



University of California
San Francisco



SCHOLARS
Gift It Forward Study

Examining the Power of Community to Increase Persistence in Science

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Funded by



Given at 2nd Annual UCB Conference on Broadening Participation

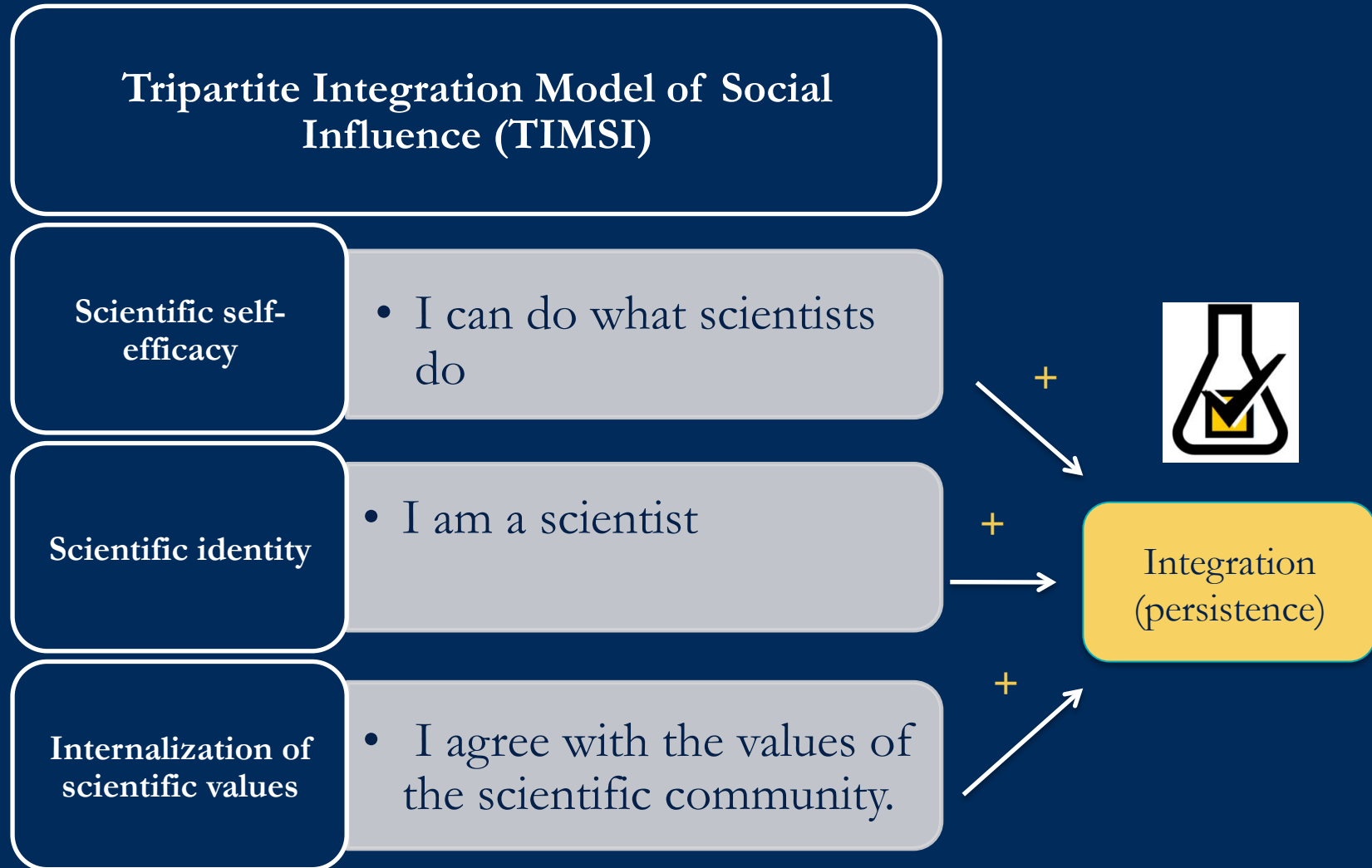


...in diversity there is beauty
and there is strength.

Maya Angelou

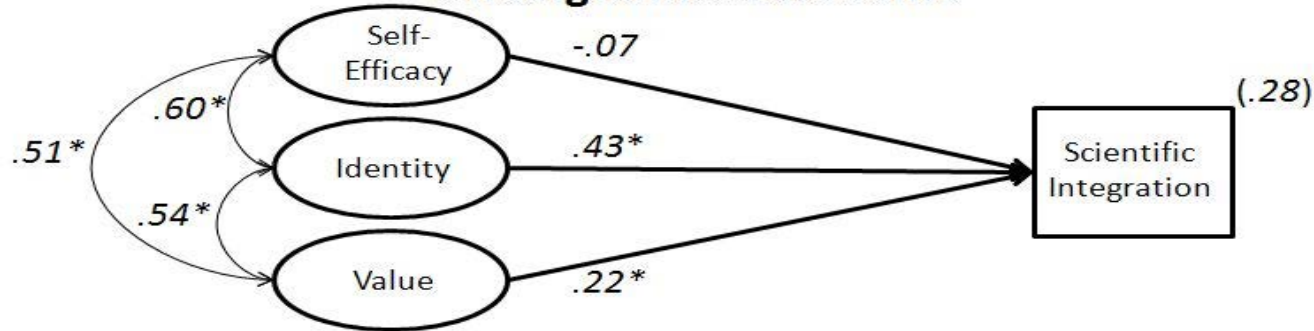
Building on Kelman's social influence theory....

Who integrates into the scientific community?

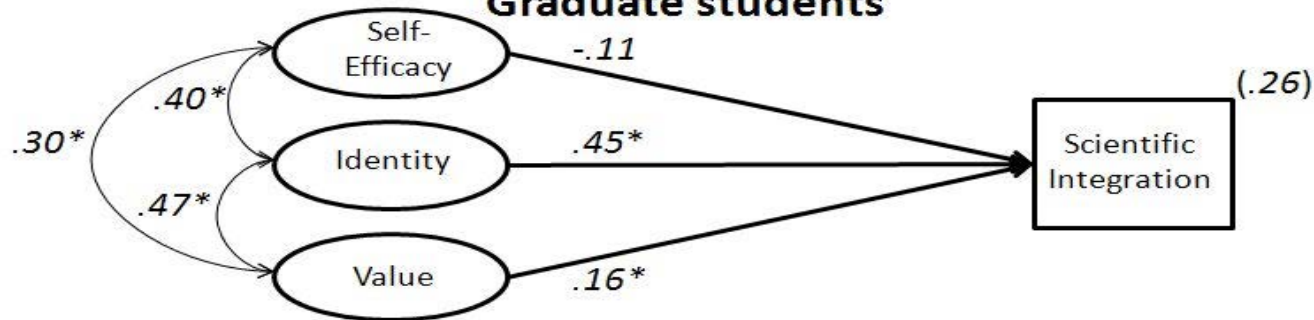


Tripartite Integration Model of Social Influence (TIMSI)

