GAINING AWARENESS OF INEQUALITY IN EDUCATION: MENTORS' PERSPECTIVES IN A SCIENCE MENTORING PROGRAM

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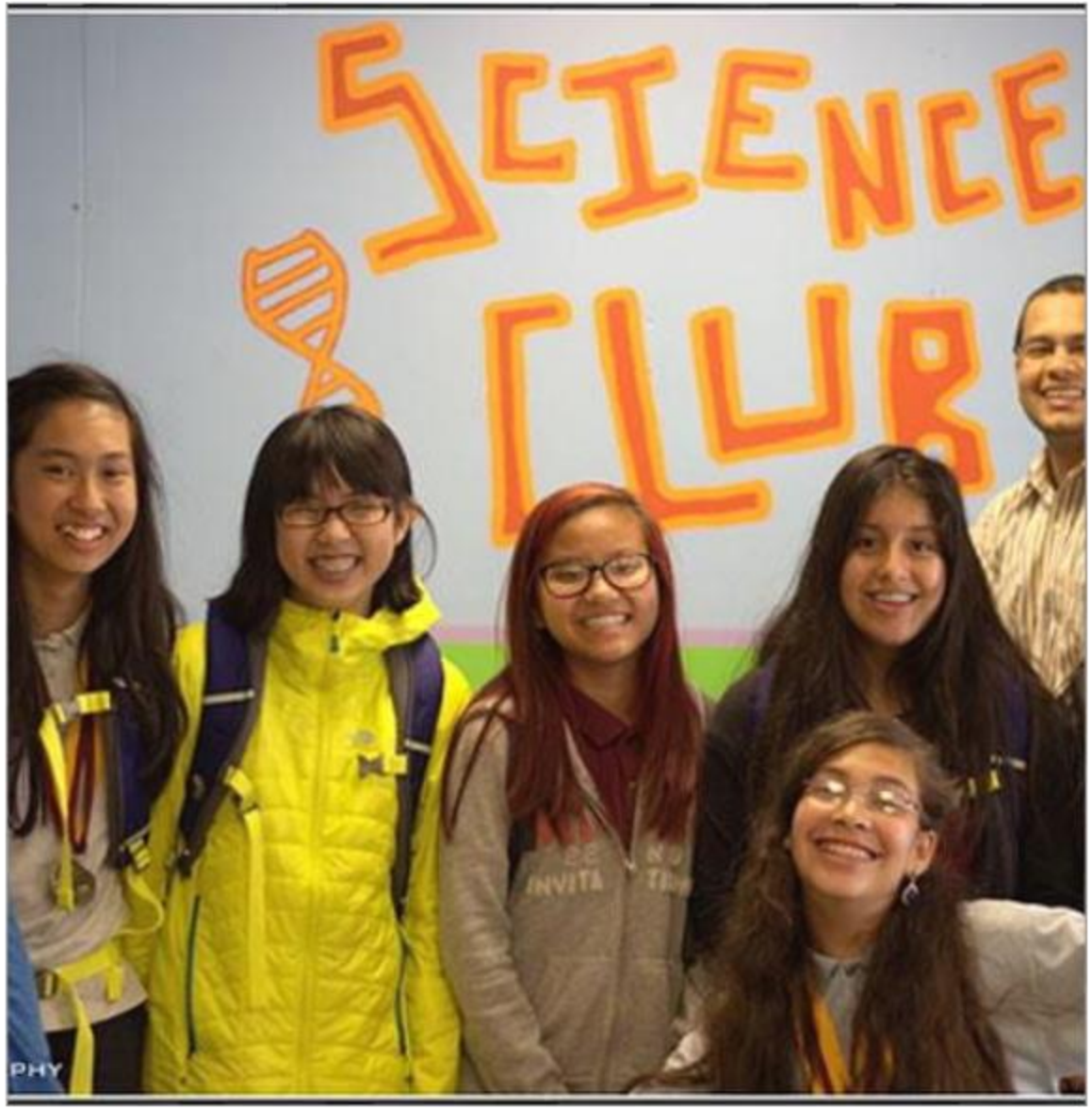
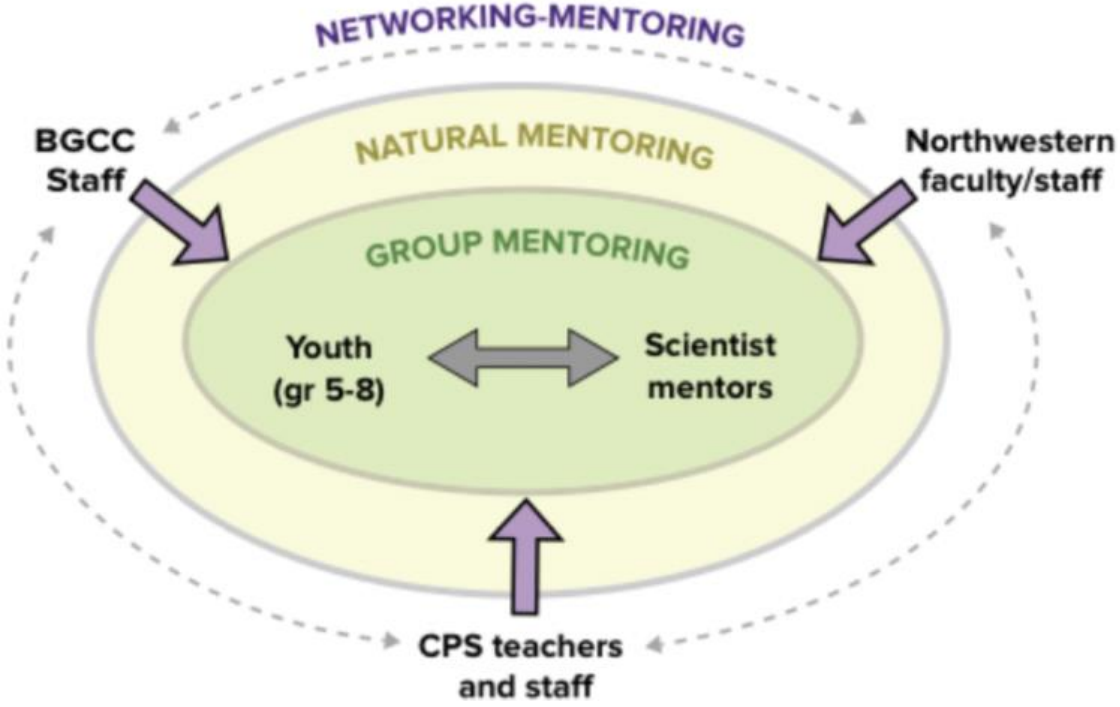


