

Supplemental Material

CBE—Life Sciences Education

Gray *et al.*

Thriving or Simply Surviving? A Qualitative Exploration of STEM Community College Students' Transition to a Four-Year University

Supplemental Materials

Gray *et al.* 2021

Table of Contents

Appendix 1. Focus group questions	2
Appendix 2. Codebook	3

Appendix 1: Focus group questions

Question Number	Question
1.	What do you think of when you think of a scientist?
2.	Do you think of yourself as a scientist?
3.	How confident are you in your ability to achieve your academic or professional goals?
4.	What tools and support do you think you need to achieve your academic or professional goals?
5.	Do you feel that you currently have those tools and support here?
6.	Do you see yourself as a member of the university's community?
7.	Is it important to you to be a member of the community?
8.	Is there a community or group at this university that you feel particularly connected to?
9.	What was the transition process like from your community college to this university?
10.	What would make the transition process to this university easier?
11.	Is this university a good fit for you overall?

Appendix 2: Focus group analysis codebook

Theme	Description of theme	Example Quote
Perception of Transition		
<i>Timing</i>		
On-timing	Participant describes feeling like their age doesn't negatively impact their experience	<i>"As far as being 22, age doesn't define when you finish or when you start. Seeing a lot of other students who are fresh out of high school coming in, they're 18 and 19. I see myself almost as a leader in each classroom and that gives me a little bit more confidence."</i>
Off-timing	Participant describes feeling as if their transition was "off-timing" with social norms, such as completing college at a non-typical age	<i>"I'm 27, so much older than most people in my classes. I'm paired up with these students who are 18 and 19. My life experiences are just so different from theirs and I just don't feel like we have very much in common. My first semester that was just very daunting."</i>
<i>Degree of stress</i>		
Low degree of stress	Participant seems to have a low degree of stress surrounding the transition	<i>"As the term goes further and further down the road, I'm starting to feel more connected. As time goes by, I feel that I have a higher sense of the community, because I am now getting used to it as a new routine for me."</i>
High degree of stress	Participant describes the transition as something that caused a high level of stress	<i>"I personally had a very rough transition. I feel like I am just starting to settle into things."</i>
<i>Affect</i>		
Positive perception	Participant discusses a positive perception of the transition, such as being excited or thinking that the transition process is going to be a good experience	<i>"I was really excited to be like all the other people who graduated from high school with me and finally get to university. So, I was really excited, and really excited to be done with community college."</i>
Neutral perception	Participant describes a perception of the transition that is neither negative or positive	<i>"I didn't find [the transition] too bad. But maybe that's just because it was bad enough in community college, that it wasn't any worse by comparison."</i>
Negative perception	Participant discusses fear or negative emotion regarding the transition	<i>"My transition was terrible. My first quarter, especially. It goes back to not being able to meet with my advisor in the geology department."</i>
Environmental Characteristics		

Physical setting	Participant discusses a physical setting involved in the transition, such as location or workplace	<i>“At [the community college] it's like I'd have my classes in different buildings, typically a two-minute walk right across the campus. Now I'm taking the streetcar from the science building down to the waterfront to get to my second class.”</i>
Pre-transition environment	Participant discusses a characteristic of their pre-transition environment (community college), such as size	<i>“It really took some devotion to actually get to know people around me here. As opposed to [community college], where it was really easy to just meet people.”</i>
Lack of quality supports	Participant describes perceiving a lack of social, emotional, academic, professional, or financial support	<i>“I'd love to be more involved and do more campus stuff but realistically that's not doable for my financial situation.”</i>
<i>Institutional supports</i>		
Academic support	Participant describes receiving academic support, such as academic advising, receiving feedback on course work, or working with peers on course work	<i>“I get to [the university] and I had to arrange a bigger room because there were too many people that showed up to the study group, because they cared about getting a good grade. So, I was super thrilled.”</i>
Professional support	Participants describe receiving professional support, such as getting career advice or getting a research placement	<i>“I got a research opportunity over the summer last year, it was through [a SIP].”</i>
Financial support	Participant describes receiving financial support, including scholarships and money to obtain course materials	<i>“Scholarships and grants. I talk to so many people who are like, “I can never get one.” I was like, “I said the same thing and I got one.” That takes the financial stress off the school. That has been pretty huge.”</i>
<i>Interpersonal support systems</i>		
Social support	Participant describes receiving social support from peers, faculty, or family	<i>“I've met a lot of people who were really motivated, and that's what really helped me feel a part of [the university], is just meeting other students who think the same way that I do.”</i>
Emotional support	Participants describe receiving emotional support, such as receiving reassurance	<i>“That emotional support, that comforting, even from your family, is significant. That helps as well.”</i>
<i>Post-transition environment</i>		

