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## Peer Review File

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### Reviewer Comments

The manuscript describes an ambitious study that aims to assess the reliability and validity of the ALSOLIFE assessment with a modest sample of children with ASD in China. The study is well-designed and several approaches are taken with results showing that the ALSOLIFE assessment meets psychometric requirements of content validity, has strong internal consistency, test-retest reliability and good inter-rater reliability. Having said that, I do not recommend the manuscript for publication in its current form as the manuscript would benefit from major revisions which are listed below. Thank you for the opportunity to review this interesting manuscript.

**Comment 1:** The introduction section needs to be amended to clearly stipulate the rationale behind the study. As the introduction currently stands, it is firstly very long and could be written in a more succinct way. The ALSO concept is central to this study, however, it is not introduced until line 80. It should be clear from the first paragraph what the aims of the research are, however, this is not clear in the current version. The rationale for the study is presented in the discussion section and several sections should be moved to the introduction (e.g. lines 513-514; “The primary objective of this study was to examine the reliability and validity of the ALSOLIFE assessment from the psychometric perspective”). The paper is also very long and repetitive, and the discussion section is particularly repetitive. The manuscript would benefit from streamlining the narrative throughout. Headings may also help the reader navigate the introduction and discussion sections.

**Reply 1:** Thanks for your careful reviewing. We apologize for the long and repetitive writing style. Going by your comments, we have made major revision and reduced to 3734 words from the original 6731 words. The repetitive sentences stating the rationale in the discussion section have been deleted and the central conception ALSO was proposed in the first paragraph. To improve readability, we also provided additional headings in the methods section.

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With concise language and carefully developed logic, we clarified the rationale in the introduction section from paragraph 1 to 6. The rationale of this study could be summarized as key answers for the following three questions behind the introduction:

① *Why the ALSO conception was proposed?* In responding to the potential challenges of ASD trajectory, ALSO was proposed to bridge the transitional needs and early intervention (paragraph 1 to 2).

② *Why the ALSOLIFE Assessment was developed?* To facilitate the application of ALSO in early intervention, and making it could be implemented by caregivers of children with ASD in China, ALSOLIFE Assessment is designed as a free, online, technology-assisted, self-operated, behavioral analysis methods supported assessing tool (paragraph 3 to 5).

③ *Why did we need to do this study?* Although embedded on the practical needs of Chinese families of children with ASD, it is still unclear whether the evaluation by ALSOLIFE Assessment is reliable and accuracy. The psychometric evaluation would be an essential step to validating the ALSOLIFE Assessment (paragraph 6).

Then, the objective of this study was presented naturally and clearly (lines 124-125; “Therefore, this study aimed to comprehensively examining the reliability and validity of the ALSOLIFE Assessment.”).

**Changes in the text:** We have modified our text based on your suggestions (see Page 4, line 65-70; Page 4, line 80-97; Page 7, line 122-130; Page 8, line 141-155; Page 9, line 156-174; Page 10 175-193; Page 11, 194-212, Page 12,213-214, 229-231, Page 19, 355-360, Page 22, 407-422, Page 23, 423-427).

**Comment 2:** The manuscript could benefit from a careful editing throughout, there were a number of awkward and incomplete sentences. Some sentences were too long (e.g. lines 68-75, 515-521) and need to be rewritten for more economical writing.

**Reply 2:** We truly appreciated your careful editing and have learned a lot in this process. The manuscript has been revised thoroughly to improve the syntax and structure of the writing (e.g. lines 66-67, 406-414). In addition, we adopted the professional English article editing service *Editage Insights* to polish the language. We believed the revised manuscript has properly addressed your concerns.

**Changes in the text:** We have rewritten the language presentation thoroughly and

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extensively. The revised portion are marked blue in the paper.

**Comment 3:** Have the authors considered any differences between children with HFA versus LFA in the study design and analysis? They state in the discussion that participants did not have HFA, but how was this assessed? It is possible that the reliability and validity of the measure is more suitable for children with a particular ASD profile.

**Reply 3:** This is an excellent suggestion. Individuals' functioning could potentially influence the reliability and validity of the assessment. In fact, we wanted to identify the subdivision of participating children with ASD during the study. However, since very few pediatrician psychiatrists in China would give specific diagnosis description such as HFA or LFA, we had no way to confirm either subdivision of ASD from the diagnosis certificate provided by the participants.

