# PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<u>http://bmjopen.bmj.com/site/about/resources/checklist.pdf</u>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

# ARTICLE DETAILS

TITLE (PROVISIONAL)	Job demands and resources and their relationship with satisfaction and thriving at work in a sample of Chinese doctors: a cross-sectional study
AUTHORS	Zhang, Shu'e; Shi, Yu; Liu, Bei; Wang, Hongni; Zhao, Xin; Wang, xiaohe; Sun, Tao

# **VERSION 1 – REVIEW**

REVIEWER	Scanlan, Justin
	The University of Sydney, Faculty of Health Sciences
REVIEW RETURNED	05-Dec-2020
GENERAL COMMENTS	
	Thank you for the opportunity to review the paper entitled: "Job demands and resources and their relationship with satisfaction and thriving at work in a sample of Chinese doctors: a cross-sectional study".
	This study explored a range of hypotheses and the background for these hypotheses are generally well-established in the introduction. The methods section gives very little detail about the statistical analyses performed and some of additional detail is provided in the results section. This should be revised so that a clear and detailed overview of the statistical approaches used in this study is provided in the methods section.
	The large number of hypotheses explored in this study means that the results section is quite dense with many tables and figures. However, overall this reporting seems reasonable. My major concern in this section is the accuracy of the results reported. There are two figures that appear to be incorrect and this leads me to have concerns about the other figures reported throughout. It would be useful for the authors to carefully re-check their results to ensure that all reporting is accurate. The two potential errors that I have identified are: In table 1, the correlation between "psychological attachment" and "work family conflict" is reported as +0.290. While this is possible, this seems unlikely given the high correlation between psychological attachment and job resources and life satisfaction which are both in turn negatively associated with work family conflict. The second error is more straightforward: in figure 2, the coefficient of relationship between job resources and job attachment is presented as 1.0297. I don't think this is possible as, unless I am misunderstanding the diagram, a coefficient cannot be >1.0.

Other, more minor comments include: (1) There are some aspects of the introduction that seem quite emotive. For example line 4, lines 5-6: "Broader workplace violence initiated by patients or their families is destroying doctors' quality of clinical work and well-being" lines 8-10: "Chinese doctors, as a group of victims, had to endure considerable contemporary challenges and barriers due to the high-level workload, emotional exhaustion, physical demands, and cynicism experienced in daily work" This detracts from the overall quality of the paper, so I would suggest that the introduction be checked and revised to present this information with more neutral language. (2) Page 4, line 4: that authors refer to "excessive treatment" – it is not clear to me what is being referred to here. Is it "over servicing" or is it providing treatments that are deemed too excessive (e.g., unnecessarily high doses of medication). It would be good to clarify what is meant by this term. (3) Page 4, line 30: it is not clear to me what is meant by "unmatched rewards" (4) Page 7 – Methods section - Subjects and procedures: "We monitored the progress of the survey daily, and anyone could obtain the Website Lucky Money as a reward after they answered the questionnaire." It is not necessary to comment on how frequently the survey was monitored as this appears to be a procedural aspect of the study rather than the design. More information is needed about what the "Website Lucky Money" is and what rewards were available to participants. (5) Page 7, line 29 to 31 – exclusion criteria need to be updated for clarity. For example, the first parts of the exclusion criteria read: "no answer, voluntarily withdrawing from the study by failing to answer all the questions, excessive missing items" which all relate to incomplete responses. "failing to answer all of the questions" suggest that any response swith missing items were excluded. However, "excessive missing items were excluded. In addition, "response t
submitted. This is not really a response rate and may mislead some readers, therefore I think it should be removed. Given the design of this study, it is not possible to present a response rate. (7) Page 8, Line 12 to 13. The concept of "oral informed consent" does not seem relevant in the context of this study design. This should be revised and explained.
(8) Page 8, line 26-27. The authors report a Cronbach's alpha for the Job Demands and Job Resources questionnaire. Given that Job Demands and Job Resources would be expected to diverge for many participants, it is usual to present alphas for Job demands items and job resources items separately. In this case, before calculating the Cronbach's alpha, were the job demands items reversed?

Thank you once again for the opportunity to review this paper. I hope the authors find my comment helpful and I look forward to seeing the updated manuscript.
the results "prove" causality. (11) Page 15, line 26: there appears to be a typo: "kill utilizations" – should this be "skill utilization"?
<ul> <li>(10) Page 14, line 8-9. "Our evidence proved that doctors' job demands have a positive direct impact on increasing work-family conflicts" – the use of the word "proved" here is too strong. Given that this is a cross-sectional study, it is not possible to assert that</li> </ul>
efforts to improve poor doctor-patient relationships." and "Chinese doctors expend greater resources—extra time, energy, and emotional labor—to satisfy the growing healthcare service demands 2 of the general population"
statements that need to be given stronger evidence include: " Chinese doctors suffer from greater work stress and heavier workload in responding to patients' needs for high-quality health care."; "More importantly, doctors often devote considerable
with the real-life situation." This statement is not supported by any evidence, so needs to be revised. The remainder of this section also needs to be reviewed and updated – preferably with more detailed connection with the existing literature. Some of the
(9) Page 13, line 17-19. The authors report "The participants in our survey had high-level job demands ( $M = 3.843 \pm 0.791$ ) and low-level job resources ( $M = 2.474 \pm 0.740$ ), which is consistent

REVIEWER	Moum, Torbjørn Institute of Basic Medical Sciences, Department of Behavioural Sciences in Medicine
REVIEW RETURNED	21-Dec-2020

GENERAL COMMENTS	Why only one alpha for "resources and demands" (p.10) as well as for "learning and vitality" (p. 12)? There should be one alpha for each scale
	No sample item for "psychological attachment" and this measure is hard to grasp intuitively.
	"I feel alive and vital" really appears to be a measure of overall QOL.
	"thriving at work" seems like an admixture of "job satisfaction" and "life satisfaction" and appear to add little of substance. The direction of causality implied for "resources" and "attachment" appears dubious, bivariate results also indicate that "resources" rather than "attachment" should be posited as the mediator.
	Readers should be made aware of the nature of the coefficients used in Figure 1 and Figure 2.