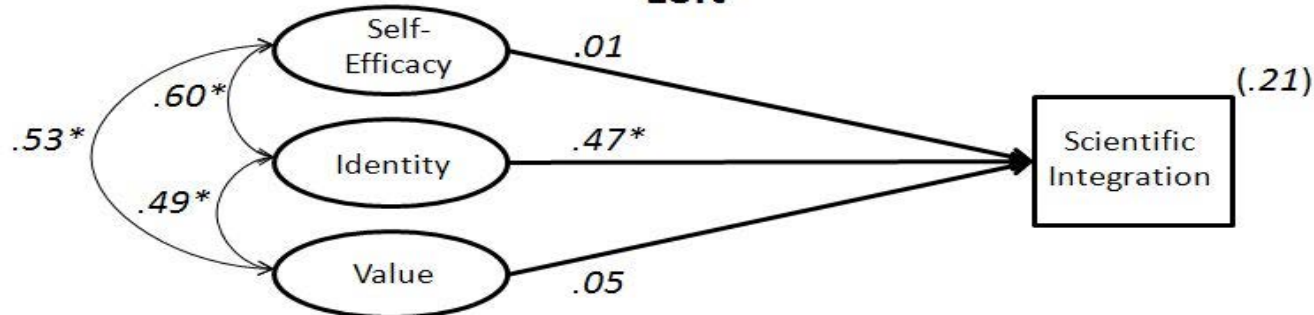
Undergraduate students



Graduate students



Left



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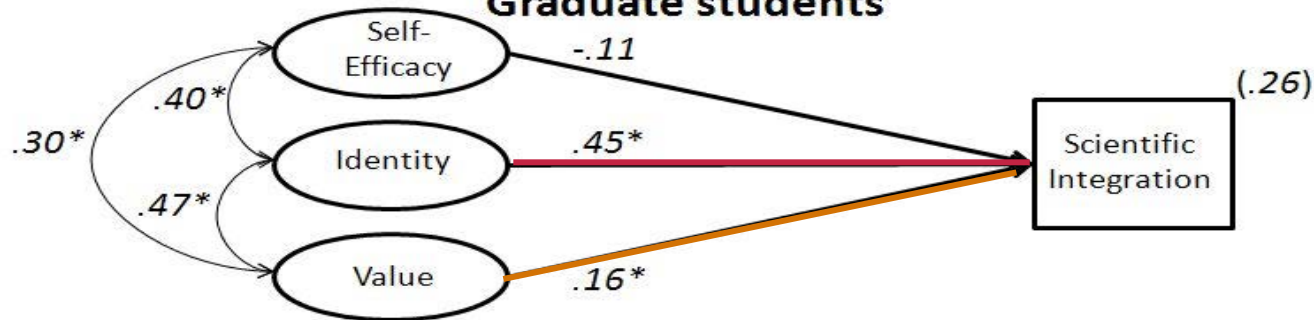


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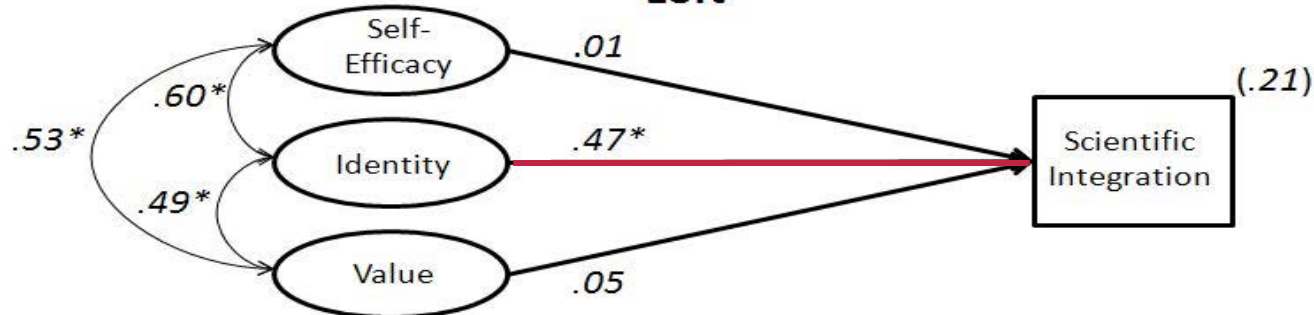
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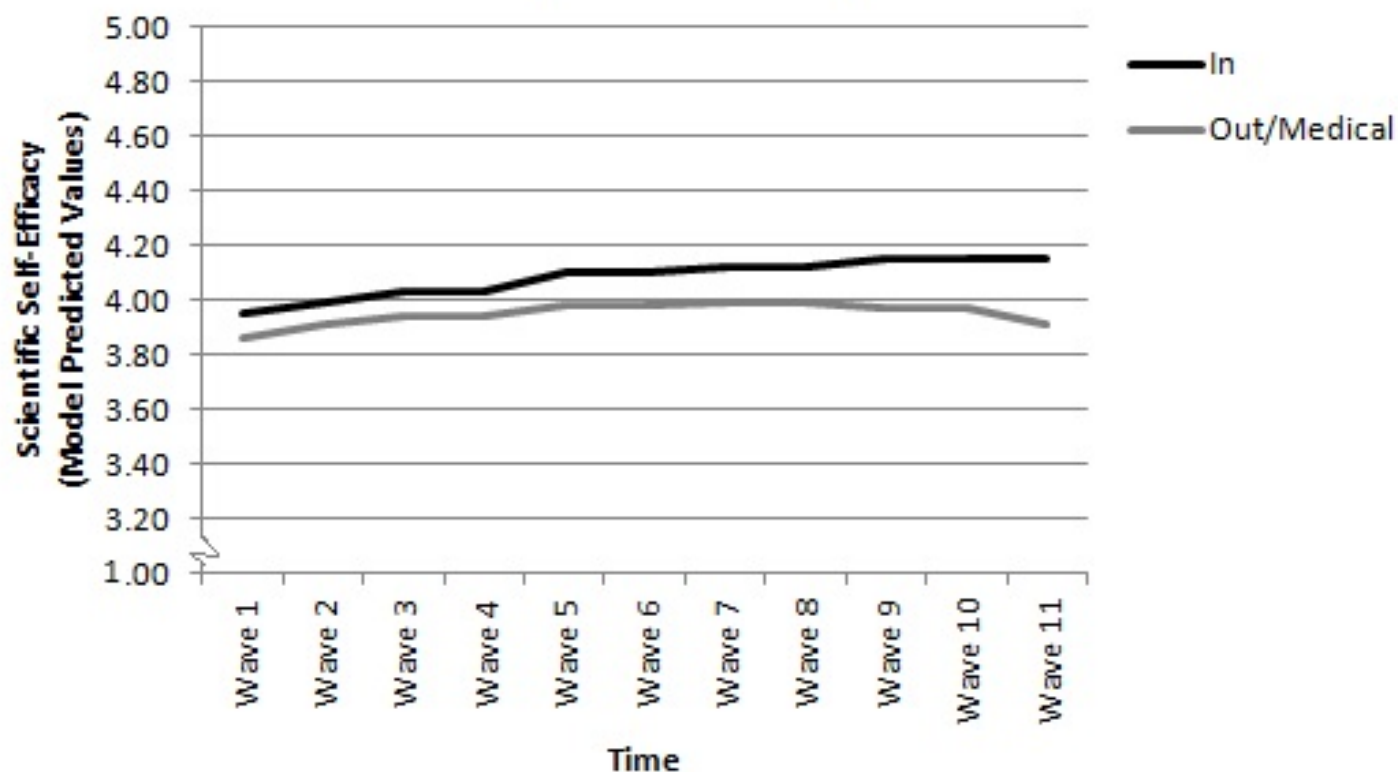


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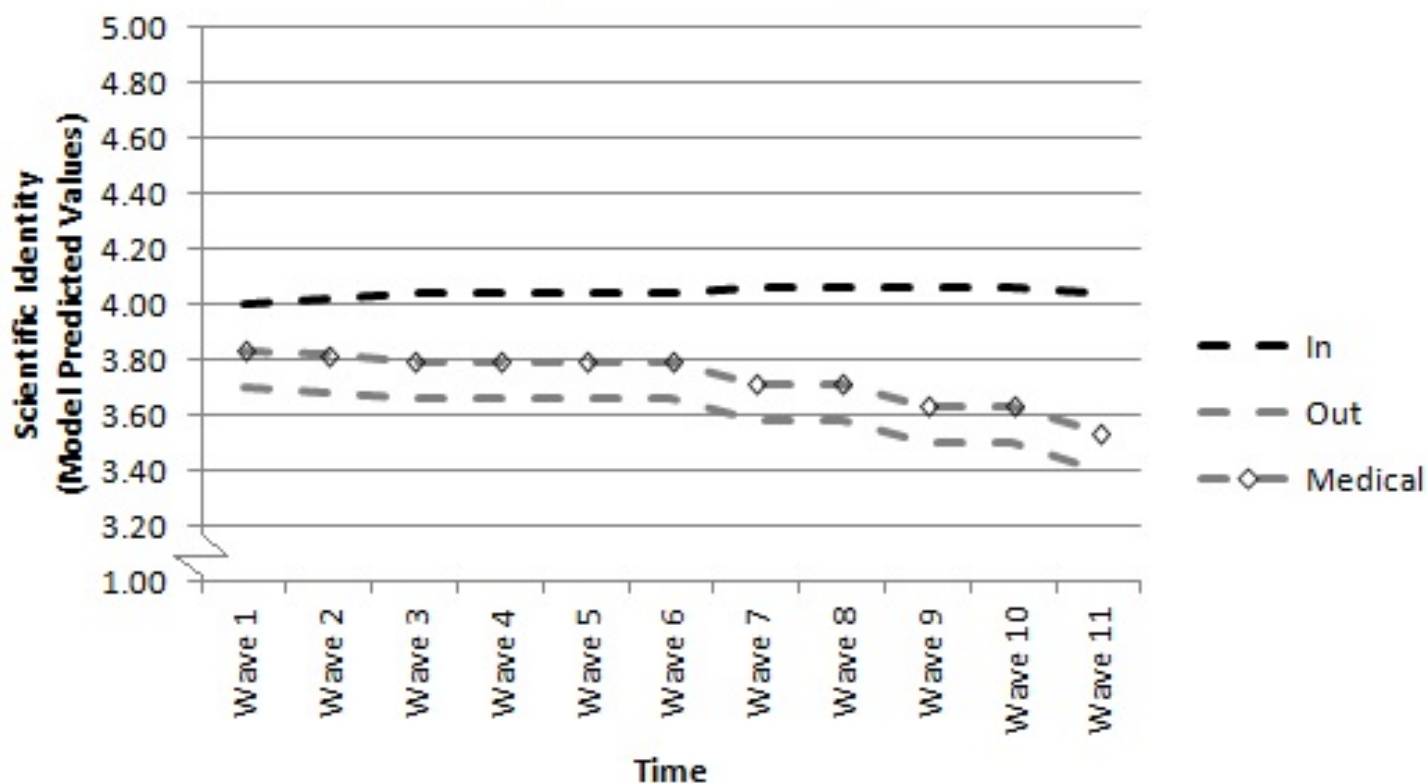


