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Pathways to STEM Careers – Preliminary findings of a Possible Selves Intervention

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Pathways to STEM Careers: Preliminary Findings of a Possible Selves Intervention

Dr. Andrea Dawn Frazier



Introduction – What are Possible Selves?

- Future-oriented visual images of hoped for selves or feared selves and are thus the embodiment of one's goals, aspirations, and fears.
- Possible selves one is apt to generate are individual, personal, and connected to the self that one is now.

“What others are now, I could become...”



Introduction-What are Possible Selves? Three Cognitive Functions

- Possible selves function as personalized representations of one's fears, threats, and goals
- They provide a context from which to make meaning of events
- Though one may have a stable self that has certain characteristics, being buffeted by positive and negative information could impact possible selves and influence how one sees the self.



Introduction-What are Possible Selves? A Working Self-Concept

- Possible selves combine within a working self-concept
- Possible selves are part of identity work
- The possible selves we envision readjust over time based on the successes and failures one experiences



“Seeing the destination but not the path”: Possible selves and school...

- “...anticipated future outcomes are an important self-regulatory factor in human functioning. Future goals influence self-regulation through their role in the planning of a path of proximal subgoals leading to future goal attainment” (Miller & Brickman, 2004, p. 23).
- One way to target interpretation of day-to-day events for viable future selves is by encouraging the development of concrete strategies that can be implemented to make the possible self more of a reality (-----)
- To facilitate talent development in a domain, young people must understand what the path entails and develop plans accordingly (Miller & Brickman, 2004) and requires the involvement of knowledgeable others; recognition from important others like teachers, family, and professionals in the talent domain (Carlone & Johnson, 2007; Frazier, 2012); and fact-finding.



The Possible Selves Intervention – What we will do to Build the Path...

- Participate in a community of practice that supports the creation of a sense of belonging
- Participate in practical experiences with the discipline, further supporting a sense of belonging
- Participate in concrete strategies that support proximal subgoals leading to the achievement of a future self as a STEM professional



The Possible Selves Intervention – What we will do to Build the Path

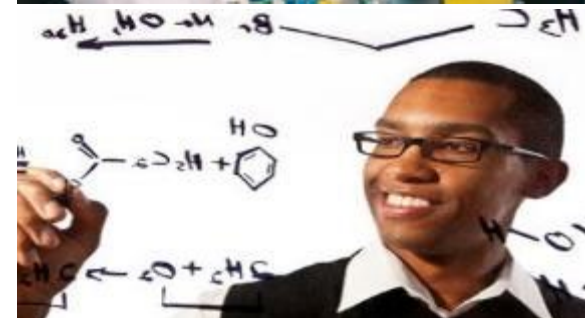
Social	Academic	Career
Community of Practice that Creates a Sense of Belonging	Practical Experiences with the Discipline	Concrete Strategies to Meet Aims of Future Selves
<ul style="list-style-type: none"> • LSAMP Meetings with URMs • Orientation/welcome meeting with scholars and faculty • Monthly meetings with scholars • Social events • LSAMP meetings with URM STEM professionals 	<ul style="list-style-type: none"> • Faculty/scholar mentoring* • Training in Possible Selves for mentors and partners/staff • Research experiences* • Summer Bridge Camp* • Summer Boot Camp* • Trips to STEM professional sites* 	<ul style="list-style-type: none"> • Academic advising • Peer tutoring* • GRE prep course • Practical workforce development experiences at Math Boot Camp



Note: Many of these activities fit multiple elements and were listed under the predominate element

Method

Research aim: To explore the adult possible selves and Next-year possible selves of Cohort 1 at Time 1 and Time 2 and to determine to what degree the path articulated in the program has been adopted by students



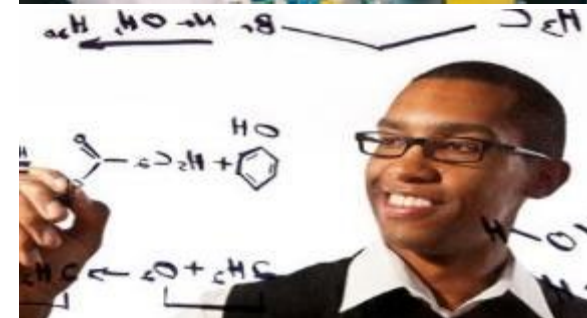
Method

Descriptor	Total =14 n(%)
Gender	
Male	4 (29%)
Female	10 (71%)
Ethnicity	
African American	9 (64%)
LatinX	5 (36%)

Descriptor	Total=14 n (%)
Classification	
First-Year	1 (7%)
Sophomore	5 (36%)
Junior	4 (29%)
Senior	4 (29%)

Descriptor	Total = 14 n (%)
Major	
Biology	10 (71%)
Math	3 (21%)
Other	3 (21%)

Note: Two students did not provide demographic information. Two students reported double-majoring in biology and math, so percentages are greater than 100% for Major.