# **VERSION 1 – AUTHOR RESPONSE**

Reviewer: 1 Dr. Justin Scanlan, The University of Sydney Author Response : Thank you for your hard work and precious comments concerning our manuscript. These comments are all valuable for our manuscript and important for revising and improving the quality of the manuscript. According to Editors and Reviewers' suggestions, we recognize that our description was not clear enough. We are including a more detailed description of the datasets in Methods section in resubmitted manuscript. Moreover, we tried our best to improve the quality of the manuscript and made major revision in resubmit manuscript. These changes will not influence the main content and framework of the manuscript. And here we did not list the all changes but marked in red in revised manuscript. We appreciate for Editors and Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Comment (1) The large number of hypotheses explored in this study means that the results section is quite dense with many tables and figures. However, overall this reporting seems reasonable. My major concern in this section is the accuracy of the results reported. There are two figures that appear to be incorrect and this leads me to have concerns about the other figures reported throughout. It would be useful for the authors to carefully re-check their results to ensure that all reporting is accurate. The two potential errors that I have identified are: In table 1, the correlation between "psychological attachment" and "work family conflict" is reported as +0.290. While this is possible, this seems unlikely given the high correlation between psychological attachment and job resources and life satisfaction which are both in turn negatively associated with work family conflict. The second error is more straightforward: in figure 2, the coefficient of relationship between job resources and job attachment is presented as 1.0297. I don't think this is possible as, unless I am misunderstanding the diagram, a coefficient cannot be >1.0.

Author Response : Thank you very much for these professional comments and constructive questions. According to your suggestions, we have rechecked the results by two authors and made the red modification. In current version, we have added the detailed illustration in method section, showing an unstandardized coefficient rather than standardized coefficient in Results section. Moreover, we have corrected all tables and figures with notes in resubmitted manuscript. (Page12-14)

Comment (2) There are some aspects of the introduction that seem quite emotive. For example line 4, lines 5-6: "Broader workplace violence initiated by patients or their families is destroying doctors' quality of clinical work and well-being..." lines 8-10: "Chinese doctors, as a group of victims, had to endure considerable contemporary challenges and barriers due to the high-level workload, emotional exhaustion, physical demands, and cynicism experienced in daily work..." This detracts from the overall quality of the paper, so I would suggest that the introduction be checked and revised to present this information with more neutral language.

Author Response : Thank you very much for these professional comments and constructive suggestions. According to your suggestions, we rechecked the introduction by two authors with red modification. (Page3-4)

Moreover, Chinese doctors are often victims in current China's health care system, facing the challenge of terrible violence4, heavy workload, overworked and overloaded, and occupational burnout5. A national survey revealed that approximately 83.4% doctors have suffered more than one sort of workplace violence6 and about 85.79% Chinese doctors reported suffering burnout5. Additionally, there is disproportionate coverage in media, television and social websites1 7 how healthcare providers have cheated customers and presented unfriendly service attitudes toward patients, by which provokes further tension relationships between both sides2 3. It might trigger a series of adverse consequences including decreased work functioning, increasing physicians' psychosocial stress and job dissatisfaction with

vicious spiral.

Comment (3) Page 4, line 4: that authors refer to "excessive treatment" – it is not clear to me what is being referred to here. Is it "over servicing" or is it providing treatments that are deemed too excessive (e.g., unnecessarily high doses of medication). It would be good to clarify what is meant by this term. Author Response : Thank you for pointing this out. Considering the ambiguity of the meaning of "excessive treatment", we rechecked and revised the introduction with red modification. Moreover, we have added the necessary references.

#### References

2. Zhou M, Zhao L, Campy K, et al. Changing of China's Health policy and Doctor - Patient Relationship: 1949–2016. Health Policy and Technology 2017;6 doi: 10.1016/j.hlpt.2017.05.002

3. The, Lancet. Chinese doctors are under threat. Lancet 2010;376(9742):657-57. doi: org/10.1016/S0140-6736(10)61315-3

Moreover, Chinese doctors are often victims in current China's health care system, facing the challenge of terrible violence4, heavy workload, overworked and overloaded, and occupational burnout5. A national survey revealed that approximately 83.4% doctors have suffered more than one sort of workplace violence6 and about 85.79% Chinese doctors reported suffering burnout5. Additionally, there is disproportionate coverage in media, television and social websites1 7 how healthcare providers have cheated customers and presented unfriendly service attitudes toward patients, by which provokes further tension relationships between both sides2 3. It might trigger a series of adverse consequences including decreased work functioning, increasing physicians' psychosocial stress and job dissatisfaction with vicious spiral.

ion with vicious spiral.

Comment (4) Page 4, line 30: it is not clear to me what is meant by "unmatched rewards" Author Response : Thank you for pointing this out, Considering the ambiguity of the meaning of "unmatched rewards", it has been changed into "effort-reward imbalance" in resubmitted manuscript. References

14. Ge J, He J, Liu Y, et al. Effects of effort-reward imbalance, job satisfaction, and work engagement on self-rated health among healthcare workers. BMC Public Health 2021;21 doi: 10.1186/s12889-021-10233-w

Comment (5) Page 7 – Methods section - Subjects and procedures: "We monitored the progress of the survey daily, and anyone could obtain the Website Lucky Money as a reward after they answered the questionnaire." It is not necessary to comment on how frequently the survey was monitored as this appears to be a procedural aspect of the study rather than the design. More information is needed about what the "Website Lucky Money" is and what rewards were available to participants. Author Response: Thank you for pointing this out. All the methodological Details were presented in the Methods section. We recognize that our description was not clear enough. We are including a more detailed description of the datasets in Methods section in resubmitted manuscript (page8-11). Moreover, we have added a more detailed description of the statistical approaches and marked this change in red , to facilitate the identification of

the change.

