Author's response to reviews

Title: Functional social support, psychological capital, and depressive and anxiety symptoms among people living with HIV/AIDS employed full-time

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Version: 2 Date: 6 October 2013

Author's response to reviews: see over
Dear Simon Harold, Executive Editor,

Thank you very much for your kind help in our manuscript (MS: 4472829479963649). Functional social support, psychological capital, and depressive and anxiety symptoms among people living with HIV/AIDS employed full-time). We appreciate the insightful comments of the reviewers and editors.

We have revised our manuscript according to the reviewers’ and editors’ comments, and would like to submit the revised manuscript. All changes have been marked in red text in the revised manuscript.

Our point-by-point responses to these questions and comments are shown in the following text. All the pages and lines indicated below are in the revised manuscript.

1. **Answer to Reviewer 1’s comments:**

   **Major Compulsory Revisions:**

   1. Given the high prevalence of unemployment among persons living with HIV/AIDS, which you cite of the first page, why restrict the sample to those who are employed full-time? You have no measures related to the workplace, job performance, or the work identity.

   **Answer:** Thank you very much for this comment. On the one hand, in the background section of our paper, we mentioned that “The expanding access to combination antiretroviral therapy (cART) for people living with HIV/AIDS (PLWHA) worldwide has delayed disease progression and decreased morbidity and mortality. Improved disease management via cART may also contribute positive psychosocial benefits like permitting PLWHA to remain in the workforce. Researchers around the globe have
raised concerns about the issue of employment because of the substantial benefits of employment for PLWHA. However, although the improved disease management offers the possibility of employment, the high rates of unemployment are common among PLWHA worldwide. The main cause of work cessation is psychological distress, not the direct effect of HIV illness on physical symptoms or AIDS-defining conditions. In addition, although the high levels of interest in returning to work have been found among PLWHA, it appears that relatively few who have stopped working actually return to work mainly because of the psychological obstacles. It would be practical to ameliorate the employment status of PLWHA through combating their psychological distress in workplaces.” The purpose of this study was to explore positive resources for reducing depressive and anxiety symptoms among employed PLWHA for preventing their work cessation. On the other hand, taking into account the type of employment, people who are employed part-time have more social mobility than those with full-time job. Moreover, there are significant differences in working conditions (e.g., schedule, job demands, wage, health insurance) of people employed part-time and those with full-time job [1]. It’s obvious that the psychosocial work environment of people employed part-time is more complicate and variable than those with full-time job, which may have some adverse effects on study conclusions. As a preliminary study, we restricted the sample to those PLWHA who are employed full-time in order to explore the possible positive effects of functional social support, psychological capital and its components self-efficacy, hope, optimism, resilience on depressive and anxiety symptoms to ameliorate their employment status.
In this study, we collected only the information about the occupational types of subjects, and had no measures related to the workplace, job performance, or the work identity. As a preliminary study, the main purpose of this study was to explore positive resources for reducing depressive and anxiety symptoms. The possible roles of these variables on depressive and anxiety symptoms, or on the associations of functional social support and psychological capital with depressive and anxiety symptoms will be determined in our future research.

References for this response:


Thanks again for the valuable comment.

1a. This sample restriction should be mentioned in the study limitations section. The fact that HIV status is often undisclosed in the workplace (next to last page) is important, but not a study limitation. The problem is that you might have a seriously unrepresentative sample of persons living with HIV/AIDS.

**Answer:** Thank you very much for this suggestion. The sample restriction has been mentioned in the study limitations section. (page 20, lines 20-22; page 21, lines 1-12)

In addition, this part “Moreover, the HIV status of PLWHA employed full-time in this study was undisclosed in the workplace. Participants believed that employment assimilates them into workplaces where the acceptances of supervisor and coworker are contingent upon undisclosed HIV status. When HIV status was disclosed,
participants experienced discrimination from supervisors and coworkers, even resulting in unemployment [52].” was removed from the study limitations section based on the suggestion.

2. Can you justify a mediation analysis on cross-sectional data? If so, I can easily imagine an alternate model in which social support (a contextual variable) mediates the effect of psychological capital (a trait) on anxiety and depression. Why prefer one “causal” model over another?

**Answer:** Thank you very much for this question. As you mentioned, this was a cross-sectional study so we could not justify a mediation analysis rigorously. The causal relations among study variables need to be confirmed with a prospective cohort study. This restriction has been mentioned in the study limitations section. A pre-established causal relation between two variables (X, Y) is essential to establish a mediation role (M). In comparison, we recognize that in most instances there are equivalent models (as you mentioned) that fit equally as well as the provisionally accepted model when researchers aim to identify the relations between study variables with a cross-sectional data. Some equivalent models may be disregarded based on logic or theory. However, if some equivalent models are theoretically plausible, then the researcher must recognize the confounding regarding the implications of their research for theory. Therefore, first of all, there must be a clear theoretical basis in the study design. The role of mature theory is to help us establish a credible causal relation, which is more reliable than a causal relation established freely based on logical reasoning. The next step is to conduct statistical tests to examine whether the
data matches our hypothetical model, so as to reduce the probability of making mistakes.

