Work-in Progress: Identity and Transitions Laboratory: Utilizing Acceptance and Commitment Therapy framework to support engineering student success

Prof. Jeremiah Abiade, University of Illinois at Chicago

Mechanical and Industrial Engineering Laboratory for Oxide Research and Education

Joanne Moliski, University of Illinois at Chicago

Mechanical and Industrial Engineering Laboratory for Oxide Research and Education

Work-in Progress: Identity and Transitions Laboratory: Utilizing Acceptance and Commitment Therapy Framework to Support Engineering Student Success

Motivation

This work in progress describes a program recently implemented at our institution to proactively prepare students to deal with poor mental health, periods of intense stress, and mental and emotional disorders (MED) generally. In a review of 11 articles, Storrie *et. al.* determined that the number of students with documented MEDs is increasing dramatically [1]. Approximately half of the students involved in the various studies reported that their MED started after they began their undergraduate studies [1]. At our institution we are seeing dramatic increases in the demand for counseling services. A related concern is the prediction of an impending enrollment crisis in higher education. The so-called 'Demographic Cliff' has provided additional motivation to improve retention and graduation rates as the number of college-going students in many states in the United States is expected to decline.

We are in the midst of a multi-year study to understand the extent to which our students are experiencing poor mental health and emotional trauma and how this may impact their academic progress. We are particularly interested in student reception to discourses on MED and whether a proactive approach lessens the stigma [1] related to MED with related increases in retention and graduation rates.

Background on problem

The World Health Organization estimates that 1in 3 first-year college students experience a mental health disorder[2]. In a survey of Canadian college students, Sandhu *et al.* found that among those affected, there was significant impact on their academic performance with stress (~ 42%), anxiety (~ 33%), and depression (~21 %) being causes of MED related poor academic [3]. While considerable research has been done on undergraduate student wellbeing, very few studies specifically target the impact of MED on engineering students.

Foremost among the findings of studies on MED in undergraduate is that stigma related to MED is a barrier to students seeking help [1]. In the design of our program we considered that stigma may be especially acute for engineering students. Many engineers valorize the toughness of engineering programs and celebrate high attrition as a sign that only the best engineering students are making it through [4]. Chew-Graham *et al.* have found that medical students (a field of study where difficulty in study may also be conflated with rigor) avoid seeking help for MED because they believe acknowledging a mental health issue is a sign of weakness [1,5]. Roberts *et al.* found that the tendency to forego help for MED is more pronounced for women and racial minorities [1,6].

The existing literature is clear that college students are facing an epidemic of mental health issues. Outside of the decreased quality of life for students, there is an academic cost and a cost to institutions as students fail to achieve their academic goals and often drop out. Intense stress and other comorbid conditions such as depression, anxiety, and post-traumatic stress disorder (PTSD) compromise the cognitive functions critical for learning engineering concepts [7]. These disorders affect students' emotional intelligence, coping strategies for stress, and the ability to

successfully complete exams [8]. Student's ability to process information can be slowed down past the rate it is being provided in a classroom setting, resulting in low levels of learning occurring in the classroom [9]. Students with untreated anxiety disorders may not be able to manage a classroom environment or form social relationships with classmates and professors [10]. With so many of the skills and abilities required for collegiate success affected by poor mental health qualify of life (MHQoL), the effect on a student's ability to be successful in the classroom can be profound.

Background on Supporting Theory and Overview of Intervention
The sharp increase in students seeking mental health services implies that either stigma may be decreasing or that the problem of MED is increasing. The current climate provides a unique opportunity to those interested in engineering student wellbeing to pilot interventions targeting poor mental health that would not have been possible in previous generations. Some methodologies seem to be relatively effective across different cultural groups and socioeconomic levels. For example, Acceptance and Commitment Therapy (ACT) targets psychological inflexibility, which has been shown effective for treating a wide range of mental health issues in a variety of groups, including American college students and refugees in Sierra Leone [11]. In a study on the feasibility and effectiveness of ACT for academic success of college students from low income families in jeopardy of being expelled from their collegiate program, "participants exhibited improved academic performance [after the intervention], surpassing the graduation rate of a comparison group and exceeding national graduation rates" [12]. A primary barrier to actual program implementation is funding, yet it also appears that various forms of low-budget interventions have shown positive results, such as online therapy and group sessions [13]. This is important as it is presumed that funding will be a primary barrier to actual program implementation. The low cost of implementing these interventions will likely offset the loss of value for institutions from student attrition.

