PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Stigma among Singaporean Youth: A Cross-sectional Study on Adolescent Attitudes Toward Serious Mental Illness and Social Tolerance in a Multi-ethnic Population.
AUTHORS	Pang, Shirlene; Liu, Jianlin; Mahesh, Mithila; Chua, Boon Yiang; Shahwan, Shazana; Lee, Siau Pheng; Vaingankar, Janhavi; Abdin, Edimansyah; Fung, Daniel Shuen Sheng; Chong, Siow Ann; Subramaniam, M

VERSION 1 – REVIEW

REVIEWER	Heather Stuart Queen's University, Kingston, Ontario, Canada
REVIEW RETURNED	09-Mar-2017

GENERAL COMMENTS	This paper explores mental illness stigma expressed by youths in Singapore. This is an interesting paper from a part of the world where we seldom see this type of research. The results of this paper should be of interest to the field and to the journal's readership. The following comments are offered for the authors' consideration. Literature Review: The definition of stigma (cited as Link and Phelan) is not the one most widely quoted. They have a much more comprehensive definition that includes social structural issues. It would be better to use this one. It can be found in the article, "Reconceptualizing Stigma." This is the definition that we most often associate with Link and Phelan. Sampling strategy: Can the authors demonstrate (e.g.: using demographic data from the target population) that the sample was representative of the target population or the extent to which the sample was open to selection bias? Perhaps they can obtain data from the school boards to give us an indication of the age and gender breakdown of students in the grades targeted for the survey. If the sample were biased, this information might be helpful in constructing weights. Measures: It would be helpful for the reader if the various dimensions of the Attitudes Towards Serious Mental Illness were described. For example, what does "wishful thinking" mean? A statement for each scale indicating the range of possible values and what a high score means also would be helpful. Analysis: Given the scales used in this analysis are Likert-type, was a polychoric correlation matrix used to extract the factors? If not, this might explain the different factor structures derived in this sample.

	If a polychoric matrix was not used, the factor structure should be confirmed using this approach. This is important to clarify given that the main conclusion of the paper is that the dimensions of stigma are different. How did the authors handle missing item data in the scales? Were values imputed or were cases eliminated? This detail should be included in the manuscript. If missing items were imputed, then it would also be important to know that there was a cut-off before imputation was done (e.g. 80% of data had to be present). If cases were deleted, then the sample size for the analysis should be reported. Conclusion: The authors conclude that the dimensions of stigma are different in Asian cultures compared to Western cultures. Given that their sample is restricted to Singaporean youth, may not be representative, and they noticed ethnic differences, extrapolating their findings to entire cultures is an overstatement. They could certainly speculate on this point, but their data do not speak to it directly. Secondly, they suggest that educational campaigns be used to address negative attitudes and misconceptions. The literature shows that traditional 'literacy based' education is not effective in changing social distance so the authors may want to be more specific about the types of interventions that would be considered best practises in the field if they are going to make recommendations. Corrigan has completed a large meta-analysis that could be helpful here. Table 1: The mean age in years should have an accompanying standard deviation. Table 2: It is interesting that words pertaining to dangerousness were not among the top 5. Expectations of danger are a common stereotype about people with a mental illness and educational programs often spend an inordinate amount of time dispelling this stereotype; yet, it doesn't seem to be top of mind. We have noticed this in Canada as well. This finding might warrant some discussion and speculation. Tables 4 and 6: The column(s) on the far right were cut off in my copy. Table 6 also had some formatting problems with the width of the first two columns.

REVIEWER	Joanna Henderson Centre for Addiction and Mental Health
REVIEW RETURNED	24-Mar-2017

GENERAL COMMENTS	Thank you for the opportunity to review this manuscript. It addresses stigma which is a very important issue in youth mental health, particularly as it relates to social inclusion and help seeking. The authors are to be commended for aspects of their methodology (cross region normative sample) and their attention to the functioning of the measures in this cultural context. I make the following suggestions in order to strengthen the manuscript: Major/Substantive Method

