PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Influence of trust on two different risk perception as an affective and cognitive dimension during Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak in South Korea: serial cross-sectional surveys
AUTHORS	Jang, Won Mo; Kim, Un-Na; Jang, Deok Hyun; Jung, Hyemin; Cho, Sanghyun; Eun, Sang Jun; Lee, Jin Yong

VERSION 1 - REVIEW

REVIEWER	Aaron Scherer University of Iowa, United Statesv
REVIEW RETURNED	15-Aug-2019

GENERAL COMMENTS	The authors of “Differences in risk perception at personal and societal level during Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreak in South Korea” present a study comparing personal and societal risk perceptions during the 2015 MERS outbreak in South Korea. I think this study addresses an important topic and think more research needs to be conducted on the factors that influence public perceptions during infectious disease outbreaks. While I liked the research overall, there are a number of issues I believe need to be addressed prior to publication. Major Issues: • MISSING RELEVANT PRIOR RESEARCH. The authors reference a couple of more tangentially related references and fail to reference much of the prior research in this area conducted during (e.g., Kim & Kim, 2018, International Journal of Environmental Research and Public Health) or immediately after (e.g., Choi, Shin, Park, & Yoo, 2018, International Journal of Communication) the MERS-CoV epidemic in South Korea. The authors need to discuss the relationship of the current research with the prior research in this area, both in the Background and Discussion sections. • FAILURE TO NOTE/DISCUSS DISCREPANCIES WITH PRIOR RESEARCH. The authors have some findings that run counter to findings they describe in the Background (e.g., personal and societal pessimism/optimism in risk judgments) or other prior research (e.g., association between proximity to a health threat and risk perceptions; see Johnson, 2018 Risk Analysis for example with Zika). These types of conflicting results should be discussed. • PERCEIVED RISK SURVEY ITEMS. I would like a little more justification for the items used to measure personal and societal risk perceptions. As I started reading the Methods section I was expecting the measures of the two types of risk perceptions to be somewhat parallel to each other so that they could be directly compared to each other (e.g., “How large of a threat is MERS-CoV to your personal health?” and “How large of a threat is MERS-CoV

	to South Korea?"). As it stands, the personal risk question measures an affective (i.e., emotional) response and the societal risk question measures a cognitive response. This means that the two questions are measuring different psychological processes, in addition to different levels of risk assessment. This is problematic because there could be cognitive personal risk measures and affective societal risk measures, producing a confound of whether any observed differences in the two risk types are due to the psychological process or the level of the judgment. Additionally, the authors should clarify whether 1) they created the questions as measures of personal and societal-level risk perceptions or 2) whether they imposed those classifications on existing data that had been collected. I do not have a problem with either option, but I think the authors need to be transparent about the creation of the items and provide justification for labeling them as personal or societal risk measures. I also think the authors should report the percentage of participants who had personal and societal risk perceptions in the same direction (Worried+Uncontrolled or Not Worried+Controlled/No Opinion) or different directions (Not Worried+Uncontrolled or Worried+Controlled/No Opinion) if making the claim that personal and societal risk perceptions are noticeably different (Abstract Conclusions section). • POLITICAL FACTORS. Based on my own research interests, I was happy to see the inclusion of the presidential support and party affiliation measures. However, there is no justification for why these factors were included, especially since the authors themselves seemed surprised by the associations of the political factors with risk perceptions (pg. 16, lines 51-53). The authors should reference other research on MERS-COV risk perceptions and political factors as justification (e.g., Choi et al., 2018 IJERPH). • MISSING VALUES. It was unclear why the percentage of missing values for societal risk perceptions was so high or what variables were dropped from analyses. I'm assuming it was because the question wasn't included in the first survey, but it doesn't seem like missing data because the survey item was not included should be combined with non-responses to the survey item when calculating the percentage of missing data. If the authors report these together, they should also report the percentages missing due to non-inclusion of the survey item vs. non-responses to the survey item). Additionally, the authors should clarify what the "these" in "these were dropped (pg. 8, line 23) refers to. I'm assuming "these" refers to the variables with percentages of missing values ≤2.7%, but the connection between the two clauses wasn't 100% clear. • PROBLEMATIC INFERENCES. The authors make inferences in the Discussion section that do not seem based on the study results, such as the assertion that there was a lack of support in the current study for cognitive reactions being more closely aligned to societal-level risk perceptions (pg. 15, lines 11-17). In this particular example, it is unclear what this assertion is based on since (as far as I could tell) they had no cognitive reaction measures as predictors of societal risk perceptions. • CLARIFYING SPECULATION. The authors make some speculative arguments that I found interesting, but I did not quite understand how the hypothesized mechanism would affect risk perceptions (e.g., what worldview/cultural-identity differences exist between men and women and how would these differences impact risk perceptions) or the connection between the hypothesized mechanism and the predictor (e.g., there is no discussion of whether age and numeracy are negatively correlated with each other). • CLARIFYING LIMITATIONS. The logic of the limitations section

