Author’s response to reviews

Title: The development of a brief and objective method for evaluating moral sensitivity and reasoning in medical students.

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Dear Editor;

Enclosed please find our responses to each reviewer. We have revised the manuscript according to the reviewers’ comments. We hope this manuscript is now acceptable for your journal. Please let us know if you need any further revisions.

Regards,
Akira Akabayashi, M.D., Ph.D.

Reviewer 1
Many thanks for your interest and warmhearted commentary on our paper. We have revised the manuscript as you have suggested. We hope that the manuscript is now acceptable for publication.

1. The description and use of DP values was not at all clear and needs further explanation and elaboration.

We have supplemented the manuscript with the following explanation of the description and use of DP values. Please let us know if you feel further elaboration is necessary.

DIT scores provided two values: moral development stage and DP values. DP values (DP2, DP3, DP4, DP4.5, DP5) correspond to each moral development stage (i.e. stage 3 = DP 3). As described in Appendix 2, calculated DP values reflect the percentage of respondents in each stage of moral development within their own particular school year. Accordingly, the sum of DP values for each school year of medical student or among residents is 100%. Calculated DP values provide a lens to better distinguish trends between moral development stage and school years. (pp. 4)

2. Title is misleading.
We have changed the title from
The development of a brief and objective evaluation method for medical ethics education: A test battery of measures for moral sensitivity and reasoning.

To: The development of a brief and objective method for evaluating moral sensitivity and reasoning in medical students.

3. Editing with the use of the word "whom."
We have revised according to your comment.
Reviewer 2

Many thanks for your insightful comments. We have revised the manuscript as you have suggested. Please find below, our response to your questions and commentary. We hope that you now find our manuscript acceptable for publication. Please let us know if any further revision is needed.

Discretionary changes:
1. Authors should restrain objectives aimed at this paper.
   We have revised as follows;
   1. To develop a brief, objective method of evaluation for moral sensitivity and reasoning,
   2. To conduct a test battery for the PIT and the DIT on medical students who are either currently in school or who have recently graduated (residents),
   3. To investigate changes in moral sensitivity and reasoning between school years among medical students and residents.

2. Donnie J Self’s work:
   We are indeed aware of Dr. Self’s work. Since this paper focuses more on the methodological aspects of evaluating moral sensitivity and reasoning, however, we initially limited our citation of his work. In accordance with your suggestion, we have cited three of DJ Self’s studies in the Discussion (pp. 8 in the revised manuscript). In addition, we have also cited a recent article on moral development by Patenaude et al (pp. 8, pp. 10 in the revised manuscript).

Major compulsory revisions:
1. Regarding Figure 2-2, pp. 7-8
   Thank you for your insightful commentary; we are in total agreement with you. The three response choices are incapable of providing any information regarding respondents’ level of "moral reasoning" development. Our writing may have invited some miscommunication. We have no intention to claim that predetermined choices can measure development of the second step, i.e., "moral reasoning.” We used only development stages and DP values as illustrated in Tables 1 and 2 to assess respondents’ moral reasoning.

   As you very well know, we used two vignettes from the DIT Japanese version (six vignettes). Our findings demonstrate that moral reasoning, in terms of moral development stage, did not fluctuate between school years. Findings concerning predetermined choices (decisions) provided sufficient grounds to surmise that predetermined decisions could be used as a tool to assess changes in moral thoughts within a medical context.

   In the last line on page 8 of the original manuscript, we state, "In light of the above, we surmise that DIT result regarding decision-making carry more significance than those results pertaining to moral development stage and DP values." In this sense, we have analyzed the result regarding decision making (Figure 2-1, 2-2) for secondary purposes, and believe that it may have practical advantages.

   Figure 2-2 and our discussion do not lead to our conclusions of a possible increase or decrease of moral reasoning development. We have revised the Conclusion accordingly.

2. Regarding the validity of the measurement scales.
   Thank you for your commentary. Nishimura, our colleagues and I developed the Japanese PIT
based on Hebert and colleagues' English version. The validity and reliability of the Japanese PIT were tested and retested; all results were published in the Japanese journal, Journal of Japan Association for Bioethics. We published these results in Japanese in order to provide Japanese educators and researchers with a direct (non-translated version), reliable and implemental report. Given that the report (Please see reference 14) is inaccessible to the English reader, we have summarized the reliability and validity measures in Appendix 1. If you feel that Appendix 1 requires more detail, please let us know.

The Japanese version of DIT has also been statistically tested for validity. Although our references describing the validity and reliability of the PIT and DIT are in Japanese, we feel that this should have no bearing on their validity and reliability. If you feel further detail is needed, please let us know.

3. What did motivate authors to adapt DIT to the Japanese culture, and how close is the Japanese culture to an ethics of care rather than an ethics of justice.

In this study, we used two vignettes from the already culturally adapted DIT (Yamagishi 1985). We selected and used the DIT's two most relevant vignettes to medical ethics in light of Kohlberg's theory being unspecific to medical ethics. In aims of providing our readers with a brief summary of the ongoing debate concerning Kohlberg's model and how it may stem from a justice-laden framework, we briefly describe the literature (Sharpe 1992; Noddings 1984; Gilligian 1982) and also the culture argument - the Japanese culture being an ethics of care rather than an ethics of justice (Yamagishi 1985).

4. No significant correlation was found between PIT and DIT scores.

As the literature on psychometry suggests, validity of a test battery is highly debatable and uncertain. That is, there is no golden standard to validate a battery of two or more tests. In the case of the PIT and DIT, they are "theoretically" measuring different aspects of Rest's four-component model. Our study has demonstrated no significant correlation between the PIT and DIT. This may serve as a validity test, which could be considered discriminant/divergent validity, showing that the DIT and PIT measure different variables. Given these limitations, we have deleted the third objective stated in the previous manuscript (examination of the test battery's validity), and have also revised the discussion as follows:

Concerning the significance of combining the PIT and DIT
As indicated in the Background, the combination of the two tests is conceptually valid since they are "theoretically" measuring different aspects of Rest's four-component model. Calculations of correlation coefficients between PIT and DIT scores found no items to be significantly correlated. Our finding of no significant correlation may lend additional support to the hypothesis that the DIT and PIT each measure different variables. Nonetheless, this lack of correlation is possibly related to the fact that the PIT was designed for medical settings while the DIT was originally created without such specificity. Further validation studies may be needed.

5. Concluding statement is not balanced with discussion.
Thank you for pointing this out to us. We have revised the concluding statement as follows:

CONCLUSION This study has utilized both the PIT and DIT in aims of developing an objective and brief method for evaluating medical students' moral sensitivity and reasoning. No significant correlation was found between PIT scores and DIT stages. PIT results demonstrated that values of Domain B (beneficence and nonmaleficence) significantly increased in fourth and fifth year students, yet once again dropped in sixth year students and in residents. Although changes in moral development stage were statistically insignificant, DIT results highlighted substantial differences in decision-making (i.e. euthanasia, theft of medications) between school years.