	How were student informed of the study? Additional clarification about how many students approached, how many consent forms distributed, how many consent forms returned, how many surveys started, how many surveys completed, and any information about non-participants would be helpful. In addition, information about strategies for encouraging completion would be informative – were reminders sent? Were incentives provided? Has the open text strategy been used before? If yes, include reference here. How was this data coded? Results How does sample compare to overall student population in terms of gender, age and ethnicity? Regarding word analyses - Ideally a coding scheme would be articulated, with some higher level themes described and used to guide the presentation of the results (including those that later appear in the Discussion). Present PCA before reporting on rates of endorsement since rates individual item endorsements, separate from understanding the measure as a whole, are of unclear value. How does exposure to MH awareness campaigns related to attitudes or types of words produced? It seems you have the opportunity to explore these questions. Discussion Much of the content of the first few paragraphs should be in the Results section or removed. Emphasis should be on interpreting finding and connecting to previous research. Clear connections back to issues of social inclusion and help seeking introduced in the Introduction should be made. Minor Include exposure to MH awareness campaigns in aims Why was 1000 picked as the target N? For ATSMI-AV – add numbers of items for each subscale in description of original and reliability info for consistency with STS. Include Ns for each category of excluded data. Move reference to Table 6 to the beginning of section where regression results are discussed. Language I would suggest a thorough review to tighten up the language and grammar, and recommend paying particular attention to informal language and phrasing.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Heather Stuart
Institution and Country: Queen's University, Kingston, Ontario, Canada
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
This paper explores mental illness stigma expressed by youths in Singapore. This is an interesting paper from a part of the world where we seldom see this type of research. The results of this paper should be of interest to the field and to the journal's readership. The following comments are offered for the authors' consideration.

Literature Review
Comment:
The definition of stigma (cited as Link and Phelan) is not the one most widely quoted. They have a much more comprehensive definition that includes social structural issues. It would be better to use this one. It can be found in the article, "Reconceptualizing Stigma." This is the definition that we most often associate with Link and Phelan.

Response: Thank you for this suggestion. We have now added Link & Phelan's (2001) definition of stigma in our literature review.

Sampling strategy
Comment:
Can the authors demonstrate (e.g.: using demographic data from the target population) that the sample was representative of the target population or the extent to which the sample was open to selection bias? Perhaps they can obtain data from the school boards to give us an indication of the age and gender breakdown of students in the grades targeted for the survey. If the sample were biased, this information might be helpful in constructing weights.

Response: In accordance with this suggestion, the Ministry of Education was contacted in an attempt to obtain the above information. Unfortunately, information on the ethnic distribution of youths was not available. However, the sample was similar to the student population in terms of age (mean 15.9 vs 15.15 years) and gender (females 47.1% vs 49.2%). This information has now been included in the manuscript.

Measures
Comment: It would be helpful for the reader if the various dimensions of the Attitudes Towards Serious Mental Illness were described. For example, what does "wishful thinking" mean? A statement for each scale indicating the range of possible values and what a high score means also would be helpful.

Response:
Further detail on the dimensions of the ATSMI-AV have been added to the measures section. At the moment there is insufficient research on the psychometric properties of the scale to give validated cut-off values. We have, however, followed the original authors' instructions that "higher scores indicate stronger endorsement" or higher levels of stigma and have clarified this in the Measures section.

Analysis

Comment: Given the scales used in this analysis are Likert-type, was a polychoric correlation matrix used to extract the factors? If not, this might explain the different factor structures derived in this sample. If a polychoric matrix was not used, the factor structure should be confirmed using this approach. This is important to clarify given that the main conclusion of the paper is that the dimensions of stigma are different.

Response: A polychoric correlation was run and compared to our results. It yielded 5 slightly different factors for the ATSMI-AV and two for the STS which remained the same. The last of the 5 ATSMI-AV appears to lack meaning and we feel the exploratory PCA conducted was appropriate and yielded factors with more semantic meaning. The results of the ATSMI-AV polychoric matrix are included below for your review.

Factor 1: Threat (Items differ with Watson's findings and our analysis via SPSS; however, factor meaning remains the same)

1. Mentally ill people scare me.
2. I would cross the street if I saw a mentally ill person coming in order to avoid passing him/her.
3. I think that mentally ill people are strange and weird.
4. I can't see myself hanging out with a mentally ill person.
5. Mentally ill people are easy to spot.
6. If you become mentally ill your life is pretty much over.
7. Mentally ill people tend to be more violent than other people.

Factor 2: Label Avoidance (same results as our analysis via SPSS)

8. If I had a mentally ill relative, I wouldn't want anyone to know.
9. Most of my friends would see me as being weak if they thought that I had a mental illness.
10. I would be very embarrassed if I were diagnosed as having a mental illness.

Factor 3: Social Concern (same results as our analysis via SPSS)

11. I think that there really isn't anything called mental illness; some people are just different.
12. Schools and parents are mostly responsible for making people mentally ill.
13. I think that society makes up the diagnosis of mental illness just to control people.
14. I think that you could catch mental illness from another person.

Factor 4: Wishful thinking (same results as our analysis via SPSS)

15. Mentally ill people can get well if they are treated with love and kindness.
16. There are medications now that can cure mental illness.
17. People who are mentally ill could be well if they tried hard enough.
18. If a relative of mine became mentally ill, I know that I could convince them to get well.