Method

LSAMP Student Pre/Post Survey assessing the following **Hoped for/Feared Possible Selves of the Next Year**:

Next year, I expect to be	Am I am doing something to be that way		If yes, what I am doing now to be that way next year
	NO	YES	
(P1) _____			(s1) _____
(P2) _____			(s2) _____
(P3) _____			(s3) _____
(P4) _____			(s4) _____



Method

LSAMP Student Pre/Post Survey assessing the following Hoped for/**Feared Possible Selves** of the Next Year:

Next year, I want to avoid	Am I doing something to avoid this		If yes, What I am doing now to avoid being that way next year
	NO	YES	
(P5) _____			(s5)_____
(P6) _____			(s6)_____
(P7) _____			(s7)_____
(P8) _____			(s8)_____



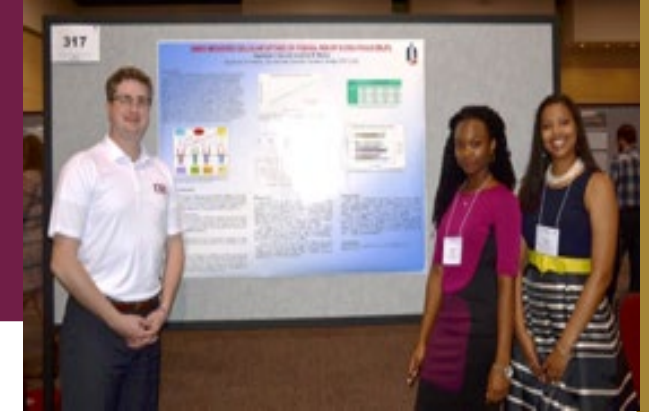
Method

LSAMP Student Pre/Post Survey assessing the following **Adult Hoped for/Expected and Feared Possible Selves**

- Please list three possible selves that you **most hope** to describe you as an adult: _____
- Please list three possible selves that are **most likely to be true** of you as an adult: _____
- Please list three possible selves that you **most fear or worry** about being as an adult: _____



Method



Procedure:

The LSAMP Student Survey is an electronic survey that students access via a Qualtrics link.

The survey takes approximately 15 to 20 minutes to complete

The Pre-survey was administered May-July 2019

The Post-survey was administered April-May 2020



Method

Data Analysis: Next Year and Adult Possible Selves were coded
A priori codes using Oysermans's coding protocol

Hoped for Selves	Feared Selves
Achievement/Academic/School	Achievement/Academic/School
Interpersonal Relationships	Interpersonal Relationships
Personality Traits	Personality Traits
Physical/Health-Related	Physical/Health-Related
Material/Lifestyles	Material/Lifestyles
Negative	Non-normative/Risky Behaviors



Results: Percent of Adult Possible Selves Coded by Major Theme

	Adult Hoped For Selves		Adult Likely Selves		Adult Feared Selves	
	Pre (n=48)	Post (n=48)	Pre (n=48)	Post (n=48)	Pre (n=48)	Post (n=48)
Achievement*	35	29	23	20	16	21
Relationships*	25	15	31	17	21	10
Personality*	35	40	37	37	42	48
Physical		6		6	6	2
Material	4	8	4	8	10	10
Negative			4	10		
Non-Normative					2	6



Results: STEM Career-Related Adult Possible Selves

Type of Adult Possible Self	Pre/Post Assessment	Possible Self
Hoped-For Self	Pre Assessment	An Inventor
Hoped-For Self	Pre Assessment	Doctor
Hoped-For Self	Pre Assessment	Securing a job in my dream career[sic]
Feared Self	Pre Assessment	Doubtful in my field and my ideas
Feared Self	Pre Assessment	Not participating in the career I want
Feared Self	Pre Assessment	Working at a Fast Food Restaurant
Hoped-For Self	Post Assessment	The best in his field
Likely Self	Post Assessment	The best in his field
Feared Self	Post Assessment	Forgetting the reason why I wanted to be a doctor



Results: Percent of Next Year Possible Selves Coded by Major Theme

	Hoped For Selves		Adult Feared Selves	
	Pre (n=64)	Post (n=64)	Pre (n=64)	Post (n=64)
Achievement*	62	59	22	24
Personality*	19	25	58	35
Relationships	9	3	8	9
Physical	6	6	6	3
Material	3	6	2	3
Negative	2			
Non-Normative			3	0



Results: STEM- Related Possible Selves

Type of Possible Self	Pre/Post Assessment	Possible Self	Concrete Strategy
Hoped-For Self	Pre Assessment	Heading in the direction towards dental school	I have been shadowing dentist but I would like to get an internship and a mentor under a dentist.
Hoped-For Self	Post Assessment	Accepted into an MD/PhD program	Studying for the MCAT and preparing my applications
Feared Self	Pre Assessment	Failing at classes, pushing back graduation and future further	I think I was burnt out and upset about failed my Org Chem 2 class. I took a break over the summer to regain focus and strategize on my fall and spring classes.
Feared Self	Post Assessment	Lack of internship experience	Applying to internships that happen in the summer of 2021



Discussion

Social	Academic	Career
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Note: Many of these activities fit multiple elements and were listed under the predominate element

Questions?



LOUIS STOKES ALLIANCE FOR
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