Of particular interest to engineering educators may be a branch of intervention known in the therapeutic domain as primary preventive interventions [14]. These types of interventions identify a group (like engineering students) that is expected to experience poor MHQoL, and provide tools and resources to the entire group in order to improve the entire group's wellness. While benefiting the entire group, this approach can offset the negative outcomes for group members who may otherwise experience a crisis. An example of this would be a student who learns in an orientation program to seek professional help when experiencing mild depression symptoms. That student can potentially avoid poor academic performance, credited to early identification of MED.

Our team piloted a set of modules deployed over six weeks as a part of an existing summer bridge program for incoming freshmen. The main focus of the summer bridge is calculus readiness. Our program, called the Identity and Transitions Laboratory (ITL) covers imposter syndrome, stress management, the formation of culturally affirming engineering identities, coping mechanisms, and how to identify warning signs of an emerging MED. The project team includes a doctoral student who led the design and implementation of the program, a mental health professional who serves as the engineering liaison for students in our campus counseling center and participated in the sessions, and members of the engineering faculty and staff. ITL has

been adopted as a permanent part of the existing summer bridge program. This allowed for a second year of program implementation and observation, for which we are analyzing data.

The ITL program is grounded in a subset of Cognitive Behavioral Therapy called Acceptance and Commitment Therapy. After extensive consultation with mental health providers, it was theorized that this methodology would be appealing to engineering students, as it utilizes language like "problem-solving" and uses discreet, stressful life events to build generalizable wellness skills. All students in this program were matriculating into their first year of engineering studies and therefore were sharing a potentially stressful life event. Based on this, attention was paid to cohort development and encouraging students to problem-solve together.

The ITL is a partnership between the Office of Minority Affairs and the College of Engineering and the campus Counseling Center, which provides students 16 free counselling seasons per year. Removing cost barriers was considered essential as multiple studies have shown that specialty mental health use is highly sensitive to changes in financial requirements" [15]. The internal partnership allows students to foster a personal relationship with a representative from the Counseling Center prior to the onset of an acute mental health crises.

Curriculum Development
The ITL curriculum is based largely on Acceptance and Commitment Therapy (ACT) methodology [16]. ACT has been used in the past with college students, with multiple studies showing statistically significant reduction in anxiety and depression symptoms of participating students [17]. Research on professional identity has shown that as novices gain expertise in their fields, they adopt field-specific language and problem framing-strategies [18]. Coincidentally, ACT's problem-solving language and strategies mirror the discipline-specific jargon engineers use. It is hypothesized that because students can use their existing engineering identity paradigm to contextualize the material, there will be fewer barriers to engaging with the content. Critics of negative aspects of engineering culture such as Riley have identified a fixation on problem-solving without consideration for the greater context of the problem as an issue engineering culture should attempt to improve [19]. ACT may be an appropriate fit for this mindset as the methodology could push students to consider their wellbeing more holistically while also embracing the student's natural aptitude for problem solving. ACT focuses on a life event from which the clinician hopes to influence a greater trend of healthier behavior [17]. This approach is a significant departure from the psychoanalysis methodologies which have traditionally dominated the therapeutic landscape [18].

Once the therapeutic grounding was chosen, the research team began determining what should be the chief objectives of the intervention. Originally, a support group model seemed optimal, however after more consideration a psychoeducational model was chosen. Support groups are guided, multi-week sessions in which cohorts therapeutically process an event or a shared problem under the guidance of a clinician. A support group model may have been more invasive than students may have been comfortable with and the anticipated attrition was expected to impact the cohort development necessary for therapeutic work to be done. Therefore, a psychoeducational model seemed to be a more appropriate fit. Psychoeducational groups tend to be didactic and require less vulnerability from the participants as there is less pressure to disclose personal information. This approach allowed the research team to disseminate information on

multiple topics without devoting too much time to in-depth exploration of any one topic. Connecting students to multiple avenues of support was selected as an objective for the intervention. By utilizing a psychoeducational model, the research team was able to bring in guests and foster familiarity between the students and the resources that will be available to them as long as they are UIC students.