Scientific Self-Efficacy (Over Time)



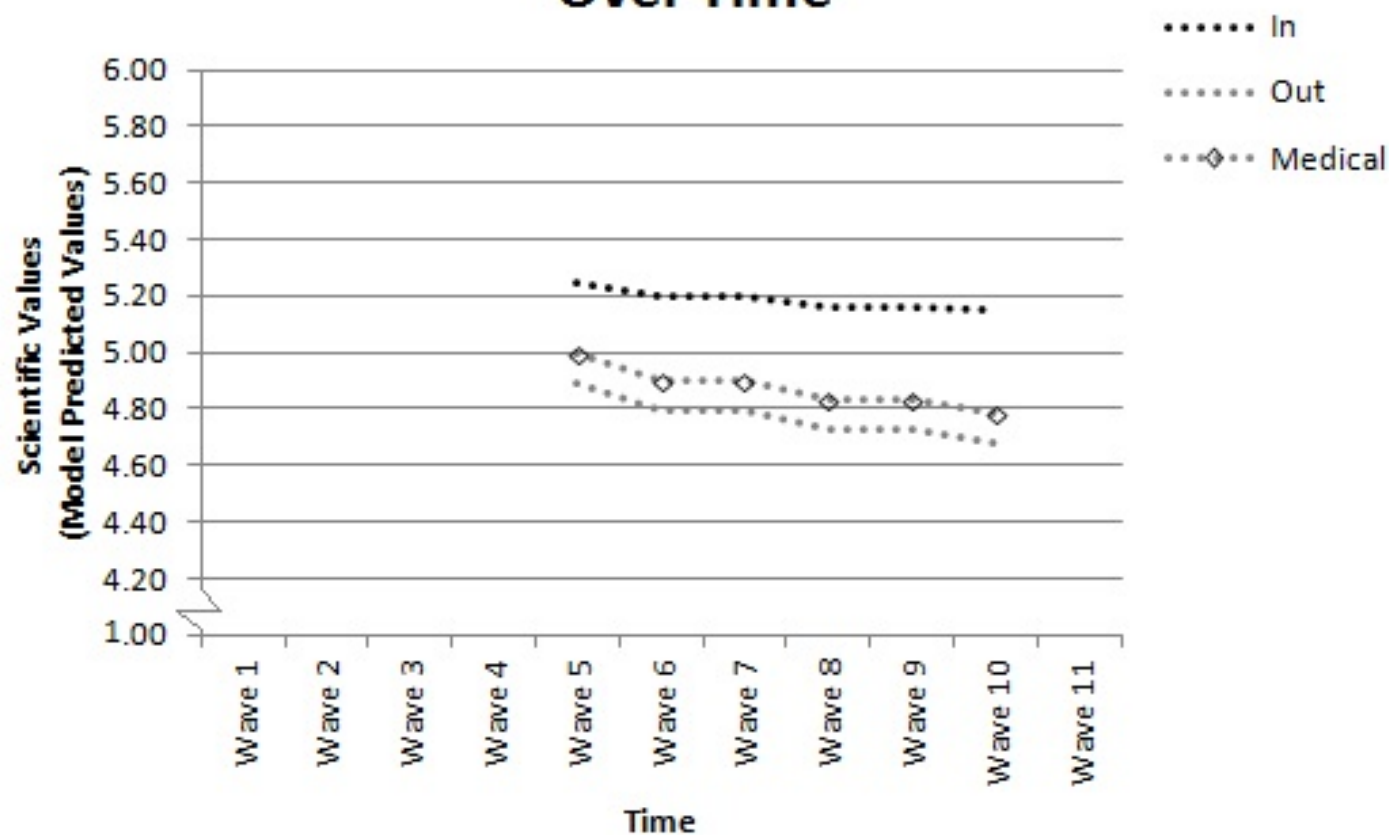


Scientific Identity (Over Time)





Value the Objectives of Science Over Time



Biology Scholars Program (BSP) UC Berkeley



- 23 year program
- Consistent “beating the odds” results
- Provides academic advising, social support, research opportunities, mentorship, seminars and workshops, community.
- National recognition for its success



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- 29% Male
- 71% Female
- 49.5 % Hispanic
- 15 % African America
- 10.6% White European
- 2.2% Native American/Alaskan
- 22.7% Other



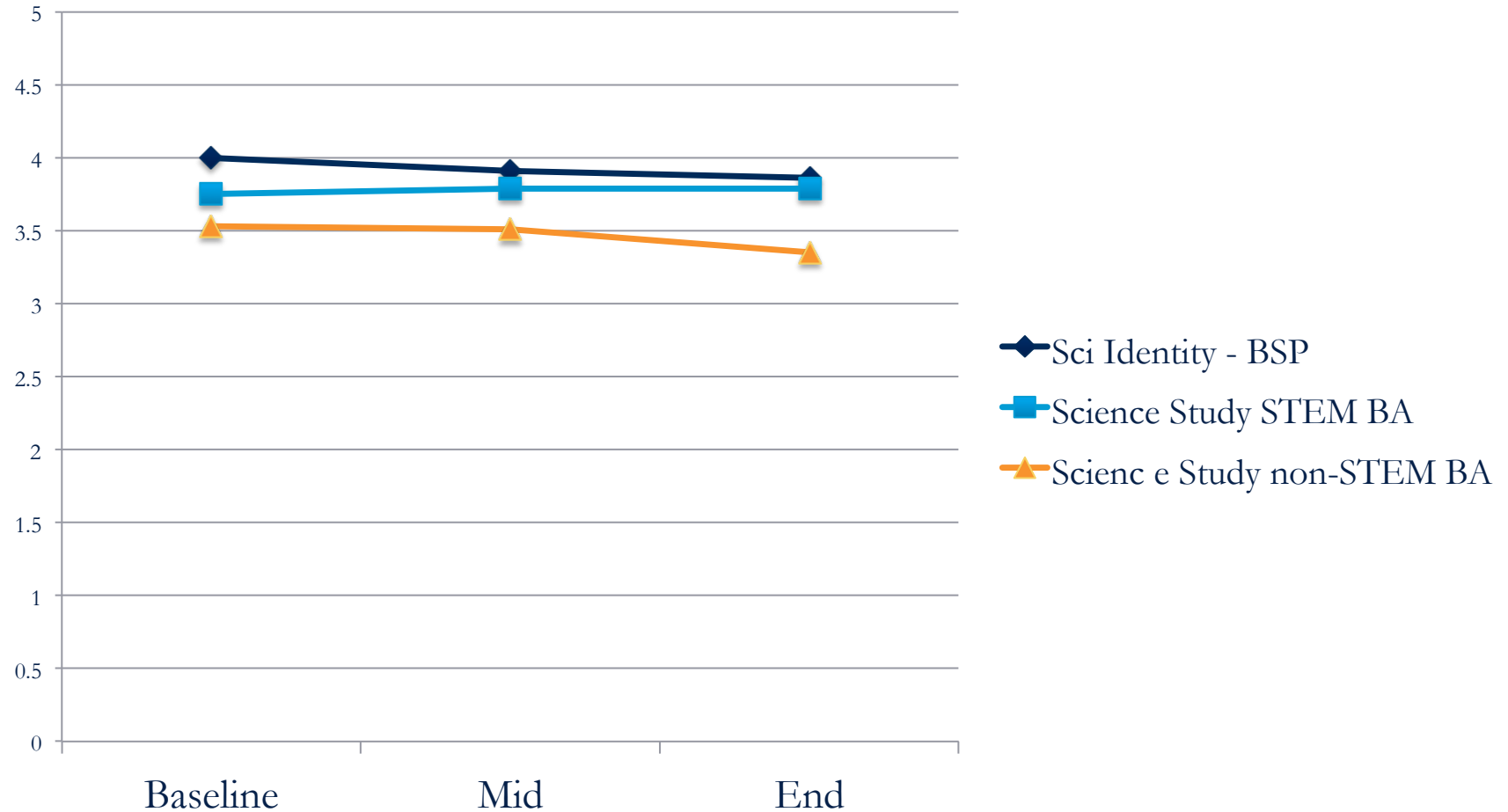
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Two Year Response Rates