	could be improved. For example, I agree with the authors that consecutive cross-sectional samples are better than a single survey in that they can provide additional information (e.g., changes in a measure over time for a population), but consecutive cross-sectional samples do not address the problem the authors brought up regarding cross-sectional designs being unable to establish causal relationships. Minor issues/suggestions: • TERMINOLOGY: I would suggest 1) changing “societal-level risk” to “societal risk” OR 2) changing “personal risk” to “individual-level risk” so that the two terms are consistent with each other. • ABSTRACT OBJECTIVES: I would change “assess the risk perception” to “assess personal and societal risk perceptions” since that is the primary novel contribution of the paper. • ABSTRACT RESULTS: I found the first sentence difficult to interpret. I assume they meant something like “Both personal and societal risk perceptions decreased as the MERS-CoV epidemic progressed.” but was unsure. • BACKGROUND: The first two sentences seem to be two ways of saying the same thing, so I would drop one of them or find a way to combine them. • BACKGROUND: The third paragraph seems like it would be more appropriate as the first paragraph, since it sets up the problem (MERS-CoV outbreak in South Korea). • METHODS: I thought there was a potential discordance between societal risk question and response wording that may have been confusing to participants. The societal risk question asks about whether the epidemic will “subside” or “spread”, but the response options are “controlled”, “uncontrolled”, or “no opinion” (although I can imagine this might easily be an issue of the translation of the question and response options). While the two sets of words are similar, usually the response options mirror the language of the question. • FIGURE 1: There was an error message in the PDF indicating that the image displaying the epidemic curves and time trends was unable to be displayed because the dimensions of the image was too large (in pixels). As a result, I was unable to view Figure 1. • STANDARD OF WRITTEN ENGLISH: While I found the standard of written English good overall, there were numerous instances where the wording made the sentence difficult to interpret (e.g., my comment regarding the Abstract Results above).

REVIEWER	Jonathan Rolison Department of Psychology University of Essex Essex England
REVIEW RETURNED	09-Sep-2019

GENERAL COMMENTS	This is an important topic and the study provides an interesting sample of participants. However, I have a number of major concerns about the research that I describe in detail below. I have not commented on the Discussion section for now as I would need to see revisions to earlier sections first. Abstract 1/ Under “Primary and secondary outcome measures”, what were