For the non-therapeutic content, the research team leaned heavily into the work being done by the Office for Research on Student Success, particularly a tool called Non-Cognitive Profiles (Appendix). The percentages to the right reflect all students who participated in the survey. For participating students, the areas of highest concern were identified as the student's likelihood to seek help/view help-seeking as non-intimidating and the student's confidence that s/he will belong in college. To address the academic help-seeking, the research team attempted to normalize interactions with professors, which can often be intimidating to new students. An engineering faculty member either lead or co-facilitated multiple sessions and encouraged students to come by his office. An additional mechanical engineering faculty member participated in an informal panel and encouraged students to meet with their advisors before they found themselves in academic crisis. An entire session was dedicated to addressing imposter syndrome, which can greatly impact the sense of belonging for students from marginalized demographics. With these directional decisions made, a six-session curriculum was developed as shown in Table 1.

Table 1 Outline of Topics for 6 Session ITL program with topics and expected outcome for each session.

Session	Topic	Outcomes
1	Embracing and adjusting to change: Identity exploration as future engineers	To assist students in reflecting on salient identities they bring to college, while considering new identities that may be forged in college. Introduce students to concept acceptance perspective (ACT) and how it may relate to embracing change.
2	Clarifying a direction: how values and our priorities contribute to wellness	To expose students to perspectives that emphasize overall wellness, values clarification and connect it to overall success of being a student.
3	Recognizing your limits	To help student identify signs of distress and distinguish between normative adjustment stressors and signs of more serious concerns. To help students identify their own biases around acknowledging emotional distress or seeking out help
4	Imposter Syndrome	To introduce the concept of imposter syndrome and help students develop strategies to recognize and thrive when faced with the issue. To have a productive discussion with students about the barriers to reaching out for help and addressing their mental health/stress.

5	Know and use your resources!	To provide practical information to students on resources available to them and ways to access these resources.
6	Managing stress and healthy coping	To empower students to consider and develop healthy coping strategies that can lead to positive health outcomes and increase academic success.

Methods/Assessment

The first cohort (n=33) was provided opportunities to submit anonymous feedback throughout the program, complete an end of program assessment, and received requests to fill out a follow-up survey after their first semester. Follow-up survey questions were also designed to determine if information learned in ITL was disseminated to students who were not in the program through their participating peers. We also obtained the grades and determined semester-to-semester and year-to-year retention for participating students. This data is being compared to similar students who did not participate in the program. Cohort 2 (n=27) to date has also submitted anonymous feedback through the program and completed three different end of program assessments along with the follow-up survey administered to Cohort 1.

Student grade point averages (GPAs) were collected after the first their term and compared to similar students with the same selective index (SI). SI is used at our institution to predict the student's first-term GPA. SI is calculated using a linear regression model with high school GPA and composite standardized test score as coefficients using five years of data of students enrolled at our university. The SI serves as a guide in the initial admissions decision. A student with an SI of 20 is predicted to have a first-term GPA of 2.0, which is the minimum GPA needed to remain in good standing academically at our institution.

Results & Discussion

Written Feedback - Cohort 1

A physical questionnaire was distributed immediately after the program concluded and was completed by all students present on the final day. This represented 37% of the students who started the program. The attrition rate is high in the existing program because students stop attending once they have tested into Calculus for their first semester. The student responses were overwhelmingly positive, although some felt that there was too much didactic content and not enough group activities.

Refinements for Cohort 2

Based on the student assessments, didactic content was replaced with group activities, including ice-breaking activities at the beginning of each session and pair-and-shares where students completed session activities in pairs. Multi-modal content such as videos were also added.