Subjects and procedures

This study used an anonymous online questionnaire to conduct an internet survey in May 2016. The study used snowball sampling. The purpose and significance of this study were provided on the front page of self-administered questionnaires. The doctors who were originally selected were appointed to

deliver the questionnaires to other doctors. The selected doctor was invited to click on a webpage link to access a self-administered questionnaire (https://www.wenjuan.com/). Subsequently, the web-page link was sent by the deliverers to other doctors via mobile phones. The participants' progress in the survey was monitored by the authors, and anyone could obtain some rewards after they answered the questionnaire. We checked the accuracy and completeness of the data and excluded questionnaires that did not meet the criteria. The two authors checked the consistency of all the data. For data management and quality control, we strictly adhered to both the inclusion criteria in selecting our final sample. The inclusion criteria were as follows: (1) being a registered doctors; (2) being currently enrolled in hospital; and (3) consent and voluntary participation in our study. We selected 2,617 valid questionnaires from 30 different cities in China to include in the sample.

Comment (6) Page 7, line 29 to 31 – exclusion criteria need to be updated for clarity.

For example, the first parts of the exclusion criteria read: "no answer, voluntarily withdrawing from the study by failing to answer all the questions, excessive missing

items" which all relate to incomplete responses. "failing to answer all of the questions" suggest that any responses with missing items were excluded. However, "excessive missing items" suggest that only those responses with substantial missing items were excluded. In addition, "response time that was too short or long" – how were responses identified as "too short"? Additionally, why were responses that took "too long" excluded? Additional information about this should be included.

Author Response: We appreciate this note. We recognize that our description was not clear enough. We are including a more detailed description of the datasets in Methods section in resubmitted manuscript. (page8-11)

Subjects and procedures

This study used an anonymous online questionnaire to conduct an internet survey in May 2016. The study used snowball sampling. The purpose and significance of this study were provided on the front page of self-administered questionnaires. The doctors who were originally selected were appointed to deliver the questionnaires to other doctors. The selected doctor was invited to click on a webpage link to access a self-administered questionnaire (https://www.wenjuan.com/). Subsequently, the web-page link was sent by the deliverers to other doctors via mobile phones. The participants' progress in the survey was monitored by the authors, and anyone could obtain some rewards after they answered the questionnaire. We checked the accuracy and completeness of the data and excluded questionnaires that did not meet the criteria. The two authors checked the consistency of all the data. For data management and quality control, we strictly adhered to both the inclusion criteria in selecting our final sample. The inclusion criteria were as follows: (1) being a registered doctors; (2) being currently enrolled in hospital; and (3) consent and voluntary participation in our study. We selected 2,617 valid questionnaires from 30 different cities in China to include in the sample.

Comment (7) Page 8, line 2-3. The response rate presented only describes the number of surveys included as a proportion of how many were submitted. This is not really a response rate and may mislead some readers, therefore I think it should be removed. Given the design of this study, it is not possible to present a response rate.

Author Response: Thank you very much for these professional comments and constructive suggestions. I have removed the response rate.

We selected 2,617 valid questionnaires from 30 different cities in China to included in the sample.

Comment (7) Page 8, Line 12 to 13. The concept of "oral informed consent" does not seem relevant in the context of this study design. This should be revised and explained.

Author Response:Thank you very much for these professional comments and constructive suggestions. I have revised and explained in resubmitted manuscript. That is "Informed consent was obtained from all participants on the front page of self-administered questionnaires." (page 9-11)

Comment (8) Page 8, line 26-27. The authors report a Cronbach's alpha for the Job Demands and Job Resources questionnaire. Given that Job Demands and Job Resources would be expected to diverge for many participants, it is usual to present alphas for Job demands items and job resources items separately. In this case, before calculating the Cronbach's alpha, were the job demands items reversed?

Author Response:Thank you very much for these professional comments and constructive suggestions. I have added the Cronbach's alpha of each scale. Necessary items have been reversed and showed in Measures section. (page 9-11)

#### Measures

The questionnaire comprised seven sections: demographic variables, job demands and job resources, work-family conflicts, job satisfaction, life satisfaction, psychological attachment, and thriving at work. Demographic characteristics and job characteristics

In the current study, four demographic variables were collected, including gender, age, marital status, and educational level. Marital status was divided into three categories: unmarried, married, and divorced or widowed. Options for educational level included"college degree or below," "bachelor's degree," "master's degree," and "doctor's degree or above." Four variables were utilized to assess job characteristics: professional categories, job tenure, daily work hours, and work shift.

## Job Demands

A total of 7 items measured job demands 44 45. A sample item of job demands is "I have an excessive amount of work to do every day." Items were scored on a 5-point Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"), where higher scores represented a higher degree of either job demands. In this study, the Cronbach's alpha coefficient of job demands scale was 0.882.

#### Job Resources

A total of 7 items measured job resources 44 45. An item inquiring about job resources is "I feel that I have enough learning opportunities in my work right now." Items were scored on a 5-point Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"), where higher scores represented a higher degree of eitherjob resources. In this study, the Cronbach's alpha coefficient of job resources 0.787.

## Thriving at Work

Ten items developed by Porath and colleagues 47 used a 5-point Likert scale—ranging from 1 ("strongly disagree") to 5 ("strongly agree")—to assess thriving at work. Two dimensions assessed were learning and vitality. Higher scores suggested that doctors had a greater passion for learning and strived to progress in the hospital. A sample item for learning is "I continue to learn more and more as time goes by" and for vitality is "I feel alive and vital." Of these, the 4 and 7 items are reverse scoring questions. In current study, the Cronbach's alpha coefficient for the learning, vitality, and the whole scale were 0.787, 0.850 and 0.861, respectively.

