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Expressive and Instrumental Social Capital Facilitates Network Connections for Community College Transfer Students in STEM

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BACKGROUND

Social capital, or the assets accessed through social connections, has been shown to support the persistence of undergraduate students majoring in the STEM fields.[1,2,3] While research has shown the importance of network connections that provide social capital for undergraduate students, we know little about how students develop these important network connections.

STEM students who begin their educational journey at a community college face unique barriers to persistence, and the composition of their network may be dependent on where they are at in the transfer process.[4] Understanding how community college transfer students develop network connections and access social capital may result in ways to support their persistence.

We aimed to understand how a cohort of STEM community college transfer Scholars in a NSF S-STEM program developed social connections with peers and faculty post-transfer. We used the **Network Theory of Social Capital**[5] to examine the **instrumental** (i.e., concrete advice and support) and **expressive** actions (i.e., emotional support and encouragement) that led to feelings of connection.

We hypothesized that the S-STEM Scholars' social connections were facilitated through instrumental and expressive actions.

SOCIAL CAPITAL

The assets accessed through social connections

Expressive: Actions related to providing emotional support

Instrumental: Actions related to providing structural support and guidance

PEERS

Connecting over the difficulty of pursuing a STEM degree

"When you're in a class with someone and having to do the same tasks and having to do the same exam, it makes you feel connected through the communal struggle."

Fostering motivation and connection through similar goals

"We have this rolling communication where we share what's going on with trying to get internships. It's a good support system."

Showing interest in one's success

Providing help with coursework

"Meeting with your peers definitely helps. You can meet up and discuss any sort of questions you may have. That's what helped me progress through these classes."

FACULTY

Showing interest in one's well-being

Providing reassurance about one's ability

Sharing knowledge of beneficial opportunities

Acknowledging one's interests and showing support

"Having them know you as a person and what you're interested in further along in your academic journey is also very helpful, because they'll be like, 'I saw this thing and I thought of you' kind of a thing."

Leveraging their position to provide support

Providing a resource to help one obtain an opportunity

"My research mentor has been incredibly supportive in helping me figure out what I'm interested in and what career I want to pursue."

Providing advice/guidance

Validating abilities in STEM

"Just to have someone there that says, 'You can do this. I think you would be really good for this position.' That was really, really cool to me."

Research Questions

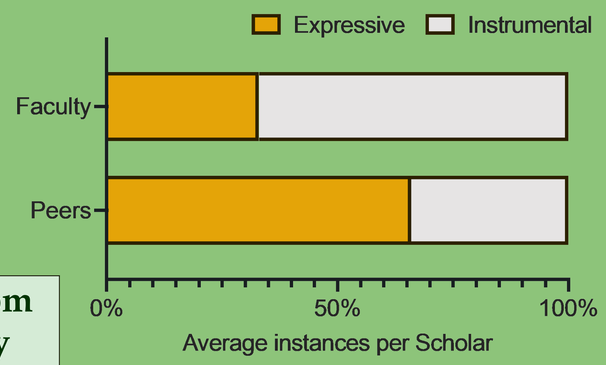
RQ1) What social capital actions contribute to the Scholar's feelings of connection with STEM peers and STEM faculty?

RQ2) What experiences detract from the Scholars feelings of connection with STEM peers and STEM faculty?

METHODS

- We conducted semi-structured interviews with S-STEM Scholars at the end of the two-year program
- Interview questions were designed to understand if and how S-STEM Scholars developed social connections with peers and faculty post-transfer
- Interview data was coded inductively and deductively by multiple researchers

Scholar Demographics (n=11)	
Average Age (Years)	27 (±5)
Female	45%
BIPoC	45%
Community College Transfer	100%



RQ1 Results: Peer connections were primarily facilitated through expressive actions, while faculty connections were primarily facilitated through instrumental actions

Disconnect from peers	Disconnect from STEM faculty
Not having commonalities among peers	Lack of instrumental social capital actions
Lack of close or deep connections	Insufficient instruction from STEM faculty
Lack of opportunities to connect across disciplines	Lack of expressive social capital actions
Competitive culture among STEM majors	

"I would probably say [my connections are] just friends from the gatherings and events I've attended. But yeah, not anything strong, just like normal friends. Because, I mean, I'm pretty introverted too."

"Their demeanor and just lack of sympathy and empathy towards their students to do well in these really high level courses and just not care was very deterring, and it also didn't feel very great. It didn't encourage me. It brought me down. It made me feel like, well, if my professor doesn't care, then why should I?"

RQ2 Results: Feelings of disconnection from peers and faculty related to barriers of social capital

CONCLUSION

It is essential to understand how connections develop among STEM community college students and their peers and faculty post-transfer, so that we can support and expedite the development of these connections. Developing connections with both STEM peers and faculty may be essential for experiencing expressive and instrumental social capital actions, which can allow these students to gain the numerous benefits connected to social capital in undergraduate STEM education including increased persistence and motivation.

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