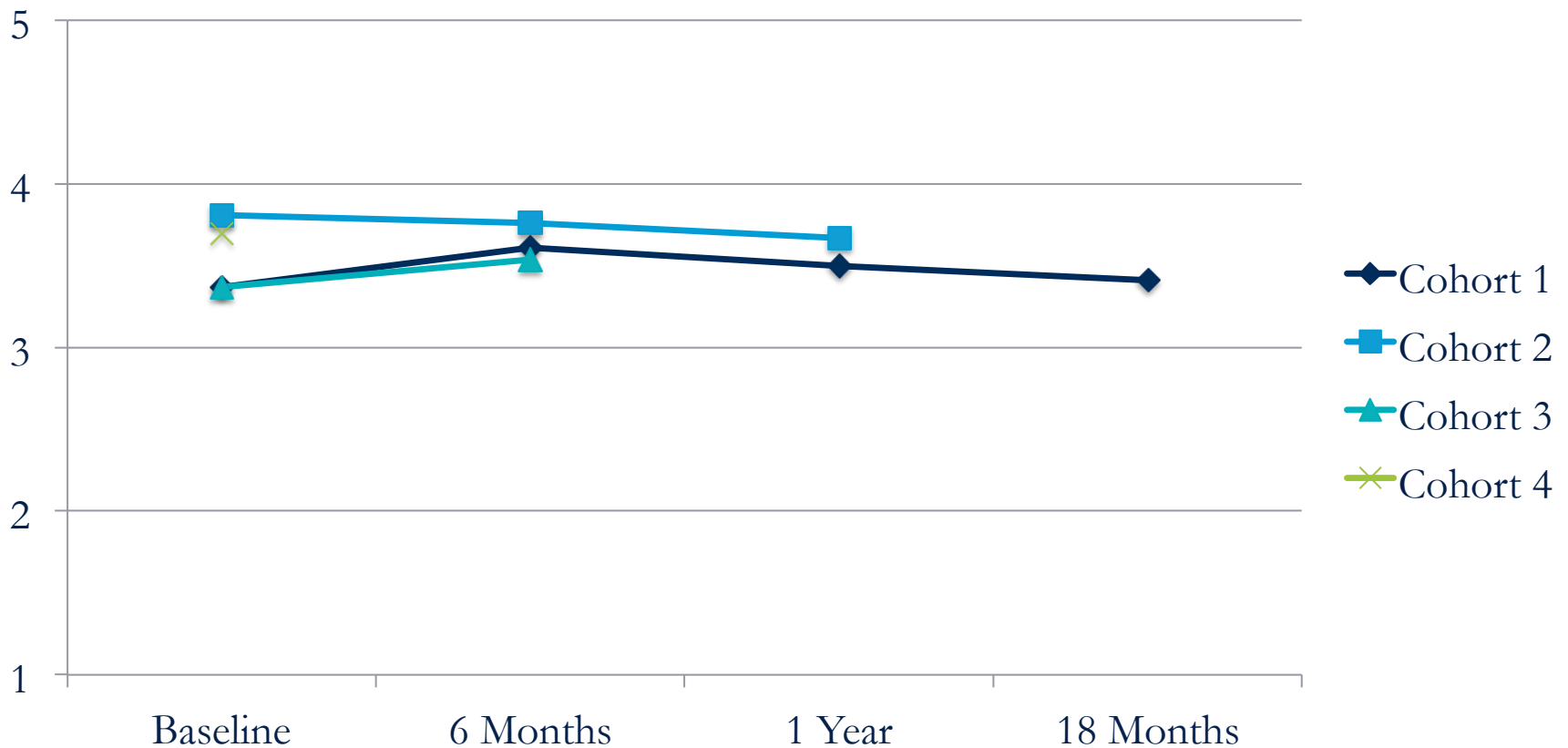
	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016
Cohort 1 (N= 69)	100%	86%	90%	80%	67%
Cohort 2 (N=36)		92%	86%	92%	78%
Cohort 3 (N=59)			100%	86%	83%
Cohort 4 (N=53)				87%	85%
Cohort 5 (N=86)					93%

Integration into Science Community (compared with *TheScienceStudy*)

