The CTC vision
Our goal is to promote college persistence and achievement, especially among students from disadvantaged backgrounds, using highly scalable mindset interventions; and to forge collaborative relationships among researchers and higher education leaders.

The team
Our team consists of leading researchers who have developed mindset interventions. The four PIs are:
- Dr. Christine Logel (University of Waterloo)
- Dr. Mary Murphy (Indiana University)
- Dr. Greg Walton (Stanford University)
- Dr. David Yeager (University of Texas, Austin)

The PIs are supported by a technical expert, Dr. Dave Paunesku, the Co-Founder and Executive Director of the Project for Educational Research That Scales (PERTS; www.perts.net) and a project manager, Dr. Omid Fotuhi, PhD., and a team of research assistants, graduate students, and postdocs.
To succeed in college, students need access to high-quality secondary education and adequate financial aid. But students also need adaptive mindsets to understand challenges they will experience in college and how they can overcome these challenges with time.

All students face challenges in the transition to college, from developing new friends, to navigating college courses, to building relationships with professors. But students from disadvantaged social backgrounds may wonder whether a “person like me” will belong or be able to succeed in college. The consequence is that, when disadvantaged students encounter common difficulties in the critical first weeks and months of college—like feelings of loneliness or receiving critical feedback—these difficulties can seem like proof that they don’t belong or can’t succeed on campus. That inference can become self-fulfilling.

Worries about social belonging are evident in the stories told by many ethnic-minority and first-generation college students. Justice Sonia Sotomayor has said that she felt like, “a visitor landing in an alien country” in college.1 A low-income student from rural South Dakota said of her transition to a liberal arts college, “I kind of feel like I’ve been dropped on Mars...I mean, it’s so different.”2

When college feels like a foreign cultural and social place, even minor inconveniences can take on a threatening meaning. Consider this reflection from Michelle Obama:

When students infer that they do not belong in college, they are less likely to reach out to faculty (e.g., to attend office hours), to join student groups, and to seek out friends. **Feelings of belonging are thus one of the most robust predictors of college success.** One study with a large group of urban secondary-school students found that pre-college worries about belonging in college (e.g., “Sometimes I worry that I will not belong in college”) predicted full-time college enrollment the next year, even when controlling for high school GPA, SAT-score, fluid intelligence, gender, and other personality differences. Worries about belonging were more predictive than every other “noncognitive” measure assessed (e.g., Big 5, test anxiety, grit, self-control).3

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**Figure 1. How worries about social belonging undermine college outcomes**

<table>
<thead>
<tr>
<th>Membership in a disadvantaged group in higher ed. (e.g. ethnic minority, first generation, etc.)</th>
<th>Psych. Interpretation</th>
<th>Behavioral Response</th>
<th>Academic outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>A challenge or setback (e.g. critical feedback, feelings of loneliness, negativity, etc.)</td>
<td>“I, or people like me, don’t belong in college.”</td>
<td>Withdrawal from the academic environment (e.g. less friendship development, less participation in extra-curricular activities, less interaction with faculty)</td>
<td>Worse achievement and persistence</td>
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</table>
Interventions that address students’ worries about belonging and potential

Recent randomized controlled trials show that brief, well-tailored messages during key transitions can address students’ worries about belonging and potential and cause lasting improvements in the transition to college for disadvantaged students. These interventions use stories from older students to help incoming freshmen anticipate challenges they will face in college and plan ways to overcome them. For instance, the social-belonging intervention conveys that everyone worries at first about whether they belong in college, but these worries dissipate with time. This belief helps students stay in the game when they feel isolated or excluded early in college. For instance:

- One 1-hour social-belonging intervention, delivered in person toward the end of students’ freshman year, raised grades among African American students at a selective private university over the next three years, reducing the racial achievement gap by 50%. See Fig. 2.

- Three trials evaluated social-belonging and related mindset interventions delivered in online modules prior to college matriculation with full cohorts of students (total N>9,500). Each intervention increased college persistence and achievement among disadvantaged students. See Fig. 3 (at the end of the document). In one trial of 584 college-admitted charter-school students, a 45-minute social-belonging intervention at the end of students’ senior year of high school increased the percentage of students who stayed full-time enrolled in college over the next year from 32% to 43%. The interventions reduced the persistence and achievement gaps between advantaged and disadvantaged students by 35-50%.

Figure 2. A brief social-belonging intervention increases the grades of African American college students over 3-years (Walton & Cohen, 2011 Science)

How do brief mindset interventions improve student success?

They help students develop social capital on campus—such as close friendships, involvement in student groups, engagement with professors, and the development of mentor relationships. These are essential resources for college student success. Worries about belonging and potential—arising from previous social or economic disadvantage—can prevent students from pursuing these opportunities. Addressing these worries can help students take active steps to acquire social capital. See Fig. 4.
Mindset interventions have a special promise for remedying inequality in higher education. These interventions can be delivered effectively before students come to campus as part of online pre-matriculation programming (e.g., alongside roommate preference forms, etc.). As such:

- They can help students form reasonable expectations for what college will be like and what challenges they will encounter, facilitating a better transition from day one.
- They are **brief**, **low-cost**, and **highly scalable**—during pre-matriculation, colleges and universities can reach the entire incoming class with online exercises at little cost per student.

Given their potential, **it is essential to learn how effective mindset interventions are in diverse post-secondary settings**. Brief mindset interventions are not magic? They are powerful only when they directly speak to students’ worries about the transition to college and help them respond to challenges they face. As a consequence, mindset exercises may be more or less effective in different contexts. They may also need to adapted or customized for new settings to be most effective.

To address the need for widespread dissemination and evaluation, we are creating a partnership between researchers and colleges and universities. This partnership will allow us to test prematriculation mindset interventions with a diverse group of colleges and universities.

