

Learning Mindsets Matter for Students in Corequisite Courses

Executive Summary

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Executive Summary

DESCRIPTION AND PURPOSE

This research brief investigates how *learning mindsets* – students’ beliefs and perceptions about themselves and the learning context – relate to academic outcomes, particularly among students enrolled in corequisite courses. We introduce the theoretical framework of learning mindsets, situate the study in the context of corequisite models in higher education and describe the key effects of learning mindsets. We conclude by discussing aspects of the higher education landscape that may explain the relationships between learning mindsets and student success, followed by recommendations for educators based upon these findings.

Because traditional prerequisite approaches to developmental education have been expensive for both students and colleges, costing approximately \$7 billion¹ and relatively ineffective,^{2 3 4 5} many systems of higher education are shifting toward corequisite developmental education models that enroll students simultaneously into a credit-bearing course in addition to a support course.⁶

To better support students within these corequisite models, it is important to understand how this approach impacts student motivation and how learning mindsets may be leveraged to enhance this nascent initiative. Historically, strategies that target learning mindsets have been particularly effective for students from traditionally underserved backgrounds (e.g., Black, Latinx, Indigenous, first-generation)^{7 8} who are disproportionately more likely to enroll in corequisite courses.⁹

Thus, in addition to identifying which learning mindsets may be particularly supportive of students enrolled in corequisite courses, the current study generates a host of recommendations that can support institutional equity efforts (i.e., changing educational methods and institutional processes as a means to rectify injustices in

1 Jaggars & Stacey, 2014

2 Calcagno & Long, 2008

3 Dadgar, 2012

4 Martorell & McFarlin, 2011

5 Xu, 2016

6 Ran & Lin, 2019

7 Cronin et al., 2021

8 Tibbetts et al., 2016

9 Hickey, Robinson, Fiorini, & Feng, 2020

the distribution of resources, practices and policies; as noted in the [Equity Philosophy](#) on the SStF website), given the evidence that supporting learning mindsets may be particularly effective for supporting many students who have been systematically marginalized by the higher education system (e.g., Black, Latinx, Indigenous, first-generation students, Pell-grant recipients). Consistent with Strong Start to Finish, we conceptualize equity in education as a means to rectify injustices in the distribution of resources, practices and policies.

Supporting students through these critical courses increases the likelihood of degree attainment which, in turn, can significantly impact their upward social mobility.¹⁰

To investigate the role of learning mindsets in corequisite education, the current project focused on four specific learning mindsets that prior research has shown to improve student success (e.g., grades and retention), particularly among Black, Latinx, Indigenous and first-generation student populations.^{7 8 9} These four mindsets are:

- The belief that intelligence can be developed through hard work, the use of effective strategies and help from others when needed (**growth mindset**).¹¹
- Perceptions of the **purpose and relevance** of educational content.¹² Specifically, the belief that one's schoolwork is valuable because it is connected to a larger purpose and/or relevant to one's life.
- Uncertainty about the quality of one's social and academic bonds (**belonging uncertainty**).¹³
- Perception that one's instructor thinks they can grow and learn (i.e., **perception of instructor growth mindset**).¹⁴

In a sample of more than 9,500 first-time, full-year students enrolled in community colleges throughout Tennessee and four-year institutions in Georgia, we administered a learning mindset survey at the beginning of the fall 2018 semester. We then tracked student outcomes over time, building a dataset that allowed us to examine how students' initial learning mindsets at the beginning of the fall 2018 semester predicted their academic performance and retention (from fall 2018 to spring 2019).

It is important to note that in all of our analyses, we accounted for the students' demographic characteristics and prior performance. That is, the relations between

10 Autor, 2014

12 Hulleman & Harackiewicz, 2009

14 Muenks et al., 2020

11 Dweck, 2006

13 Walton & Cohen, 2007

mindsets and outcomes are calculated after controlling for the effects of demographic group membership, so we can confidently claim that the results were not due to race, ethnicity, gender, first-generation status or high school performance among students. Even when comparing students who are of identical race/ethnicity, gender, first-generation status and high school performance, the above findings hold.

