REVIEW ARTICLE

Who Gets to Belong in College? An Empirical Review of How Institutions Can Assess and Expand Opportunities for Belonging on Campus

Kathryn M. Kroeper[1] · Maithreyi Gopalan[2] · Katherine T. U. Emerson[3] · Gregory M. Walton[4]

Abstract

Over a dozen rigorous randomized-controlled trials show that recognizing worries about belonging in a new school as normal and as improving with time can help students stay engaged, build relationships, and succeed. Such "social-belonging" interventions can help students take advantage of opportunities available to them to develop their belonging in college—yet what is the institutional role? Drawing on past literature, and reporting novel data from the College Transition Collaborative's massive trial of the social-belonging intervention ($N = 15{,}143$ control-condition students in 374 "local-identity" groups across 22 representative colleges and universities; Walton et al., 2023), we explore who gets to belong in college and what institutional leaders can do to expand these opportunities. First, we find that opportunities for belonging (i.e., "belonging affordances") vary widely, both across institutions and systematically across groups. Notably, Black, Asian, and first-generation college student groups are each less likely than other groups to have minimally adequate opportunities for belonging. Second, all institutions are serving some student groups well, but all can improve: none provides adequate belonging affordances for all groups. Third, four classes of institutional factors predict belonging affordances at the identity-group level: (1) greater in-group representation, (2) more inclusive cultures, (3) greater opportunities for strong relationships, and (4) greater opportunities for productive learning. We conclude by discussing how institutions can learn for whom they are creating opportunities for belonging and for whom they are not, and how institutions can expand opportunities for belonging for groups that are not yet well served.

Keywords Social belonging · Belonging affordances · In-group representation · Purpose · Inclusive cultures · Relationships · Growth mindset cultures

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Extended author information available on the last page of the article

Imagine Jaylen and Jordan, two college students existing at the extremes of a belonging continuum.

Jaylen is confident she belongs. Nearly everywhere she looks on campus, she sees aspects of herself reflected. Many campus events and courses resonate with her experiences, values, and identity. She has made close friends, who give her joy and support her through challenges. She helps lead a student group she is passionate about. More than one faculty member shows interest in her and helps guide her growth. She's motivated by classes, supported when she faces challenges, and excited by where she's going. Altogether, Jaylen feels at home on campus and glad to be there.

Now consider Jordan. More often than not, Jordan does not feel she belongs. Time and again, she finds that campus events and courses do not speak to her lived experiences. In residences, sometimes it seems other students do not get her, or maybe they do not even want her there, possibly because of aspects of her identity. She has few real friends on campus. She often feels isolated and alone. At best, she is on the periphery of a student group. In classes, sometimes she feels judged when she does not understand the material immediately, as if professors just want to work with whomever already gets it. When she has tried to reach out, faculty and administrators have not been very responsive. As a result, Jordan does not really have a direction or purpose. Frankly, she often feels like a visitor on campus—and an unwelcome one.[1]

Why does a student, like Jaylen, develop a strong sense of belonging on campus, while another, like Jordan, does not? And what can *institutions* do so more students have Jaylen's experience, and not Jordan's?

Belonging Is a Relationship: Both Students and Institutions Share Agency

We understand belonging as a relationship between a person and a context (Walton & Brady, 2017).[2] Applied to college, "belonging" reflects a student's overall sense of how well they fit in, or *could* fit in, at their institution, including whether they feel

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[1] Of course, the reality of belonging is more complex than the Jaylen and Jordan examples suggest. Belonging is not a binary, all-or-nothing experience, nor is it static. Students' sense of belonging at college shifts across different *spaces* and *over time*, shaped by their identities, interactions, and—as this paper highlights—institutional factors. Across space, students may feel a sense of belonging in one setting while questioning it in another; even students who feel largely isolated may still experience connection in specific relationships or counterspaces (Covarrubias, 2024). Across time, some students start college unsure of their place but grow more connected through affirming experiences; others may find their experience of belonging erode through repeated adversity (Walton & Cohen, 2011). We use Jaylen's and Jordan's experiences to represent two ends of a continuum by which institutional factors may shape students' opportunities to belong.

[2] In centering the relationship between a person and a context (Walton & Brady, 2017), our definition goes beyond approaches that emphasize "school connectedness" or that define belonging in terms of relationships, such as "being liked, respected, and valued by fellow students and by the teacher" (Goodenow, 1993).

they are, or *will be*, respected and valued and supported in their growth and contributions. From this perspective, both the student *and* the institution have agency in building a better relationship (Hurtado et al., 1998, 2012; Walton et al., 2023). Yet they play different roles.

The student's primary role is to navigate the college environment. This involves persevering through the inevitable challenges and setbacks of joining a new community, building friendships, seeking out and establishing mentor relationships, choosing relevant courses, working hard to learn, and developing a professional direction. Much past research in psychology has emphasized students' agency in building their belonging, barriers that can prevent students from executing this agency, and how to overcome these barriers (Kroeper & Murphy, 2017). For instance, many students experience uncertainty about their belonging in college, particularly in settings in which their racial-ethnic, social class, or gender group has historically been excluded or faces negative stereotypes (Walton & Cohen, 2007). An exclusionary history and context can evoke a pervasive worry about whether "people like me" can belong in college. Then, even everyday challenges, like exclusion from a party or a brusque comment from an instructor, can seem to confirm the global fear that "people like me" do not belong here (Murphy et al., 2020; Walton & Cohen, 2007, 2011; Walton et al., 2015a, 2015b). That inference, in turn, can cause students to disengage from others on campus, and then fail to develop the relationships with peers and faculty members that all students need to succeed (Brady et al., 2020; Walton et al., 2015a, 2015b; Yeager et al., 2016a, 2016b). In this way, worries about belonging can become self-confirming.

Causal evidence for this process comes from randomized intervention field-experiments testing the "social-belonging intervention." This brief reading-and-writing exercise offers students the idea that worries about belonging are normal in the transition to college and can improve with time (Walton & Brady, 2020a, 2020b). In many settings, this can help students sustain a sense of belonging in the face of everyday challenges, stay engaged and build stronger relationships, and succeed at higher rates, with the greatest benefits for students from underserved racial-ethnic and social-class backgrounds, who face acute social-identity based reasons to question their belonging in mainstream institutions.

But belonging is not the sole responsibility of the student. Institutions also have agency to create the conditions in which all students *can* belong (Datnow et al., 2002; Destin, 2020; Gray et al., 2018; Hurtado et al., 1998, 2012; Strayhorn, 2023; Walton & Wilson, 2018; Walton & Yeager, 2020). What is their role?

By way of analogy, consider a dinner party in which a host (institution) invites guests (students). The guests have an important role. They can choose to come, navigate the space, and decide with whom to interact and what conversations or activities to engage in, but, in general, guests act within the parameters set by the host. It is the host who decides whom to invite to the party (admit to the institution). It is the host who structures the evening and defines its progression—deciding whether to play a silly party game or open up the pool; to listen to one kind of music or another, or to break out the karaoke machine; to drink a high-end wine or share Jell-O shots; and to eat burgers or Coq au Vin. The host thus has disproportionate influence over the environment and overall

experience of the party, how people interact, and whom and what the space is for. When a guest feels out of place—perhaps they do not know anyone, the music is unfamiliar, or the food is not what they are used to—a thoughtful host can notice and make adjustments, offering a warm welcome, introducing them to other like-minded guests, inviting them to suggest music they like, or offering a dish that feels more familiar, improving their experience. In such a case, a guest who was initially uncomfortable might stick it out, grow more at ease, and even help shape the party atmosphere—perhaps introducing a party game the host had not planned. In doing so, the guest not only makes the party more enjoyable for themself but may also help create a more welcoming environment for others who might otherwise have remained on the fringes. However, when the host fails to notice—or worse, actively ignores—a guest's discomfort, expecting them to simply fall in line with the scheduled program, that guest's unease may deepen, making it more likely that they will disengage from the party or leave it altogether.