In this study, we asked the participating caregivers to fill in the demographic information in the system before using the ALSOLIFE Assessment, which included their child's IQ test results. However, we gathered little information because some participating caregivers either skipped the item, or responded "I do not know" or "IQ test not taken". We followed up on the unclear IQ information through an additional telephone interview with caregivers, and found out that most young children with ASD in mainland did not receive the Wechsler IQ tests when they were diagnosed during preschool age.

As to the state in the discussion that participants did not have HFA, it is not the description of this study but related to the participants in the reference 33 (*Palmen A, Didden R, Lang R. A systematic review of behavioral intervention research on adaptive skill building in high-functioning young adults with autism spectrum disorder. Research in Autism Spectrum Disorders 2012;6:602-17*).

Thank you very much for the inspiration. This could potentially be our next research project and the comparison of HFA and LFA is beyond the scope of the current study.

**Changes in the text:** We deleted the easily misleading text relates to HFAs in the discussion section.

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**Comment 4:** I am interested in whether the order of the six skill domains might impact performance of the children who take the assessment. If children with ASD are required to complete a number of assessments which can take up to three hours according to the authors, what impact will this have on their performance and on the reliability of the measure in this regard?

**Reply 4:** Thank you for the thoughtful questions. We wrote the sentence in the original paper (e.g. line 303-304 “The six skill domains are assessed in order, that is, the scoring of all items in one domain is completed before proceeding to the next domain”). Apologized for the easily misinterpretation of this sentence caused by our poor language presentation.

We meant to describe the scoring process. That is, the user won’t get the score until he/she finished the specific skill domain. In fact, there is no fixed evaluating order between six skill domains. Caregiver users can freely choose which skill domain to start with. The system also allows users to quit at any time and resume it at their convenience. We have made the clarification on page 11, line 201-202.

**Changes in the text:** We have revised the text in the methods section (see Page 11, line 201-202)

**Comment 5:** The introduction should mention how similar measures have been validated. For example, the authors use the PEP-3 and the VB-MAPP to measure criterion-related validity, however, it is unclear if/how these measures have been validated. If they are validated (which I assume they are) this should be stated as this will strengthen the findings of this analysis.

**Reply 5:** Thanks for your suggestion. Based on several published studies, the PEP-3 and the VB-MAPP has been well validated in children with ASD. We have added the related literature and clearly stated the validation of the PEP-3 and the VB-MAPP in the methods section, under the headings *Psychoeducational Profile 3rd Edition (PEP-3)* and *Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP)* in the manuscript.

**Changes in the text:** We have modified the text of introducing the PEP-3 and the VB-MAPP based on your suggestions (see Page 11, line 210-213; Page 12, line 228-232).

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**Comment 6:** The authors received scores on the PEP-3 from 31 children and scores from the VB-MAPP from 34 children in the study. Were any of these the same children? This information should be included in the manuscript as it may impact the criterion-related validity.

**Reply 6:** Thank you for pointing it out. We did have two separate groups of participating children, one with PEP-3 scores while the other with VBMAPP results. There is no overlapping between groups. We could have made this statement much clearer. We have made the revision on page14, line 254-255 “Out of all participating children, 31 had taken PEP-3 assessment (age of 2.21-6.51 years old) while another 34 had taken VB-MAPP (age of 1.8-6.04 years old)”.

**Changes in the text:** We revised the text in the methods section, under the headings *Procedures / Criterion-related validity* (see page14, line 250-251)

**Comment 7:** I have concerns as the authors state that additional demographic information is yet to be collected for this study but it is unclear what demographic information is missing and how this impacts the findings. If there is important information missing about the participants this should be collected prior to the analyses being undertaken to ensure that the results are accurate.

**Reply 7:** Thank you very much for catching our grammatical error. We meant to indicate our follow up interview with the caregivers, which was part of our routine procedures in this study. Whenever we encountered any unclear information, we called the caregiver directly for confirmation and clarification. We did not plan to collect any additional demographic information after the analysis. We have made the grammatical correction on line 396-397 “We also confirmed any unclear demographic information through an additional telephone interview”.

**Changes in the text:** We have corrected the text in the discussion section (see Page 21, line 396-397).

Some smaller points:

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**Comment 8:** On line 352, the authors refer to Table 2 when discussing the six experts for the content validity but this should refer to Table 3.