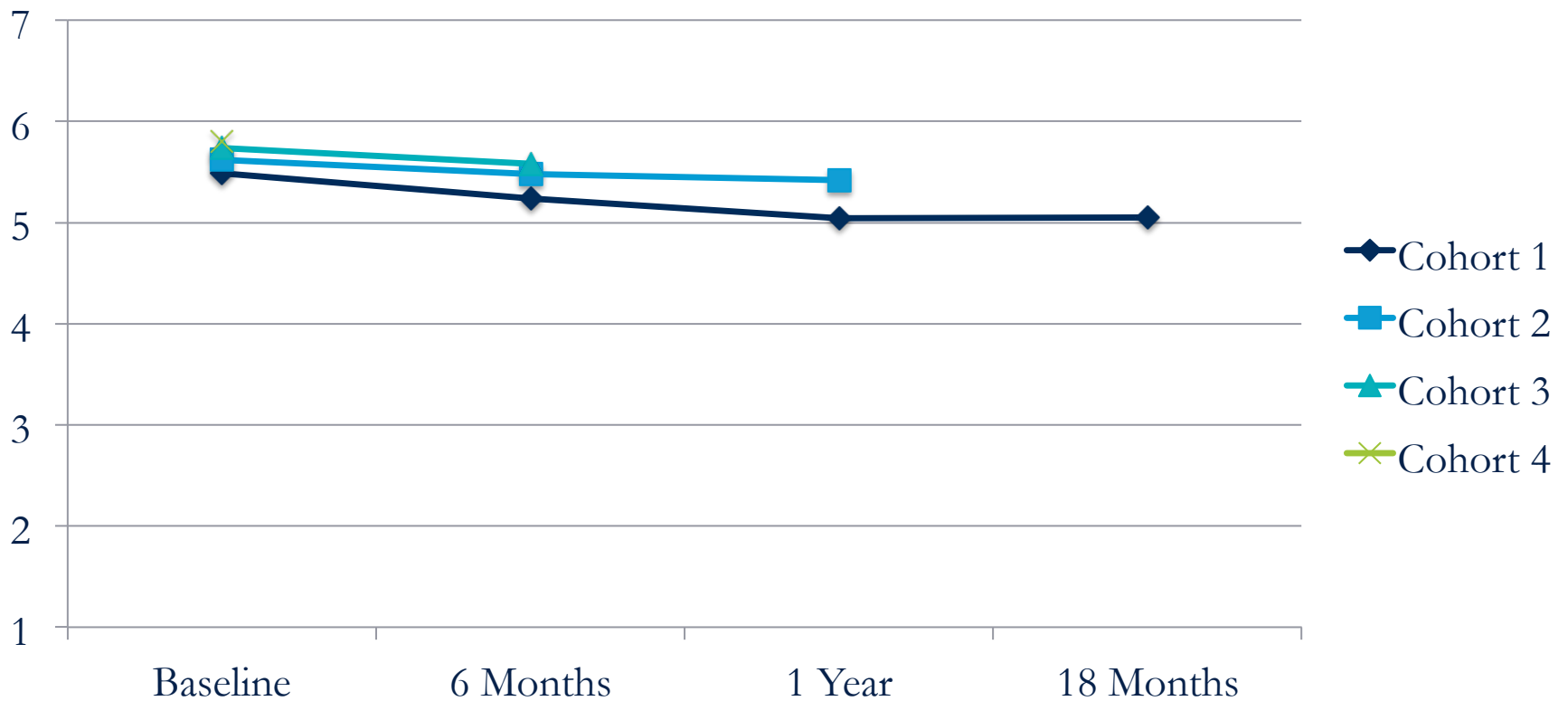




Scientific Self-Efficacy



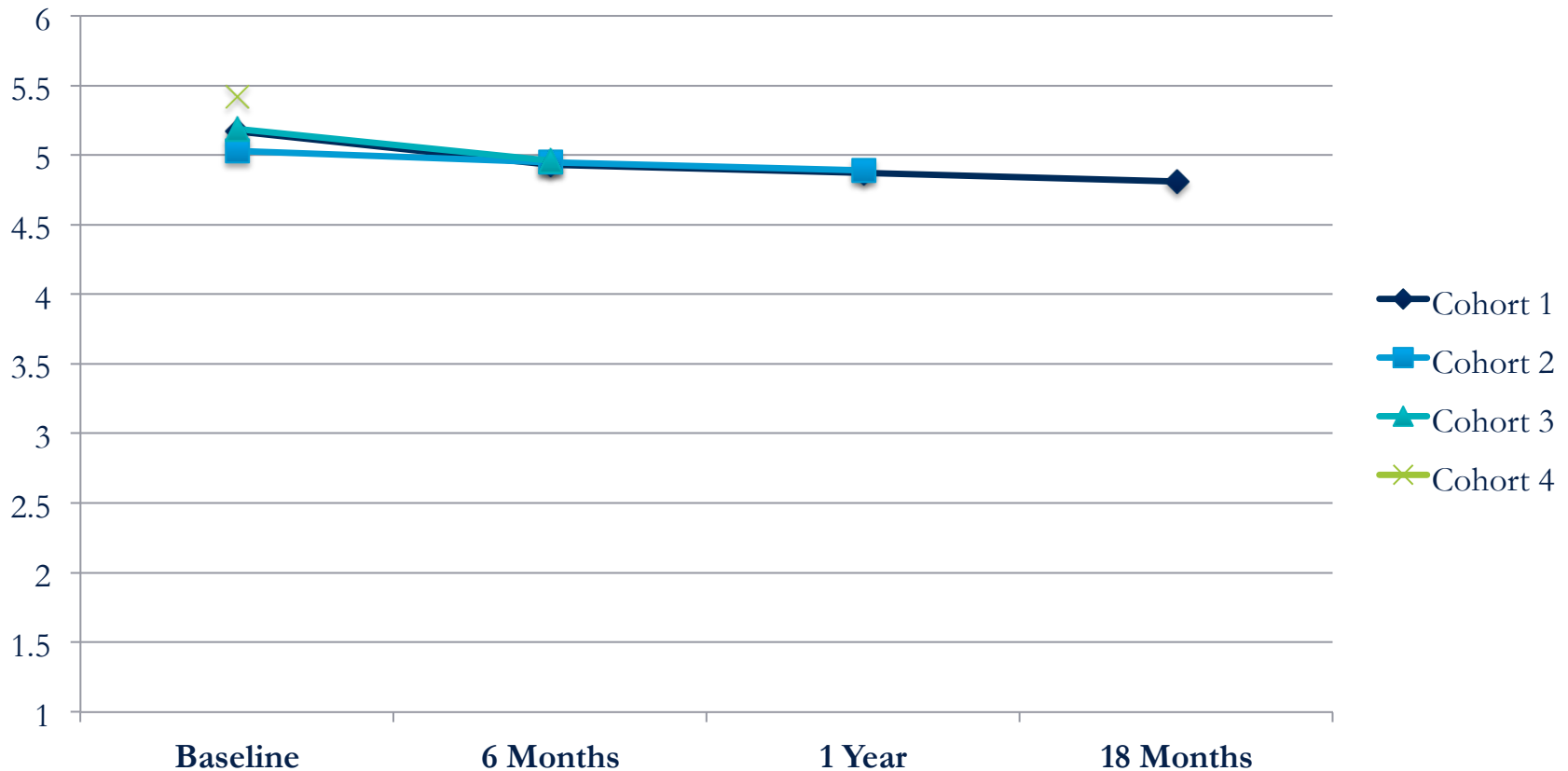
No significant declines for BSP students.



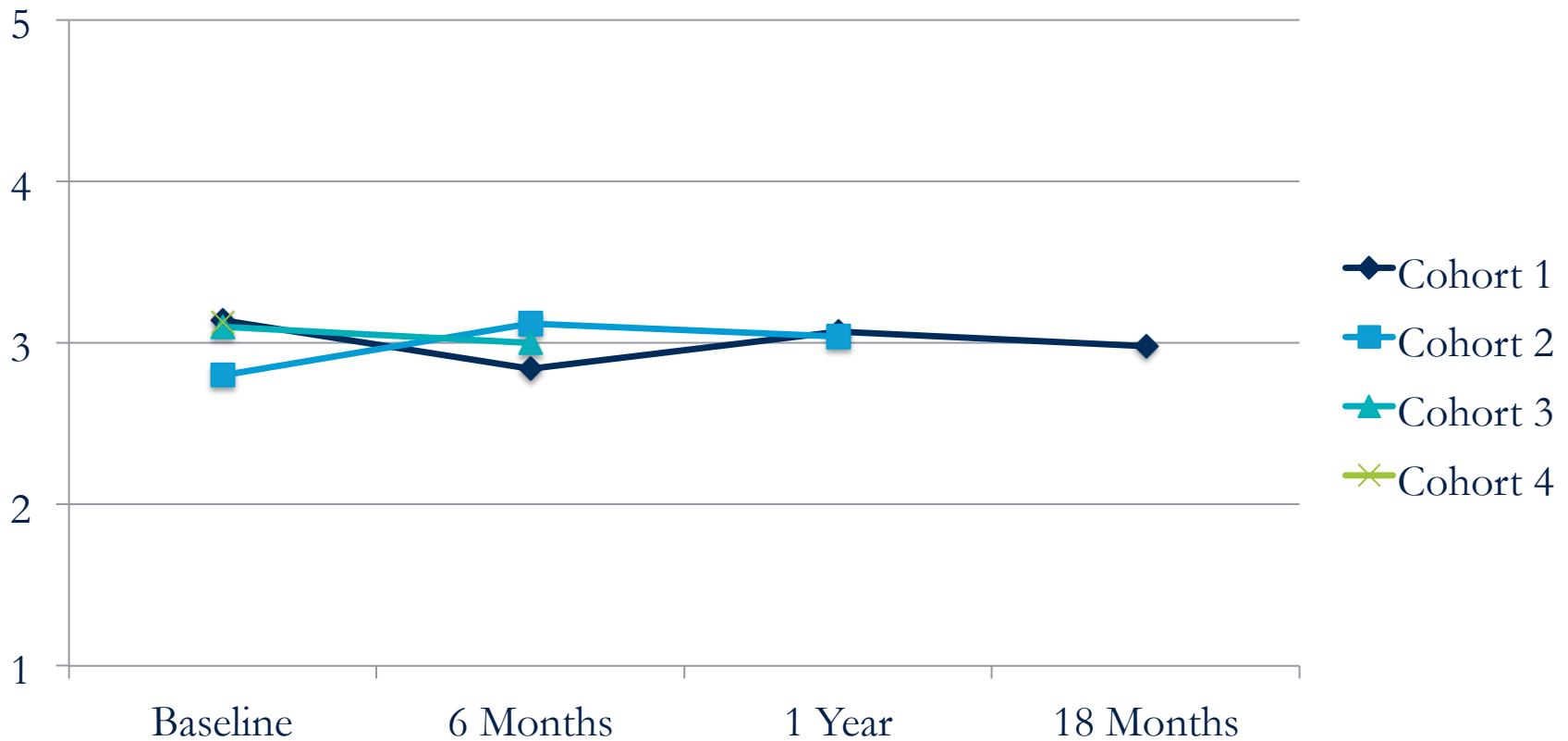
Only significant different is in Cohort 1 from Baseline to 1 Year.