The order of sessions was revised to teach the imposter syndrome session in Week 2 and host the resource panel in Week 6. The imposter syndrome session was moved in order to have more time to build cohort relationships before delving into sensitive material such as values and mental health. Additionally, this augmentation was implemented to highlight to students earlier in the program how their mental health, engineering identity, and academic success intersect. The

resource panel was moved to the final session so that students would have more time to acclimate to the campus and develop informed questions for the panel participants.

GPA Analysis - Cohort 1
Figure 1 below shows a comparison of first year GPA for students in Cohort 1 to similar students with the same predicted SI. A control group was selected for each student based on the student's SI and major at the end of their second semester at our institution. Students were compared to students in their major with the same predicted SI. For example, a mechanical engineering student with an SI of 3.0 was compared with all mechanical engineering students in their classification who also had an SI of 3.0. Students who transferred to another college were excluded from this graphic because statistics for the colleges they transferred to were unavailable.
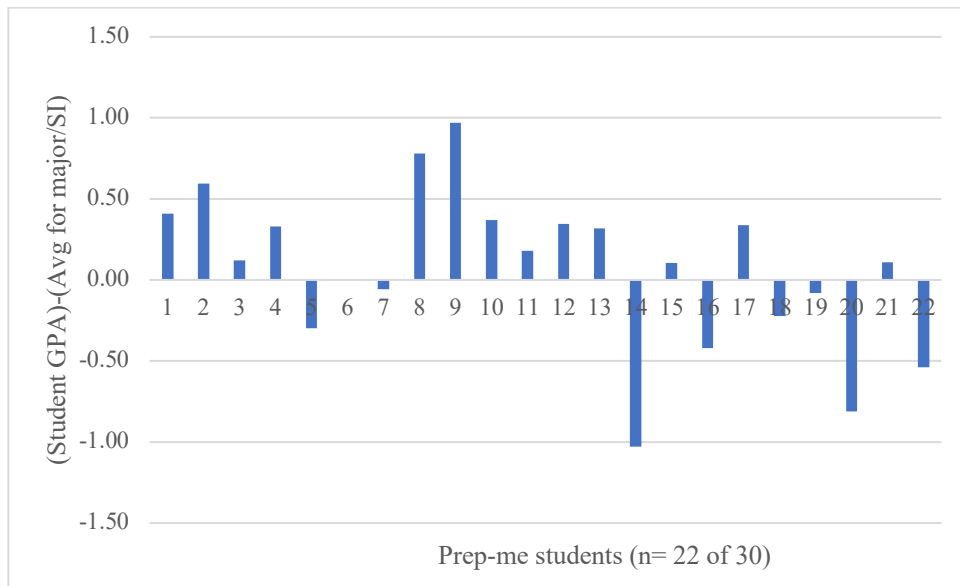
Figure 1 Difference between first-year cumulative GPA of the participating students (Y-axis) compared to the GPA of engineering students with their same predicted GPA and major. The height and direction of the column represent the relative performance (better or worse) for each participating in comparison to those with same predicted GPA and majors.

Analysis of differential GPA attainment versus similar students reveals 62% of students who participated in the ITL program performed better than their comparison group in their first-year GPA. Further analysis of the comparison of first-term GPA for cohort 1 versus predicted first-term GPA shows that ~ 53% of the students attained GPAs greater than their predicted first-term GPA based on their incoming SI with only 27% of the comparison group outperforming their expected performance. Approximately 46% of the students attained first-term GPAs greater than students in their comparison group with the same incoming SI. It is worth noting that only ~ 20% of the students in the program were predicted to have first-term GPAs greater than students in their comparison groups. The analysis of first-term GPA data for cohort 2 is ongoing. Due to the small sample size, the researchers decided to compare students using this methodology as opposed to a more standard t-test. Stronger statistical analysis will be completed once more data has been gathered.

The existing summer bridge program is designed to get students calculus ready, which is determined by the student score on a math placement exam. Typically, students cease participation in the summer bridge program once they have attained their desired math placement for their first term. This feature of the program led to high attrition in the ITL in which the student participation dropped from 45 students at the onset to only 12 at the program end. Based on student feedback, a decision was made to extend the pilot beyond the first year and to incorporate student comments for program improvement for the summer of 2019. Of the students in Cohort 1who responded to a follow-up survey, all said that they had utilized the information presented in the program in the subsequent semesters.