	the factors assessed in association with risk perception? 2/ I found the results hard to follow and interpret. What was “overall risk perception” and what does it mean that it decreased with the level of risk perception, which level, personal or societal? I do not understand in the next sentence how personal risk perception doubled and then declined. Is this over time? Is it that female participants and older adults perceived greater risk, rather than were more likely to perceive risk? I am assuming no threshold on the rating scale was used to dichotomize risk and no risk. Did younger adults perceive greater societal risk than older adults or compared to their personal risk estimates? What is the relevance of trust in the president? Some context for this finding is needed in the objectives and outcome measures sections. 3/ The conclusion section reads more like a summary of the findings. Beyond needing to do more research, what are the conclusions that can be taken from this study? Introduction 4/ First paragraph, the importance of assessing public risk perceptions of disease outbreaks could be strengthened by reference to the research below showing that for other outbreaks, such as the Ebola virus, the provision of health information about the disease, such as via the internet, can be effective in informing the public about risks and of preventive measures without reducing their perceptions of the seriousness of the disease. As such, it is important to assess public perceptions of risk for themselves and societal, access to information via the internet, being one way in which risk perceptions are informed. Rolison, JJ. and Hanoch, Y., (2015). Knowledge and risk perceptions of the Ebola virus in the United States. Preventive Medicine Reports. 2, 262-264 5/ Second paragraph, last sentence, what was “the failure of the government’s on risk communication” that resulted in public concern? 6/ The Introduction is lacking hypotheses or even general research questions or aims to be addressed by the study. No mention is made, for example, of people’s views toward their country’s government, which is among the factors in the results of the abstract. There is no clear compelling case for distinguishing personal and societal risk, beyond the distinction made in previous research, even though this distinction appears to be the major motivation of the study. What hypotheses were derived based on this distinction and what implications do the possible findings have for theory or practice? Methods 7/ How were participants recruited for the study? I understand that a private company did this, but how? 8/ Is the question “Do you think the MERS epidemic will subside or spread within a few days?” really an assessment of societal risk? It does not ask the participant to think of the risk for their society. The question could be answered personally as I may believe my risk to be high if I believe the epidemic will spread within the next few days.

	9/ The Participant section is confusing because some of the demographics that should be reported here are reported in the Results section (e.g., levels of education) and the actual item levels are instead in a survey instruments section. The repetition and spreading of participant demographics across sections is hard to follow. I suggest putting all this in the Participant section. Results 10/ In the “Epidemic curve and time trends of risk perception” section, I need to see Figure 1 to interpret these findings, but it does not appear in the manuscript. Can statistical analyses not be conducted to support these observations? Why are percentages reported in the text for risk perception where a likert scale was used? 11/ In the “Factors associated with the personal-level risk perception” section, does “>40 years” refer to older versus younger adults? 40 years is middle aged. This dichotomy is misleading. I suggest treating age as a continuous predictor and discussing an association with age. 12/ High education was associated with lower perceived personal risk. This finding can be discussed in the context of the Rolison et al (2014), mentioned in point 4. 13/ In general, the findings need to be reported in the context of hypotheses, either supporting them or not supporting them. How else does the reader know which findings are important and unexpected and which are most important?

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Comment #1:
• MISSING RELEVANT PRIOR RESEARCH.
→Thank you for your opinion. We added relevant prior studies including which you mentioned both in the Background and Discussion sections.
- Kim & Kim, 2018, International Journal of Environmental Research and Public Health
- Choi, Shin, Park, & Yoo, 2018, International Journal of Communication

Comment #2:
• FAILURE TO NOTE/DISCUSS DISCREPANCIES WITH PRIOR RESEARCH.
→Thank you for your opinion. We made improvement in the research frame. There were questions of the lack of theoretical evidence to divide risk perception into individual and societal levels in this study. We accepted key conception of reviewers` opinions and changed the research frame into affective and cognitive risk perception.
Additionally, we aligned logical flow, and added contents including relevant research both in the Background and Discussion sections. Of course, the following papers were also included.
- Johnson, 2018 Risk Analysis for example with Zika

Comment #3:

• PERCEIVED RISK SURVEY ITEMS. I would like a little more justification for the items used to measure personal and societal risk perceptions…. I think the authors need to be transparent about the creation of the items and provide justification for labeling them as personal or societal risk measures.
→Thank you for your opinion. We made improvement in the research frame. There were questions of the lack of theoretical evidence to divide risk perception into individual and societal levels in this study. We accepted key conception of reviewers` opinions and changed the research frame into affective and cognitive risk perception. We used three concepts of affective risk perception, cognitive perception, trust in government.
- Affective risk perception: “How much worried are you that you could get MERS?”
- Cognitive risk perception: “Do you think MERS epidemic will settled down in the next few days or spread further?”
- Trust in government (presidential job approval rating): “Do you approve or disapprove of the way President Park Geun-hye is handling her job as president?”
Dual pathway of risk perception has been discussed relatively much in past papers. that subgroup analysis was necessary to verify the concept. We added contents including relevant research both in the Background and Discussion sections.
The validity of the questionnaire used in the survey was not evaluated because of the urgency of the outbreak. We also imposed survey items on existing questionnaire developed by Gallup Korea, an affiliation of Gallup International.