BACKGROUND ON OVERALL STUDY

SCIENCE CLUB'S NESTED MENTORING MODEL



SCIENCE CLUB MENTORING MODEL

Comprised of volunteers as opposed to credit-bearing, course-based service

Utilizes more senior, graduate students and postdoctoral fellows who can commit to the 1-year guidelines recommended by MENTOR's practice guidelines

Employs a rigorous assessment approach

we posit that mentor characteristics, particularly their cultural sensitivity and awareness, may moderate the effectiveness of the program on youth's science identity and outcomes.

RESEARCH QUESTIONS FOR LARGER STUDY

1) Which moderators of Science Club's mentoring model are most important for building YOUTH participants' science identity?

2) Which moderators of Science Club's mentoring model are most important for building MENTOR participants' identity and skills as community-focused science educators?

CURRENT STUDY

LITERATURE REVIEW

Mentoring programs match adults to work with youth who differ on a variety of demographic characteristics, such as race and class (Garringer et al., 2017)

Demographic differences between mentors and mentees reinforce negative stereotypes (Sánchez et al., 2021).

Most of the youth mentoring literature has focused on the benefits of mentoring for mentees (e.g., DuBois et al., 2011, Raposa et al., 2019).

RESEARCH AIM

To explore the changes in adult mentors' cultural humility attitudes in a science mentoring program for urban adolescents of color from low-income communities.

METHODS

Mixed-methods	Survey	Semi-structured Interview
• Mentor alumni of the Science Club mentoring program. • Graduate students in the sciences • volunteered at a community-based organization to work with 5th- to 8th-graders	• 142 mentors (M_{age} = 32), • The social justice interest scale (Miller et al., 2009)	• 35 Mentors (M_{age} = 32) • How they benefited from serving as a mentor.

