Dear Drs. Alice Moncaster and Carol Morris,

Thank you very much for the opportunity to revise and resubmit our manuscript, entitled "Women of Color Engineering Students’ College Experiences and Learning Outcomes in the United States." We substantially revised the manuscript to demonstrate how to incorporate the intersectionality framework in quantitative studies, acknowledge the limitations of HIPs as a combined measure, offer more implications to faculty and administrators in engineering programs, and include figures to explain the interaction terms more effectively to our readers. We address each of the comments in specific details in the attachment.

While we have made edits throughout the manuscript, we have highlighted the paragraphs that have been significantly revised. Please feel free to contact me if any of these adjustments are unclear or if we failed to address adequately any of the reviewers’ concerns. Thank you again for the opportunity to revise and resubmit this manuscript.

Sincerely,

Hyun Kyoung Ro

Bowling Green State University

**Reviewer B:**

Suggestions:

• It is unusual to cite a reference in the abstract for a paper. I believe it elevates the work of Crenshaw above your current work. I think you can remove this and simply use the word intersectionality that you later explain well in the context of Crenshaw. Your findings are interesting on their own.

Thank you for the suggestion. We deleted the reference from the abstract.

• In addition to the tables I would recommend you include a visual correlation matrix to allow the reader to more quickly see the important relationships. Example here:

<http://www.sthda.com/english/wiki/correlation-matrix-a-quick-start-guide-to-analyze-format-and-visualize-a-correlation-matrix-using-r-software>

We appreciate the link that the reviewer suggested. We added correlation information among outcome measures in text (page 9). We added figures to show two significant interaction effects that we found (page 12).

• For table 1 spell out mean and standard deviation in the headings.

We fixed it.

• For table 2-4 in the caption explain the meaning of the primary number and then the (italicized numbers) so a reader that is not familiar with this type of statistical analysis can understand your results. You may also want to describe the significance and min/max associate with the interaction effects.

This comment made us think that the current format of the tables may be confusing. Thus, we changed the format of the tables and we present our results now by outcomes. Hopefully, the current versions are better to understand the results of our analyses. If the editors and reviewers suggest different ways of presenting the study findings, we are happy to work again.

• For your least squares regressions, it would be helpful if you could report the R2 for the fits to give the reader a sense of error or size. It would also be helpful to include a graph of at least one of the OLS regressions as an example so the reader can really understand your method.

We included graphs to explain the interaction effects as the reviewer suggested (please see figures 3 and 4). We also added R2 in Tables 2-5.

• For the conclusions, it may be helpful for many faculty/administrators if you give concrete examples of the types of inclusive pedagogical practices that would be most helpful for women. You discussed a few in the body of the paper, but I think it would be nice to summarize them in the conclusions for someone who wants to take action immediately after reading your work.

Thank you for the feedback. We added more concrete examples of implications that faculty and administrators can apply in their schools and colleges (last two paragraphs of the implications, page 14-15).

• You also suggest that intersectionality should be considered by other people in similar work/analysis. For this to be a reasonable recommendation you may also need to summarize a clear step-by-step analysis technique that could be implemented. This probably starts with data collection questions and then correlations techniques.

We extended the content of intersectionality as a conceptual framework how to apply the framework in quantitative study. We added more content that how the quantitative study is framed by an intersectionality approach in the method section (page 10-11). We also added more citations that other researchers could follow when they incorporate intersectional approach into their quantitative studies.

**Reviewer C:**

Is there a measure of socio-economic status available in this dataset that could be controlled for in the analyses? Parental education is available but are there any items or measures available?

Thank you for the suggestion. We added students’ self-reported social class in our analyses (page 10).