Comment (9) Page 13, line 17-19. The authors report "The participants in our survey had high-level job demands ( $M = 3.843 \pm 0.791$ ) and low-level job resources ( $M = 2.474 \pm 0.740$ ), which is consistent with the real-life situation." This statement is not supported by any evidence, so needs to be revised. The remainder of this section also needs to be reviewed and updated – preferably with more detailed connection with the existing literature. Some of the statements that need to be given stronger evidence include: "... Chinese doctors suffer from greater work stress and heavier workload in responding to patients' needs for high-quality health care."; "More importantly, doctors often devote considerable efforts to improve poor doctor-patient relationships." and "Chinese doctors expend greater resources—extra time, energy, and emotional labor—to satisfy the growing healthcare service demands 2 of the general population..."

Author Response:Thank you very much for these professional comments and constructive suggestions. According to your suggestion, I have supplemented the necessary evidence and references in the latest submitted version.

## References

47. The L. The doctors' predicament: China's health-care growing pains. The Lancet 2019;393(10181):1569. doi: https://doi.org/10.1016/S0140-6736(19)30861-X

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64. Scheepers RA, Lases LSS, Arah OA, et al. Job Resources, Physician Work Engagement, and Patient Care Experience in an Academic Medical Setting. Academic medicine : journal of the Association of American Medical Colleges 2017;92(10):1472-79. doi: 10.1097/acm.000000000001719 [published Online First: 2017/05/05]

Comment (10) Page 14, line 8-9. "Our evidence proved that doctors' job demands have a positive direct impact on increasing work-family conflicts" – the use of the word "proved" here is too strong. Given that this is a cross-sectional study, it is not possible to assert that the results "prove" causality.

Author Response:Thank you very much for these professional comments and careful suggestions. According to your suggestion, we have changed "proved" to "showed" in order to be more accurate and reasonable in the latest version.

Comment (11) Page 15, line 26: there appears to be a typo: "kill utilizations" – should this be "skill utilization"?

Author Response: We appreciate the note. I am very sorry for my mistake. I have revised "kill utilizations" to "skill utilization" in the latest submitted version. We also re-checked the whole manuscript further. Thank you for pointing this out again.

#### Reviewer: 2

Dr. Torbjørn Moum, Institute of Basic Medical Sciences

Author Response 1 : Thank you for your hard work and precious comments concerning our manuscript. Those comments are all valuable for our manuscript and important for revising and improving the quality of the manuscript. According to Editors and Reviewers' suggestions, we tried our best to improve the quality of the manuscript and made major revision in resubmit manuscript. These changes will not influence the main content and framework of the manuscript. And here we did not list the all changes but marked in red in revised manuscript. We appreciate for Editors and Reviewers' warm work earnestly, and hope that the correction will meet with approval.

## Comments to the Author:

Comment (11) Why only one alpha for "resources and demands" (p.10) as well as for "learning and vitality" (p. 12)? There should be one alpha for each scale.

Author Response:Thank you very much for these professional comments and constructive suggestions. I have added the Cronbach's alpha of each scale in the latest submitted version. Necessary items have been reversed and showed in Measures section.

## Measures

The questionnaire comprised seven sections: demographic variables, job demands and job resources, work-family conflicts, job satisfaction, life satisfaction, psychological attachment, and thriving at work. Demographic characteristics and job characteristics

In the current study, four demographic variables were collected, including gender, age, marital status, and educational level. Marital status was divided into three categories: unmarried, married, and divorced or widowed. Options for educational level included"college degree or below," "bachelor's degree," "master's degree," and "doctor's degree or above." Four variables were utilized to assess job characteristics: professional categories, job tenure, daily work hours, and work shift. Job Demands

A total of 7 items measured job demands 44 45. A sample item of job demands is "I have an excessive amount of work to do every day." Items were scored on a 5-point Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"), where higher scores represented a higher degree of either job demands. In this study, the Cronbach's alpha coefficient of job demands scale was 0.882. Job Resources

A total of 7 items measured job resources 44 45. An item inquiring about job resources is "I feel that I have enough learning opportunities in my work right now." Items were scored on a 5-point Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"), where higher scores represented a higher degree of eitherjob resources. In this study, the Cronbach's alpha coefficient of job resources 0.787. Thriving at Work

Ten items developed by Porath and colleagues 47 used a 5-point Likert scale—ranging from 1 ("strongly disagree") to 5 ("strongly agree")—to assess thriving at work. Two dimensions assessed were learning and vitality. Higher scores suggested that doctors had a greater passion for learning and strived to progress in the hospital. A sample item for learning is "I continue to learn more and more as time goes by" and for vitality is "I feel alive and vital." Of these, the 4 and 7 items are reverse scoring questions. In current study, the Cronbach's alpha coefficient for the learning, vitality, and the whole scale were 0.787, 0.850 and 0.861, respectively.

Comment (12) No sample item for "psychological attachment" and this measure is hard to grasp intuitively.

Author Response: We appreciate the note. According to your suggestion, I have added the sample items of psychological attachment scale in the latest version.

Sample items include "I'd be happy to spend the rest of my career at current hospital" and "Working at current hospital has a great deal of personal meaning for me".

#### Reference

36. Burris ER, Detert JR, Dan S, Chiaburu. Quitting before leaving: the mediating effects of psychological attachment and detachment on voice. Journal of Applied Psychology 2008;93(4):912.

Comment (13) "I feel alive and vital" really appears to be a measure of overall QOL. "thriving at work" seems like an admixture of "job satisfaction" and "life satisfaction" and appear to add little of substance. The direction of causality implied for "resources" and "attachment" appears dubious, bivariate results also indicate that "resources" rather than "attachment" should be posited as the mediator.