In view of the above principles, we were encouraged to look for plausible equivalent models when designing our research. Therefore, our study hypotheses were built on a solid theoretical foundation. Social support as a psychosocial environmental factor can effectively alleviate depressive and anxiety symptoms. The causal relation has been validated extensively. In this study, the credible relations between social support and depressive and anxiety symptoms were built. In our opinion, social support as an external positive resource could play its role effectively when some necessary internal resources exist simultaneously [1]. Although people’s perception of and adaptation to environments is variable, these personal resource levels are cultivated by environmental factors [2]. It is proposed that internal resources may mediate the relationship between environmental factors and outcomes.

In our study design, psychological capital was considered as a state-like internal resource, which can be affected by a variety of psychosocial environmental factors. Studies have shown that social support can promote psychological capital level, in turn produce a variety of positive effects, such as increasing job performance, easing job stress and burnout. Based on theory and research on both the newly emerging psychological capital, and the more established social support reviewed above, we hypothesized that psychological capital was a mediator in the associations of functional social support with depressive and anxiety symptoms.

References for this response:

2. Xanthopoulou D, Bakker AB, Demerouti E, Schaufeli WB: **The role of personal resources in the job demands-resources model.** *Int J Stress Manag* 2007, 14:121-141

This response has been written in the text of our revised manuscript. (page 21, lines 12-20)

2a. Of course, no one can know cause and effect from correlational data, but you use terms like “precursor” and “mechanism” in your interpretation of results from a cross-sectional analysis.

**Answer:** Thank you very much for this comment. We are really sorry for the confusion. We have revised these terms like “precursor” and “mechanism” in our interpretation of results from a cross-sectional study. (page 17, lines 6-7; page 19, lines 5-6)

**Minor Essential Revision:**

1. You use the abbreviation FSS before saying what it stands for.

**Answer:** Thank you very much for this comment. We have revised the abbreviation FSS in our manuscript with regards to the comment. (page 6, line 10)

2. PC would be a better acronym for psychological capital. Or, just spell it out.

**Answer:** Thank you very much for your suggestion. We have changed “PsyCap” to “PC” as the acronym of psychological capital in our revised manuscript.

3. Why would those in cART have lower levels of psychological capital than those
not in this treatment?

**Answer:** Thank you very much for this question. In our study, the participants who were being treated with cART reported lower self-efficacy, resilience, optimism, and psychological capital than those untreated with cART. In our opinion, one possible reason for the finding is that there is a significant difference in HIV/AIDS-related perceptions between the two groups. In China, a CD4 cell count $\leq 350$ cells/$\mu$L is recommended as a criterion (regardless of WHO clinical stage of HIV/AIDS) for medical eligibility for the initiation of antiretroviral therapy among PLWHA. In addition, patients (a CD4 cell count of 350-500 cells/$\mu$L and regardless of WHO clinical stage of HIV/AIDS) who meet certain conditions are also recommended to start antiretroviral treatment [1]. Accurate and reliable CD4 cell count is an important indicator of the strength of the immune system and HIV disease progression. Moreover, the CD4 cell count can also be indicative of the success or failure of cART. Lower numbers of CD4 cells probably indicate a weakening of the immune system, advancement in the progression of HIV disease, and failure of cART. In this study, we found that the level of CD4 cells of participants being treated with cART (Mean = 361.0, SD = 185.5) was significantly lower than those untreated with cART (Mean = 532.3, SD = 252.8; $t = -6.81$, $p < 0.001$). Thus, although they were being treated with cART, negative perception in the progression of HIV/AIDS or the efficacy of cART may damage their psychological state, possessing a lower level of psychological capital compared with those untreated with cART. This finding suggests that more attention should be given to those in cART in order to improve their psychological state.
capital.

References for this response:


This response has been written in the text of our revised manuscript. (page 19, lines 21-22; page 20, lines 1-18)

Quality of written English: Needs some language corrections before being published

Answer: Thank you very much for this suggestion. Language corrections have been made in the revised manuscript carefully. Moreover, our revised manuscript was checked and edited by an English editing service company that can provide professional copy-editing service.

2. Answer to Reviewer 2’s comments:

Minor Essential Revisions:

Background

P. 7 . In the description of the objectives of the study, it would be appropriate that the authors explicit - because of the analyzes performed - also hypotheses about the role and weight of the single components of psychological capital in the process of mediation between social support and depressive and anxiety symptoms.

Answer: Thank you very much for this suggestion. We have revised the description of the study objectives with regards to the suggestion in our revised manuscript. (page
Statistical Analysis

1. P.12 : "All study variables were centralized before analysis to ..." . Do the authors mean standardized or centered (i.e., subtracting the mean of the predictor from each score of the predictor)? It would be appropriate to specify which transformation has been made, in order to make clearer understanding of the results.