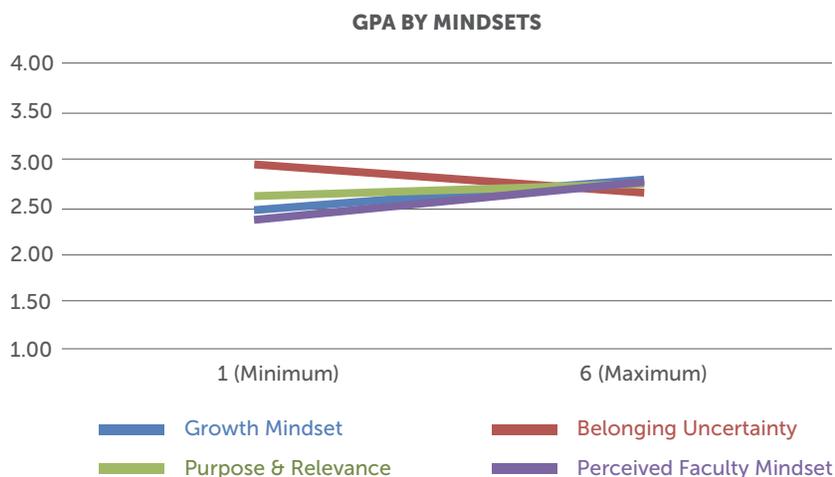
KEY FINDINGS

Supporting students enrolled in corequisite courses is a way to promote equity.

Consistent with prior research,⁹ we found that students enrolled in corequisite courses were more likely to be from historically marginalized backgrounds (i.e., compared to the non-corequisite sample, the corequisite sample was disproportionately comprised of Black, Latinx, Indigenous, first-generation students and Pell grant recipients). Hence, any strategies implemented through the corequisite model have the potential to make a more direct impact on these student populations, which could lead to more equitable student outcomes. Given the importance of passing critical corequisite courses for making progress toward degree completion, supporting these students through these courses carries positive implications for their future social mobility.¹

Learning mindsets are important, on average, for all students. We also found that students' grades were related to their growth mindset, perceptions of the purpose and relevance of their coursework, belonging uncertainty and perceptions of their instructors' growth mindset beliefs (see below). That is, students who performed better in their fall courses (i.e., had higher end-of-semester GPAs) also reported having more of a growth mindset, perceiving more purpose and relevance in their studies, perceiving their faculty to endorse a growth mindset and feeling less belonging uncertainty.

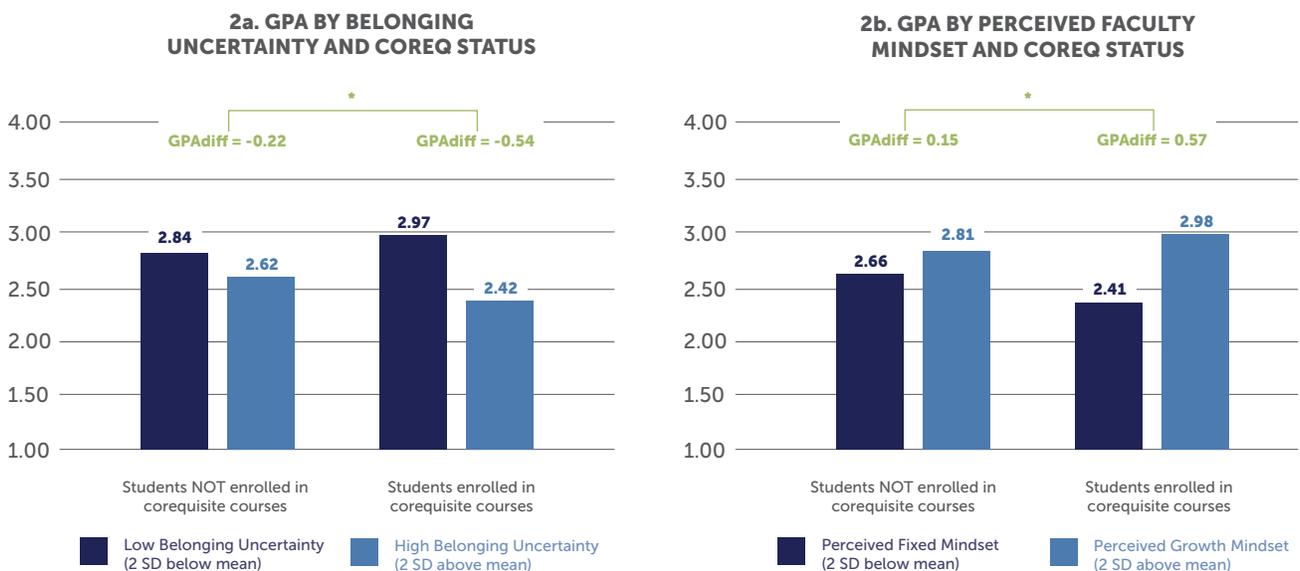
Figure 1. Overall Fall 2018 GPA by Student Mindsets



Belonging uncertainty is distinct from a sense of belonging. Is belonging uncertainty the opposite of a more positively framed sense of belonging? Although they are related, our research says no. Belonging uncertainty and a sense of belonging are both conceptually and empirically distinct. Whereas a sense of belonging indicates the amount of general fit and acceptance that a student experiences, belonging uncertainty refers to the doubt that many students feel about whether or not college is a place they can succeed. As evidence that they are related, yet distinct from each other, our data show that belonging uncertainty and sense of belonging are only slightly correlated with each other. In fact, we find that there is a small, negative relationship between our measures of belonging uncertainty and sense of belonging. That is, the more uncertainty someone feels about their belonging, the lower their self-reported sense of belonging tends to be.