Author Response:Thank you for pointing this out. We recognize that our description was not clear enough in introduction section. We are including a more detailed description of relevant concepts in the Introduction section (Page6, page7) in resubmitted manuscript. Thriving at work is not same to quality of life and life satisfaction. In order to better understand, we have revised the Introduction section (Page6, page7) with red moderation in the latest version. Two dimensions of assessed thriving at work were learning and vitality. In current study, ten items developed by Porath and colleagues to assess thriving at work, which has good reliability and validity in Chinese context. Relevant concepts are described as followed.

Thriving at work refers to a positive psychological state characterized by a joint sense of vitality and learning in their work. More specifically, researchers suggest that employees who are thriving experience personal growth by feeling energized and alive (i.e., vitality) and by having a sense of continually acquiring and applying knowledge.

However, quality of life is a highly subjective measure of happiness that is an important component of many financial decisions. Factors that play a role in the quality of life vary according to personal preferences, but they often include financial security, job satisfaction, family life, health, and safety.Life satisfaction refers to people's cognitive assessment of satisfaction with one's life circumstances.

Life satisfaction measures an individual's overall assessment of their life circumstances . It provides a subjective assessment of an individual's happiness, and is a main indicator of well-being. It is multidimensional in nature, and encompasses satisfaction with a broad spectrum of specific life domains.

Comment (14) Readers should be made aware of the nature of the coefficients used in Figure 1 and Figure 2.

Author Response:

Thank you very much for these professional suggestions and detailed comments. Moreover, we rechecked the results by two authors with red modification. We corrected the tables and figures with notes in resubmitted manuscript. The coefficients in Figure 1 and Figure 2 represented unstandardized coefficients. Figure notes have been added in resubmitted manuscript.

#### **VERSION 2 – REVIEW**

REVIEWER	Scanlan, Justin
	The University of Sydney, Faculty of Health Sciences
REVIEW RETURNED	28-Feb-2021
GENERAL COMMENTS	Thank you for the opportunity to review the revised version of the paper entitled: "Job demands and resources and their relationship with satisfaction and thriving at work in a sample of Chinese doctors: a cross-sectional study". The authors have provided a detailed response to the comments from the original review. The revised manuscript is improved and clearer, but I still have a few comments and suggestions for further improvements.
	Abstract: In the participants section, the authors report "A total of 2,617 doctors were recruited to complete in May 2016." This should be revised for clarity. A clearer statement may be "A total of 2,617 doctors provided sufficiently complete responses to be used in the study" (or similar).
	Final sentence of the results "Furthermore, psychological attachment partially mediated the relationship between perceived job resources and vitality, and partially mediated the relationship between perceived job resources and thriving at work." – this section refers to specific analyses exploring the mediating role of psychological attachment in the relationship between job resources and vitality. This analyses is not presented in this version of the paper (with the analysis only focusing on the overall construct of 'thriving at work'). Therefore this section should be updated.
	Strengths and Limitation section: The first three statements in this section appear to be the authors' summary of findings rather than strengths or limitations. Additionally, the first statement, "Doctors in China suffer from common imbalance between job demands and resources" is not really able to be made from the results from this study. While mean ratings for job resources were lower than job demands, it cannot really be concluded that these are imbalanced, particularly given that these are not compared with

and normative data (I have also commented on this in the discussion section).
Introduction: The introduction provides a reasonable overview of the rationale behind the hypotheses explored in this study. However, the flow and structure of this section could be improved. At the moment, this section seems fairly "jumpy" – going from topic to topic without good connections between the different ideas. It would be useful for the authors to revise this section to improve overall coherence and flow.
<ul> <li>Specific suggestions in relation to this section include:</li> <li>1. Page 3, line 25-26 "facing the challenge of terrible violence" is still a bit emotive. I would suggest that this be updated to "facing challenges associated with workplace violence".</li> <li>2. The section outlining the JDR is a little confusing (page 4, line 4-7: "The Job Demands Resources (JD-R) Model, which can satisfy the need for specificity by providing various types of job demands and job resources depending on the occupational context, is presented to facilitate employee well-being and mechanisms to cope with occupational stress.") – this should be updated to provide a clearer overview of the JDR theory.</li> <li>3. Page 4, line 22 to 26: "Insufficient job resources and high-level job demands have caused Chinese doctors to face various dilemmas—such as low frequency of training, deficient supervisory support, effort-reward imbalance14, imperfect laws, lack of empowerment and autonomy, and overwork and overload which together trigger dissatisfied attitudes and disturbed psychological health 16." This is quite a long sentence. It would be good to break this down into several sentence to make it easier to understand. Additionally, it would be useful to provide more context about what "imperfect laws" relates to.</li> <li>4. Page 5, line 7 to 11: "Controversially, some studies assert a negative relationship between job demands and satisfaction, but others report contradictory results, including a non-significant relationship, a positive relationship, or a gender-specific relationship more complex than what is often assumed 20." – the use of the word "Controversially" is not really correct in this context – this should be revised and updated.</li> <li>5. Page 6, line 16: the abbreviation "COR" is used without explanation.</li> </ul>
<ul> <li>Methods</li> <li>1. Page 7, line 28-29: "Subsequently, the web-page link was sent by the deliverers to other doctors via mobile phones." – it is not clear what "deliverers" means in the context of this sentence.</li> <li>2. Page 7, line 30 to Page 8, line 1: "anyone could obtain some rewards after they answered the questionnaire" – this needs more detail. As I mentioned in my previous review, it would be helpful to provide additional detail about the kinds of rewards that could be gained by completing the survey as this assists in understanding the potential inducement of participants.</li> <li>3. Page 8, line 5 to 6: inclusion criterion should be listed as "being a registered doctor" rather than "being a registered doctors"</li> </ul>

Overall, I think that the discussion section, similar to the introduction, would benefit from a rewrite to make the flow better and make it easier to understand the authors' interpretations of the results.

