table 4 is necessary.

We think that this is necessary for easy viewing and reporting.

- A piece of information you could add is that all factor loadings in the factor analysis were >0.4.

We have added this, thank you for your suggestion.

- Page 13, section 3.4 - you compare the sizes of correlations (‘had stronger association’). But you should either rephrase (just mention the range of sizes) or investigate if the sizes of the correlations really differ from a statistical point of view (which could be done with a Z-test, formula available on the Internet).

We have rephrased to just mention the range of sizes.

- Pages 14-15, Table 5 - the asterisks and their explanations are superfluous since the exact p-values are given.
We agree with your comment and have since removed them.

Discussion:

- The vague rationale for performing the regression models also affects the quality of the discussion. For example, page 15, lines 41-45 leaves me as a reader with a so-what feeling. Is the rationale to provide empirical evidence for the conclusion from the review by Shanks et al, that the QPR maps the CHIME framework very well? Or was it to investigate if clinical factors contributed to personal recovery, in addition to factors representing CHIME? That should be stated early on, along with the aim.

Thank you for your comments that have clarified the rationale of our study. Hence, as mentioned above, we have reframed our aims and hence, edited the first paragraph of the discussion.

- Page 16, lines 18-20 - you claim that clinical and psychological factors had unique and complementary roles in explaining personal recovery. But did you show that? The clinical factors became insignificant when the psychological factors were entered.

Results show that both clinical and psychological factors play significant roles in explaining personal recovery. However, as psychological factors play much larger roles, this effect became insignificant. We had attempted to reverse the sequence of clinical and psychological factors entered. When psychological factors were entered at stage 1 and clinical factors entered at stage 2, the model change was still significant although the R square change is much smaller. This means that clinical factors do contribute to personal recovery, albeit smaller contribution than psychological factors. This sentence has been deleted as there is substantial revision of our discussion due to the change of study aims as well.

- Page 16, lines 24-40 - this paragraph is vague. Can one assume at all that measures are perceived as meaningful by service users and caregivers? And what does 'This' refer to in the concluding sentence?
We have re-written this paragraph in our revised manuscript.

- Page 17, line 4/5 - what does 'they' refer to here? The discussion contains many grammatical mistakes or obscurities and I will not mention any more here. But the paper definitely needs language editing, including use of modifiers, tenses and of punctuation marks.

While revising the discussion, we have taken note of the above.

- Lines 15-27 - please delete this reasoning, which is speculative and based on a difference in beta values that are almost identical.

This has been deleted.

- Page 18, line 1 - you mention the chosen method allowed you to see a Scree plot. But is there a method for FA that does NOT allow you to see a Scree plot?

Thank you for pointing this out. We have deleted this.

- Same page, mid paragraph - the reasoning here is interesting and mostly well-articulated, but again you propose that you have shown clinical and psychological factors played unique roles in personal recovery. Did you? I think you showed that psychological factors outplayed the role of clinical factors.

This has been revised and we have explained above on the interplay of the relationships.

- The conclusion, lines 54-57 - these are some general recommendations, not linked with your study, and should therefore be deleted. Also the last part of the conclusion is a general statement. Please rewrite to link the conclusion more clearly to your findings.
The discussion/conclusion seems to be the weakest part of this paper and needs substantial revision.

We have considered all of your comments and have made substantial revision to the discussion, including the conclusion.

References