Comment #4:
• POLITICAL FACTORS. However, there is no justification for why these factors were included, The authors should reference other research on MERS-COV risk perceptions and political factors as justification (e.g., Choi et al., 2018 IJERPH).
→Thank you for your opinion. We used three concepts of affective risk perception, cognitive perception, trust in government. Trust in government includes expectations of government`s competence to prevent people from risk and develop and implement follow-up measures. It can be termed this trust concept as competence-based trust. We tried to assess the competence-based trust using presidential job approval rating. We added contents including relevant research both in the Background and Discussion sections.

Comment #5:
• MISSING VALUES. It was unclear why the percentage of missing values for societal risk perceptions was so high or what variables were dropped from analyses…they should also report the percentages missing due to non-inclusion of the survey item vs. non-responses to the survey item. Additionally, the authors should clarify what the “these” in “these were dropped (pg. 8, line 23) refers to

→Thank you for your opinion. Further, there was omission of cognitive risk perception in survey 1 therefore survey 1 model with cognitive perception was excluded. The missing values due to non-inclusion of cognitive risk perception in survey 1 accounted for 73.5% of total missing values of cognitive risk perception. Missing values of any variable except cognitive risk perception (27.3%) were ≤2.7%.

Comment #6:
• PROBLEMATIC INFERENCES. The authors make inferences in the Discussion section that do not seem based on the study results, such as the assertion that there was a lack of support in the current study for cognitive reactions being more closely aligned to societal-level risk perceptions (pg. 15, lines 11-17).

→Thank you for your opinion. we substituted the inferences of societal level risk perception with

contents of cognitive risk perception.

Comment #7:
• CLARIFYING SPECULATION. I did not quite understand how the hypothesized mechanism would affect risk perceptions (e.g., what worldview/cultural-identity differences exist between men and women and how would these differences impact risk perceptions) or the connection between the hypothesized mechanism and the predictor (e.g., there is no discussion of whether age and numeracy are negatively correlated with each other).
→Thank you for your opinion. We added evidence of speculation and mechanism in the Discussion section.
- ie Possible explanation for lower perception of risk by male are that male have more to gain from risky behaviors.
- ie We found that the higher the age, the higher president's job approval rating. The effect of trust may lead to a reduction in the cognitive risk perception among older respondents.

Comment #8:
• CLARIFYING LIMITATIONS. The logic of the limitations section could be improved. For example, I agree with the authors that consecutive cross-sectional samples are better than a single survey in that they can provide additional information (e.g., changes in a measure over time for a population), but consecutive cross-sectional samples do not address the problem the authors brought up regarding cross-sectional designs being unable to establish causal relationships.
→Thank you for your opinion. We removed the sentence.

Comment #9:
• TERMINOLOGY: I would suggest 1) changing “societal-level risk” to “societal risk” OR 2) changing “personal risk” to “individual-level risk” so that the two terms are consistent with each other.
→Thank you for your suggestion. We changed the research frame into affective and cognitive risk perception. (affective risk perception and cognitive risk perception)

Comment #10:
• ABSTRACT OBJECTIVES: I would change “assess the risk perception” to “assess personal and societal risk perceptions” since that is the primary novel contribution of the paper.
→Thank you for your suggestion. We changed the sentence according to your mention.
Comment #11:
• ABSTRACT RESULTS: I found the first sentence difficult to interpret. I assume they meant something like “Both personal and societal risk perceptions decreased as the MERS-CoV epidemic progressed.” but was unsure.
→Thank you for your suggestion. We changed the sentence according to your mention.

Comment #12:
• BACKGROUND: The first two sentences seem to be two ways of saying the same thing, so I would drop one of them or find a way to combine them.
→Thank you for your suggestion. We removed the sentence according to your mention.

Comment #13:
• BACKGROUND: The third paragraph seems like it would be more appropriate as the first paragraph, since it sets up the problem (MERS-CoV outbreak in South Korea).
→Thank you for your suggestion. We corrected according to your mention.