University as a default	Participant describes that attending this university was their "default" choice, due to reasons such as money or location	<i>"When I decided to go back to school, I happened to be living in [the city]. It was the only choice for me."</i>
Feelings of morale	Participant describes feeling enthusiastic about the university or happy to be at the university	<i>"I couldn't really imagine going anywhere else. [The university] made the most sense for me to go to, but I am really happy here. I really like my instructors; I like the people I'm with. I like [the city]. I'm happy to be here."</i>
Individual Characteristics		
Life stage	Participant describes their stage of life, such as being an older student	<i>"I think I'm kind of lucky in the sense that age has helped me feel more confident, even though I have a lot of things that could also hinder me in my success. I'm 33, so I'm kind of racing time, but not fully."</i>
Underrepresented	Participant describes being underrepresented in the STEM fields	<i>"Honestly speaking, I don't feel very confident in my ability. I'm pre-med, and trying to get into medical school. I'm the first person in my family to go to college. None of the women in my family, well none of the men either, but especially the women, ever went to school."</i>
Previous experience with a similar transition	Participant describes having experience with a transition of a similar nature	<i>"So, it was probably harder to get started at the community college than to transfer. Transferring wasn't as bad."</i>
Perception of a scientist	Participant describes their perception of a scientist, including intrinsic and extrinsic traits	<i>"Now that I've been in school and explored a little bit more, for me, a scientist can work in the lab, can work outside, like doing field sampling or doing research. So, it has a broader spectrum. Before I thought a scientist is usually working in a lab."</i>
SIP participant	Participant describes being in a STEM intervention program (SIP)	<i>"Coming into this program with the bridge week and with [the SIP], it really helped introduce me to all the resources that are available for me, both on campus and even outside of campus."</i>
<i>Self-efficacy</i>		
Supports to self-efficacy	Participants describe things that supported a high self-efficacy, such as being very sure of their goals or having the reinforcement of past successes	<i>"My patience and my perseverance has increased due to my age, so I think that having those two skills will help me succeed in achieving what I want, even when obstacles are present."</i>

Barriers to self-efficacy	Participants describe things that hindered a high self-efficacy, such as having a lack of motivation or being unsure of their goals	<i>“If I want to achieve writing a paper for a class but then my mind is just not working properly because I worry about stuff, then the ideas, the energy that needed to go to that paper was dispersed to unnecessary time. I feel like I'm wasting so much time and good space.”</i>
High self-efficacy	Participants describe positive feelings about their personal ability, such as being confident in their abilities	<i>“I'm honestly confident as is, only even more considering what kind of level I'm in and seeing that I am more than half way done. That makes me even more confident that I can finish and go strong even further.”</i>
Low self-efficacy	Participants negatively describe their personal abilities, such as lacking confidence in their abilities	<i>“Honestly speaking, I don't feel very confident in my ability.”</i>
<i>Sense of belonging</i>		
Supports to belonging	Participants describe things that contributed to a feeling of belonging, such as having a high level of campus involvement or being in a diverse community	<i>“I feel I am a part of the [university] community. I live on campus, I work at the [university] as a lab attendant for the library, and I'm just here constantly. I feel very integrated into the community.”</i>
Barriers to belonging	Participants describe things that hindered their feeling of belonging, such as having to commute or having a lack of connection to their peers	<i>“I'm not on campus too much. For me it takes a while to commute back and forth so I'm here less now. I feel I'm a bit disconnected because of it.”</i>
Strong sense of belonging	Participants describe having a strong sense of belonging to the university or a group within the university	<i>“I do feel like I belong here with the people. I'm not the oldest person here. I enjoy talking to people in my classes. I love some of the faculty I've come in contact with.”</i>
Weak sense of belonging	Participants describe that they don't feel that they belong at the university or to groups within the university	<i>“I don't feel part of the community here much at all. I met a couple of friends in a couple classes that I'll see out and about and I know where they work and I'll run into them or whatever, but I don't really spend a lot of time on campus.”</i>
<i>Science identity</i>		
Strong science identity	Participant demonstrates that they think of themselves as a scientist	<i>“I do consider myself a scientist now, because even when I feel like I'm not doing work that is important, it is still important in some speck of what is happening overall.”</i>

Emerging science identity	Participant views themselves as becoming a scientist	<i>“I am just learning how to be a scientist; I wouldn't say I officially am yet. Because I still have a lot of ways to learn and improve to be one going forward.”</i>
Lack of science identity	Participant demonstrates that they do not think of themselves as a scientist	<i>“I am a student who appreciates science. I don't know if that necessarily is enough for me to feel like a scientist, though.”</i>