

Developing YOUth!

Year Four Results of a Longitudinal Study of STEM Youth Development Program Alumni

C. Aaron Price¹, Alison Mroczkowski¹, Angela Skeeles-Worley², Robert H. Tai²

¹ Museum of Science and Industry, Chicago
² University of Virginia Curry School of Education
 Correspondence: aaron.price@msichicago.org



STEM Career Interest

Control (N=164)						Treatment (N=64)				
	Year 1	Year 2	Year 3	Year 4	Change In Yes	Year 1	Year 2	Year 3	Year 4	Change In Yes
STEM Career Goal	Y-51.9% N-32.1% ?-16.1%	Y-49.7% N-35.7% ?-14.7%	Y-56.0% N-33.3% ?-10.7%	Y-26.7% N-60.0% ?-13.3%	-25.2%	Y-76.3% N-5.1% ?-18.6%	Y-63.8% N-15.5% ?-20.7%	Y-71.4% N-17.1% ?-11.4%	Y-55.6% N-33.3% ?-11.1%	-20.7%

Y = (YES) STEM Career Goal N = (NO) No-STEM Career Goal ? = Unsure, Undecided, or Unclear

College Dropout Rate

Control Group (N=164)						Treatment Group (N=64)				
	Year 1	Year 2	Year 3	Year 4	% change in enrollment	Year 1	Year 2	Year 3	Year 4	% change in enrollment
College Enrollment	1-87.7% 2-8.2% 3-4.0%	1- 78.7% 2-19.7% 3-1.6%	1-73.0% 2-23.0% 1-4.0%	1-53.3% 2-46.7% 3-0%	-34.4%	1-100% 2-0% 3-0%	1-100% 2-0% 3-0%	1-88.6% 2-11.4% 3-0%	1-83.3% 2-11.1% 3-5.6%	-16.7%

1=Enrolled in College part or full time 2=Not enrolled; working part or full time 3=Not enrolled; not working

Developing YOUth! is a project to study the impact of a science museum's youth development program on participants as they enter, progress and graduate from college. Youth typically join the program at the start of high school and continue until they graduate. There are 3 sessions per year, each lasting 10 Saturdays. Program model focuses on leadership, self-confidence, communication skills, college readiness and other positive youth development factors – all within a STEM context.



More Information

Mroczkowski, A., Skeeles-Worley, A., Harris, N. & Price, C.A. (submitted). Youths' perceptions of features of a museum-based, science focused, youth development program that create a supportive community context: A qualitative case study. *Journal of Adolescent Development*.

Price, C. A., Kares, F. K., Segovia, G. & Lloyd, A. B. (2018). Staff Matter: Gender differences in STEM career interest development in adolescent youth. *Applied Developmental Science*, 1-16. doi: 10.1080/10888691.2017.1398090

<https://www.msichicago.org/education/research-and-evaluation/developing-youth/>



Study supported by NSG award DRL-1514593

Methods

- Quasi-experimental design with a treatment (alumni from a science museum adolescent development program; n = 64) and a control (n = 163)
- 3 annual cohorts are being studied (graduates of 2016, 2017 and 2018).
- Cohorts get a survey every summer after high school graduation. These are results from the fourth summer of surveys.
- A subgroup is followed via interviews (n = 29) and ethnographically (n = 10).

Highlights

- These are results from the fourth year of surveys.
- Alumni STEM career interests dropped 20.7% while in college. Control group's interest dropped 25.2%. In both cases, the drop is mostly heading into year 4.
- Overall college dropout rate for alumni was 16.7% while the control group was 34.4%.
- Qualitative data point to the importance of the staff role and applying all eight aspects of the NRC's features of positive youth development.
- Surveys will continue at least until all youth have left college.
- Our hope is to follow them perpetually (i.e. throughout life).

The National Research Council and Institute for Medicine list eight key features for positive youth development settings.

Physical and psychological safety
 Appropriate structure
 Supportive relationships
 Opportunities to belong

Positive social norms
 Support for efficacy and mattering
 Opportunities for skill-building
 Integration of family, school and community efforts
 (NRC, 2002)

We found evidence for all 8 features in our interview data, despite interviews not being designed around those features.

Relationship with Staff

"I wasn't a bad bad child, but just kind of just sneaky and stuff and I uhm a lot of people probably wouldn't have trusted me. I'm not like I don't steal stuff or anything it's just that I do kinda dumb stuff like he'd [staff member] be like, 'why are you doing that?' or something along the lines of that and with him, he completely trusted me fully. And that was one of the first times that someone did that and after that, it changed the way I acted and everything."

Makaya

Structure

"I think the structure is really good as far as you do Science Minors and then In-Betweeners and then Achievers. And that setup is really good [...] I think it's a good transition. When I was in Minors, I was like the achievers look like they're having so much fun. But I think jumping into Achievers first would be too much. And so Science Minors is a good step before, it kind of slowly integrates you into that interaction with people, slowly integrates you into the process of communication of science."

Brandy

Positive Peer Culture

"It's the culture of the students. I'm still really good friends with a lot of them that graduated in the past [...] They are inspiring because they go after what they want. Karani is one of those people that will not stop until he gets what he wants. He sees himself as somebody that is gonna change the world, and that—and I've never seen that in somebody before, especially seeing it in someone my age... that was the culture of everyone in this program. I was going to have to change... from being scared to going after what I want."

Anjelica

Belonging

"And it's just, it's really, really cool to be able to come to a place and know that [...] I belong there. That like, I'm supposed to be there, and that I'm supposed to be doing something there, and that thing is learning, and then teaching [...] I think the connection that the museum has with Chicago and with the world just because of how big it is and how known it is, I think it's really cool. I enjoy it a lot."

Lena

Meaningful Opportunities & Experiences

"Volunteering at the Museum of Science and Industry [...] you know, when a kid 'gets' something and they feel more inspired to be a future scientist, or doctor, or engineer, or poet or anything. Like I feel like I made an impact on somebody's life [...] I think that makes me feel really good about myself."

Andy