The second iteration of the program experienced higher rates of engagement, less attrition (23 students were present on the last day out of the original 27), and unprompted articulation from the students on how they planned to implement the things they learned in their lives. Students also expressed consistent interest in having a longer program that could go more in depth on the material. Further analysis will be conducted once first-term and first-year grades for Cohort 2 and retention data are available.

Based on first-term and first-year GPAs, the ITL participants are outperforming their comparison groups. However, The ITL program is situated within an existing academic intervention, making it difficult to isolate the impact of ITL on academic performance. To determine the efficacy of the ITL, the researchers plan to do a longitudinal study of student experiences as they matriculate through our institution. We are particularly interested in monitoring student coping strategies in the face of MED compared to students who did not participate in the ITL.

The following is a representative summary of feedback from the follow-up survey that was provided to Cohort 1.

Follow Up Survey - Social support: Almost all respondents across both cohorts continued to use office of minority affairs at our institution as a resource. Students also heavily utilized friend groups as a means of support. Cohort development was a major goal of the program and these responses indicate that this program objective was met. Additionally, one student explicitly stated that they used their friend group to counter feelings of inadequacy. During the program, discussing feelings of inadequacy with peers was suggested to students as a means of combatting imposter syndrome. Therefore, this feedback is favorable to program objectives.

Question	Student Responses
Think of an average engineering student in your head. Do you feel like you fit that description? Why or why not?	A little. I still feel like I am not smart enough but I know that I am not the only one who feels that way so we together (my friends and I) are trying to change our mentality by encouraging each other

Follow Up Survey - Identity as what you are: Students generally expressed affinity with an engineering identity. Some students had positive association with engineering, relating it to qualities like problem- solving ability, aptitude, and work ethic. Two students related their engineering identity to their social identity. One student cited difficulty relating to others as a

reason they identified as an engineer. Another student cited the same premise. However, for them it was a reason they did not identify as an average engineering student.

Question	Student Responses
Think of an average engineering student in your head. Do you feel like you fit that description? Why or why not?	Yes, because an engineer student can be from anywhere and anyone dedicated can be an engineer. Yes, because I'm hardworking Yes, because I am good at math, science, and most importantly, problem solving. Somewhat because I might not be as professional as some of the other students but I still give it my all. Yes. Engineering students can be stereotyped as introverts who are bad at communicating. Most people I know would tell me I fit that stereotype. No because I have more relationships

Follow Up Survey - Identity as what you do: While most students referenced traits and characteristics about themselves as supporting their engineering identity, a few students referenced activities and actions that make them feel like engineers. This is a positive finding and focusing on identity-affirming action is a recommended strategy to deal with Imposter Syndrome.

Question	Student Response
Think of an average engineering student in your head. Do you feel like you fit that description? Why or why not?	Yes because I take engineering class and am involved in a few engineering, student-based teams at the school Yes because I am in engineering clubs Yeah, I be doing engineering work so I must be an engineer.

Anecdotal Evidence

The instructors experience with one particular student may provide some indication that students appreciating the material is the most important factor leading to students accessing resources. Outside of class time, the student expressed that they were extremely discontent with the content. This student called the program a waste of time and felt that talking about mental health was an attempt to reduce personal responsibility. The researchers received extremely negative feedback on one of the forms that may be presumed to have belonged to this student. Despite this, after learning about the disability resource center in the panel, the student took aside an instructor to

ask for more information and how to set up an assessment for a learning disability. The student was also struggling significantly in the academic portion of the course. This anecdote may serve as evidence that students are still able to utilize information despite pre-existing biases against the material.

Conclusion

The research team has implemented a six-week program to prepare students to proactively deal with MED as a part of an existing summer bridge program in a US-based College of Engineering.

Cohort 1 experienced high attrition, going from 45 students to 12 in the first year. Despite this, consensus was reached that the program was successful for a pilot and program improvements were generated to be implemented in the 2019 summer. Of the students who responded to a follow-up survey, all said that they had utilized the information presented in the program during the semester.