Likewise, institutional leaders have differential power to shape the norms, values, policies, and practices that structure students' experiences. In particular, they have the power to steer the collective ethos toward, or away from, an inclusive one for students from diverse backgrounds. For instance, institutions may admit a diverse student body—or just token numbers of students from underrepresented groups. They may offer classes and coursework and support activities that resonate with diverse students, problems they care about, and who they aspire to become—or they might expect students to conform to a cultural default (Cheryan & Markus, 2020). In a sociocultural and historical context in which racial-ethnic and social-class exclusion and negative stereotypes have been endemic in education (Bonilla-Silva & Peoples, 2022; Ornstein, 2019; Stephens et al., 2012a, 2012b, 2012c), institutions can actively challenge negative stereotypes and embody norms of group-based respect—or they can allow stereotypes and biases to fester. They may create spaces that make it easier for students to meet and develop friendships, or easier to interact with faculty who can become mentors—or they may make this harder. They may promulgate values of learning and becoming, even when a student does not get it at first or has not had particular prior opportunities—or they may create a culture that values identifying the "smart" students while excluding the rest. People within the college, from peers to faculty, can be proactive *and* responsive to students from diverse backgrounds, open and eager to develop strong relationships with them, and supportive of their growth and discovery—or disengaged, overwhelmed by other responsibilities, or biased in their responses.

Like dinner party hosts, institutions hold particular power over the campus climate. When students encounter institutions that are not designed for them, do not listen to them, and are unresponsive to their needs, some may resist, leveraging their frustration for deeper engagement and activism (Bettencourt, 2021; Covarrubias et al., 2022; Santa-Ramirez, 2022). Others may decide that it is not worth it and leave (Brown & Rodríguez, 2009; Loo & Rolison, 1986; Tinto, 1988; Van Gilder et al., 2024).

Belonging Inequities in College

We take it as a given that higher education institutions have a responsibility to serve all students equitably. However, higher education institutions were not in general built to serve the diversity of modern students. They were designed by and for a narrow slice of the population, primarily White students from middle and upper class backgrounds (Bonilla-Silva & Peoples, 2022; Hurtado et al., 1999; Ornstein, 2019). It is unsurprising, then, that there are inequalities in students' sense of belonging in college along racial-ethnic and social class lines (Brannon, 2023; Gopalan & Brady, 2019; Langhout et al., 2009; Ostrove & Long, 2007; Stephens et al., 2012a, 2012b, 2012c; Walton & Cohen, 2007). In turn, many higher education institutions have struggled with pervasive low completion rates, particularly among students from historically underserved backgrounds (Ellsworth et al., 2022; Hausmann et al., 2007). Yet we also believe that colleges and universities have the power to remake campus norms, values, policies, and practices to be more responsive to and fitting for modern students (Destin, 2020; Gray et al., 2018; Hurtado et al., 1998, 2012). It is by understanding the barriers to belonging that diverse student identity groups face that institutions can make the changes that will create a welcoming and inclusive environment for every student.

Overview

In this empirical review, we ask two primary questions:

1. How do opportunities for belonging vary *across* and *within* (a) higher education institutions and (b) racial-ethnic and social-class groups?
2. What predicts students' opportunities for belonging, and what can institutions learn from these predictors to create more equitable belonging opportunities?

To answer these questions, we first review multiple streams of past research to identify specific contextual barriers to belonging for college students.

We then empirically explore these barriers using robust data from control-condition students in a multi-site randomized controlled trial of the social-belonging intervention conducted by the College Transition Collaborative (CTC). In so doing, we clarify challenges to belonging for diverse student identity groups, which contribute to institutional inequality in a sample that generalizes to 749 4-year post-secondary institutions in the USA. These results draw on but go beyond past research, which has tended to examine variability in opportunities for belonging in small samples, and/or in one institution at a time, or that has examined specific predictors of belonging opportunities in isolation from other factors. For instance, past research has theorized and, in some cases, shown that students of color and students from first-generation backgrounds are afforded fewer opportunities to belong than students from other backgrounds (Destin, 2020; Gray et al., 2018; Hurtado et al., 1998,

2012). Yet typically such research has examined only one or a few institutional contexts, even as there is certainly variability across contexts. In general, past research has not provided the research designs or statistical models necessary to quantify variability within identity groups across contexts or over time (Fong et al., 2024; Gelman, 2015; Kaplan, 2023; Kaplan et al., 2020; though see Graham et al., 2022, for examples in K-12 settings). Even when institutional contexts are considered, they are often discussed in broad, simplified terms (e.g., "Does the institution meet an enrollment threshold to qualify as an HSI?"; Covarrubias et al., 2023), or examine only a single contextual factor (e.g., in-group representation; Walton et al., 2015a, 2015b). Here, we report results (a) that generalize to a large portion of the post-secondary landscape in the USA; (b) that integrate and test the role of multiple aspects of institutional contexts and diverse student identities in predicting variability in belonging opportunities; and (c) that examine the role of these multiple potential predictors of belonging opportunities simultaneously.

Finally, we discuss what institutions can do to help ensure every student they serve, especially those students in groups that have been historically excluded, can come to feel they belong on campus.

A Review of Four Classes of Institutional Barriers to Belonging in Higher Education

Belonging is both a core human need (Baumeister & Leary, 1995) and widely considered a linchpin for success in college (Strayhorn, 2018; Walton & Brady, 2017). When students are supported in their belonging, they find greater intrinsic value in their studies (Carr & Walton, 2014; Freeman et al., 2007; Gopalan & Brady, 2019; Walton et al., 2012). In turn, they demonstrate greater motivation and engagement (Gillen-O'Neel, 2021; Walton & Cohen, 2007), which contributes to higher achievement (Carini et al., 2006; Deci et al., 1991; Murphy & Zirkel, 2015; Shook & Clay, 2012; Walton & Cohen, 2011), better health and well-being (Gopalan & Brady, 2019; Walton & Cohen, 2011), greater persistence and retention (Berger & Milem, 1999; Gopalan & Brady, 2019; Hausmann et al., 2007), and, ultimately, improved life satisfaction and career success (Brady et al., 2020). Because students from historically underserved racial-ethnic and social-class backgrounds in higher education face the most pervasive questions about their belonging, efforts to support belonging, including race-neutral efforts, can have the greatest benefits for these student groups (Brady et al., 2020; Erman & Walton, 2014; Gillen-O'Neel, 2021; Murphy & Zirkel, 2015; Walton & Cohen, 2011).

In this section, we review four classes of institutional factors that expand (or constrain) opportunities to belong in college: (1) in-group representation; (2) inclusive (vs. exclusive) campus cultures; (3) opportunities to develop strong relationships; and (4) opportunities for productive learning (see Table 1). We identified these factors relying on past research, anticipating that they may contribute to racial-ethnic

Table 1 Four classes of institutional factors that predict belonging for student identity groups on college campuses

Factor 1: in-group representation	Factor 2: inclusive (vs. exclusive) campus cultures	Factor 3: opportunities to develop strong relationships	Factor 4: opportunities for productive learning
	• Sincere commitment to diversity, equity, and inclusion • Reduced social identity threats • Reduced bias and discrimination	• Opportunities to develop strong peer relationships • Opportunities to develop strong mentor relationships	• Pathways to purpose • Growth (vs. fixed) mindsets cultures

and social-class inequality in opportunities for belonging as well as to variability across contexts.[3] While these factors overlap, and can become mutually reinforcing in a student's experience, it is useful to distinguish them both because research has examined their influence as distinct factors and because they point to different steps institutions can take to improve campus climates. Although not our emphasis here, we also presume that the relationship between belonging and these factors is often reciprocal and recursive.

In the subsequent section, we report new analyses from the College Transition Collaborative trial that operationalize these factors and quantify their predictive relationship with the opportunities to belong experienced by different student identity groups. In doing so, we provide an unparalleled map of the landscape of belonging affordances in US higher education.

Finally, we conclude by reviewing *how* institutions can make changes to improve their campus climate to be more inclusive, focusing on the factors identified here.

Factor 1: In-Group Representation

The underrepresentation of students of color and those from less affluent backgrounds on college campuses creates challenges to belonging for students in these groups for several reasons.

First, the mere fact of underrepresentation can make a person's identity more salient, both for themselves and for those around them (Graham et al., 2022; Kanter, 1977; Kardosh et al., 2022; Lord & Saenz, 1985; Taylor et al., 1978). For instance, when a student's race-ethnicity is underrepresented in a classroom (e.g., one Black student in a predominantly White class), they are more likely to reference their race-ethnicity (McGuire et al., 1978). This heightened salience can prompt worries about being tokenized or stereotyped by others (Cohen & Swim, 1995; Davis et al., 2004; Keller & Sekaquaptewa, 2008; Lewis & Shah, 2021; Mallett et al., 2011; Purdie-Vaughns et al., 2008; Robinson, 2013; Steele et al., 2002), which can erode feelings of belonging (Krusemark, 2012).