RESULTS

1.0 SOCIAL JUSTICE MINDSET

Social Justice Mindset Scale (Miller, 2009)
Retrospective pre-post
7 items, (1) No interest to (7) considerable interest
Internal consistency (Cronbach's alpha = 0 .84)

To what degree did Science Club participation shift mentors' social justice mindset?

Construct	25thO%	Median	75thO%
Social Justice Mindset - pre	29	34	39
Social Justice Mindset - post	36	40	45

2.0 INTERVIEW RESULTS

Gaining an increased awareness of inequities in youth's access to high-quality education.

01 Racial, class, and gender inequalities in education

02 Initial stereotyped assumptions about youth and their communities

03 Youth and community strengths and expertise

04 Mentors' own positionality and privilege

“I don't think [Science Club] changed my thinking as much as…my practice…an essential skill is humility…there's a lot of experience I have that they don't, and there's a lot of experience they have that I don't have…I think Science Club was a good way of learning the ways in which I don't live out that value sometimes…in realizing, Oh, actually…I am making an assumption here…so there were kind of more opportunities to recognize that.”

“I'm going to go to one of these low income, low resource areas, and I'm just gonna meet them where they're at and…teach them science or do science projects with them. And then you, you sit there and you're like, Oh my gosh, these kids are super smart. And like, they just needed somebody to just sit down and do it…all you had to do is just go there and just help them a little bit. You don't even need a…lot of help, just a little bit.”

DISCUSSION

These findings offer insight to the ways in which serving as mentors can impact adults' cultural humility.

The science mentoring program promotes adult mentors' cultural sensitivity and awareness about access and equity.

The increased social justice mindset through the science mentoring program aligns with the awareness of their privilege and inequalities in education and communities.

ACKNOWLEDGEMENT

Science Club

BOYS & GIRLS CLUBS OF CHICAGO

Thank you

PARTICIPANTS

BGCC_Pederson-McCormick Site

Each Week/90 MIN

2 Mentors-4 Mentees

Structured Curriculum

BGCC_True-Value club

RESEARCH QUESTIONS

Research Questions	1) Which moderators of Science Club's mentoring model are most important for building YOUTH participants' science identity? 2) Which moderators of Science Club's mentoring model are most important for building MENTOR participants' identity and skills as community-focused science educators?	3) To what extent does Science Club's nested mentoring model impact other participating individuals and organizations?
Study addressing research questions	**Study 1 - Retrospective** Science/science educator identity and mentoring moderators •Youth surveys, interviews, PMM •Mentor surveys, interviews, PMM •Parent/Caregiver interviews	**Study 2 - Prospective** Science/science educator identity and mentoring moderators •Mentoring Group observations •Youth surveys, interviews, PMM •Youth skills assessments •Mentor surveys, interviews, PMM •Parent/Caregiver interviews	**Study 3** Nested mentoring study with school, club, and university partners

DATA COLLECTION STATUS

	Goal	Actual
Youth Survey	100 (new, orig 165)	26
Youth Interview	40	10
Mentor Survey	104	142 complete
Mentor Interview	20	36
Parent/Caregiver Int.	15	2