**Answer:** Thank you very much for this question. We are really sorry for this confusion. In our study, all study variables were standardized (i.e., subtracting the mean and dividing by the standard deviation) before analysis to account for differences in scale scores. We have specified the transformation in order to make clearer understanding of the results in our revised manuscript. (page 12, lines 15-16)

2. In relation to the structural models tested, it would be appropriate to specify which matrices have been used to estimate the model (covariance/correlation matrix or polyserial correlation?). As well as the estimation method (Maximum Likelihood?). It would be also advisable to write in the text of the p-value associated with the $\chi^2$.

**Answer:** Thank you very much for this suggestion. We have specified the matrix have been used to estimate the model and the estimation method in our revised manuscript. Structural equation modeling was used to test proposed linkages between variables using maximum likelihood estimation from the sample covariance matrix. (page 11, lines 17-18)

In addition, we have written in the text of the p-value associated with the $\chi^2$. (page 14, line 22; page 15, lines 14-15)
Figure 1

1. It is not clear how the structure model depicted in Figure 1 was parameterized. For example, given that anxiety and depression are highly correlated with each other, was a correlation between the respective residues estimated? Furthermore, I see that the tested model has 18 degrees of freedom. This should be due to the fact that, as previously specified and reported in the legend of Figure 1, the model checks the effect of covariates (age, gender, education, monthly income, cART Treatment, and months since HIV-seropositive) simultaneously. If so, I would write it in the text (also in relation to the model below).

Answer: Thank you very much for this comment. We really appreciate your expert point of view. Given that anxiety and depression were highly correlated with each other, the correlation between the respective residues was estimated in the model (Figure 1). The number of degrees of freedom was influenced by the fact that the effects of covariates (age, gender, education, monthly income, cART treatment, and months since HIV-seropositive) were checked in the model simultaneously. Thus, we have written it in the text of our revised manuscript. (page 14, lines 17-21)

Figure 2

1. It is not clear how the structural model depicted in Figure 2 was parameterized. Since the variables in the model are highly correlated with each other, was a correlation between the residuals of anxiety and depression estimated? And among the residuals of self efficacy, hope, resilience, and optimism? If so, I would write it in the text.
Answer: Thank you very much for this suggestion. The correlation between the respective residues was estimated in the model (Figure 2, including correlation between the residuals of anxiety and depression, and correlations among the residuals of self efficacy, hope, resilience, and optimism). Also, the number of degrees of freedom was influenced by the fact that, as previously specified and reported in the legend of Figure 2, the model checked the effects of covariates (age, gender, education, monthly income, cART treatment, and months since HIV-seropositive) simultaneously. Thus, we have written it in the text of our revised manuscript. (page 15, lines 9-14)

Conclusions

Among the limitations of the study, it would be advisable to highlight also the possible role of negative affectivity of respondents. The "mono method" approach used for this study (through the unique use of self-report measures to detect the causes and consequences), may have contributed to increase the correlations between the measures. The observed correlation between FSS and strain (Depressive symptoms, Anxiety symptoms) can thus be explained in the light of a third variable that determines both, namely the negative affectivity. See in this respect the study of Falco, A., Girardi, D., Marcuzzo, G., De Carlo, A., Bartolucci, G. B. (2013). Work stress and negative affectivity: A multi-method study. Occupational Medicine, 63(5), 341-347. DOI: 10.1093/occmed/kqt054

Answer: Thank you very much for this suggestion. We agree with your suggestion. Among the limitations of the study, we have highlighted the possible role of negative
affectivity of respondents.

The unique use of self-report measures to detect the study variables may have contributed to increase the correlations between the measures. Negative affectivity that may act as a source of common method bias (CMB) can substantively influence the relationship between stressors and psychophysical strain [1,2]. Thus, the observed correlations of FSS with depressive and anxiety symptoms could be partly explained in the light of negative affectivity. A multi-method approach should been used in further studies [2]. (page 21, lines 20-22; page 22, lines 1-4)

References for this response:


3. Answer to editors’ comments:

1. As you can see from the reports, both referee have a number of comments that you will need to address in a revised submission. Specifically, Referee 1 raised a number of issue that will need further discussion and clarification.

   Answer: Thank you very much for these comments. The paper has been revised based on the reviewers’ comments carefully. The issues raised by Referee 1 have been further discussed and clarified in our revised manuscript.

2. Please also ensure that your revised manuscript conforms to the journal style
(http://www.biomedcentral.com/info/ifora/medicine_journals). It is important that your files are correctly formatted.

**Answer:** Thank you very much for the advice. We have proofread the revised manuscript and ensure that our revised manuscript conforms to the journal’s manuscript structure.
Thanks again for these detailed valuable comments, which not only help us with the improvement of our manuscript, but suggest some new ideas for future studies. Based on these comments, careful modifications have been made to our manuscript.

It would be highly appreciated if you are kind to give a favorable consideration on it.

We look forward to hearing from you.

If there are any other questions, please contact us by e-mail.

Sincerely yours,

Li Liu, Lie Wang