Specific suggestions:

1. Page 14, line 21-22. The authors refer to "high-level job resources (M =  $3.843 \pm 0.791$ ) and low-level job resources (M = 2.474 ± 0.740)". I think the first part should refer to job demands rather than job resources. Additionally, saying that the scores represent "high-level" or "low-level" is not really possible unless these are presented in the context of normative data – this is what I was referring to in my first set of comments. Just because the scores were above or below the mid-point of the scale, it is not generally possible to comment on whether these are "high" or "low" without more explanation or context. This is also the case when the authors refer to high or low levels of the other variables such as work-family conflicts, psychological attachment, life satisfaction, job satisfaction and thriving at work. It would be useful for the authors to review and revise this section. 2. Page 15, line 7 to 9: "A dilemma of the unbalance between job demands and resources is common among Chinese doctors, which must receive adequate attention from hospital managers further" – this section should be revised for clarity. If the authors wish to relate this to previous findings from other studies, then references should be provided. If the authors are commenting on the implications of findings from this study, this section should be reworded to make it clearer that they are highlighting implication. 3. Page 16, line 7 to 8: "however, adequate support from others may sharpen the positive effects of the work-family conflicts on emotional exhaustion and cynicism" - this is not this sentence is confusing and unclear. Please review and revise for clarity. 4. Page 16, line 10 to 12: "Overall, it is beneficial for hospital managers to help doctors work toward a more balanced approach to well-being by reducing excess workload, providing satisfactory support, and alleviating worsening work-family conflicts." The last section "alleviating worsening work-family conflicts" should be revised for clarity. 5. Page 16, line 20 to 23: "The present study illustrated that the

5. Page 16, line 20 to 23: "The present study illustrated that the likelihood of doctors reporting a greater sense of thriving at work is likely to be driven by high levels of available job resources that can help them achieve their career goals." The intent of this section is unclear. The results suggest that job resources are related to psychological attachment which leads to thriving. Are the authors trying to make this point by referring to psychological attachment as "that can help them achieve their career goals" – I think that it would be preferable to revise this sentence so that there is consistency between what is reported here and the actual findings from this study.

6. Final sentence of the conclusion (page 18, line 6 to 8): "The findings suggested that hospital managers and supervisors should focus on providing a dynamic equilibrium between doctors' job demands and job resources." This conclusion cannot be drawn from the results of this study. Additionally, this sentence is simply a re-statement of the theory of the job demands resources model / conservation of resources model, so doesn't really add much to

the conclusion. It would be useful to provide a clearer statement that provides some information about how this could be achieved or what the results from the study suggest should be done by managers to promote life and job satisfaction and thriving at work.
While I have made a large number of suggestions, I think that this manuscript is improving and with some additional work, will be a good quality contribution to the overall literature.

# **VERSION 2 – AUTHOR RESPONSE**

Reviewer: 1

Abstract:

Comment 1: In the participants section, the authors report "A total of 2,617 doctors were recruited to complete in May 2016." This should be revised for clarity. A clearer statement may be "A total of 2,617 doctors provided sufficiently complete responses to be used in the study" (or similar).

Author's response: Thank you for pointing this out. We agree with this suggestion and revised portions are marked in red in the manuscript. (page2, lines12-13)

Comment 2: Final sentence of the results "Furthermore, psychological attachment partially mediated the relationship between perceived job resources and vitality, and partially mediated the relationship between perceived job resources and thriving at work." – this section refers to specific analyses exploring the mediating role of psychological attachment in the relationship between job resources and vitality. This analyses is not presented in this version of the paper (with the analysis only focusing on the overall construct of 'thriving at work'). Therefore this section should be updated.

Author's response:

Thank you for pointing this out. I have modified this section as requested http://bmjopen.bmj.com/site/about/guidelines.xhtml#articletypes. (page2, lines 21-23)

Comment 3: Strengths and Limitation section: The first three statements in this section appear to be the authors' summary of findings rather than strengths or limitations. Additionally, the first statement, "Doctors in China suffer from common imbalance between job demands and resources" is not really able to be made from the results from this study. While mean ratings for job resources were lower than job demands, it cannot really be concluded that these are imbalanced, particularly given that these are not compared with and normative data (I have also commented on this in the discussion section).

Author's response:

Thank you for pointing this out. I have modified this section as requested http://bmjopen.bmj.com/site/about/guidelines.xhtml#articletypes. (page3, lines 4-11)

Furthermore, I compare this data with the normative data and revise the conclusion. Thanks again. (page3, lines 6-13)

Comment 1: The introduction provides a reasonable overview of the rationale behind the hypotheses explored in this study. However, the flow and structure of this section could be improved. At the moment, this section seems fairly "jumpy" – going from topic to topic without good connections between the different ideas. It would be useful for the authors to revise this section to improve overall coherence and flow.

Author's response:

Thank you for pointing this out. We will be happy to edit the text further, based on helpful comments from the reviewers.

Comment 2: Page 3, line 25-26 "facing the challenge of terrible violence" is still a bit emotive. I would suggest that this be updated to "facing challenges associated with workplace violence".

Author's response: Thank the reviewer for pointing this. We agree with this suggestion and revised sentence are marked in red in resubmit manuscript. (Page3, line23-24)

Comment 3: The section outlining the JDR is a little confusing (page 4, line 4-7: "The Job Demands Resources (JD-R) Model, which can satisfy the need for specificity by providing various types of job demands and job resources depending on the occupational context, is presented to facilitate employee well-being and mechanisms to cope with occupational stress.") – this should be updated to provide a clearer overview of the JDR theory.