MIKE'S DEFINITION OF COMMUNITY FOCUSED SCIENCE EDUCATOR

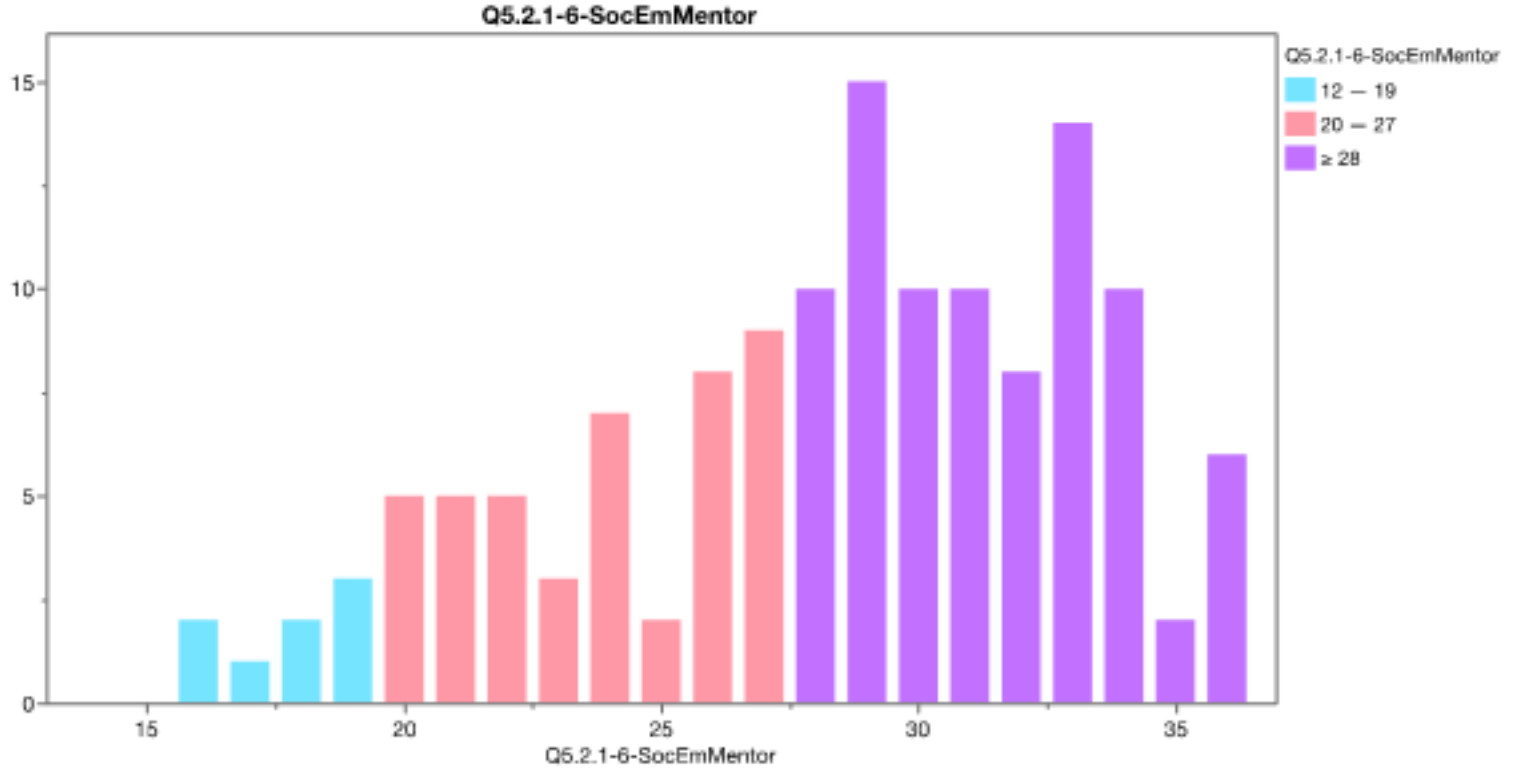
1. Understand educational equity,
2. social justice attitudes,
3. seeing communities and youth as strengths rather than deficits,
4. listening,
5. culturally humble,
6. aware of their power and privilege,
7. asset-based approach

Skill	n	%
Working with individuals of diverse cultures and economic backgrounds	127	89%
Teaching skills	121	85%
Mentoring	119	84%
Science communication	117	82%
Listening	109	77%
General communication skills	107	75%
How to work effectively with low-income diverse youth	106	75%
Collaboration and teamwork	97	68%
Troubleshooting and thinking through problems	81	57%
Leadership	74	52%
Working with school/community partners	53	37%
Curriculum development	45	32%
Program evaluation	23	16%
Informal STEM program administration	23	16%
Lab techniques and equipment skills	10	7%
Grantwriting	4	3%

2.0 MENTORING BEHAVIOR

MENTOR'S SOCIO-EMOTIONAL MENTORING SUPPORT FOR MENTEES?