Comment #14:
• METHODS: I thought there was a potential discordance between societal risk question and response wording that may have been confusing to participants. The societal risk question asks about whether the epidemic will “subside” or “spread”, but the response options are “controlled”, “uncontrolled”, or “no opinion” (although I can imagine this might easily be an issue of the translation of the question and response options). While the two sets of words are similar, usually the response options mirror the language of the question.
→Thank you for your suggestion. We aligned the expressions according to your mention.

Comment #15:
• FIGURE 1: There was an error message in the PDF indicating that the image displaying the epidemic curves and time trends was unable to be displayed because the dimensions of the image was too large (in pixels). As a result, I was unable to view Figure 1.
→Thank you for your suggestion. We corrected the dimensions of the image according to your mention. (300 dpi, 90 x 90 mm)

Comment #16:
• STANDARD OF WRITTEN ENGLISH: While I found the standard of written English good overall, there were numerous instances where the wording made the sentence difficult to interpret (e.g., my comment regarding the Abstract Results above).

→Thank you for your suggestion. We corrected expressions and concerned about not meeting your expectation.

Reviewer: 2

Comment #1:
1/ Under “Primary and secondary outcome measures”, what were the factors assessed in association with risk perception?
→Thank you for your opinion. We added the names of factors.
Comment #2:
2/ I found the results hard to follow and interpret. Some context for this finding is needed in the objectives and outcome measures sections.

→Thank you for your opinion. We corrected the sentences according to your mention.

Comment #3:
3/ The conclusion section reads more like a summary of the findings. Beyond needing to do more research, what are the conclusions that can be taken from this study?

→Thank you for your opinion. We added the value of this study.

Comment #4:
4/ First paragraph, the importance of assessing public risk perceptions of disease outbreaks could be

strengthened by reference to the research below

Rolison, JJ. and Hanoch, Y., (2015). Knowledge and risk perceptions of the Ebola virus in the United States. Preventive Medicine Reports. 2, 262-264

→Thank you for your opinion. We added the prior studies according to your mention.
- Evaluating the public risk perception of disease helps us know what knowledge the public needs. Therefore, understanding characteristics of risk perception and factors relating to how people perceive the risk is important in terms of minimizing the impact of spread of infectious disease.

Comment #5:
5/ Second paragraph, last sentence, what was “the failure of the government’s on risk communication” that resulted in public concern?
→Thank you for your opinion. We added more information according to your mention.
- The Korean government did not disclose timely information about the outbreak of MERS-CoV, such as lists of affected medical institutions. 7 Due to increased public anxiety about MERS-CoV, the trust in the Korean government had fallen and the image of the Korean president as leader had been damaged.

Comment #6:
6/ The Introduction is lacking hypotheses or even general research questions or aims to be addressed by the study. What hypotheses were derived based on this distinction and what implications do the possible findings have for theory or practice?

→Thank you for your opinion. We made improvement in the research frame. There were questions of the lack of theoretical evidence to divide risk perception into individual and societal levels in this study. We accepted key conception of reviewers` opinions and changed the research frame into affective and cognitive risk perception.
Additionally, we aligned logical flow, and added hypotheses including relevant research both in the Background and Discussion sections.
- We hypothesized that (1) affective risk perception would increase and decrease faster than cognitive risk perception over time and that (2) low trust in government would be related with high risk perception (both affective and cognitive).

Comment #7:
7/ How were participants recruited for the study? I understand that a private company did this, but how?
→Thank you for your opinion. We had described relevant information in the Methods section.
- All surveys were conducted using mobile (85%) or landline (15%) random digit dialing numbers in eight regions which was representative of nationwide.

Comment #8:
8/ Is the question “Do you think the MERS epidemic will subside or spread within a few days?” really an assessment of societal risk? It does not ask the participant to think of the risk for their society. The question could be answered personally as I may believe my risk to be high if I believe the epidemic will spread within the next few days.
→Thank you for your opinion. We made improvement in the research frame. There were questions of the lack of theoretical evidence to divide risk perception into individual and societal levels in this study. We accepted key conception of reviewers` opinions and changed the research frame into affective and cognitive risk perception. We used three concepts of affective risk perception, cognitive perception, trust in government.