Author's response: Thank you for pointing this out. We will be happy to edit the text further, based on helpful comments from the reviewers. The statements have been corrected and revised portions are marked in red in the manuscript. (Page 4, line1-7)

Comment 4: Page 4, line 22 to 26: "Insufficient job resources and high-level job demands have caused Chinese doctors to face various dilemmas—such as low frequency of training, deficient supervisory support, effort-reward imbalance14, imperfect laws, lack of empowerment and autonomy, and overwork and overload which together trigger dissatisfied attitudes and disturbed psychological health 16." This is quite a long sentence. It would be good to break this down into several sentence to make it easier to understand. Additionally, it would be useful to provide more context about what "imperfect laws" relates to.

Author's response: Thank the reviewer for pointing this. We will be happy to edit the text further, based on helpful comments from the reviewers. The statements have been corrected and revised portions are marked in red in the manuscript (Page 4, line17-24).

Comment 5: Page 5, line 7 to 11: "Controversially, some studies assert a negative relationship between job demands and satisfaction, but others report contradictory results, including a non-significant relationship, a positive relationship, or a gender-specific relationship more complex than what is often assumed 20." – the use of the word "Controversially" is not really correct in this context – this should be revised and updated.

Author's response: Thank you for pointing this out. We agree with this suggestion and revised portions are marked in red in the manuscript. (Page 5, line7-8)

Comment 6: Page 6, line 16: the abbreviation "COR" is used without explanation.

Author's response: Thank you for your hard work and precious comments concerning our manuscript. We recognize that we did not express contents clearly in the section, which caused confusion to you. The theory has been explained above, but the corresponding abbreviation is not given. In the resubmitted manuscript, we have added more detailed information (Page 6, line 3-8). Revised portions are marked in red in the manuscript. We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

#### Methods:

Comment 1: Page 7, line 28-29: "Subsequently, the web-page link was sent by the deliverers to other doctors via mobile phones." – it is not clear what "deliverers" means in the context of this sentence.

Author's response: Thank you for pointing this out. We recognize that we did not express contents clearly in the section, which caused confusion to you. In the manuscript, we have added more detailed information (Page 7). Revised portions are marked in red in the resubmit manuscript. We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Comment 2: Page 7, line 30 to Page 8, line 1: "anyone could obtain some rewards after they answered the questionnaire" – this needs more detail. As I mentioned in my previous review, it would be helpful to provide additional detail about the kinds of rewards that could be gained by completing the survey as this assists in understanding the potential inducement of participants.

Author's response: Thank you for pointing this out. we have added more detailed information in the manuscript (Page 7). Revised portions are marked in red in the resubmit manuscript. We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Comment 3: Page 8, line 5 to 6: inclusion criterion should be listed as "being a registered doctor" rather than "being a registered doctors".

Author's response: Thank you for pointing this out. We will be happy to edit the text further, based on helpful comments from the reviewers. The statements have been corrected and revised portions are marked in red in the manuscript (Page 7, line27).

Comment 4: Page 8, line 7 to 8: "We selected 2,617 valid questionnaires from 30 different cities in China to include in the sample." This needs to be reworded as the current wording suggests that there were more than 2,617 responses and that the authors selected 2,617 out of these. What the authors are trying to express is that there were 2,617 usable responses completed as part of this study.

Author's response: Thank you for pointing this out. We recognize that we did not express contents clearly in the section, which caused confusion to you. We have added more detailed information in the resubmitted manuscript (Page 8). Revised portions are marked in red in the manuscript. We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Comment 5: Sections on Job Demands and Job Resources (bottom of page 8, top of page 9), both sections refer to "where higher scores represented a higher degree of either job demands". This is a copy and paste error from the previous version where these were combined. It should read "where higher scores represented a higher degree of job demands" in the job demands section and "where higher scores represented a higher degree of job resources" in the job resources section (i.e., removing "either" from both sentences and changing job demands to job resources in the job resources section.

Author's response: We really thank the Reviewer. Agreed and corrected in the revision. Revised portions are marked in red in the manuscript (Page 9, line 2).

Comment 6: Page 10, line 19: a scale of "never" to "almost always" is not a Likert scale. Therefore this should be updated to "All responses were marked on a 5-point scale ranging from 1 ("never") to 5 ("almost always")"

Author's response: Thank the reviewer for pointing this. We agree and revised accordingly. Revised portions are marked in red in the manuscript (Page 9, line9-10).

Comment 7: Page 9, line 17-19: "Higher scores suggested that doctors had a greater passion for learning and strived to progress in the hospital." The part on "strived to progress in the hospital" presumably relates to description of "vitality" – I don't really see that vitality is always related to "striving to progress in one's work", therefore, I think that this description should be updated.

Author's response: Thank the reviewer for pointing this. We will be happy to edit the text further, based on helpful comments from the reviewers. The statement has been corrected and references added (The reference are as follows), and the revised portions are marked in red in the manuscript (Page 10, line ;Page 11, line ).

#### Reference

Spreitzer, G., Porath, C. L., & Gibson, C. B. (2012). Toward human sustainability: how to enable more thriving at work. Organizational Dynamics, 41(2), 155-162.

Kleine, A. K., Rudolph, C., & Zacher, H. . (2019). Thriving at Work: A Meta-Analysis.

Comment 8: Page 10, line 27-28: "An internal consistency reliability test was performed to check inventory reliability." I think that "to check inventory reliability" is an error. Please check and revise.

Author's response: We really thank the Reviewer. We agree with this suggestion and revised portions are marked in red in the manuscript . We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

#### Results

Comment 1: Page 11, line 28-29: "The absolute value of the correlation coefficient was between 0.25 and 0.75" – I am confused by this statement. Some of the correlations were < 0.25, so this statement does not seem accurate.

Author's response: Thank the reviewer for pointing this.

