

Increased Researcher Identity and Sustained Engagement During the First Year of the MYHealth Training Program for High School Students

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BACKGROUND

- Currently, Black, Indigenous, and People of Color (BIPOC) as well as first-generation college students and students from low socioeconomic backgrounds are underrepresented in STEM and healthcare-related fields. Diverse workforces have been shown to be more innovative, consider more diverse perspectives, and produce higher quality works than workforces lacking diversity.
- MYHealth is a virtual, research training program that aims to increase the representation of historically marginalized groups in health research and healthcare careers by building interest and engagement in research among high schoolers in Southeast Michigan.
- Youth Participatory Action Research (YPAR) develops young people's research skills through the creation of research projects addressing issues the youth identified as affecting them, their school, or their community (Ozer, et al., 2015).

METHODS

Program description

- We're evaluating the first two phases of the MYHealth program: Summer Launch (SL) and the Impact Projects (IP). All phases were held virtually.
- SL was held during July 2022 over the course of 10 week days. Participants met online to learn about research methods and ethics and to network with health researchers from diverse fields.
- IP was held from September 2022 through May 2023. Participants applied their new knowledge of research methods by conducting an adolescent health-focused study.

Participants

- 9th-12th graders in Southeast Michigan that self-identified as a member of an underrepresented group in STEM and health research careers. Table 1.

Data Collection

- Surveys were administered at 4 time points: 1) pre- and 2) post- Summer Launch and 3) pre- and 4) mid- Impact Projects.
- Researcher Identity (or participants' ability to see themselves as a researcher) was measured using the Researcher Identity Scale 5-point scale (Wilson, et al., 2022).
- Likewise, participants' motivation to do well in science and pursue a science career was measured using the Science Motivation Questionnaire-II 5-point scale (Bryan, et al., 2011).
- Engagement was measured using attendance (SL and IP) and a modified version of the YPAR Process Template (Ozer) rated by research mentors.

Analysis

- Differences in the mean scores at the 4 different time points is used to assess program impact. Results are shown in Table 2.
- Engagement was scored on scale from 0-2 and averaged across the first 9 sessions.

RESULTS

Table 1: Participant Demographics

Variable	Pre Summer Launch, N = 30	Pre-Impact Projects, N = 20
Gender		
Female	24 (83%)	19 (95%)
Male	4 (14%)	1 (5%)
Prefer not to respond	1 (3%)	0 (0%)
Ethnic Background		
African American/Black	6 (20%)	4 (20%)
Arab/Arab American	15 (50%)	10 (50%)
Middle Eastern/Middle Eastern American (MENA)	4 (13%)	1 (5%)
South Asian/South Asian American	4 (13%)	4 (20%)
White/Caucasian/European/European American & Japanese/Japanese American	1 (3.3%)	1 (5%)
Grade		
9 th grade	3 (10%)	0
10 th grade	6 (20%)	4 (20%)
11 th grade	13 (43%)	9 (45%)
12 th grade	8 (27%)	7 (35%)
Socioeconomic Status (1-10 scale)		
Mean (SD)	6.23 (1.68)	5.95 (2.31)