- Affective risk perception: “How much worried are you that you could get MERS?”
- Cognitive risk perception: “Do you think MERS epidemic will settled down in the next few days or spread further?”
- Trust in government (presidential job approval rating): “Do you approve or disapprove of the way President Park Geun-hye is handling her job as president?”

Comment #9:
9/ The Participant section is confusing because some of the demographics that should be reported here are reported in the Results section (e.g., levels of education) and the actual item levels are instead in a survey instruments section. The repetition and spreading of participant demographics across sections is hard to follow. I suggest putting all this in the Participant section.
→Thank you for your suggestion. We put all the contents of demographic variables in the participant section.

Comment #10:
10/ In the “Epidemic curve and time trends of risk perception” section, I need to see Figure 1 to interpret these findings, but it does not appear in the manuscript. Can statistical analyses not be conducted to support these observations? Why are percentages reported in the text for risk perception where a likert scale was used?
→Thank you for your opinion. We corrected the dimensions of the image according to your mention. (300 dpi, 90 x 90 mm) We used the epidemic curve to show contextual information of MERS risk perception, so we aimed for descriptive analysis.

Comment #11:
11/ In the “Factors associated with the personal-level risk perception” section, does “>40 years” refer to older versus younger adults? 40 years is middle aged. This dichotomy is misleading. I suggest treating age as a continuous predictor and discussing an association with age.

→Thank you for your opinion. We did not mean the dichotomy, but groups of older than 40 years. Age was classified in to 6 levels (19-29, 30s, 40s, 50s, 60s, 70 age and older). We corrected the sentence to avoid misunderstanding.

Comment #12:
12/ High education was associated with lower perceived personal risk. This finding can be discussed in the context of the Rolison et al (2014), mentioned in point 4.

→Thank you for your opinion. It was not intended to emphasize effect of education. Rather the opposite. We corrected the sentence to avoid misunderstanding.

- The association of education with affective risk perception was non-significant except university degree in the overall survey (aOR 0.73; 95% CI 0.55-0.96).

Comment #13:
13/ In general, the findings need to be reported in the context of hypotheses, either supporting them or not supporting them. How else does the reader know which findings are important and unexpected and which are most important?

→Thank you for your opinion. We enhanced the logical flow in the discussion section.

Three key findings and interpretations were derived.

- First, we found that affective risk perception responded faster and lasts longer.
- Second, our study shows that low trust in government had influenced both affective and cognitive risk perceptions.
- Third, we found that gender, age, perceived economic status, residential area, party identification correlated significantly with risk perception.

VERSION 2 – REVIEW

REVIEWER	Aaron Scherer University of Iowa, USA
REVIEW RETURNED	26-Nov-2019

GENERAL COMMENTS	The authors of "Differences in risk perception at personal and societal level during Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreak in South Korea" were very responsive to the reviewers' comments on the initial submission, but there are still a number of issues I believe need to be addressed prior to publication. Major Issues: • SAMPLE 1. I think the authors should drop the Sample 1 analyses, since it did not include one of the important measures (cognitive risk perceptions), which makes it hard to know how to interpret the trends in cognitive and affective risk perceptions if they are "starting" at different time points in the reported results. • METHODS: It is unclear if the authors' changes to the wording of the two risk perception measures was because the changes were a more accurate translation or if they simply changed the language to match what the reviewers thought they wording should be. • DISCUSSION: I found the Discussion hard to follow. For example, they describe the results as being inconsistent with prior findings that affective reactions tend to be higher in the early stage of an epidemic, but the authors results were that the affective reactions were higher than the cognitive reactions, which would be consistent with the prior research. Relatedly, the authors should explicitly say whether their results were consistent or inconsistent with their hypotheses from the Background section. • STANDARD OF WRITTEN ENGLISH: As with the original submission, I think the authors (understandably) struggled with writing in English. I think the authors need to have someone with English as a first language read through the manuscript and make suggestions for rewording prior to publication. Minor issues/suggestions: • BACKGROUND: Is the reported index case of MERS the first case ever or just for South Korea? I'm assuming the latter, but the authors should clarify in the text. • METHODS: Rather than "perceived household economic status", I would suggest calling the measure "subjective household economic status" or "self-reported household economic status" • ABSTRACT and METHODS: The authors need to use consistent terminology. For example, they refer to their trust measure as "trust in government", "competence-based trust", or "presidential job approval" throughout the manuscript. • DISCUSSION: They authors speculate that the relationship between age and risk perceptions may be mediated by trust. This is something that they can, and should, test if they are going to