Second, underrepresentation acts as a cue. Students who survey their college environment and see few people from their group there may wonder why their group is poorly represented. Particularly when underrepresentation is paired with a history of negative stereotypes that allege that one's group is less capable than others or less deserving of educational opportunities, students may suspect that their group

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[3] This empirical review uses data from the College Transition Collaborative's massive trial of the social-belonging intervention (Walton et al., 2023). During study planning, our large team of experts on belonging, which was led by social psychologists but also included researchers with training in economics, statistics, policy, and higher education, deliberated on which measures to include in the survey, which ultimately gave rise to the four classes of institutional factors discussed here. This discussion was grounded in our collective understanding of the belonging literature at that point in time, with particular attention to theories and research that provide causal evidence of factors that affect belonging. We conceptualize these factors as important influences on belonging but not as encompassing all such influences.

is underrepresented because it is not welcome—that it does not *belong* there (Davis et al., 2004; Kumar et al., 2019; Murphy & Zirkel, 2015).

Third, the reality of underrepresentation means that there are fewer opportunities to connect with members of one's own group on campus. This makes it more difficult to form in-group friendships, to join in-group networks, or to find and engage in cultural events that celebrate one's racial-ethnic or social class identity (Brannon & Lin, 2021; Rolón-Dow et al., 2022). It may also mean that culturally relevant coursework, affinity groups, and campus events are less common (Rolón-Dow et al., 2022), and it may restrict opportunities to effectively advocate for these resources or address other group-specific concerns (Astin & Bayer, 1971).

Revealing the importance of ingroup representation, Murphy et al., (2007) showed advanced math, science, and engineering college students a promotional video for a STEM leadership conference. Half saw a video in which men outnumbered women three to one; half saw a gender-balanced video. Women who saw the gender-imbalanced video (vs. the gender-balanced video) not only anticipated a diminished sense of belonging and expressed less interest in attending the conference. They also showed heightened cognitive and physiological vigilance, including greater memory for trivial aspects of the video and increased heart rate and sweating. In a context in which women face negative stereotypes (see Thébaud & Charles, 2018), the gender-imbalanced video triggered a psychological threat.

The harms associated with low in-group representation, evident in controlled experiments, also emerge in real-world academic environments. One field study of women in engineering found that, in male-dominated majors (< 20% women, averaging 10% women), women underperformed relative to men and reported lower levels of belonging and worse social and psychological experiences on an array of measures; by contrast, no gender disparities emerged at the same institution in more gender-balanced majors (> 20% women, averaging 33% women; Walton et al., 2015a, 2015b). Similarly, increased representation of racial-ethnic minority and first-generation students in STEM courses has been linked to higher grades for all college students, but especially for students within these minoritized groups (Bowman et al., 2023).

In another study, Black engineering students at Historically Black Colleges and Universities (HBCUs), as compared to peers attending Predominantly White Institutions (PWIs), experienced a greater sense of institutional belonging (Kumar et al., 2019). Many students, in their qualitative responses, pointed to the significance of being among "people like me." Although PWIs will not typically become minority-serving institutions, this research suggests that increasing the representation of students from historically underrepresented racial-ethnic and social class backgrounds on campus is one way to expand opportunities for belonging for students from these groups.

Factor 2: Inclusive (vs. Exclusive) Campus Cultures

While an adequate presence of students of color and those from less affluent backgrounds is important, representation alone does not ensure that students experience

a sense of belonging on campus (Covarrubias et al., 2023; Garces & Jayakumar, 2014; Hurtado & Ruiz Alvarado, 2015; Hurtado et al., 1998, 2012; Muragishi et al., 2023; Sanchez, 2019). It is also important that students experience the overall campus culture as inclusive rather than exclusive (Hurtado & Carter, 1997; Slaten et al., 2014). What differentiates an inclusive campus culture from an exclusive one?

Sincere Commitments to Diversity, Equity, and Inclusion First, how an institution approaches diversity, equity, and inclusion shapes whether students from groups that could be excluded feel welcome and valued on campus (Hurtado et al., 2012; Lewis & Shah, 2021). When students from marginalized racial-ethnic and social class backgrounds perceive inadequacy or insincerity in their college's commitment to these values (Lewis & Shah, 2021; Rolón-Dow et al., 2022; Wilton et al., 2020) and/or when these students perceive their institution as unresponsive to their values, goals, and concerns (Brannon et al., 2015; Browman & Destin, 2016; Stephens et al., 2012a, 2012b, 2012c; Valandra et al., 2022), it can negatively impact their sense of belonging within the institution. To illustrate, consider how in the wake of the George Floyd murder, many universities issued statements condemning racism and expressing solidarity with the Black community. Although the intent behind these solidarity statements was likely positive, Valandra et al. (2022) point out that many such statements were seen as insincere ("empty platitudes"). Experiments revealed that when solidarity statements lacked specific mention of concrete actions that institutions would take to address racial inequities, they were more often seen as performative which, in turn, tended to undercut Black Americans' sense of belonging in these institutions (Derricks et al., 2023). An inclusive campus, therefore, is sincere in its promotion of diversity, equity, and inclusion, and holds itself accountable when it falls short. Institutions, however, may vary in how effectively they promote and uphold values of inclusion in general and/or with regard to different student groups.

Reduced Social Identity Threats Second, when people enter a space in which their group has been devalued, mistreated, or marginalized, they may experience identity threat: a pervasive concern and vigilance to the prospect of group-based devaluation, exclusion, or disrespect (Murphy & Taylor, 2012; Steele et al., 2002), which can diminish their feelings of belonging (Cohen & Garcia, 2008; Walton & Cohen, 2007).

Identity threat arises from cues, both overt and subtle, that signal to certain groups that they are less valued than others in a setting, or are at risk of devaluation (Steele et al., 2002; Walton et al., 2015a, 2015b). One such cue we have already discussed is insufficient in-group representation (Murphy et al., 2007; Purdie-Vaughns et al., 2008), but there are many others (Cheryan & Markus, 2020; Murphy & Taylor, 2012; Murphy et al., 2018). For example, practices that emphasize independence and competition over interdependence and collaboration can imply to students from more interdependent communities, like first-generation college students, that they do not fit (Canning et al., 2020; Diekman

et al., 2010; Fryberg & Markus, 2007). Additionally, curricular exclusion—where the contributions and histories of people of color and people from working class backgrounds are omitted in favor of an emphasis on the wealthy and White—can signal to students from these excluded racial-ethnic and social class groups that their identities and histories are not valued (e.g., Van Gilder et al., 2024). Physical cues on campus—such as which groups are represented in campus cultural centers, and the presence (or absence) of gender-affirming restrooms and private lactation rooms—can also signal who is typical and valued (Krusemark, 2012). Similarly, the tradition of honoring founders (typically White men) or donors (wealthy) with statues or building names can signal who is valued on campus—wealthy White people—and who is not—everyone else (Alderman & Rose-Redwood, 2020; Inwood & Martin, 2008; Johnson et al., 2022; Trawalter et al., 2021).

As an empirical demonstration of the role of physical cues, Cheryan et al. (2009) filled a computer science classroom with stereotypically masculine items, like Star Trek posters and video game paraphernalia. This signaled a geeky masculine representation of computer science, which undermined women's sense of belonging and interest in the field relative to men. But when the room featured gender-neutral objects instead, such as nature posters and water bottles, if anything women expressed *more* interest in computer science than men.

So, an inclusive campus seeks to identify and eliminate identity threatening cues. Yet, institutions may vary in how well they recognize these threats and mitigate their impacts.

Reduced Bias and Discrimination Third, both bias and the failure to acknowledge and address bias hinder students' experience of belonging (Hurtado & Ruiz Alvarado, 2015; Hussain & Jones, 2021; Levin et al., 2006; Slaten et al., 2016), as well as elevate identity threat (Logel et al., 2009), undermine emotional, cognitive, and physical health (Clark et al., 1999; Green et al., 2024; Keels et al., 2017; Murphy et al., 2013; Paradies et al., 2015), and ultimately reduce the likelihood students can form the kinds of relationships they need to thrive (Milkman et al., 2015).