REFERENCES

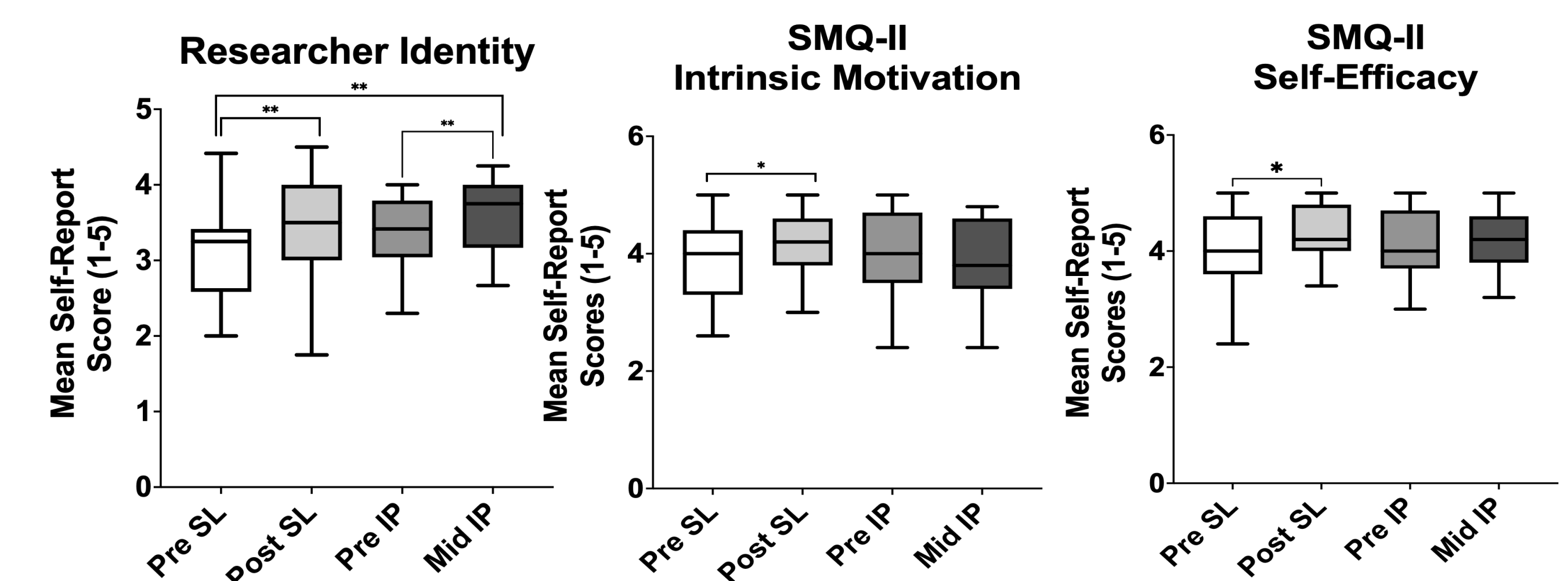
- National Center for Science and Engineering Statistics (NCSES) [Internet]. Women, Minorities, and Persons with Disabilities in Science and Engineering. Directorate for Social, Behavioral and Economic Sciences. Alexandria, VA: National Science Foundation; 2021 [cited 2022 May 5]. Report No.: Special Report NSF-21-321. Available from: <https://nces.gov/pubns/nsf21321/>.
- Ozer EJ, Douglas L. Assessing the Key Processes of Youth-Led Participatory Research: Psychometric Analysis and Application of an Observational Rating Scale. *Youth & Society*. 2015;47(1):29-50. doi:10.1177/0044118X12468011
- Bryan RR, Glynn SM, Kittleson JM. Motivation, achievement, and advanced placement intent of high school students learning science: Motivation of High School Students Learning Science. *Sci Ed*. 2011;95(6):1049-1065. doi:10.1002/sce.20462
- Wilson M, Bathia S, Morell L, Gochyyev P, Koo BW, Smith R. Seeking a better balance between efficiency and interpretability: Comparing the likert response format with the Guttman response format. *Psychological Methods*. Published online January 13, 2022. doi:10.1037/met0000462

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Table 2: Summary Statistics on Research and Science Indicators

Variable	Pre-Summer Launch, N = 30	Post-Summer Launch, N = 27	Pre-Impact Projects, N = 20	Mid-Impact Projects, N = 16
Research Identity	3.08 (0.53)	3.46 (0.67)	3.37 (0.95)	3.61 (0.86)
SMQ-II				
Intrinsic Motivation	3.89 (0.74)	4.18 (0.65)	4.01 (0.93)	3.87 (0.80)
Self-Efficacy	4.01 (0.64)	4.29 (0.53)	4.10 (0.77)	4.16 (0.72)
Self-Determination	4.02 (0.71)	4.10 (0.67)	3.92 (0.87)	4.00 (0.90)
Grade Motivation	4.47 (0.81)	4.52 (0.70)	4.61 (0.70)	4.73 (0.69)
Career Motivation	4.44 (0.61)	4.45 (0.56)	4.32 (0.98)	4.45 (0.91)
Total Program Hours		44.05 (6.75)	-	13.72 (5.32)
Engagement (from YPT)				
Active Engagement	-	-	-	1.65 (0.56)
Sustained Engagement	-	-	-	1.58 (0.58)

Figures 1-3: Changes in Researcher Identity, Intrinsic Motivation, and Self-Efficacy During the First Two Phases



CONCLUSION

- 30 students participated in SL and 23 participated in IP with 20 carried over from SL.
- Attendance was high during SL.
- Engagement was high during IP, but attendance dropped with an average of 14.74 students out of 23 attending each session.
- Participants experienced a significant increase in researcher identity, self-efficacy, and intrinsic motivation.
- This pilot year supports the effectiveness of MYHealth in increasing researcher identity in high schoolers and engaging students
- Future research should measure sustained interest toward research and healthcare careers.