	speculate about it and have the data to test it. • FIGURE 1: I'm not sure if this a problem with the image used for Figure 1 or the way the manuscript is created by BMJ Open, but I still did not have a Figure 1 in the manuscript.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Comment #1:
• SAMPLE 1. I think the authors should drop the Sample 1 analyses, since it did not include one of the important measures (cognitive risk perceptions),
Response
→We thank you for your suggestion. We have dropped the survey 1 information, and made appropriate correction in the manuscript.

Comment #2:
• METHODS: It is unclear if the authors' changes to the wording of the two risk perception measures was because the changes were a more accurate translation or if they simply changed the language to match what the reviewers thought they wording should be.

Response
→We thank you for your comment. We think there is a mixture of two different conceptual dimensions (affective-cognitive and personal-societal) in two risk perception questions. The questionnaire had not been adjusted carefully because of the urgency of the outbreak. The reviewers` comments helped us to re-check the translation issues and the adequacy of concepts. We consider that our risk perception questions focused more on personal risk perception than societal risk perception. And we identified that the affective-cognitive frame has a richer background of theory and evidence rather than the personal and societal frame. As a result, we made improvement in the research frame and changed the wording of the two risk perception measures. Our current manuscript modifications reflect the changes. We also corrected the questionnaire (affective risk perception).

Comment #3:
• DISCUSSION: the authors should explicitly say whether their results were consistent or inconsistent with their hypotheses from the Background section.

Response
→We thank you for your suggestion. In the discussion section, we have reflected this as follows:
- "However, our results that affective reaction tends to decrease before cognitive reaction are inconsistent with those of previous studies."

Comment #4:
• STANDARD OF WRITTEN ENGLISH: I think the authors need to have someone with English as a first language read through the manuscript and make suggestions for rewording prior to publication.

Response
We thank the reviewer for this comment. We have engaged the service of English-speaking editors to improve the quality/language of the manuscript.

Comment #5:
• BACKGROUND: Is the reported index case of MERS the first case ever or just for South Korea? I'm assuming the latter, but the authors should clarify in the text.

Response
→We thank you for your suggestion. We have corrected the sentence accordingly as presented below:
"In South Korea, since the occurrence of the index case of Middle East respiratory syndrome (MERS) on May 20, 2015, a total of 186 persons were diagnosed with the disease, 38 of whom had died, and 16,693 patients were quarantined."

Comment #6:
• METHODS: Rather than "perceived household economic status", I would suggest calling the measure "subjective household economic status" or "self-reported household economic status"

Response
→We thank you for your suggestion. We changed the sentence according to your suggestion.

Comment #7:
• ABSTRACT and METHODS: The authors need to use consistent terminology. For example, they refer to their trust measure as "trust in government", "competence-based trust", or "presidential job approval" throughout the manuscript.

Response
→We thank you for your suggestion. We have ensured consistency in the use of the terms in the revised manuscript. We have resolved this problem in the revised manuscript.

Comment #8:
• DISCUSSION: They authors speculate that the relationship between age and risk perceptions may be mediated by trust. This is something that they can, and should, test if they are going to speculate about it and have the data to test it.

Response
→We thank you for your insightful comment. We have changed the sentence accordingly as follows:

- "After trust in government was adjusted for, we found correlation between older age and lower cognitive risk perception."

Comment #9:
• FIGURE 1: I'm not sure if this a problem with the image used for Figure 1 or the way the manuscript is created by BMJ Open, but I still did not have a Figure 1 in the manuscript.

Response
→We thank you for your comment. We have re-checked the image and confirmed the dimensions of the image accordingly. (300 dpi, 90 × 50.63 mm)