Learning mindsets may be even more important for students enrolled in corequisite courses. Interestingly, we also found that two learning mindsets – belonging uncertainty and perception of instructor mindset – were particularly related to outcomes for students enrolled in corequisite courses compared to students not enrolled in corequisite courses. That is, feeling uncertain about belonging was more strongly related to lower GPAs for students enrolled in corequisite courses (Figure 2a). This means that students enrolled in corequisite courses who felt uncertain about belonging had even lower GPAs than students with the same amount of uncertainty who were not enrolled in corequisite courses. Additionally, when students enrolled in corequisite courses perceived that their instructors had a fixed mindset (believing that their students had a fixed level of intelligence that could not be changed), their GPA was lower (Figure 2b).

Figure 2a & 2b. Effects of Belonging Uncertainty, Perceived Faculty Growth Mindset, and Corequisite Status on GPA



Students enrolled in corequisite courses report more belonging uncertainty and perceive their instructors to be less supportive of students' growth mindsets.

One troubling finding from the present study is that students enrolled in corequisite courses *started* the semester with higher levels of belonging uncertainty and lower levels of perceived faculty growth mindset (both of which predicted students' grades and retention). Thus, the students who would benefit most from feeling *less* belonging uncertainty or perceiving *more* faculty growth mindset (e.g., students enrolled in corequisite courses) actually report feeling *more* uncertain and perceive *less* faculty growth mindset than their peers who are not enrolled in corequisite courses.

RECOMMENDATIONS

Measuring learning mindsets, particularly in corequisite models, should be encouraged. Measuring learning mindsets builds awareness about their importance, enabling the field to track progress over time and gain a better understanding of how to create more motivationally supportive climates. Given that some mindsets (e.g., belonging uncertainty, perceived faculty growth mindset) were particularly strong predictors of academic outcomes among corequisite students, administering learning mindset measures in corequisite models feels especially relevant.

Focus on targeting the corequisite environment and how it can support learning mindsets. Historically, the way institutions have marked their developmental education programs have encouraged a deficit framing around the need to "remediate at-risk and underprepared" students. Rather than trying to "fix" students to be more motivated, we advocate for targeting the learning environments to turn them into more motivationally supportive climates. Our findings suggest that implementing systemic changes that create more belonging-supportive learning environments – where instructors showcase their belief in their students' abilities and intelligence – could support the development of all students and students enrolled in corequisite courses, in particular.

Leverage data to target specific learning mindsets when implementing changes. Learning mindset data can be used to inform what kinds of strategies can be implemented to support different groups of students. For example, although the learning mindsets measured in this report are all related to important academic outcomes (e.g., GPA), our findings indicate that specific learning mindsets are more salient in specific learning contexts. In particular, because belonging uncertainty and perceptions of faculty growth mindset are particularly important in corequisite courses, employing practices in corequisite courses that help reduce students' uncertainties

about belonging (e.g., eliminating messages of non-belonging that students receive), and that convey that the instructor believes in each student’s potential to learn (e.g., offering opportunities to learn from mistakes and challenges) may be more effective than encouraging a more general positive mindset toward learning.

Integrate learning mindset supportive strategies into existing equitable systems-change efforts. Historically, strategies that target growth mindset, purpose and relevance, and belonging uncertainty have also been effective at supporting historically marginalized students (e.g., Black, Latinx, Indigenous, and first-generation college students).^{7 8} Thus, implementing learning mindset supportive practices has multiple benefits: In addition to being particularly effective for supporting historically marginalized students, the present research also indicates that they may be especially effective for supporting students enrolled in corequisite courses.

ENDNOTES

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| 1. Jaggars & Stacey, 2014 | 6. Ran & Lin, 2019 | 10. Autor, 2014 |
| 2. Calcagno & Long, 2008 | 7. Cronin et al., 2021 | 11. Dweck, 2006 |
| 3. Dadgar, 2012 | 8. Tibbetts et al., 2016 | 12. Hulleman & Harackiewicz, 2009 |
| 4. Martorell & McFarlin, 2011 | 9. Hickey, Robinson, Fiorini, & Feng, 2020 | 13. Walton & Cohen, 2007 |
| 5. Xu, 2016 | | 14. Muenks et al., 2020 |

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