Bias manifests in many forms, from subtle microaggressions (Ellis et al., 2019; Keels et al., 2017; Lewis et al., 2021; Morales, 2014; Solórzano et al., 2000; Van Gilder et al., 2024) to overt discrimination (Bonilla-Silva & Peoples, 2022; Davis et al., 2004; Jenkins et al., 2021; Smith et al., 2016; Valandra et al., 2022). All can erode feelings of belonging (Lewis & Shah, 2021; Tachine et al., 2017). As one example, an audit study by Milkman et al. (2015) of more than 6500 professors in the USA revealed that faculty on average were more responsive to requests for informal mentorship from students with names suggesting a White male identity than all other student groups (see also Moss-Racusin et al., 2012; Zhao & Biernat, 2017). These results imply that it is not just the awareness of bias that can undermine students' experience and belonging. A direct consequence of bias is to constrain opportunities for students to form relationships that will support their learning and growth.

So, an inclusive campus proactively seeks to prevent bias and discrimination and, when discrimination does occur, actively confronts and addresses it. Yet,

institutions may vary in whether they acknowledge bias and discrimination, and if they do, in how they attempt to prevent or address it (and for whom).

Factor 3: Opportunities to Develop Strong Relationships, or Lack Thereof

The degree to which a university does, or does not, create opportunities for students to develop strong relationships on campus can influence students' sense of belonging (Slaten et al., 2014, 2016). Close personal relationships serve many functions related to belonging for college students, and many kinds of relationships play important roles.

Opportunities to Develop Peer Relationships Close peer friendships can help students navigate and handle many of the challenges that come up in college, as well as support psychological well-being (Bolger et al., 2000; Fisher et al., 2019; Hausmann et al., 2007; Hoffman et al., 2002; Locks et al., 2008; Rubin et al., 2016). For instance, friendships support academic motivation. One laboratory study found a social connection as minimal as a shared birthday with a math major led undergraduates to express greater motivation in math and to persist 65% longer on an insoluble math puzzle (Walton et al., 2012), an effect that was mediated by greater feelings of belonging in math. Similarly, peer collaboration can be a powerful source of intrinsic motivation: Simply being treated as a partner on a task, rather than as working separately, can lead students to enjoy challenges more, to persist longer, and to choose to pursue more challenges in the future (Carr & Walton, 2014).

For students from underrepresented groups, it is helpful, in addition, to distinguish *intragroup friendships* (with other members of one's group) and *intergroup friendships* (with a broader community, such as with students in a majority group on campus). Both serve important functions and can face particular barriers.

Intragroup friendships can create a sense of community with one's in-group on campus; provide opportunities to see in-group members who have succeeded in the institution, who may constitute effective role models and peer-mentors; provide opportunities to deepen an appreciation for one's in-group identity; support the perception that the institution, which hosts these relationships, values one's identity; and provide opportunities for collective advocacy (Brannon & Lin, 2021; Carter et al., 2019; Dennehy & Dasgupta, 2017; Lockwood & Kunda, 1997; Thelamour et al., 2019). Yet opportunities to develop and maintain intragroup friendships on campus can vary, both as a function of the representation of a student's group on campus and institutional support for the student's identity group, through community centers, affinity groups, ethnic-themed cultural groups, and classes (Bonilla-Silva & Peoples, 2022; Stellino, 2020).

Strong intergroup friendships are also valuable. For students from underrepresented groups, these friendships can seem to represent the institution and belonging in it as a whole; provide opportunities to understand challenges in college from a broader perspective; and, like intragroup friendships, buffer against the

negative mental health effects of discrimination (Akcinar et al., 2011; Benner & Wang, 2017; Carey et al., 2022; Mendoza-Denton & Page-Gould, 2008; Muragishi et al., 2023; Shook & Clay, 2012; Walton et al., 2015a, 2015b). Intergroup friendships also serve important roles for majority-group students, including to broaden their perspectives and reduce intergroup prejudice (Brannon & Walton, 2013; Shook & Fazio, 2008). Several past trials of the social-belonging intervention find a strengthening of students' close friendships on campus in parallel to improvements in students' academic trajectory, including both closer friendships in general for students from underrepresented groups (Yeager et al., 2016a, 2016b) and more cross-group friends, in particular (Walton et al., 2015a, 2015b). Yet institutional contexts vary in the availability of these friendships, potentially even *within* institutions across different student identity groups. One source of this variance involves basic features of the college environment, which shape the opportunities all students have to interact with each other, including the availability of on-campus housing and residential programming; the presence of small or collaborative or project-based classes; and space and support for student groups in general. Other factors include default normative patterns of interaction among peers and in classes. Such patterns can functionally include or exclude students from minoritized backgrounds, including in student work groups (Binning et al., 2024; Dasgupta et al., 2015; Muragishi et al., 2023). Additionally, even as similarities are, in general, a basis of friendships (Pettigrew, 1998; Walton et al., 2012), it is also important for students from different groups to be able to recognize and value differences (Sanchez et al., 2022). Yet college environments may vary in the extent to which they support cross-group friends in recognizing and valuing both similarities and differences, which may contribute to instability in these friendships (Carey et al., 2022; Plummer et al., 2016; Rude & Herda, 2010; Shelton et al., 2023; Shook & Fazio, 2008; Trail et al., 2009).

Opportunities to Develop Strong Mentor Relationships In addition to peer friendships, mentor relationships with faculty and other instructors play many roles for students (Campbell & Campbell, 1997, 2007; Freeman et al., 2007; Hallinan, 2008; Kraft et al., 2023; Miller et al., 2019; Palmer & Gasman, 2008; Whitten et al., 2020). Instructors not only help students plan their courses, link them to campus support services, and provide high-quality learning experiences (Chang et al., 2014; Chhuon & Wallace, 2014; Deil-Amen & Rosenbaum, 2003), they also communicate to students that they are seen, valued, cared for, and believed in. In the best circumstances, mentors share with mentees a vision of the good and capable person they can become, even when they are struggling or not there yet (Chhuon & Wallace, 2014; Drake, 2011; Hoffman et al., 2002). Indeed, one of the strongest predictors of students' sense of belonging in school is perceived support from teachers (Allen et al., 2018). Experimental and longitudinal evidence finds that specific approaches to affirm or restore trust and strengthen relationships with mentors can have powerful lasting benefits for students' experience in both secondary and post-secondary school (Carrell & Kurlaender, 2023; Dennehy & Dasgupta, 2017; Gehlbach et al., 2016; Walton et al., 2021; Wu et al., 2022; Yeager et al., 2014a, 2014b).

However, opportunities to develop and maintain mentor relationships vary (Limeri et al., 2019), including along racial-ethnic and social class lines (e.g., Van Gilder et al., 2024). As mentioned above, audit studies show that college faculty can be less responsive to outreach from students from historically marginalized groups (Milkman et al., 2015; Moss-Racusin et al., 2012; Zhao & Biernat, 2017). And beyond initial engagement, mentor–mentee relationships that bridge social identity divides can also involve some of the same tensions that arise in other cross-group interactions, including concerns about negative and stereotypical judgment, which can give rise to mistrust (Cohen & Steele, 2002; Cohen et al., 1999). Just as the social-belonging intervention has improved students' development of close friendships in college, so it has improved students' development of mentor relationships, particularly among students of color and first-generation students including at the end of the first year (Yeager et al., 2016a, 2016b, Table S21) and in retrospective reports after college (Brady et al., 2020). In the latter case, this gain in mentorship statistically mediated large treatment-caused improvements in Black graduates' life satisfaction and career satisfaction and success in young adulthood. Yet if such mentor relationships are unavailable, gains that hinge on them will go unrealized.

Factor 4: Productive Learning Opportunities, or Lack Thereof

College is centered on the goals of learning: on identifying and developing a purpose, specific skills, and values that can guide a student into adult life and help them become the person they aspire to be. So, when a student doubts their belonging in college, they are not merely questioning their social place. They are wrestling with their opportunity to pursue this transformative journey. Thus, another factor that influences students' opportunity to belong is whether the post-secondary institution gives students opportunities to learn and develop in ways that are meaningful to them (Slaten et al., 2014, 2016). Such opportunities serve as pathways for students to engage substantively with academic and non-academic pursuits on campus, fostering a deeper sense of connectedness.

