

The relationship
between a sense of
belonging and well-
being in men and
women undergraduate
physics students

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The social cure

‘The social cure’ is the idea that those that have stronger social connections and relationships have higher levels of well-being and general health (e.g., Jetten, Haslam, & Alexander, 2012).



Belonging in Education

- Could this be applied to education?
- Could the shared experience of learning and strong bonds with other students result in more support and more well-being?

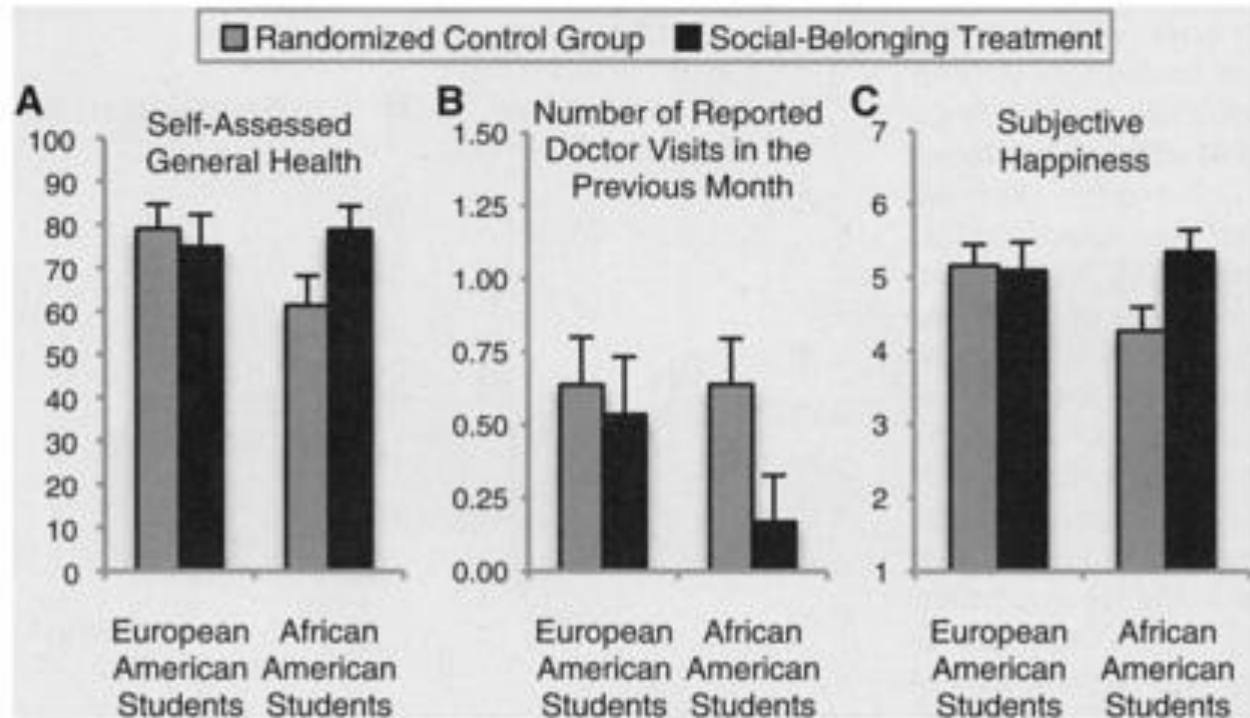


Fig. 4. Self-reported health and happiness 3 years postintervention. Error bars represent ± 1 SE. Data were combined across cohorts where measures were completed by both cohorts. (A) Self-assessed general health (cohort 2). (B) Reported doctor visits in the previous month (cohorts 1 and 2). (C) Subjective happiness (cohort 2). The y axes in (A) and (C) represent the full range of each scale. The y axis in (B) represents about 2.00 standard deviations. Sample sizes in cohort 2 only are $N_{\text{European Americans}} = 20$ and $N_{\text{African Americans}} = 23$. Sample sizes in cohorts 1 and 2 are $N_{\text{European Americans}} = 31$ and $N_{\text{African Americans}} = 38$.



Self-perceptions of women in undergraduate physics

- Recent research suggests that women report a lesser sense of belonging than men (Seyranian et al., 2018).
 - Similarly, women report less self-efficacy (their confidence in their ability to complete physics tasks) than men (Nissen & Shemwell, 2016).
 - Women also do not identify with physics as a discipline to the same extent as men (Hazari, Sonnert, Sadler, & Shanahan, 2010)
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Hypotheses

That women will have a lower sense of belonging and well-being than men.

That the relationship between belonging and well-being will be stronger for men than for women in physics.

Study: Sample and survey

- The sample consisted of 310 physics students (105 women, 205 men).
- The physics students were from all year levels, from introductory to the integrated Masters level.
- The survey was given to them prior to their lecture or workshop.
- The survey measured their sense of belonging, identification with physics as a discipline, their self-efficacy, and their sense of well-being.

Results: Means, Standard deviations, and t-tests.

	M_{Men}	SD_{Men}	M_{Women}	SD_{Women}	t-value (df=308)	p-value
Self-efficacy	3.99	.61	3.80	.59	2.60	.010
ID	5.26	1.42	4.93	1.36	2.00	.046
Belonging	5.25	1.46	5.27	1.52	-.087	.931
Wellbeing	2.86	.46	2.88	.41	-.29	.769

Please note that these variables are not measured on a standardized scale, as such this scale should be used to compare the differences between men and women, rather than between variables.

Results: Regressions

Men:

Physics ID -> Well-being: $\beta = -.111$, $p = .146$.

Self-efficacy -> Well-being: $\beta = .325$, $p < .001$.

Belonging -> Well-being: $\beta = .302$, $p < .001$.

Women:

Physics ID -> Well-being: $\beta = .010$, $p = .930$.

Self-efficacy -> Well-being: $\beta = .424$, $p < .001$.


Belonging -> Well-being: $\beta = .043$, $p = .718$.

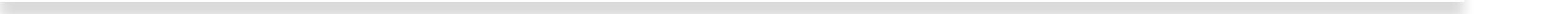
Why is this?

- Could it be that women don't identify with physics, as such it doesn't matter to them if they belong?
- Could it be that women who pick physics do not derive that their well-being from a sense of belonging?
- Could it be that women do not feel as though their performance is more important to their sense of well-being than their feeling of belonging?



Future question

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- Is it just the case for women in undergraduate physics or for all under-represented groups in education?
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Summary

- Contrary to our hypotheses, women in undergraduate physics reported similar levels of belonging and well-being as men.
- Self-efficacy predicts well-being for both men and women.
- Belonging predicts well-being for men, but not for women.

Thank You

- If you have any questions, please contact me at:
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References:

Jetten, J., Haslam, C., & Alexander, S. H. (Eds.). (2012). *The social cure: Identity, health and well-being*. Psychology press.

Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447-1451.