The second iteration of the program experienced higher rates of engagement, less attrition, and unprompted articulation from the students on how they planned to implement the things they learned in their lives. Students also expressed consistent interest in having a longer program that could go more in depth on the material. Further analysis will be conducted once grades for Cohort 2 and third-semester retention are available. Both cohorts express identification with an engineering identity and report utilizing support on campus.

The current analysis is qualitative in nature. That and the high attrition compel further study to assess the true efficacy of the programming. The research team will continue to track both Cohort 1 and Cohort 2 in order to assess the impact of program participation on retention and eventual graduation.

References

[1] K. Storrie, K. Ahern, A. Tuckett, "A systematic review: Students with mental health problems—A growing problem," International Journal of Nursing Practice vol. 16, pp. 1-6, 2010.

[2] R. P. Auerbach, P. Mortier, R. Bruffaerts, J. Alonso, C. Benjet, P. Cuijpers, K. Demyttenaere, D. D. Ebert, J. G. Green, and R. Kessler, "19.1 World Health Organization World Mental Health Surveys International College Student Project (WMH-ICS): Prevalence and Distribution of Mental Disorders," Journal of the American Academy of Child & Adolescent Psychiatry, vol. 57, no. 10, 2018.

[3] H. Sandu, A. Arora, J. Brasch, D. Steiner, "Mental Health Stigma: Explicit and Implicit Attitudes of Canadian Undergraduate Students, Medical School Students, and Psychiatrists," Can. Journal of Psychiatry, vol. 64 (3), pp. 209 - 217, 2019.

[4] D. Riley, "Engineering and Social Justice: Synthesis Lectures on Engineering, Technology, and Society", Morgan and Claypool Publishers, 2018

[5] C. Chew-Graham, A. Rogers , N. Yassin, "I wouldn't want it on my CV or their records': Medical students' experiences of help-seeking for mental health problems" Medical Education vol. 37, pp. 873–880, 2003.

[6] L. Roberts, T. Warner, C. Lyketos, "Perceptions of academic vulnerability associated with personal illness: A study of 1027 students at nine medical schools," Comprehensive Psychiatry, vol. 42, pp. 1–15, 2001.

[7] R. Yehuda, J. A. Golier, L. Tischler, K. Stavitsky, and P. D. Harvey, "Learning and Memory in Aging Combat Veterans with PTSD," J. Clin. Exp. Neuropsychol., vol. 27, no. 4, pp. 504–515, May 2005, doi: 10.1080/138033990520223.

[8] Christopher L. Thomas, Jerrell C. Cassady, Monica L. Heller, "The influence of emotional intelligence, cognitive test anxiety, and coping strategies on undergraduate academic performance," Learning and Individual Differences, vol. 55, 2017, pp. 40-48, 2017.

[9] Todd C Buckley, Edward B Blanchard, W.Trammell Neill, "Information processing and ptsd: A review of the empirical literature," Clinical Psychology Review, vol. 20, Issue 8, pp. 1041-1065, 2000.

[10] Brenda M. Morton, "The grip of trauma: How trauma disrupts the academic aspirations of foster youth," Child Abuse & Neglect, ISSN 0145-2134, 2017

[11] Corinna Stewart, Ross G. White, Beate Ebert, Iain Mays, Jennifer Nardozzi, Hannah Bockarie, A preliminary evaluation of Acceptance and Commitment Therapy (ACT) training in Sierra Leone, Journal of Contextual Behavioral Science, Volume 5, Issue 1, 2016, Pages 16-22,

[12] E. K. Sandoz, K. K. Kellum, and K. G. Wilson, "Feasibility and preliminary effectiveness of acceptance and commitment training for academic success of at-risk college students from low income families," J. Context. Behav. Sci., vol. 6, no. 1, pp. 71–79, Jan. 2017, doi: 10.1016/j.jcbs.2017.01.001.

[13] Panajiota Räsänen, Päivi Lappalainen, Joona Muotka, Asko Tolvanen, Raimo Lappalainen, "An online guided ACT intervention for enhancing the psychological wellbeing of university students: A randomized controlled clinical trial," Behaviour Research and Therapy, vol. 78, pp. 30-42, 2016.

