

Abstract

- ❖ **Aim:** The aim of the current study was to examine predictors of STEM class engagement as well as STEM activism orientation in adolescents.
- ❖ **Results:** Findings revealed that inclusion and discrimination shape engagement and activism orientation as well as the important role of classroom belonging.

Introduction

- ❖ There is growing attention to the need to diversify the STEM workforce (Langdon, et al., 2011).
- ❖ Research indicates that an important barrier to persistence in STEM fields for marginalized groups, including women and ethnic minoritized individuals, relates to a culture in many STEM organizations, such as academic institutions, that fosters discrimination, harassment and prejudicial treatment of those from underrepresented groups (Robnett, 2015; McGee, 2016).
- ❖ Because adolescence is a critical developmental period during which youth are forming their attitudes, orientations and lifelong behaviors (Arnett, 2002), to create this change we must attend to issues of bias and discrimination well before individuals enter college STEM classrooms or the STEM workforce: namely, during high school.
- ❖ Thus, the current study examines how high school students' perceptions of inclusion, discrimination and belonging in STEM classes are related to their STEM classroom engagement as well as their out-of-school STEM efficacy, namely their STEM Activism Orientation.
- ❖ The goal is to understand what factors predict formal and informal STEM orientation.

Participants

- ❖ 242 high school students between 13-20 years ($M_{age} = 15.76$)
 - ~58.8% female and 41.2% male
 - ~36.4% White/European-American, ~33% Black/African-American, ~13% Hispanic/Latino, ~17.6 Unknown/Other

Method

- ❖ Participants completed an online survey in the Fall and Winter of 2020 measuring:
 - Perceived Inclusion:** Developed for this study. 4 items. Example: How welcoming or not welcoming are your STEM classes for girls?
 - Perceived Discrimination** (modified from Wong et al., 2003): 5 items. Example: In your STEM classes, how often do you feel that your teachers call on you less because of who you are?
 - STEM Classroom Belonging** (London et al., 2011): 8 items. Example: How much do you feel that you fit in within your STEM classes?
 - STEM Class Engagement** (Fredericks et al., 2015): 4 subscales: Behavioral, Social, Cognitive and Emotional Engagement. Example: I want to understand what is learned in STEM classes.
 - STEM Activism Orientation** (modified from Flanagan, Syversten, & Stout 2007): 8 items. Example: How well do you think your STEM experiences in school have prepared you to? Apply your STEM knowledge to express your views on the problem.

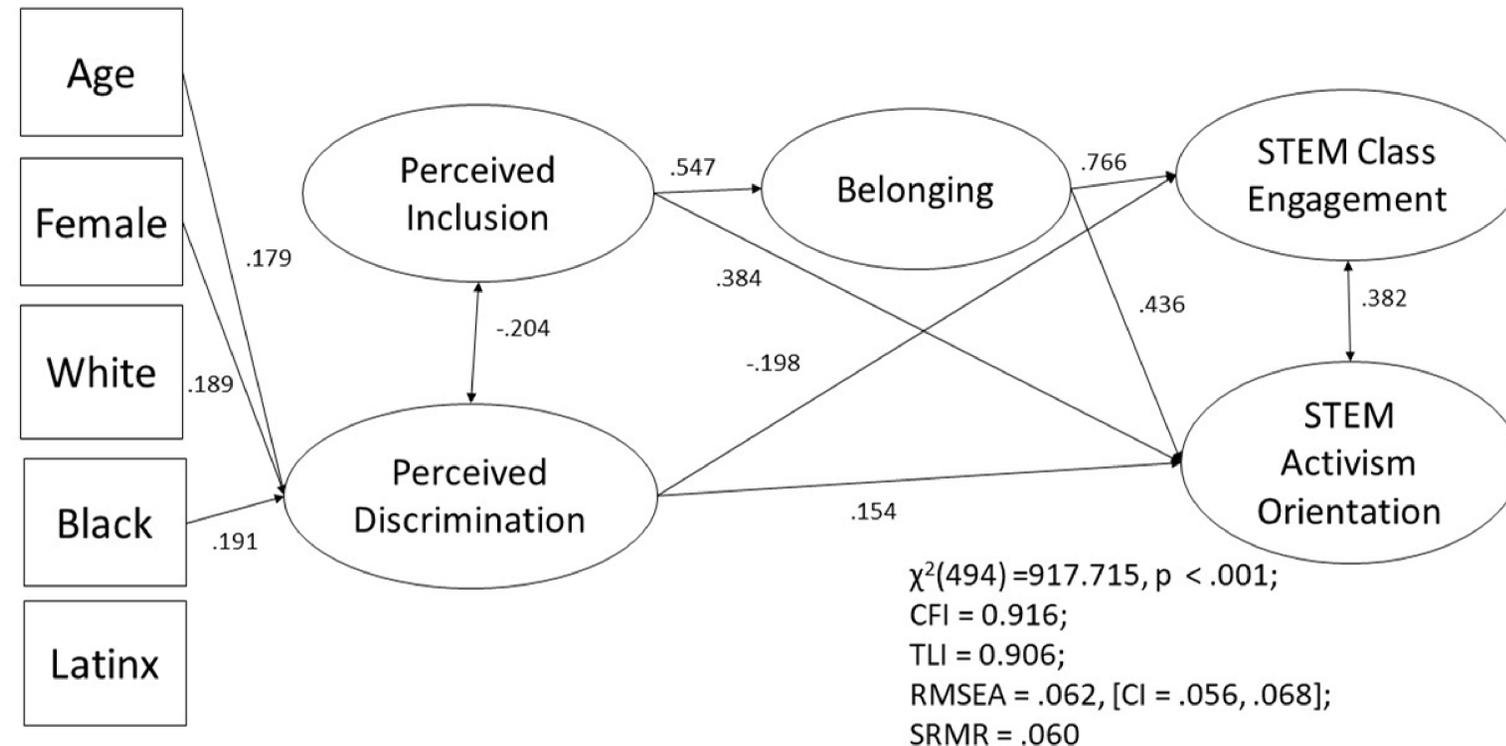
First a measurement model was computed in order to confirm the latent constructs. Then, path analyses were conducted to examine the structural relations between inclusion, discrimination, belonging and STEM class engagement and STEM activism orientation. Model fit was good, please see Figure 1 for results.

Grant Information



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Results



Discussion

- ❖ Findings revealed that older students, female students and Black students perceived more discrimination in their STEM classes as compared to other students.
- ❖ Findings documented that participants who perceived greater discrimination also perceived less inclusion in their STEM classes. Moreover, those who perceived their classes to be more inclusive also felt that they belonged more in their STEM classes.
- ❖ Higher STEM class belonging predicted higher STEM class engagement and STEM activism orientation. Further, higher perceived inclusion predicted both engagement (direct effect and through belonging) and STEM activism orientation.
- ❖ Interestingly, perceived discrimination was associated with lower STEM classroom engagement, but higher STEM activism orientation, suggesting that discrimination experiences may prompt activism.
- ❖ Finally, STEM Class Engagement is related to STEM Activism Orientation.
- ❖ Overall, findings document how perceptions related to discrimination and inclusion shape both formal and informal STEM orientations. Implications suggest the importance of school climate in encouraging youth to engage in their STEM classes and take action in their communities around STEM issues.

References

References available upon request.