Factor 5: Untitled (Items differ Watson's findings and our analysis via SPSS; The meaning of this factor is hard to determine)

19. I sometimes worry that I may have a mental illness.
20. I don't think that there is any way that I can become mentally ill.

Item not loaded: (different from our analysis via SPSS)

21. Eating the wrong things or taking drugs can make you mentally ill.

Comment: How did the authors handle missing item data in the scales? Were values imputed or were cases eliminated? This detail should be included in the manuscript. If missing items were imputed, then it would also be important to know that there was a cut-off before imputation was done (e.g. 80% of data had to be present). If cases were deleted, then the sample size for the analysis should be reported.

Response: Cases with missing data (N = 60) were eliminated from the original sample of 1000 students, and "940 responses were included for analysis after data cleaning". The remaining cases had at least 80% of data present. This information has been added to the manuscript for clarity.

Conclusion
Comment:
The authors conclude that the dimensions of stigma are different in Asian cultures compared to Western cultures. Given that their sample is restricted to Singaporean youth, may not be representative, and they noticed ethnic differences, extrapolating their findings to entire cultures is an overstatement. They could certainly speculate on this point, but their data do not speak to it directly. Secondly, they suggest that educational campaigns be used to address negative attitudes and misconceptions. The literature shows that traditional 'literacy based' education is not effective in changing social distance so the authors may want to be more specific about the types of interventions that would be considered best practises in the field if they are going to make recommendations. Corrigan has completed a large meta-analysis that could be helpful here.

Response: Thank you for these recommendations. The text has been amended to discuss potential cultural differences without generalising findings to all Asian cultures. Further detail on potential stigma interventions has also been added to the discussion.

Comment:
Table 1: The mean age in years should have an accompanying standard deviation.
Table 2: It is interesting that words pertaining to dangerousness were not among the top 5. Expectations of danger are a common stereotype about people with a mental illness and educational programs often spend an inordinate amount of time dispelling this stereotype; yet, it doesn't seem to be top of mind. We have noticed this in Canada as well. This finding might warrant some discussion and speculation.
Tables 4 and 6: The column(s) on the far right were cut off in my copy. Table 6 also had some formatting problems with the width of the first two columns.

Response: Thank you for the above suggestions. Changes have been made to the tables in the documents to make them clearer. Please let us know if they still do not show correctly.

Reviewer: 2
Reviewer Name: Joanna Henderson
Institution and Country: Centre for Addiction and Mental Health
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
Thank you for the opportunity to review this manuscript. It addresses stigma which is a very important issue in youth mental health, particularly as it relates to social inclusion and help seeking. The authors are to be commended for aspects of their methodology (cross region normative sample) and their attention to the functioning of the measures in this cultural context. I make the following suggestions in order to strengthen the manuscript:
Major/Substantive

Method
Comment: How were student informed of the study? Additional clarification about how many students approached, how many consent forms distributed, how many consent forms returned, how many surveys started, how many surveys completed, and any information about non-participants would be helpful. In addition, information about strategies for encouraging completion would be informative – were reminders sent? Were incentives provided?

Response: Thank you for highlighting these important questions. Students were informed of the study via school notification boards, email blasts and presentations at the schools. Reminders were sent to volunteers and participants who completed the survey were reimbursed. 1016 surveys were started and 1000 were completed. Further information on participant response has been added to the manuscript.

Comment: Has the open text strategy been used before? If yes, include reference here. How was this data coded?

Response: The open text method has been used in previous studies and the references have been added to the paper. Data was coded using basic content analysis. (Pinfold V, Toulmin H, Thornicroft G, Huxley P, Farmer P, Graham T. Reducing psychiatric stigma and discrimination: evaluation of educational interventions in UK secondary schools. Brit J Psychiat. 2003;182(4):342-346.)

Results
Comment: How does sample compare to overall student population in terms of gender, age and ethnicity?

Response: Similar to the comment from the first reviewer, the Ministry of Education was contacted in an attempt to obtain the above information. Unfortunately, information on the ethnic distribution of youths was not available. However, the sample was similar to the student population in terms of age (mean 15.9 vs 15.15 years) and gender (females 47.1% vs 49.2%)

Comment:
Regarding word analyses - Ideally a coding scheme would be articulated, with some higher level themes described and used to guide the presentation of the results (including those that later appear in the Discussion).

Response: Thank you for this suggestion. We have attempted to describe the findings from the word analyses more clearly in the manuscript and described more themes found in the data.

Comment: Present PCA before reporting on rates of endorsement since rates individual item endorsements, separate from understanding the measure as a whole, are of unclear value.

