



## MOTIVATIONAL INTERVENTIONS

### A pedagogical strategy “that increases students’ motivation to learn or that removes barriers to learning”

(Yaeger & Walton, 2011).

*Very helpful overviews include Aguilar, Walton & Wieman (2014), Yaeger & Walton (2011) and Tibbetts, Harackiewicz, Priniski, & Canning (2016)*

Process	Challenge	Theory behind how motivational intervention can address	Sample Studies
<b>SELF-AFFIRMATION / STEREOTYPE THREAT</b>	If women and historically underrepresented groups (HUGs) perceive that they are in danger of confirming a stereotype about their group, they can experience increased anxiety and reductions in performance.	<b>Reminding people of diverse, positive aspects of themselves can lead people to see negative events and information as less threatening</b> (e.g., reduction of stereotype threat)	On the first day and right before a midterm, intro physics students are asked to spend 10-15 min. writing about positive values (e.g., independence, creativity) that are important to them. Women’s grades increased by .33 grade points, reducing gender achievement gap by 61%. Authors suggest that the exercise reinforces that students are more than negative stereotypes about their group membership (Miyake, et al., 2011).
<b>ATTRIBUTION</b>	Students’ explanations for success or failure influence subsequent achievement. Students could perceive tough standards or low grades as diagnostic of their capacity to succeed in the discipline.	<b>Reframe critical feedback or adverse events as less consequential or as positive</b> (e.g., failing one quiz is not diagnostic of one’s long-term future in the field).	Critical feedback on assignments emphasizes: (1) reflection of a teacher’s high standards, (2) students’ potential to reach them, and (3) substantive feedback to improve (e.g., “I’m giving you these comments because I have very high expectations and I know that you can reach them.”) HUGs receiving this feedback showed higher revision rates and more improvement in writing, compared to those receiving standard feedback. Authors suggest that the exercise reinforces to students that critical feedback can be attributed to instructors’ high standards and belief in student potential (Yaeger et al., 2014).
<b>EXPECTANCY-VALUE</b>	Student motivation is determined by expectations for success and the perceived value of a task. Students may not feel they can be successful or may not see material as relevant.	<b>Increase motivation by increasing sense of relevance and/or greater transparency on path to success.</b>	Intro biology students were asked to pick a concept from lecture and, for homework, write about the relevance of the concept or issue to their own life, giving examples. Performance improved slightly for all students, but especially for HUGs (40% reduction in achievement gap) and first gens (61% reduction) (Harackiewicz, Canning, Tibbetts, Priniski, & Hyde, 2015). (See also Hulleman & Harackiewicz, 2009.)
<b>SOCIAL BELONGING</b>	It is difficult for students to establish a sense of belonging in a course or department.	<b>Increase the degree to which students perceive they belong to a group and are connected to others.</b>	Showing female STEM students images of female engineers and mathematicians improved their attitudes, identification, self-efficacy, and career interest in STEM (Dasgupta, 2011; see also Walton & Cohen, 2011; Walton, et al., 2015).

## Other Types of Motivational Interventions

Theory	Summary (from Lazowski & Hulleman, 2016)
Implicit theories of intelligence	Students' beliefs about whether intelligence is stable (i.e., fixed or entity mindset) or is malleable (i.e., growth or incremental mindset) influence goal striving, persistence, and performance.
Attribution	Students' explanations for success or failure influence subsequent achievement.
Transformative experience	Reframing the learning experience as an application of the content in a way that enhances everyday value
Self-determination	Satisfying students' three core needs (autonomy, relatedness, competence) are essential for promoting motivation and well-being
Interest	The development and deepening of interest in specific topics and academics is influenced by situational and individual difference factors
Goal setting	Specific, difficult task goals produce higher commitment and performance than vague goals that are easy to attain
Self-confrontation	Students' perception that their behaviors and values differ from their self-conception motivates change
Possible selves	Students' conception of what they might become (both desired and feared) serve as incentives for future behavior and a way to evaluate current behavior
Achievement goal	Students' goals for engaging in an activity shape how they approach, experience, and react to achievement situations
Need for achievement	The importance of mastery, high achievement, and besting others to reach one's full potential

## References

- Aguilar, L., Walton, G., & Wieman, C. (2014). Psychological insights for improved physics teaching. *Physics Today*, 67(5): 43-49.
- Aronson, J. (2002). Stereotype threat: Contending and coping with unnerving expectations, J. Aronson, Ed. In *Improving Academic Achievement: Impact of Psychological Factors on Education* (pp. 279-301). New York: Academic Press.
- Aronson, J., Fried, C.B., & Good, C. (2001). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 38(2): 113-125.
- Dasgupta, N. (2011). Ingroup Experts and Peers as Social Vaccines Who Inoculate the Self-Concept: The Stereotype Inoculation Model. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, 22:4: 231-246.
- Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Priniski, S. J., & Hyde, J. S. (2015, Nov 2). Closing achievement gaps with a utility-value intervention: Disentangling race and social class. *Journal of Personality and Social Psychology*. <http://dx.doi.org/10.1037/pspp0000075>
- Hulleman, C. S., & Harackiewicz, J. M. (2009). Making education relevant: Increasing interest and performance in high school science classes. *Science*, 326, 1410-1412.
- Lazowski, R.A. & Hulleman, C.S. (2016). Motivation interventions in education: A meta-analytic review. *Review of Educational Research*, 86(2): 602-640.
- Miyake, A., Smith-Kost, L. E., Finkelstein, N. D., Pollock, S. J., Cohen, G. L., & Ito, T. A. (2010). Reducing the gender achievement gap in college science: A classroom study of values affirmation. *Science*, 330, 1234-1237.
- Tibbetts, Y., Harackiewicz, J.M., Priniski, S.J., & Canning, E.A. (2016). Broadening participation in the life sciences with social-psychological interventions. *CBE Life Sciences Education*, 15(3). Available: <http://www.lifescied.org/content/15/3/es4.abstract>.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331, 1447-1451.
- Walton, G.M., Logel, C., Peach, J.M., Spencer, S.J., & Zanna, M.P. (2015). Two brief interventions to mitigate a 'chilly climate' transform women's experience, relationships, and achievement in engineering. *Journal of Educational Psychology*, 107(2): 468-485.
- Yeager, D.S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., Hessert, W.T., & Williams, M.E. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General*, 143(2): 804-824.
- Yeager, D.S., & Walton, G.M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81(2): 267-301.