Pathways to Purpose The reason people pursue post-secondary education, sometimes moving far from home, sacrificing other opportunities, or going into debt, is because they believe a college education will help them become the kind of person they would like to be and to do the kinds of things they would like to do in their lives. That might mean gaining skills that could help them pursue an interesting or important profession; being financially secure and able to support a family; joining new and diverse communities that enrich their lives; and/or developing ways to give back or make a difference in a problem or to a community they care about.

Colleges and universities can support students' growth in identifying and developing this sense of purpose and forging a path to achieving it, including through course offerings, programs, student groups, and structured approaches that help students reflect on their purposes in classwork and college (Diekman et al., 2024; Hulleman & Harackiewicz, 2020; O'Keefe et al., 2018, 2023). Yet success in doing so may vary across institutions and student groups. In turn, if a student finds their college

environment is not helping them develop and pursue long-term goals they value, they may experience a lack of belonging on campus (Lewis et al., 2019).

Growth (vs. Fixed) Mindsets Cultures Campus cultures, and their many subcultures (e.g., colleges, departments, and classrooms), also vary considerably in the beliefs they express and imply about the nature of intelligence, known as *institutional mindsets* (Murphy et al., 2021, 2025). Some spaces exhibit more of a *fixed mindset culture*, where the prevailing values and norms hold that intelligence is a static, innate trait. This mindset emphasizes so-called natural talent and interprets failure as a sign of inherent inability. Policies and practices in these places prioritize recruiting and retaining only the "best and brightest," as in "weed-out classes," overlooking the potential for growth and development in a broader population. Other spaces, however, exhibit more of a *growth mindset culture*, where the prevailing values and norms hold that intelligence can be nurtured through persistence, strategic effort, and support-seeking. Accordingly, policies and practices are tailored to nurture the potential in *all* students, not just those who excel initially. These environments value progress and resilience, and encourage learning from setbacks.

Research consistently shows that fixed mindset cultures, compared to growth mindset cultures, are linked to a reduced sense of belonging, often negatively impacting engagement and performance (Good et al., 2012; Hecht et al., 2023a, 2023b; Kroeper et al., 2025; LaCosse et al., 2021; Muenks et al., 2020, in press; Rattan et al., 2018). Fixed mindset cultures particularly harm students from marginalized racial-ethnic, social class, and gender backgrounds (Canning et al., 2019, 2022; Emerson & Murphy, 2015; Good et al., 2012; LaCosse et al., 2021; Rattan et al., 2018). One longitudinal field study found that even as all students performed worse in STEM classes taught by professors who endorsed a fixed (rather than growth) mindset, this harm was greatest for racially minoritized students (Canning et al., 2019).

The differential effects of fixed mindset cultures can be understood through a social identity threat lens (Emerson & Murphy, 2014; Walton et al., 2015a, 2015b). Fixed mindset cultures imply that certain people are naturally smart while others are not. Students from historically marginalized communities, who contend with stereotypes that allege that they are less capable than others, are therefore particularly likely to be perceived—and to fear that they will be perceived—as lacking in ability (Canning et al., 2022; Emerson & Murphy, 2015; Rattan et al., 2018). Testing this identity threat process, Canning et al. (2022) had students evaluate a calculus syllabus that either reflected a fixed mindset (e.g., "Students that struggled in Calculus I will not be able to keep up") or a growth mindset (e.g., "If you have not mastered concepts yet, see me or a TA for resources"). Women in the fixed mindset condition experienced greater concerns about stereotyping and a reduced sense of belonging, which contributed to lower test performance—a pattern not shown by men.

Current research advocates for educational environments to cultivate growth mindset cultures (Hecht et al., 2023a, 2023b; Kroeper et al., 2022a, 2022b; Muenks et al., 2024), as these cultures are more inclusive, equitable, and effective in nurturing a sense of belonging. Yet, institutions may vary in how successfully they implement and sustain them.

An Empirical Examination

So far, we have reviewed past literature examining four classes of institutional factors that restrict or expand opportunities for belonging in college: (1) in-group representation, (2) inclusive cultures, (3) opportunities for strong relationships, and (4) opportunities for productive learning. All these factors may vary, both by student identity groups and institutional contexts. Traditionally, these factors have been studied in isolation—fragmented and scattered across many often small-scale studies. The CTC trial allows us to examine the predictive role of these factors simultaneously, in one large, diverse, and representative sample. In doing so, we can begin to build an integrated understanding of the variability in students' opportunity to belong in post-secondary institutions in the USA and predictors of this variability.

In this section, we will examine variation in opportunities to belong, *across* and *within* the 22 institutions involved in the CTC trial. To do so, we examine variability across the 374 "local-identity groups" (LIGs) in this trial. Then, we operationalize the four factors outlined above, and quantify their predictive relationship with variability in the opportunities to belong experienced by different student groups. Finally, we conclude by discussing how institutions can broaden opportunities for belonging, especially for student groups not yet well served, by focusing on these four classes of factors.

Data and Background

In the 2015–2016 (cohort 1) and 2016–2017 (cohort 2) academic years, the CTC carried out a multi-site randomized controlled trial (RCT) of the social-belonging intervention in partnership with 22 diverse post-secondary institutions. A total of 26,911 college students formed the analytic sample for primary experimental tests (Walton et al., 2023). The participating institutions vary in size, geography, and selectivity, and include broad-access public universities, public flagship universities, liberal arts colleges, and selective private universities (for details, see Table S1). Generalizability analyses show that this sample reasonably represents 749 4-year colleges and universities in the USA, which collectively welcome more than a million students to college every year (Walton et al., 2023).

During the summer before beginning college, students recruited for the CTC trial were randomized to complete belonging or active control materials through online modules offered by their matriculating institution. Then, toward the end of their first year at college, these same students were invited to participate in a spring term survey,[4] which asked about their experiences of belonging and perceptions of the campus environment, among other questions not central to the focus of this paper.

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[4] The spring survey was administered via Qualtrics and took no more than 15 min, including open-ended responses. At most schools, all students were invited to participate; however, at schools with very large student populations, a random subsample was invited, with an oversampling of underrepresented racial/ethnic minority students to ensure adequate sample sizes across groups.

A primary focus of the CTC trial was to examine heterogeneity in intervention effectiveness, particularly as a function of belonging affordances (Walton et al., 2023; for other studies using CTC data, see Bowman et al., 2022, 2023; Gilbertson et al., 2022; LaCosse et al., 2020; Logel et al., 2021; Stubblebine et al., 2024). Results showed that the social-belonging intervention significantly improved progress in college, namely the rate at which students completed the first year full-time enrolled, particularly among students in groups that had historically progressed at lower rates. Yet these gains were constrained by belonging affordances: Among student groups that did not have minimally adequate opportunities to belong at their institution, the intervention had no detectable effect on academic progress.

Although these results helped inspire our emphasis on belonging affordances, and although we use data from the CTC trial here, our primary purpose is not to describe the social-belonging intervention. Instead, focusing on the 15,143 students assigned to the control group, we aim to deepen our understanding of belonging affordances: absent intervention, how much does the opportunity to belong vary *across* and *within* institutions, as well as *across* and *within* racial-ethnic and social-class groups? How well do key institutional factors, drawn from past literature, predict these belonging affordances?

Key Terminology

We briefly overview our terms here, describing how we assessed key measures and how we interpret them. More details are provided in the Supplementary Information (SI). For further technical details, see Walton et al. (2023).

Local-Identity Groups As part of the CTC trial, we classified students into LIGs based on students' (a) race-ethnicity, (b) first-generation status, (c) cohort, and (d) college (Walton et al., 2023). Thus, each LIG represents students of a given race-ethnicity, with a given first- or continuing-generation status, enrolled at a specific college, in a specific cohort (e.g., "continuing-generation Black students starting at Yale University in the 2016–2017 academic year"; "first-generation Asian students starting at Southern Oregon University in the 2015–2016 academic year").[5] Understanding variability at the LIG-level offers far more theoretical nuance and statistical power than traditional approaches, which compare only a few static, canonical groups (e.g., Black vs. White students) or that broadly categorize students as "disadvantaged" vs. "advantaged." Such approaches presume that the same groups that are underserved at one institution will be underserved at another. The LIG-level approach relaxes this assumption, allowing us to detect and quantify variability in belonging affordances *across* and *within* institutions and identity groups simultaneously.