SOCIOEMOTIONAL MENTORING, CHEMERS ET AL, 2011 *(SURVEY ITEMS 5.2.1-6)*
6 ITEMS, SCALE: (2) NOT AT ALL ; (6) TO VERY LARGE EXTENT
INTERNAL CONSISTENCY (CRONBACH'S ALPHA = 0.88)



	Low (2-4)	Med (5-7)	High (8-10)
Socioemotional Mentoring (n=137)	8 (6%)	44 (33%)	85 (62%)

WHAT DOES IT MEAN TO BE A COMMUNITY FOCUSED SCIENCE EDUCATOR?

Pay it forward

Listening & patience

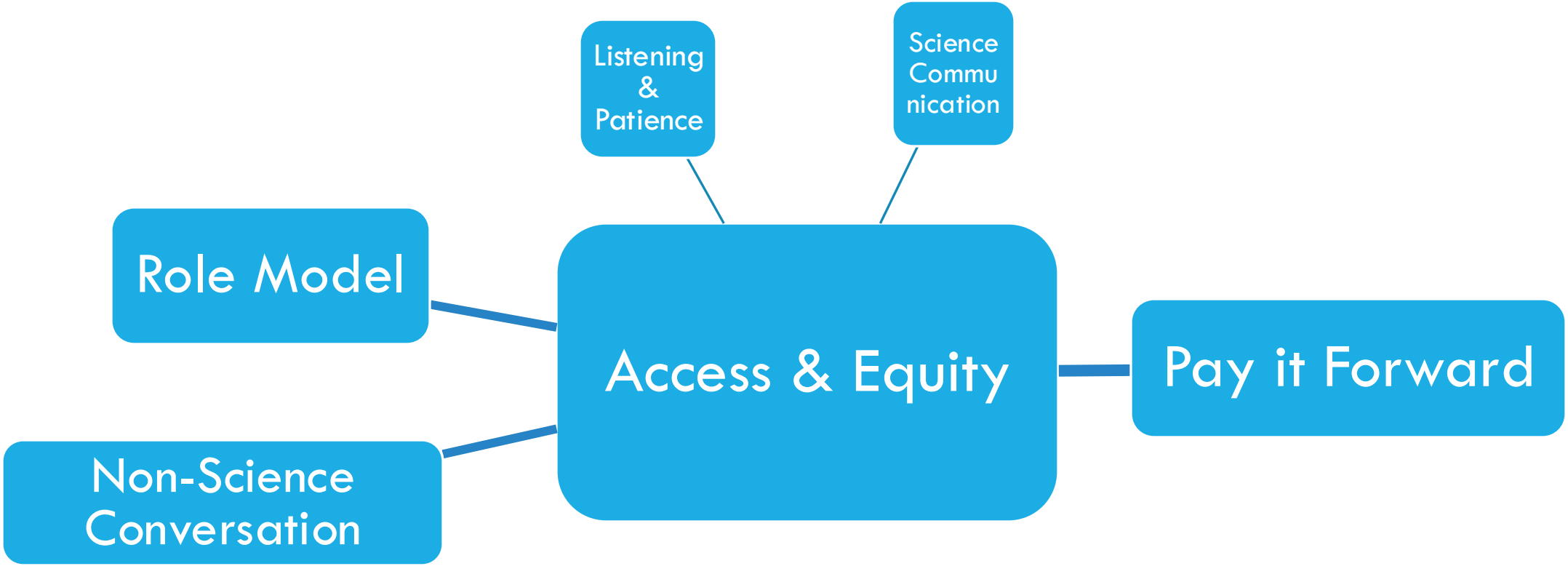
Science communication

Awareness of access & equity

Role model

Non-science conversations & support

HOW IS AWARENESS OF ACCESS & EQUITY RELATED TO OTHER COMPONENTS OF MENTOR IDENTITY?



PRELIMINARY PATTERNS

- Based on the survey result of the significant increase in mentors' social justice mindset, the mentors' narratives explain how the social justice mindset increases and influences mentors through the Science Club mentoring program.
- The awareness about access and equity is related to a responsibility to the community as a role model with caring for mentees' non-science-related challenges and struggles and motivating them to participate in a further commitment to volunteering.