**Reply 8:** Thanks for your carefully reviewing. We have checked the orders of all tables based on your comments. In the current version of manuscript, the table describing the six experts for the content validity changed to Table 2.

**Changes in the text:** We have corrected the text (see Page 13, line 246).

**Comment 9:** The terms used to describe Autism Spectrum Disorder varied from autism, ASD and autism spectrum. To aid with consistency, the authors are advised to streamline the terminology used throughout the manuscript. Relatedly, the authors use some terminology which is not universally acceptable. For example, they use the phrase “mental retardation” in Table 2.

**Reply 9:** Thanks for your carefully reviewing. Your suggestions are helpful to improve the quality of the manuscript. We have streamlined the terminology used throughout the manuscript and corrected the phrase “mental retardation” into “developmental delay” based on your advice.

**Changes in the text:** We have corrected the text Tn table 1.

**Comment 10:** Some abbreviations are not spelled out before they are used. For readers unfamiliar with some abbreviations used (such as BCBA), I would recommend that all abbreviations are written in full the first time they are used.

**Reply 10:** Thank you for pointing this out. We have revised all abbreviations written in full the first time they are used.

**Changes in the text:** We have corrected the text (see Page 4, line 64).

**Comment 11:** In the conflicts of interest statement, the authors state that they have no conflicts of interest to declare, however, it is worth considering the fact that one of the authors are responsible for the development of the ALSOLIFE assessment, i.e. the resource that the paper is validating.

**Reply 11:** Thanks for your carefully reviewing. Dr. Yanqing Guo is the creator of the ALSO conception, but not the responsible person of the ALSOLIFE Assessment. The legal representative person of the ALSOLIFE platforms company takes responsibility

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of the development of the ALSOLIFE Assessment.

The legal representative person of the ALSOLIFE platforms company is Mr. Zhiguang Zhang, who is an expert on big data and IT technology. As a father of a child with ASD aged 6 years old, Mr. Zhang appreciated the ALSO conception from Dr. Yanqing Guo's book. Having in-depth understanding of the needs of Chinese families of children with ASD, he collaborated with other two fathers of children with ASD, and organized the multidisciplinary team to develop the ALSOLIFE Assessment and aligned IEP system as the free, online, technology-assisted, self-operated and behavioral intervention approaches supported systems based on ALSO conception. (e.g. 89-97).

Although Dr. Yanqing Guo had invited to be a supervision of ALSO conception to contribute his wisdom on the design of the ALSOLIFE Assessment and IEP systems. The author of the ALSOLIFE Assessment is the multidisciplinary ALSOLIFE R&D team, not Dr. Yanqing Guo himself.

Since it is free of charge for using ALSOLIFE Assessment online system, ALSOLIFE platforms company make profits from other services (Offline autism intervention agencies, online training courses, books or games for children with ASD, teaching aids for caregivers).

Therefore, Dr. Yanqing Guo does not have potential conflicts of interests with ALSOLIFE Assessment, let alone this empirical study. As the co-author of this manuscript, Dr. Guo contributed the core of ALSO conception and helped the participants recruitment. He did not participate in any design and data analysis of the study.

As Chinese researchers, we think it is meaningful to conduct this study to benefit the families of children with ASD in China by providing a practical, validated, cultural fit and scientifically tested assessment tool. The rationale why we do this study was presented clearly in the instruction.

**Comment 12:** Figures do not have any descriptions.

**Reply 12:** Thank you for pointing this out. We have added the description for Figures.

**Changes in the text:** The revised descriptions for Figures have been added in the document of Figure list.

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**Comment 13:** The reference provided for [12] is the same as [1] and is an article on world autism day, not the normative sample data on the ability development of typically developing children as the authors state. This should be amended and referenced appropriately.

**Reply 13:** Thanks for your carefully reviewing. We have corrected this reference mistake and revised the reference list thoroughly.

**Changes in the text:** The revised portion in the reference section have been marked blue (see Page 25-27).

**Comment 14:** Supplemental material – Further information about the type of tasks the ALSOLIFE assessment used, giving some examples is needed to fully understand the measure being validated

**Reply 14:** Thanks for your interests of the ALSOLIFE Assessment Content. We have added six sample items, one from each skill domain, to better illustrate the operation of ALSOLIFE Assessment.

**Changes in the text:** The Supplemental material has been uploaded.