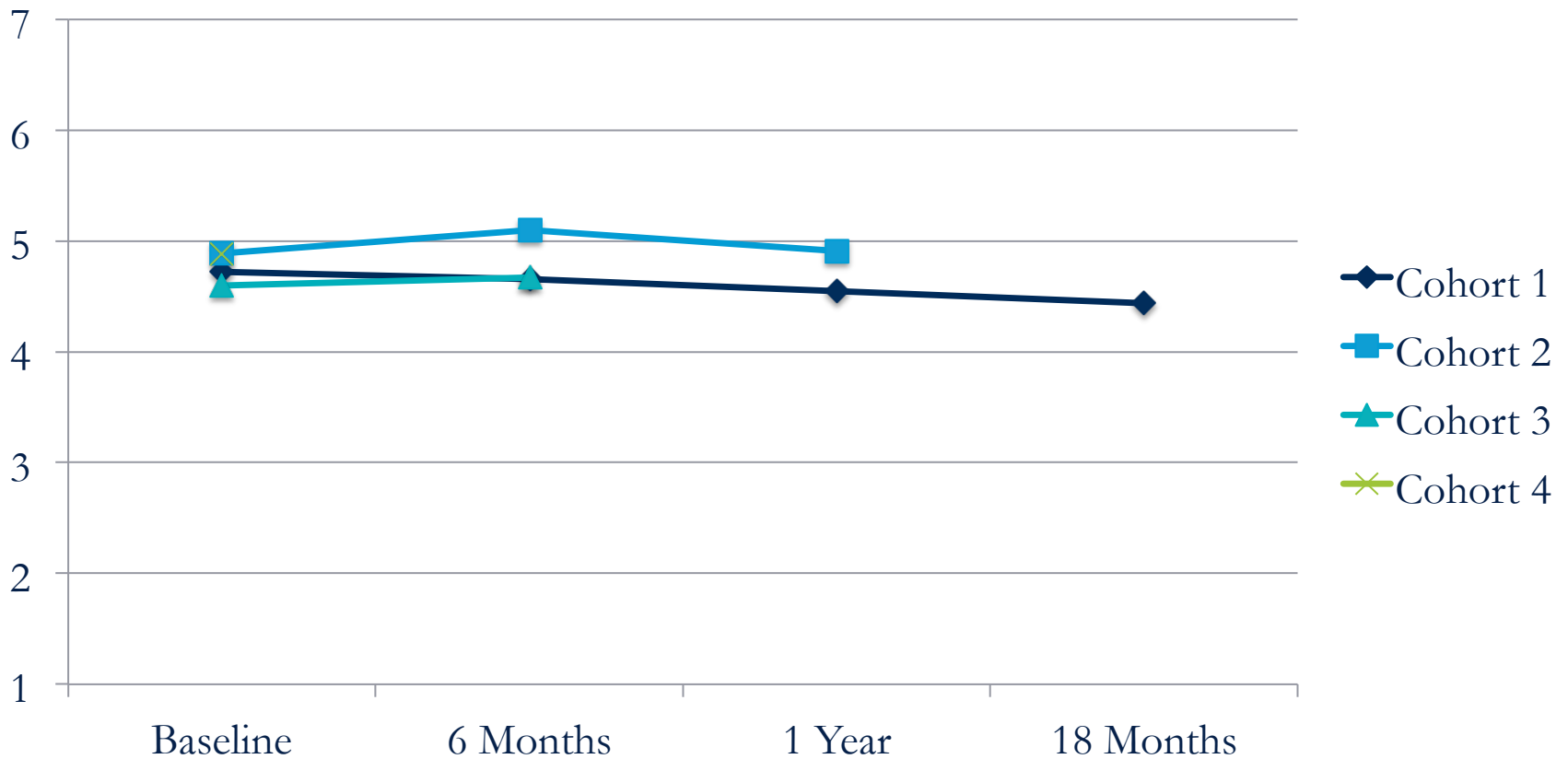
Scientific Community Values



**No significant declines for BSP students.*



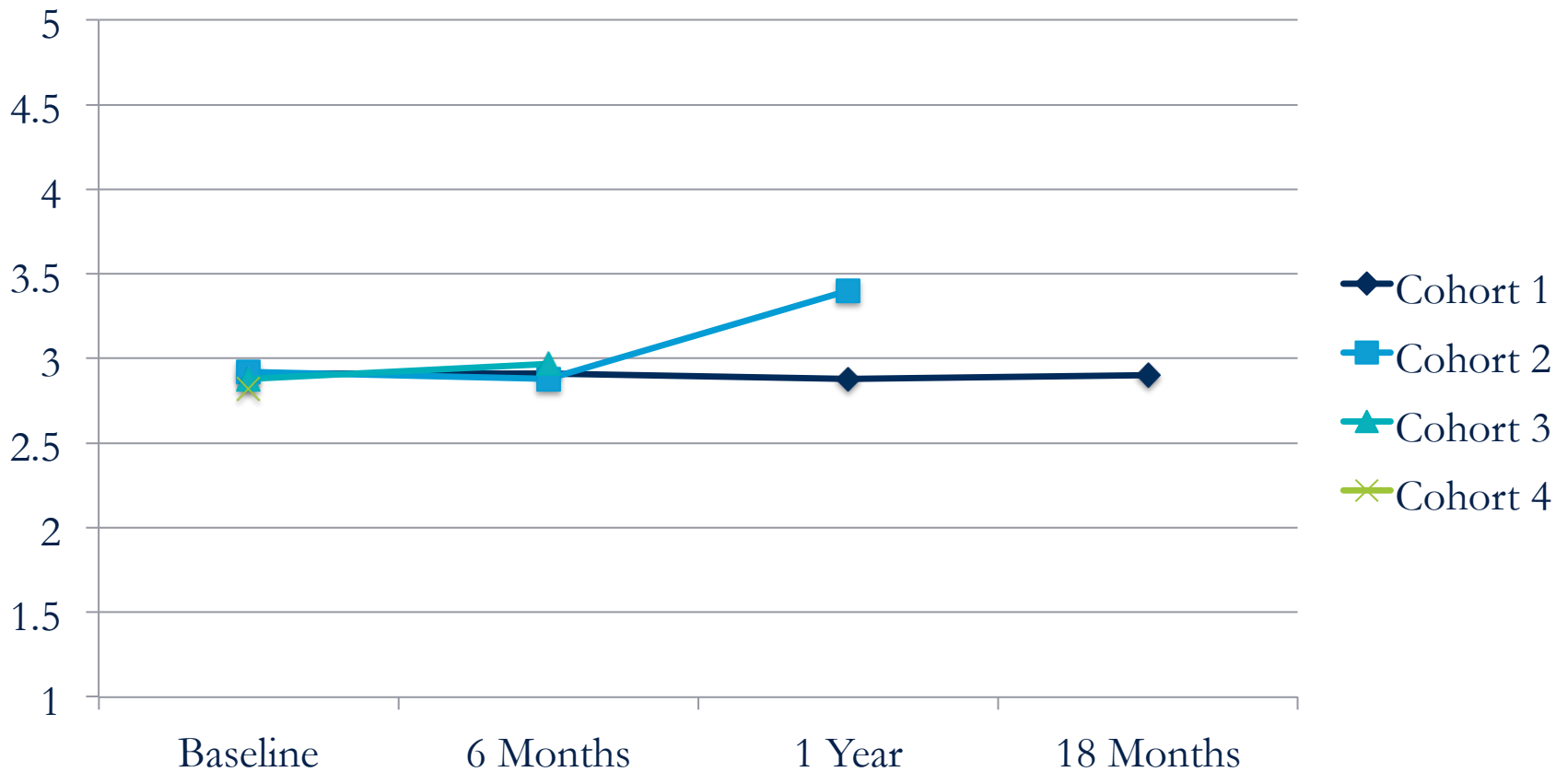
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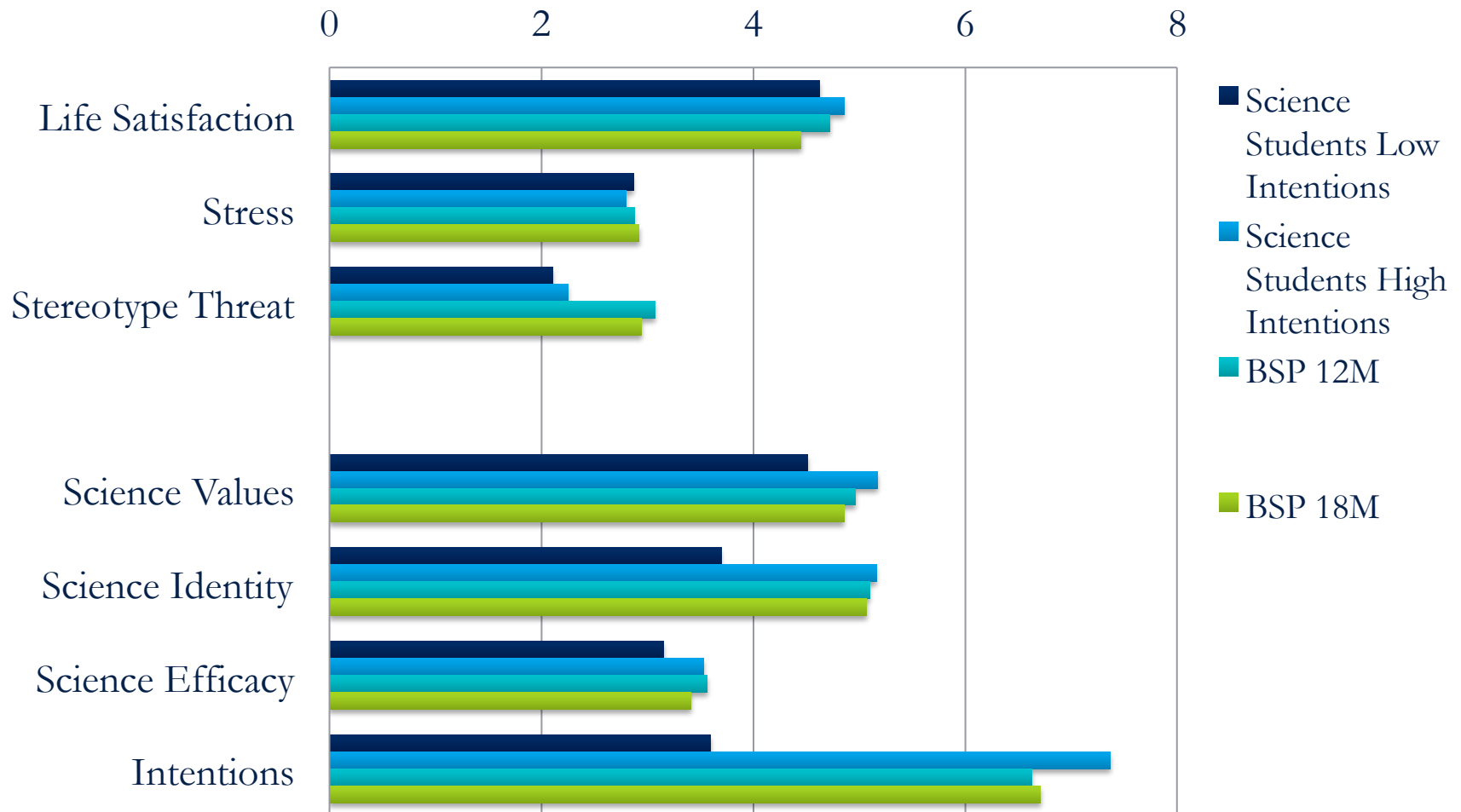
Biology Scholars: *Stress*