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[5] Racial-ethnic identity and first-generation status were obtained from student self-reports at the point of intervention delivery, supplemented with institutional demographic records when self-report data were unavailable. Although 456 LIGs were possible, the final analytic sample includes only 374 LIGs, as not all race-ethnicity and first-generation-status combinations were present in all college cohorts.

Belonging This measure, assessed at the student level, reflects each student's sense of how well they fit in at their school at the time of the spring term survey. It consists of 4 items: "I feel like I belong at [school name]"; "I fit in well at [school name]"; and "I feel comfortable at [school name]," rated on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*); "When you think about [school name], how often, if ever, do you wonder: 'Maybe I don't belong here?,'" rated on a 5-point scale from 1 (*never*) to 5 (*always*). This final item was reverse-scored. All items were converted to a 10-point scale, prior to averaging.

Belonging Affordances This measure, assessed at the LIG-level, estimates each identity group's *opportunity to belong* at a specific college within a specific cohort. To operationalize this opportunity to belong, we measured the degree to which students in a given race × first-generation status identity group, in a particular cohort, at a particular college achieved a sense of belonging, on average, by the end of the spring semester of their first year, absent treatment.

Following Walton et al. (2023), we used a multilevel random effects model to obtain Empirical Bayes (EB) estimates of belonging for each LIG. We used the EB estimation method because the LIGs varied widely in size. EB estimation reduces the fluctuations in raw group means that can be especially large for small groups. EB estimates thus provide an informative average mean value (see Raudenbush & Bryk, 2002). While we interpret this measure as an estimate of belonging affordances, it is a proxy rather than a direct measure of this construct, as the degree to which students in a given identity group achieve a given level of belonging reflects both local contextual affordances and other influences (e.g., potentially including students' prior experiences in school and broader cultural and societal factors; Offidani-Bertrand et al., 2022).

In the present study, we examine belonging affordances in two ways: continuously, when analyzing predictors of belonging affordances, and categorically, when examining variability in the percentage of LIGs for which belonging affordances were "minimally adequate." Following Walton et al. (2023), we defined "minimally adequate" belonging affordances using Bayesian Causal Forest (BCF) analyses. This method uses machine-learning to identify complex, non-linear interactions and is known for conservatively detecting true heterogeneity where it exists, while avoiding over-interpretation (Hahn et al., 2020; Yeager et al., 2019). Using BCF analysis, Walton and colleagues found that the threshold at which the belonging affordances moderator impacted the social-belonging intervention's treatment effect was at -0.50 SD, which corresponded to the 36th percentile among LIGs. For LIGs with a Belonging Affordance EB estimate below this threshold, the social-belonging intervention did not improve first-year full-time completion rates, whereas for LIGs above this threshold, it was beneficial on average. That is, among student groups with minimally adequate opportunities to belong, the intervention helped students translate these opportunities into greater progress through the first year of college.

Institutional Factors These measures reflect the four classes of institutional factors that we expect, based on the literature reviewed above, to predict belonging affordances: (1) in-group representation, (2) inclusive campus cultures, (3) opportunities for strong relationships, and (4) opportunities for productive learning. In examining how these factors predict belonging affordances, we seek to open up what is otherwise essentially a black box: *why* might some student groups experience greater belonging affordances than others? Our hope is that understanding these predictive relationships will inform both theory (what underlies belonging at the group level?) and practice (what might institutions do to expand belonging affordances?). Estimates of in-group representation were computed from data provided by each institution. All other measures were obtained from the spring-term survey (see Table S6). As with the belonging affordances measure, we derived EB estimates at the LIG-level for each institutional factor within each class. Full descriptive details and inter-correlations are provided in the *SI* (Tables S2–S3).

Results

How Do Opportunities for Belonging Vary?

How Do Belonging Affordances Vary by Identity Groups? First, we observe meaningful variation across identity groups. Some identity groups are systematically better served than others (see Fig. 1 and Table 2). For instance, while 97% of White LIGs, 90% of Hispanic/Latinx LIGs, and 70% of continuing-generation LIGs had adequate belonging affordances—meaning their LIG-level EB estimates exceeded
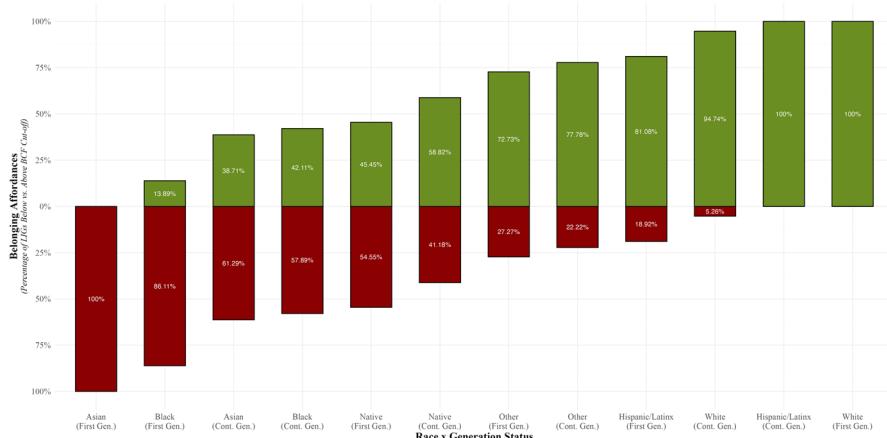

Fig. 1 Percentage of local-identity groups below vs. above the "minimally adequate" belonging affordance cut-off by race × generation identity groups. Note. The "minimally adequate" belonging affordance cut-point, determined by BCF analyses, is set at −0.50 SD, corresponding to the 36th percentile among LIGs. LIGs above this threshold are considered to have medium-to-high opportunities for belonging, while those below are considered low

Table 2 Percentages of LIGs with medium-to-high (versus low) belonging affordances

	Examining race-ethnicity and first-gen. status separately	Examining intersections between race-ethnicity and first-gen. status	
		Among first-gen. LIGs	Among continuing-gen. LIGS
By race-ethnicity			
Hispanic/Latinx	90%	81%	100%
Black/African/African American	28%	14%	42%
Asian/Asian American	22%	0%	39%
Nat. Am./Nat. Hawaiian/Other Pac. Isl	54%	45%	59%
White/European American	97%	100%	95%
Other	75%	73%	78%
By generation status			
First-generation	57%	-	-
Continuing generation	70%	-	-

the "minimally adequate belonging affordances" cut-point—only 28% of Black LIGs, 22% of Asian LIGs, and 57% of first-generation LIGs did. There were also important identity intersections, particularly among Asian and Black LIGs. Whereas 42% of Black and 39% of Asian *continuing-generation* LIGs had adequate belonging affordances, only 14% of Black and 0% of Asian *first-generation* LIGs did. The results reveal systemic disparities in belonging affordances in the post-secondary system in the USA. Black and Asian first-generation students in particular have the fewest opportunities to belong.

Second, we observe meaningful variation within each identity group (see Fig. S1). To illustrate, Black continuing-generation college students at School 7 had the lowest mean belonging affordances in the entire sample (EB Estimate = −2.67), placing them in the 0th percentile of all LIGs; in contrast, at School 16, Black continuing-generation college students had a much higher mean belonging affordance (EB Estimate = 0.31), placing them in the 73rd percentile of all LIGs. Similarly, Native American first-generation college students had low belonging affordances at School 5 (EB Estimate = −0.99, 10th percentile); however, at School 18, this group had one of the highest belonging affordances (EB Estimate = 1.61, the 90th percentile). Thus, even as there is systemic variation across identity groups, these groups are not monoliths. There is important variation within groups. Some institutions offer adequate belonging opportunities to groups that are generally less well served. As we will address: Why? What institutional practices could make belonging affordances more equitable?