Response: We have changed the order of the results presented to the above.

Comment: How does exposure to MH awareness campaigns related to attitudes or types of words produced? It seems you have the opportunity to explore these questions.

Response: Thank you for this suggestion. Details on the differences in open text answers between the two groups has been added to the manuscript.

Discussion
Comment: Much of the content of the first few paragraphs should be in the Results section or removed. Emphasis should be on interpreting finding and connecting to previous research. Clear connections back to issues of social inclusion and help seeking introduced in the Introduction should be made.

Response: Thank you for these comments. Some parts of the section have been removed and we have attempted to discuss the implications of our findings in relation to previous research presented in the Introduction.

Minor
Comment:
Include exposure to MH awareness campaigns in aims

Response: Thank you for this suggestion, the aims have been reworded and determining exposure to MH campaigns has been added.

Comment: Why was 1000 picked as the target N?

Response: The target N was calculated during the planning stages of the study. Based on Watson et al. (2005)'s study, the mean of Attitudes Toward Serious Mental Illness Scale-Adolescent Version (ATSMI-AV) ranged from 1.79 to 2.6, with standard deviation ranging from 0.65 to 0.95. In order to reach significance level at $p<.05$, acceptance of margin of error at 0.03 level, and taking into account 25% refusal rate and 15% missing data, the desirable minimum sample size ranged from 666 to 990. To have a conservative estimation, it was suggested that 1000 should be the target N for the survey.

Comment: For ATSMI-AV – add numbers of items for each subscale in description of original and reliability info for consistency with STS.

Response: We have added the number of items in each factor for the ATSMI-AV. Unfortunately, the original authors of the scale did not publish reliability information.

Comment: Include Ns for each category of excluded data.

Response: No data was manually deleted, only listwise deletion was used. Details on number of participants with missing data for each measure of interest has been added to the manuscript.

Comment: Move reference to Table 6 to the beginning of section where regression results are discussed.

Response: Thank you, the reference to Table 6 has been moved.

Language
Comment: I would suggest a thorough review to tighten up the language and grammar, and recommend paying particular attention to informal language and phrasing.

Response: Changes have been made to the manuscript to improve the language and grammar used.

Comment: We have done our best to address the feedback raised by the reviewers and revised the paper accordingly.

Response: We look forward to your favourable response.

VERSION 2 – REVIEW

REVIEWER	Heather Stuart Queen's University, Canada
REVIEW RETURNED	07-Aug-2017

GENERAL COMMENTS	The revisions are helpful and the paper is much improved. There are a few typographical and grammatical issues that should be addressed in the editing process.

REVIEWER	Joanna Henderson Centre for Addiction and Mental Health
REVIEW RETURNED	25-Jun-2017

GENERAL COMMENTS	The authors have addressed many of the suggestions offered during the previous review and the manuscript is much improved. One area for continued consideration is the opportunity to more fully examine self-reported exposure to MH awareness activities and use of pejorative words, naming mental illnesses, and expressing sympathy, as well as scores on measures. While the authors have added a statement comparing rates of pejorative words for exposed and non-exposed groups, it is not clear what if any analyses were conducted. Adding information about analyses conducted would be helpful, and if possible, expanding the scope of analyses. Also, a strength of the study is the inclusion of students from across 6 schools. What was the distribution of participating students across the 6 participating schools? How might the distribution of students by schools (or clustering) affect the results? In addition, the following suggestions are made: Abstract: The current wording of the final sentence seems to imply that this study examined educational interventions and in my opinion is unnecessarily narrow in scope (“Misconceptions and negative attitudes towards mental illness are common and should be addressed in educational campaigns”). Perhaps consider changing to something like “Misconceptions and negative attitudes towards mental illness are common demonstrating a clear need for effective stigma reduction campaigns.” Methods: The inclusion of additional details about each participating school and their rates of student participation would be helpful. Results, 2nd paragraph: “…418 (44.5%) listed pejorative words and phrases like “crazy”, “weird”, “scary”, “stupid”…” – Perhaps this should be revised to read “…418 (44.5%) respondents listed at least one pejorative word or phrase like “crazy”, “weird”, “scary”, “stupid”…” Discussion: The Discussion would be strengthened by a broader discussion of stigma reduction strategies and their effectiveness. The authors may wish to review Mehta et al., 2015 “Evidence for effective interventions to reduce mental health-related stigma and discrimination in the medium and long term: systematic review” in BJPsych.