Cohort 2: Stress significantly increased from Baseline to 6M and 12M

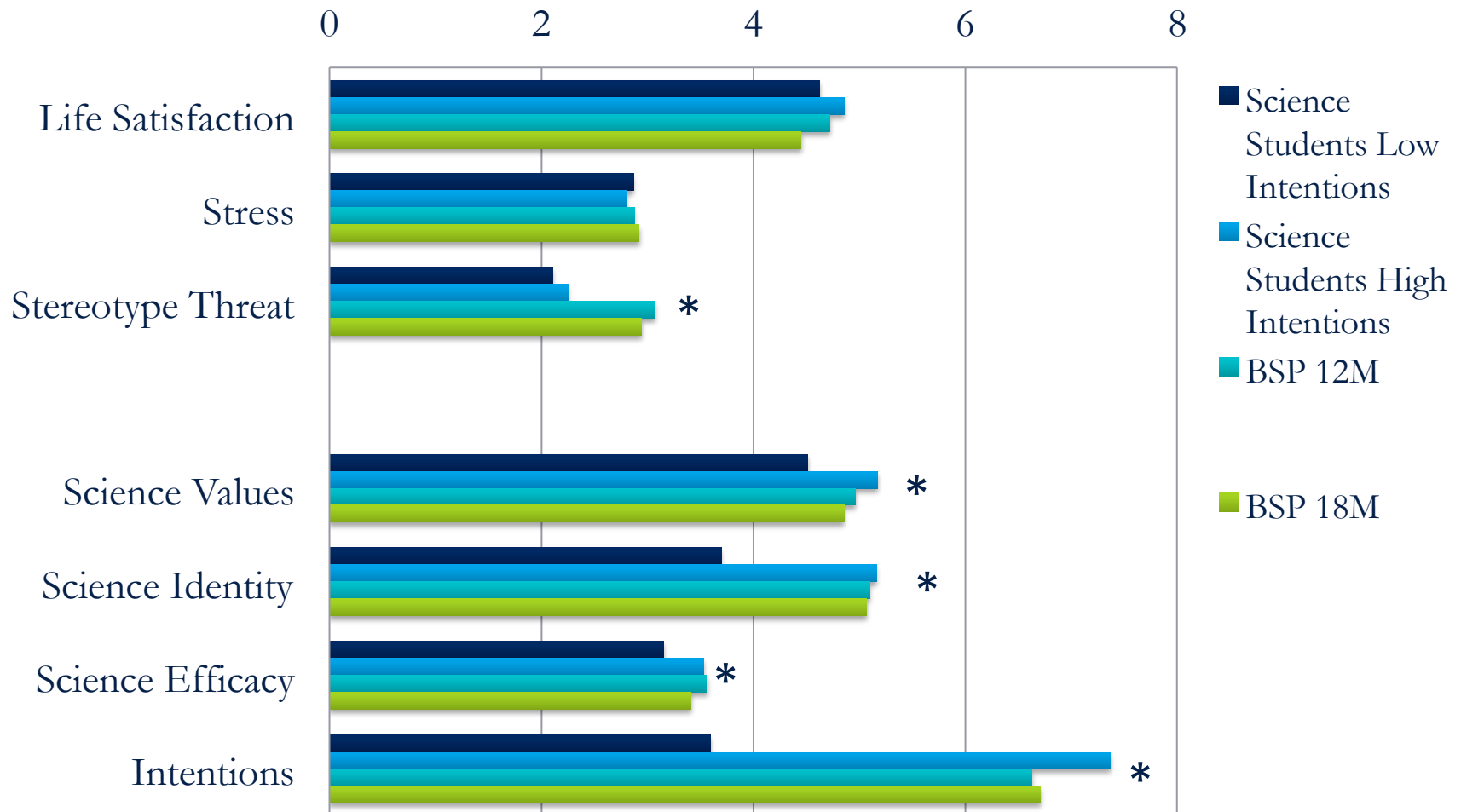
Psychosocial and Outcome Variable:

BSP compared with UC Berkeley Biology/ Chemistry Science Students

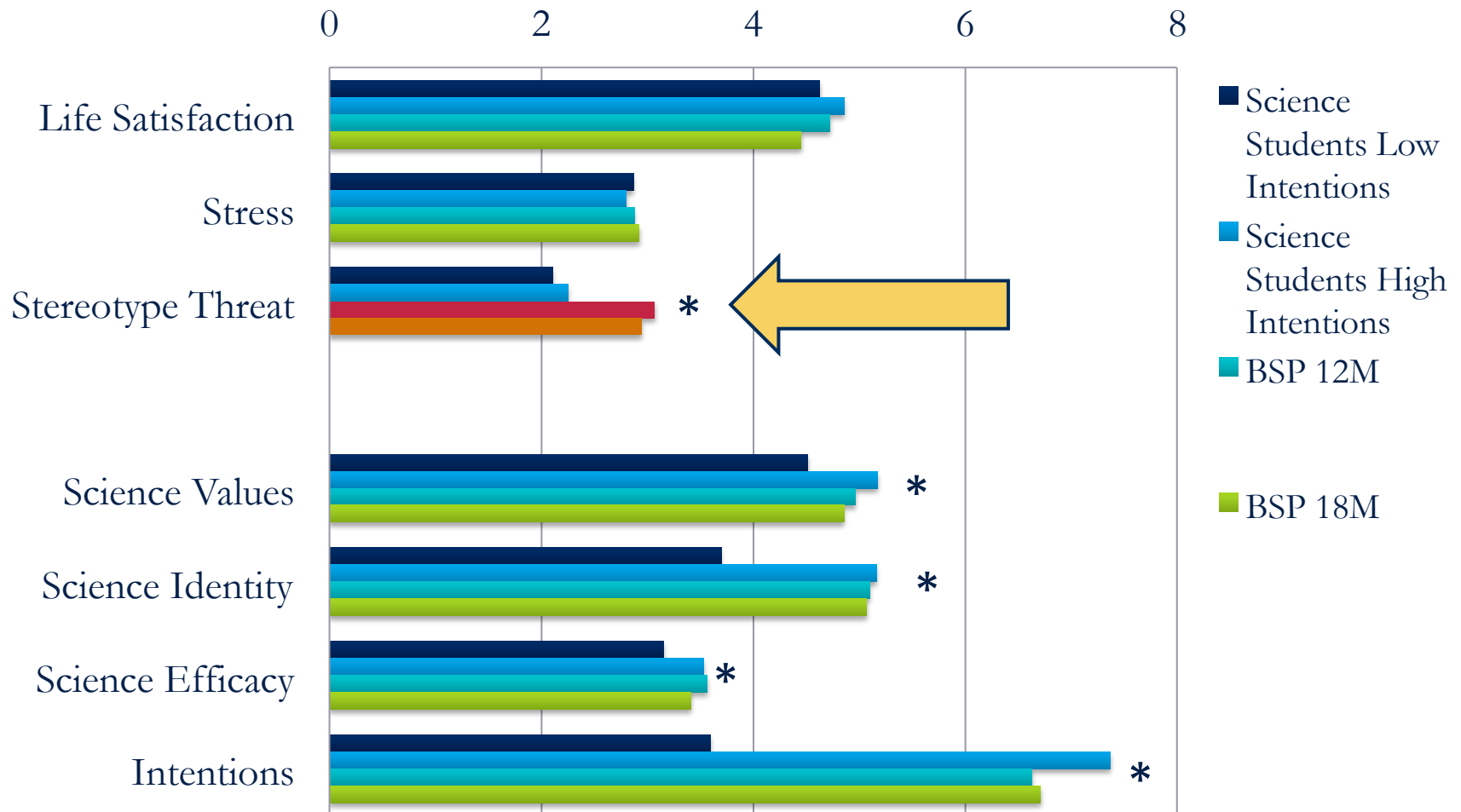


Psychosocial and Outcome Variable:

BSP compared with UC Berkeley Biology/Chemistry Science Students



Psychosocial and Outcome Variable: *BSP compared with UC Berkeley Biology/ Chemistry Science Students*



Example of Stereotype Threat Questions

How often do you feel that because of your ethnicity...

- Some people believe that you have lower ability than other students.
- People assume that you are not good enough, even if you are similar to other students.
- If you do poorly on a test, people act like that is normal.
- Your intelligence is not fairly evaluated.





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BSP 2016 Participation & Integration

Spring 2016

	Science Efficacy	Science Identity	Science Values
Tutoring	-.04	-.04	.16
BSP Participation	.28*	.14	.07
Events Attended	.32*	.29*	.13
Appointments Attended	.35*	.23	-.11
Total Events Attended	.41**	.28*	.20

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).



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BSP 2015 Participation and Integration

Spring 2015	Science Efficacy	Science Identity	Science Values
BSP Participation	.21	.12	.13
Events Attended	.27*	.29*	.01
Appointments Attended	.40**	.26	-.08
Total Events Attended	.40**	.28*	.19

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).



Focus Group

- Demographics: 7 were female and 2 were male. Majority underrepresented groups (mostly Hispanic/Latino). Two were of Asian descent. One person self-identified as part of the LGBTQ community.
- Academic placement: 7 were in Integrative Biology (IB), 1 in Environmental Studies, and 1 in Bioengineering. 7 were in their 3rd or 4th year, 1 in the 2nd year and 1 in graduate school.
- Professional Intentions: All but one student had intentions to attend graduate school in a STEM field (or was attending already).

Key Finding: Off Campus Community Matters

- Students overwhelmingly describe developing efficacy, identity and value of their professional knowledge by
 - leaving the academic institution
 - sharing what they know with others in the community (in local schools, non-profits, etc.)

Real-world application of knowledge is found to be particularly important for people from non-majority groups and this group's comments reflected this quite clearly.

Key Finding: Community Matters on Campus

- Students gave ample examples of how their peers or older students (including BSP staff who were recently students) help support them, mentor and advise them.
- They had far less examples of how the university was providing this support through “official” mentor and advisor relationships.
- The caveat to this trend was when students describe being in smaller groups (with BSP, clubs, fraternities, small majors, or mentor labs).

Key Finding: Collectivist in an Individualistic Context

This diverse group of students reflected the challenges and avenues for success that occur for people who operate in a highly individualistic environment, but who flourish in a more collectivistic environment.

- The grading system, depersonalized advising and teaching, and stories of feeling alone were by far the most emotionally charged topics for this group.
- Comforting were the times when they felt connected to others including faculty, staff and other students.

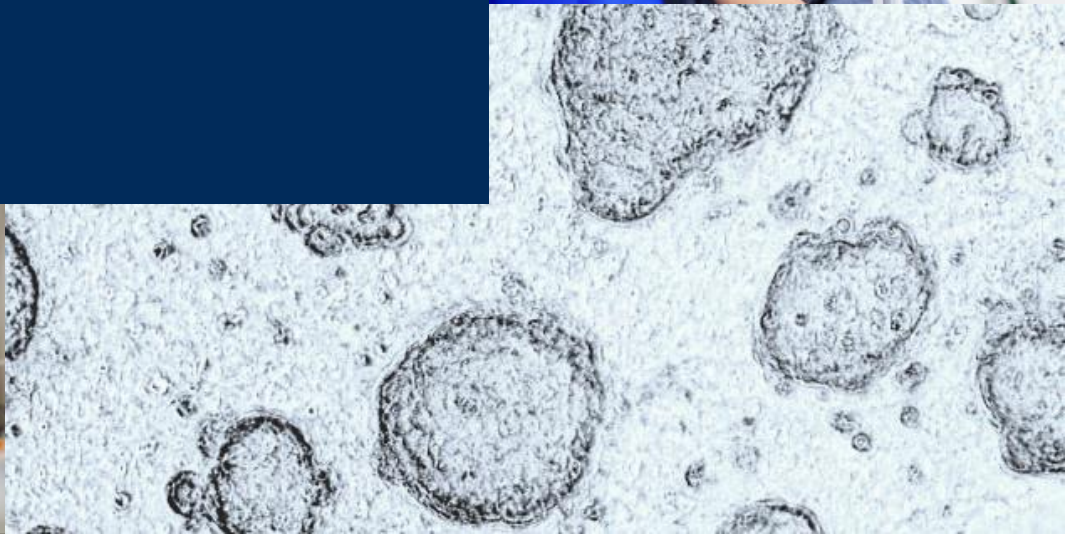
In Summary....

- Effective Programs help sustain student integration into professional community
- Historically underrepresented students benefit from connecting work to community and feeling community in their academic context

Effective mentors and advisors “treat students as family, ask me about my life and emotions, and school life. They never ask me for transcripts when giving me advice.”



THANK YOU
UCSF



Example of Science Efficacy Questions

Extent to which you are confident you can successfully complete the following tasks...

- Use scientific language and terminology.
- Figure out/analyze what data/observations mean.
- Use scientific literature and/or reports to guide research.
- Use technical science skills (use of tools, instruments, and/or techniques).
- Report research results in a written paper.



Example of Science Identity Questions

Level of agreement with each statement...

- In general, being a scientist is an important part of my self-image.
- I am a scientist.
- I have a strong sense of belonging to the community of scientists.
- Being a scientist is an important reflection of who I am.



Example of Science Value Questions

How much is this person like you?



- A person who thinks it is valuable to conduct research that builds the world's scientific knowledge.
- A person who believes writing up research results to be published in a leading scientific journal is a good use of time.
- A person who feels discovering something new in the sciences is thrilling.
- A person who thinks it is important work to identify truths using the scientific method.
- A person who thinks discussing new theories and ideas between scientists is important.