How Do Belonging Affordances Vary by Institutions? Just as we observe variation across identity groups, we see variation across schools (see Figs. 2 and 3). In
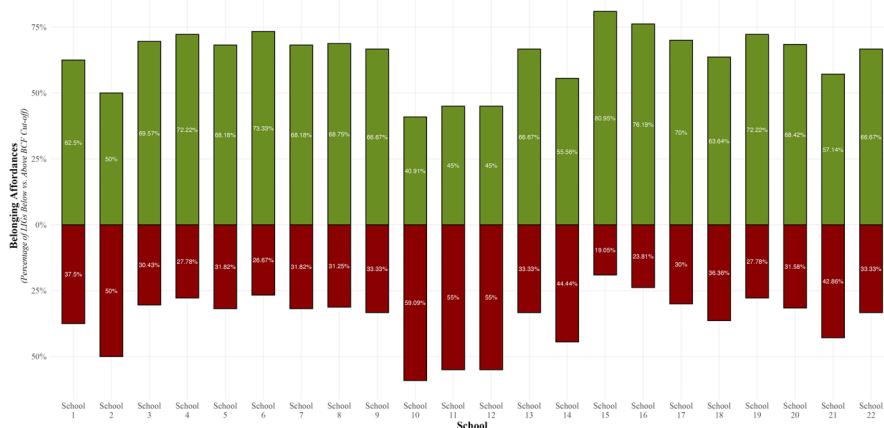
Fig. 2 Percentage of local-identity groups below vs. above the "minimally adequate" belonging affordance cut-off by school..Note. The "minimally adequate" belonging affordance cut-point, determined by BCF analyses, is set at −0.50 SD, corresponding to the 36th percentile among LIGs. LIGs above this threshold are considered to have medium-to-high opportunities for belonging, while those below are considered low
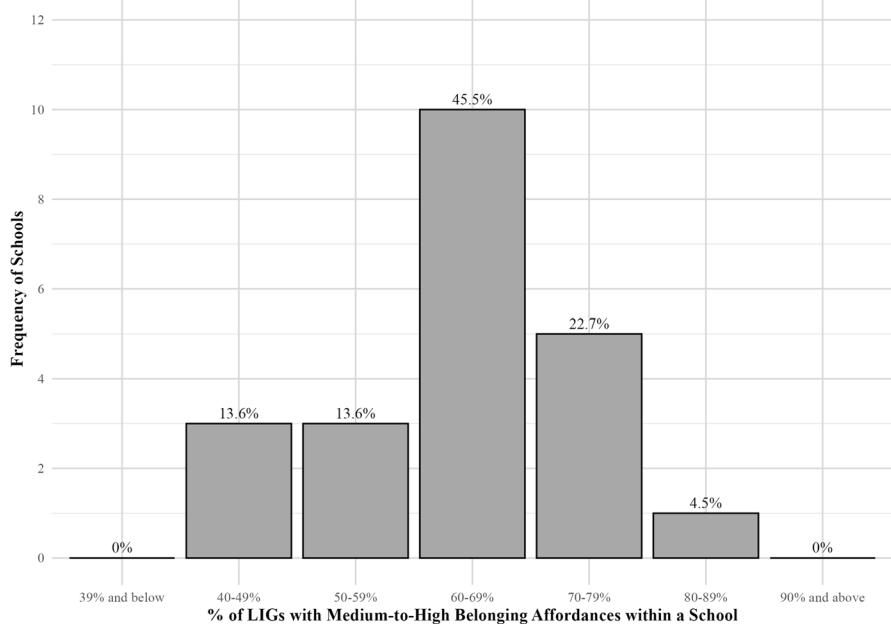

Fig. 3 Percentage of local-identity groups with medium-to-high belonging affordances within school

School 15, for example, 81% of LIGs had minimally adequate belonging affordances (the highest percentage in the sample). However, in School 10 only 41% of LIGs exceeded this cut-point (the lowest percentage in the sample).

Most schools in our sample afforded adequate belonging opportunities to most LIGs (86.3% did); however, none served all identity groups adequately. At School 15, for instance, even as White first-generation students had very high belonging affordances (EB Estimate = 2.66, 99th percentile), Black first-generation students had very low belonging affordances (EB Estimate = −1.22, 4th percentile; see Fig. S2). Every college in our sample successfully created belonging affordances for at least some identity groups. And *every* institution can expand belonging affordances to more identity groups.

Importantly, this institutional variability does not merely reduce to institutional classifications. As an example, first-generation Hispanic/Latinx students had the greatest belonging affordances in our sample at one Hispanic-serving institution (HSI), ranking first among 37 college cohorts for this identity group. Yet, a different HSI had the *lowest* belonging affordances for this same identity group, ranking 37th out of the 37 college cohorts (see Covarrubias et al., 2023, for related work on the concept of "servingness" and how it varies across HSIs). As another illustration, continuing-generation Black students had the greatest belonging affordances at one select private university in the sample, but were at the bottom at two other select private universities, ranking 37th and 38th of 38 college cohorts. Clearly, the nuances of contexts matter, extending beyond institutional classifications.

What Predicts Students' Opportunities for Belonging?

What are these nuances? In this section, we aim to open the "black box" of belonging affordances by exploring the underlying institutional factors that systematically predict this variability. We calculate correlations between measures that fall in the four classes of institutional factors reviewed earlier, linked in previous literature to belonging, quantifying their relationships with belonging affordances at the LIG-level across our large and representative dataset. Because a strong predictor of belonging affordances at the LIG-level is the proportional representation of the LIG on campus, we also calculate partial correlations that assess how well each measure predicts belonging affordances above and beyond proportional representation (see Table 3). In general, the other factors predict belonging affordances both alone and above and beyond proportional representation.

In-Group Representation on Campus Overall, higher representation of an identity group on campus predicted greater belonging affordances for that group ($r = 0.59$, $p < 0.001$).

Inclusive Campus Cultures Inclusive campus cultures predicted greater belonging affordances at the LIG-level. For instance, when members of a local-identity group perceived a genuine desire on campus to enhance race and social class inclusivity, these groups experienced greater belonging affordances ($r = 0.42$, $p < 0.001$). Conversely, the perception of an exclusive campus culture predicted lower belonging affordances. For example, reports of greater social identity threat experiences

Table 3 Correlations between institutional factors and belonging affordances at the LIG-level

Institutional factor	Predictor description	r	$r_{partial}$
In-group representation	**Proportional representation** of local identity group on campus	0.585***	-
Inclusive campus culture	**Sincerity of commitment to inclusion:** (1-item) "I believe that most people at [school name] genuinely want to make [school name] a more inclusive place with regards to race and class."	0.416***	0.229**
	Social identity threat: (3-items), e.g., "At [school name], to what extent do you worry that people negatively judge you based on what they think about your racial group?"	−0.485***	−0.297***
	Stereotype threat: (1-item) "Do you think other people at your school would be surprised or not surprised if you or people like you succeeded in school?"	−0.425***	−0.281***
	Level of biases: (1-item) "To what extent do minority-group students (e.g. racial, ethnic, sexual, religious minorities) experience bias, discrimination, or unfair treatment at [school name]?"	−0.314***	−0.219***
	Entrenched inequalities: (1-item) "Inequalities due to race and class are deeply entrenched at [school name]."	−0.409***	−0.282***
Opportunities for strong relationships	**Close peer friendships:** (2-items), e.g., "Thinking back on this past academic year so far, I feel that I have made some close friends at [school name]."	0.431***	0.331***
	Loneliness: (2-items), e.g., "At [school name], how often do you feel isolated from others?"	−0.471***	−0.397***
	Faculty/administrator mentorship: (2-items), e.g., "Thinking back on this past academic year, have you developed a relationship with a [faculty / administrator] mentor at [school name] (formal or informal) that has been helpful to you and your academic and/or personal development?"	0.194***	0.087
Opportunities for productive learning	**Purpose:** (1-item) "Right now, how much do you feel that your life at [school name] has a sense of direction or meaning to it?"	0.488***	0.493**
	Institutional fixed mindset: (2-items), e.g., "So far, it seems that most people at [school name] seem to believe that students can't really change how intelligent they are."	−0.381***	−0.270***

Note. Partial correlations are adjusted for in-group representation on campus at the local identity group level

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

pertaining to race and social class predicted fewer belonging affordances ($r = -0.49$, $p < 0.001$), as did perceptions of pervasive bias, discrimination, and unfair treatment on campus ($r = -0.31$, $p < 0.001$).

Opportunities to Cultivate Strong Relationships The opportunity to build strong relationships on campus predicted greater belonging affordances at the LIG-level. For example, the more members of a local-identity group reported forming close friendships on campus, the greater the belonging affordances that group experienced ($r = 0.43$, $p < 0.001$). Likewise, the more members of a local-identity group reported establishing mentor–mentee relationships with faculty or administrators, the greater their belonging affordances ($r = 0.19$, $p < 0.001$).