[14] J. A. Durlak and A. M. Wells, "Primary Prevention Mental Health Programs for Children

and Adolescents: A Meta-Analytic Review," Am. J. Community Psychol., vol. 25, no. 2, pp. 115–152, Apr. 1997, doi: 10.1023/A:1024654026646.

[15] S. A. Friedman et al., "The effects of three kinds of insurance benefit design features on specialty mental health care use in managed care," J. Ment. Health Policy Econ., vol. 22, no. 2, pp. 43–59, 20 19.

[16] S. Grégoire, L. Lachance, T. Bouffard, and F. Dionne, "The Use of Acceptance and Commitment Therapy to Promote Mental Health and School Engagement in University Students: A Multisite Randomized Controlled Trial," Behav. Ther., vol. 49, no. 3, pp. 360–372, May 2018, doi: 10.1016/j.beth.2017.10.003.

[17] A. Gegenfurtner, E. Lehtinen, L. Helle, M. Nivala, E. Svedström, and R. Säljö, "Learning to see like an expert: On the practices of professional vision and visual expertise," Int. J. Educ. Res., vol. 98, pp. 280–291, 2019, doi: 10.1016/j.ijer.2019.09.003.

[18] S. C. Hayes, "Acceptance and Commitment Therapy, Relational Frame Theory, and the Third Wave of Behavioral and Cognitive Therapies," doi: 10.1016/S0005-7894(04)80013-3.

Appendix

Noncognitive Factor		% of students with either a blue or purple score
Time Management **Student's engagement with time management practices.** Score is based on 6 items. Students are asked how often they do time management tasks. (e.g., Make a list of the things you have to do each day.)	[purple]	12%
Academic Goal Engagement **How much the student incorporates behavioral strategies to pursue academic goals.** Score is based on 3 items. Students are asked how true are the following statements. (e.g., If my educational opportunities become worse, I will try harder.)	[blue]	10%
Family-School Conflict **Time spent in family roles does not allow enough time to fulfill all responsibilities in school roles.** Score is based on 5 items. Students are asked the extent to which they agree with statements. (e.g., The time I spend on family responsibilities does not interfere with my school responsibilities.)	[green]	11%
Academic Help-Seeking **Student's likelihood to seek help and/or view help-seeking as not intimidating.** Score is based on 6 items. Students are asked the extent to which they agree with statements. (e.g., I would not feel like a failure if I needed help in school.)	[blue]	44%
Academic Motivation **Student's interest in coursework, perception of its value, and intrinsic desire to learn.** Score is based on 8 items. Students are asked how true are the following statements. (e.g., I think that what we are learning in my classes is interesting.)	[green]	4%
Academic Self-Efficacy **The belief that various academic tasks can be successfully achieved by the student.** Score is based on 6 items. Students are asked how confident they are completing academic tasks. (e.g., Research a term paper; Write course papers.)	[purple]	10%
Academic Readiness **Student's perceptions of college academic readiness.** Score is based on 4 items. Students are asked the extent to which they agree with statements. (e.g., I am prepared for the academic requirements of college.)	[purple]	14%
Value of Education **Perceptions of how a college degree will help the student reach career goals.** Score is based on 3 items. Students are asked the extent to which they agree with statements. (e.g., A college degree is necessary for me to reach my career goals.)	[green]	11%
Managing Stress **Student's management of emotions during stress.** Score is based on 3 items. Students are asked how true are the following statements. (e.g., I know how to keep calm in difficult or stressful situations.)	[green]	15%
Sense of Belonging in High School **Student's sense of belonging and connectedness to school.** Score is based on 5 items. Students are asked how often they agree with statements. (e.g., My high school is supportive of me.)	[green]	10%
Belonging Certainty in College **Student's confidence that he or she will belong in college.** Score is based on 3 items. Students are asked how true are the following statements. (e.g., I feel confident that I will feel like I belong in college.)	[purple]	48%

Key: [green] =Strength [blue] = Some concern [purple] = Immediate intervention recommended