Given the mention of Kuh’s work on High Impact Practices (HIPs), it would be helpful to include examples of studies that have looked at differences in the learning outcomes related to HIPs based on gender, race/ethnicity, first gen/non-first gen students, etc. For example:

<https://www.ncore.ou.edu/media/filer_public/5e/78/5e7861d9-acdf-4f6a-98f7-8d7f2be20707/05_jcscore_32_f17_how_high-impact_practices_influence_academic_achievement_for_african_american_college_students_-_final_.pdf>

and more recent studies particularly from Kuh, Jillian Kinzie, Natasha Jankowski, etc. could also be reviewed.

Thank you for the suggestions. We added the citation that the reviewer suggested (page 5-6) and explained differences in the learning outcomes related to HIPs by different student characteristics.

The creation of the continuous variable that simply sums up the number of HIPs the student participated is problematic, see <https://secure-web.cisco.com/1t0t0l2wjFD67ikOkIHLKtYFCEqO0vSte1kY83B4PcE3KnUNiWhBasbVWxp0gfg4EEsQxbaOxvT2ZJL5qSlk5-Y9oKeRwA2V2P-rBKrnEKzDz99fV0wZQr2opzSX0qW-m04tlfeGTP0EB9ULzlOBMr3a0pjZ3068btXIyzQPy7fBhFIREmUhs8CkeaSNX8YoLkGAunrtRXG4IQwQ6uFnwvqaIHbTPE9nNXYa64E4MWLz-s6CpbZZc-Do1A-I_JRoysaxvUIvpj52ZQyJ8VE1rHGf2n98lfnPXJjGAIgR7xlFmQzS-9fMz_Bet46LjQFfkYRrh3GQhyNPdNJcpWdPZBC3skAvLbm5EYueXxdIYUJHg7Vsrzvc-hZk6cJiMJekjE0FLh9W3OgxhAX_w1C-AS148iQV6x9NR2b7PAsA-0yEhujKtGFRjgyn-3AWKxYyXbbEydwQQjAu7wTuDwzvHgbrJ0gsA6QtCiddWulYhESW4cquv3l4SSylO9p1fFbCFtM0xg2fhPkWIufbhjXg1dw/https%3A%2F%2Fwww.aacu.org%2Fpublications-research%2Fperiodicals%2Fhigh-impact-practices-promoting-participation-all-students>

and

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.697.6006&rep=rep1&type=pdf>.

It does not address the fact that not all students -- particularly first generation and transfer students as well as students of specific race/ethnicity groups -- participate in all HIPs equally. This variable does not capture the differences in participation in various HIPs and as a result, the general recommendation that “Engineering faculty and administrators in higher education institutions should evaluate if the content and pedagogies of HIPs promote women of color students’ learning development.” should be revisited.

We really appreciate the feedback. We acknowledged the limitation of this approach (approaching HIPs as a whole and measuring a continuous variable combining all HIPs), and demonstrate the unequal opportunities in HIPs participation for students (particularly first generation and transfer students and certain racial/ethnic groups) (p. 11).

We also revised the sentence “Engineering faculty and administrators in higher education institutions should evaluate if the content and pedagogies of HIPs promote women of color students’ learning development.” The new revision was stated here (page 14-15).

*This study, however, found no significant interaction effect between HIPs and students’ race on the four learning outcomes maybe because we combined the different types of HIPs as one continuous measure. We evaluate how many HIP programs engineering women students involve in, not which programs each racial/ethnic groups of women engage in. Latina women or Asian American women engineering students may be attractive to certain HIP programs; thus more research should look at the detailed level of HIPs. Engineering faculty and administrators in higher education institutions should evaluate which racial/ethnic groups of students are included or excluded in certain HIPs and encourage them to experience the benefits of the programs.*

The intersectionality lens for used in this study is important and quite promising. It would be helpful to see an expansion of the Conclusion section and more speculation and exploration of future research directions that would be potentially fruitful and generative.

We added more future research ideas and policy implications to analyze Black and other racial minority students with an intersected way (page 14). We also added a sentence about how the intersectionality framework can help engineering educators and researchers to reveal engineering students’ voices and experiences with marginalized identities, such as sexual orientation (page 15).