Comment 2: Table 1 – please remove the 1.000 correlations along the diagonal, as this figure is not meaningful.

Author's response: Thank you for pointing this out. We agree and revised according your suggestion. Revised portions are marked in red in the manuscript.

Comment 3: Page 12, line 5 to 7: "The controlled variable for eliminating the effects including gender, marital status, hospital level, service years, professional title, night shifts, work hours, and education level." This sentence is unclear and it would be useful to provide more detail in terms of what is trying to be expressed. Were these variables entered into a first step of a hierarchical regression prior to completing the remainder of the analyses?

Author's response: Thank you for your hard work and precious comments concerning our manuscript. We agree and revised according your suggestion. Revised portions are marked in red in the manuscript.

Comment 4 : Page 12, Line 7: As job demands and job resources were entered as separate independent variables, they should not be presented as "Job demands and job resources" but rather "Job demands" and "Job resources" in the context of this sentence.

Author's response: We really thank the Reviewer. We agree with this suggestion and revised portions are marked in red in the manuscript (Page 12, line 4).

Comment 5: Notes to Figure 1 and Figure 2: "\*\*P <0.01, Correlation is 11 significant at the 0.01 level (2-tailed)" – I think this is not accurate. I think it should probably be "coefficient" rather than "correlation"

Author's response: Thank you for pointing this out. We agree and revised accordingly. Revised portions are marked in red in the manuscript (Page 14, lines 11).

Discussion

#### Specific suggestions

Comment 1: Page 14, line 21-22. The authors refer to "high-level job demands ( $M = 3.843 \pm 0.791$ ) and low-level job resources ( $M = 2.474 \pm 0.740$ )". I think the first part should refer to job demands rather than job resources. Additionally, saying that the scores represent "high-level" or "low-level" is not really possible unless these are presented in the context of normative data – this is what I was referring to in my first set of comments. Just because the scores were above or below the mid-point of the scale, it is not generally possible to comment on whether these are "high" or "low" without more explanation or context. This is also the case when the authors refer to high or low levels of the other variables such as work-family conflicts, psychological attachment, life satisfaction, job satisfaction and thriving at work. It would be useful for the authors to review and revise this section.

Author's response: We agree and revised accordingly. Revised portions are marked in red in the manuscript(Page 14, lines 4-7).

Comment 2: Page 15, line 7 to 9: "A dilemma of the unbalance between job demands and resources is common among Chinese doctors, which must receive adequate attention from hospital managers further" – this section should be revised for clarity. If the authors wish to relate this to previous findings from other studies, then references should be provided. If the authors are commenting on the implications of findings from this study, this section should be reworded to make it clearer that they are highlighting implication.

Author's response: Thank you for pointing this out. We agree and add references accordingly. Revised portions are marked in red in the manuscript.

## Reference

Dürr Lena, Forster Andrea, Bartsch Christina E & Koob Clemens. (2021). Anforderungen, Ressourcen und Arbeitsengagement Pflegender während der zweiten Welle der COVID-19-Pandemie. P(4).

Jiang Li, Broome Marion E & Ning Chuanyi. (2020). The performance and professionalism of nurses in the fight against the new outbreak of COVID-19 epidemic is laudable. International journal of nursing studies (4).

Comment 3: Page 16, line 7 to 8: "however, adequate support from others may sharpen the positive effects of the work-family conflicts on emotional exhaustion and cynicism" – this is not this sentence is confusing and unclear. Please review and revise for clarity.

Author's response: Thank you for pointing this out. We agree and revised accordingly. Revised portions are marked in red in the manuscript (Page 16, lines - 16-18).

Comment 4: Page 16, line 10 to 12: "Overall, it is beneficial for hospital managers to help doctors work toward a more balanced approach to well-being by reducing excess workload, providing satisfactory support, and alleviating worsening work-family conflicts." The last section "alleviating worsening work-family conflicts."

Author's response: Thank the reviewer for pointing this. Agreed and corrected in the revision. Revised portions are marked in red in the manuscript .(Page 16, lines - 19-21).

Comment 5: Page 16, line 20 to 23: "The present study illustrated that the likelihood of doctors reporting a greater sense of thriving at work is likely to be driven by high levels of available job resources that can help them achieve their career goals." The intent of this section is unclear. The results suggest that job resources are related to psychological attachment which leads to thriving. Are the authors trying to make this point by referring to psychological attachment as "that can help them achieve their career goals" – I think that it would be preferable to revise this sentence so that there is consistency between what is reported here and the actual findings from this study.

Author's response: Thank you for pointing this out. We agree with this suggestion and revised portions are marked in red in the manuscript.

Comment 6: Final sentence of the conclusion (page 18, line 6 to 8): "The findings suggested that hospital managers and supervisors should focus on providing a dynamic equilibrium between doctors' job demands and job resources." This conclusion cannot be drawn from the results of this study. Additionally, this sentence is simply a re-statement of the theory of the job demands resources model / conservation of resources model, so doesn't really add much to the conclusion. It would be useful to provide a clearer statement that provides some information about how this could be achieved or what the results from the study suggest should be done by managers to promote life and job satisfaction and thriving at work.

Author's response: Thank you for pointing this out. We recognize that we did not express contents clearly in the section, which caused confusion to you. We have added more detailed information in the manuscript (Page 18). Revised portions are marked in red in the resubmit manuscript. We appreciate for Reviewers' warm work earnestly, and hope that the correction will meet with approval.

# **VERSION 3 – REVIEW**

REVIEWER REVIEW RETURNED	Scanlan, Justin The University of Sydney, Faculty of Health Sciences 04-Oct-2021
GENERAL COMMENTS	Thank you for your careful updating of the manuscript in response to comments from the final round. I would suggest that careful copyediting be completed prior to publication as there are still a number of challenges in relation to expression, but in relation to main focus of the content, I do not have any further comments or suggestions.