	Discussion, last paragraph: The last sentence ("In the future studies may also replicate the measures used to evaluate the effectiveness of public education campaigns being rolled out by relevant agencies.") lacks clarity. Perhaps something like the following might be more appropriate depending on the authors' intended message: "In the future, findings about the measures in this study should be replicated and rigorous studies should be used to evaluate the effectiveness of public education campaigns before being rolled out" ? Strobe checklist: Item 21 is missing

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Heather Stuart
Institution and Country: Queen's University, Canada
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Comment: The revisions are helpful and the paper is much improved. There are a few typographical and grammatical issues that should be addressed in the editing process.

Response: Thank you for your kind comment. We have done our best to thoroughly proofread the revised manuscript for typographical and grammatical issues.

Reviewer: 2
Reviewer Name: Joanna Henderson
Institution and Country: Centre for Addiction and Mental Health
Please state any competing interests or state 'None declared': None declared.

Please leave your comments for the authors below

Comment: The authors have addressed many of the suggestions offered during the previous review and the manuscript is much improved. One area for continued consideration is the opportunity to more fully examine self-reported exposure to MH awareness activities and use of pejorative words, naming mental illnesses, and expressing sympathy, as well as scores on measures. While the authors have added a statement comparing rates of pejorative words for exposed and non-exposed groups, it is not clear what if any analyses were conducted. Adding information about analyses conducted would be helpful, and if possible, expanding the scope of analyses.

Response: We have further explored the relationship between exposure to MH awareness activities and types of words used as suggested by the reviewer. A chi-square test was used to compare the two groups though no significant differences were found. Information on the methods used and results have been added to the manuscript.

Comment: Also, a strength of the study is the inclusion of students from across 6 schools. What was the distribution of participating students across the 6 participating schools? How might the distribution of students by schools (or clustering) affect the results?

Response: As our sample was a vulnerable group (14-18 year old minors), the survey had to remain as anonymous as possible by the request of the ethics board and the Ministry of Education. Thus, students were not asked to identify which school they attended. However, the country of Singapore is a very small island nation and city-state about 719.1 km² in size and the schools are distributed across three of the five Regions of Singapore. The schools were also a mix of government-run, government-aided and independent schools. Additional details about the participating schools has been added to the manuscript. We have also amended the strengths and limitations section to discuss the above points.

In addition, the following suggestions are made:

Abstract
Comment: The current wording of the final sentence seems to imply that this study examined educational interventions and in my opinion is unnecessarily narrow in scope ("Misconceptions and negative attitudes towards mental illness are common and should be addressed in educational campaigns"). Perhaps consider changing to something like "Misconceptions and negative attitudes towards mental illness are common demonstrating a clear need for effective stigma reduction campaigns."

Response: Thank you for this suggestion. The wording has been changed in the manuscript.

Methods
Comment: The inclusion of additional details about each participating school and their rates of student participation would be helpful.

Response: We have added further details about the participating schools to methods section.

Comment: Results, 2nd paragraph: "…418 (44.5%) listed pejorative words and phrases like "crazy", "weird", "scary", "stupid"…" – Perhaps this should be revised to read "…418 (44.5%) respondents listed at least one pejorative word or phrase like "crazy", "weird", "scary", "stupid"…"

Response: The sentence has been amended in the manuscript for clarity.

Discussion
Comment: The Discussion would be strengthened by a broader discussion of stigma reduction strategies and their effectiveness. The authors may wish to review Mehta et al., 2015 "Evidence for effective interventions to reduce mental health-related stigma and discrimination in the medium and long term: systematic review" in BJPsych.

Response: Thank you for bringing this important review to our attention. The implications of the review are discussed in relation to our findings and local context.

Discussion, last paragraph.
Comment: The last sentence ("In the future studies may also replicate the measures used to evaluate the effectiveness of public education campaigns being rolled out by relevant agencies.") lacks clarity. Perhaps something like the following might be more appropriate depending on the authors' intended message: "In the future, findings about the measures in this study should be replicated and rigorous studies should be used to evaluate the effectiveness of public education campaigns before being rolled out" ?

Response: Thank you for highlighting this sentence. It has been changed to be clearer and now reads "This study could be replicated in the future in order to evaluate the effectiveness of public education campaigns when they are launched locally".

Comment: Strobe checklist: Item 21 is missing

Response: Thank you. The Strobe checklist has been updated and Item 21 is completed on page 12 of the manuscript.

Comment: We have done our best to address the feedback raised by the reviewers and revised the paper accordingly.

Response: We look forward to your favourable response.

VERSION 3 – REVIEW

REVIEWER	Joanna Henderson Centre for Addiction and Mental Health, Canada
REVIEW RETURNED	16-Sep-2017

GENERAL COMMENTS	The authors have adequately addressed the issues raised by this author.