Working in collaboration with interested faculty and administrators at each partner school, we will test two different implementations of mindset interventions:

- A standardized intervention that is held common across contexts. This will allow us to evaluate how effective a standardized mindset intervention is overall in improving outcomes among disadvantaged students in diverse settings in the transition to college.

- A customized intervention that is revised for each school partner using best practices in user-centered design (e.g., specially designed student focus groups). This will allow us to assess whether customized implementations are more effective.

We will test these interventions with full cohorts of incoming students at partner schools in online, pre-matriculation programming. A third, randomized group of students will receive standard information about the transition to college.

After this evaluation, partner universities will be able to use interventions shown to be effective for future incoming students in perpetuity for internal improvement purposes. Effective interventions will also be made available to other colleges, universities, and secondary schools that wish to use them.
Timeline

The project would go forward on a three year timeline as follows:

Year 1
• CTC team comes to campus to meet with faculty or faculty/student research teams to discuss the project, priorities, and to conduct interviews and focus groups with students.
• Information from each participating institution provided to the researchers, e.g., to identify groups of students at higher risk, prior campus research on retention or academic performance, descriptions of current retention or success programs.
• The CTC team and campus representatives develop the customized intervention.

Year 2
• Summer:
  * CTC provides partner with a web link to the interventions for incoming students to use.
  * Partner insures that most entering students complete the intervention.
• Data processing and initial data analyses and reports to participating colleges
• Revise interventions as needed
• Spring-term survey to assess effects on students' school-relevant feelings, attitudes, and behaviors.

Year 3
• Interventions could be delivered to no students, to all students, or on a randomized basis depending on results from randomized years.
• Final analyses and reports
• Final recommendations provided to participating colleges
• Final versions of interventions provided to partner for their future use.

FAQs

What are CTC Mindset Interventions?
They are online reading and writing activities in which students learn from stories from older students about common challenges in the transition to college and how they can overcome these challenges. The New York Times (May 15, 2014) describes them:

“First-year students read brief essays by upperclassmen recalling their own experiences as freshmen. The upperclassmen conveyed in their own words a simple message about belonging: "When I got here, I thought I was the only one who felt left out. But then I found out that everyone feels that way at first, and everyone gets over it. I got over it, too." After reading the essays, the students in the experiment then wrote their own essays...echoing the same message. The whole intervention took no more than an hour...”

When and how are CTC mindset interventions delivered?
Interventions are delivered before students come to campus as part of online prematriculation programming (e.g., alongside roommate preference forms, etc.). As such, they are brief, low-cost, and highly scalable. During prematriculation, colleges and universities can reach the entire incoming class with online exercises at little cost per student.
Who are CTC partner schools?
Current partners include selective private institutions, large public universities, and liberal arts colleges. Partners are excited to take innovative, evidence-based steps to improve college outcomes for disadvantaged students. We partnered with 13 schools in 2014 - 2015 and intend to work with an additional 7 schools starting in 2015 - 2016.

Can we give the treatment to all students?
Prematriculation messages can be powerful. However, their effects depend on the context. It would be inappropriate to give all students a new treatment without first evaluating the results compared to a group of students exposed to standard messaging. After evaluating an intervention, partner schools will be able to continue to use effective interventions with all incoming students in perpetuity for internal improvement purposes.

What opportunities are there for on-campus experts to collaborate?
We are excited to collaborate with faculty at partner colleges and universities with relevant interests and expertise. This collaboration may include the facilitation of data collection, development of the customized intervention, collection and preparation of focus group data, and identification of novel, important outcome measures, moderator variables, or statistical analyses. We are also hopeful that our collaboration will give rise to future projects at partner colleges and universities, such as how to improve STEM gateway courses, how to send welcome messages to incoming students, questions that arise in advising and mentoring, issues in residential education, etc. We have expertise in all these areas through collaborations at Stanford, UT-Austin, and elsewhere.

How is CTC funded?
CTC will be funded initially through contributions from partner colleges and universities. We are also applying for federal and foundation grant support.

How are project funds spent?
CTC is a research collaboration. The funds support project expenses, especially project managers, post-docs, and graduate students who carry out the work to design, implement, and evaluate intervention results. The PIs receive none of the kick-start funds. Their contribution is cost-shared by their home institutions.

Are CTC Mindset interventions guaranteed to work at my school?
No. Mindset interventions are not guaranteed to work at every school, just as an exciting new medication is not guaranteed to work for every patient. Our existing trials show that CTC mindset interventions have significant promise to improve the transition to college for disadvantaged students. However, it is likely that the interventions will be more effective at some schools than others; and with some groups more than others. Understanding this variability is essential to deploying these interventions effectively and to improving them for the next generation of students.

1 Ludden & Weeks, 2009
2 Aries & Berman, 2012, p.1
3 Mendoza - Denton et al., 2002; Walton & Cohen, 2007
4 http://www.whitehouse.gov/the_press_office/2014/01/16/remarks-president-and-first-lady-college-opportunity-summit
5 Yeager et al., under review
6 Walton & Cohen (2011)
7 Yeager & Walton (2011)
Figure 3. Brief prematriculation interventions improve college outcomes among disadvantaged students (Yeager et al., under review).

(A) Percentage of urban public high school students (predominantly African American and first-generation college students) who stayed full-time enrolled in college in the first-year (N=584) (Experiment 1). (B) Percentage of students who completed the first semester full-time enrolled (12+ credits earned) at a flagship public university (N=7,342) (Experiment 2). (C) Cumulative first-year GPA at a selective private university (N=1,592) (Experiment 3). Bars represent raw mean or percentages.