Opportunities for Productive Learning Productive learning opportunities also predicted greater belonging affordances at the LIG-level. When local-identity group members reported experiencing a greater sense of purpose on campus—feeling that their life on campus had direction and meaning—the greater the belonging affordances that group experienced ($r = 0.49$, $p < 0.001$). Conversely, the more local-identity group members perceived a prevailing fixed mindset on campus, the less that group experienced belonging affordances ($r = -0.38$, $p < 0.001$).

Understanding Institutional Factors Together While the analyses reported above examined each institutional factor, on its own and above and beyond proportional representation, we also examined these factors together. Table S3 reports correlations between and within the measures comprising the four institutional factors. As can be seen, these correlations are, at most, moderate in magnitude, suggesting that these factors are not redundant but begin to capture the complexity of college students' experience.

Table S4 reports stepwise regression analyses examining the collective predictive relationship of the institutional factors on belonging affordances. Notably, because of the relationships particularly among measures comprising each institutional factor and the potential for multicollinearity this creates, we focus on the *change in total variance explained* in this analysis rather than on individual predictor coefficients. A model with only sociodemographic factors (i.e., race and first-generation status, model 1) explained about 19% of the variation in belonging affordances. Adding in-group representation increased the explained variance significantly, to 38% (model 2). Adding predictors from each factor, one factor at a time (models 3–5), further increased the explained variance, indicating that each factor was predictive above and beyond both sociodemographic factors and in-group representation. A model including all four institutional factors explained 60% of the variance (model 6), suggesting that these institutional factors work together to predict belonging affordances.

The stepwise regression analyses also reveal that controlling for the institutional factors significantly reduced racial-ethnic and social-class inequality in belonging affordances. This finding is consistent with our theorizing that these institutional

factors contribute to inequality in belonging affordances. Our design, however, does not provide a direct test of this causal role.

Lastly, in Table S5, we report a LASSO regression, which accounts for potential multicollinearity and balances the trade-off between variance and bias using a variable selection approach. This analysis retained all institutional factors, even as one item was dropped, providing further evidence that each factor explains unique variance in belonging affordances.

What Can Institutions Learn to Expand Belonging Opportunities?

Our findings reveal systemic inequality in belonging affordances as a function of student identity group and substantial variability in this *across* and *within* institutions. Therefore, it is essential for researchers and institutional leaders to understand *their specific institutional context*: Which student groups are, and are not yet, afforded adequate opportunities to belong in a given institution? Why might this be? What targeted reforms might expand belonging opportunities to all students?

In this section, we discuss how institutions can listen to their students and act effectively. Focusing on the four factors identified above, we maintain a broad scope, emphasizing flexibility. Given the diversity of student populations and the unique cultures of different institutions, effective practices will vary, so too will the roles of various institutional actors. Expanding belonging affordances is not the job of a single office or administrator but a collective effort. From senior leadership to student success practitioners to faculty in the classroom, everyone can play an important role in creating an environment where all students can belong. Here, we provide a foundational conceptual framework that a variety of institutional actors can use as they consider how to adapt and implement evidence-based strategies to enhance belonging within their contexts.

Listening to Students

In preparing for the CTC trial, we conducted focus groups with diverse students at each partner institution. *What has your experience been like? What was a time you felt like you really belonged? What was a time you felt like maybe you didn't belong? How has your experience changed over time?* Often, administrators listened in on these conversations and, often, they marveled afterward at how much they had learned. For despite their many years of hard work, many had not previously sat down and simply asked students, in open-ended ways, to share their experience.

Numerous scholars have highlighted the importance of listening to students, emphasizing how much institutions can learn from students' lived experiences (e.g., Covarrubias et al., 2022; Jehangir, 2010; Kahu et al., 2022)—not to mention how empowering it can be for students when institutions genuinely listen to them (Gray et al., 2022). One way to listen is to monitor data on student recruitment, retention, and graduation rates, for instance to identify disparities. But to understand students' underlying experience, institutional leaders must probe deeper. Regular surveys,

interviews, and focus groups can each reveal vivid, multifaceted perspectives on why certain groups feel included or excluded (Walton & Brady, 2020a; Yeager et al., 2016a, 2016b). Different institutional actors may approach this listening process with distinct goals. Senior administrators may focus on identifying structural changes to expand belonging opportunities. Student success practitioners may focus on refining specific programs and support services. Faculty may focus on fostering belonging in their own classrooms.

As a starting point, we recommend regular, campus-wide surveys that measure belonging as well as the predictors outlined in this paper, as they have proven important across a representative variety of institutions and student identity groups. Interested readers can refer to the *SI* for the exact items we used and select those most appropriate for their context (Table S6). It may also be helpful to institutionalize procedures for regular open-ended conversations between key administrators with students about their experiences on campus, whether one-on-one or in small groups, particularly students in underserved groups. Students are the experts in the student experience, after all. Such conversations may inform an understanding of survey results and other administrative data. Monitoring social media can also offer real-time insights into the campus environment (e.g., Valandra et al., 2022). This mix of qualitative feedback and quantitative data can uncover specific challenges to belonging and opportunities to foster a more inclusive environment.

Taking Action

With a clearer understanding of students' experience of belonging, institutions can begin to make changes that will matter for student groups not yet well served. In this section, we describe a range of evidence-based practices, grounded in the four classes of institutional factors that we found predict belonging affordances.[6] Certainly, it is important to learn what specific changes will be helpful on any given campus, rather than to assume that what worked in one setting will automatically work in another (McPartlan et al., 2020). As there is limited space here, we encourage readers interested in a given solution to follow the references to learn more deeply about that approach.

Before we delve into evidence-based practices to expand belonging affordances, we emphasize three points. First, expanding belonging affordances may not, on its own, enhance students' academic progress: Institutions may also need to cultivate a campus culture that recognizes belonging concerns as normal for all students and as improving with time (Walton et al., 2023). This can include direct communications to students about belonging, but *how* institutions talk about belonging matters. Effective messaging does not mean simply proclaiming, "You belong here" (Walton, 2021). Such a statement can imply that students *should* already feel they belong,

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[6] While the data we reported are correlational, the extensive experimental and longitudinal research we have reviewed suggest that these relationships are at least partially causal. Yet third variables are possible, as is reciprocal causality, where improved belonging may itself reinforce the factors we have identified.

and, if they do not yet, that is their fault. Rather, it is critical to clearly communicate to students that belonging is a *process* (see Demszky et al., under review). This idea should be communicated consistently and genuinely embraced (Jayakumar & Museus, 2012; Museus et al., 2018; Walton & Brady, 2020a, 2020b), including in how institutions welcome students to college (Walton et al., 2023; Yeager et al., 2016a, 2016b) and elsewhere in campus life, such as in classrooms, residences, interactions with faculty, or relationships with peers. For instance, one series of studies found that peer-to-peer group conversations about belonging embedded in introductory science courses—affirming that belonging concerns are normal and can improve—eliminated gender and racial-ethnic achievement gaps in those physics and biology classrooms (Binning et al., 2020).

Second, to be effective, any intervention must speak to students' experiences within their context (Kaplan, 2023; Kaplan et al., 2020). An approach that is effective for one group in one context may not have the same impact for another group or in another setting (Walton & Wilson, 2018; Yeager & Walton, 2011).

Third, these are not "set-it-and-forget it" solutions. That does not work in personal relationships, and it will not work for students' relationship with their school. These solutions are, rather, ongoing processes of engaging with students and creating, maintaining, and strengthening a campus culture that includes them.

Factor 1: Increase Diverse Representation on Campus

While the Supreme Court has recently prohibited the use of race in college admissions in the USA (Students for Fair Admissions, Inc. V. President and Fellows of Harvard College, 2023), our data clearly show that greater representation of an identity group on campus predicts greater belonging affordances for that group. The implication is that maintaining and increasing an adequate presence of historically excluded racial-ethnic and social class groups on campus is one important way to make belonging affordances more equitable. It is also the case that, in some circumstances, taking group identity into account can be necessary to promote merit in university admissions (Erman & Walton, 2014; Logel et al., 2012; Walton & Spencer, 2009; Walton et al., 2013).

Institutions in the USA now face an increasingly complex legal landscape. Indeed, recent federal guidance has cautioned against considering race in institutional decision-making broadly (Trainor, 2025), though this interpretation has yet to be tested in court and institutions may choose to challenge it. It remains to be seen how previously established approaches to increasing diversity, such as outreach programs targeting underrepresented communities, partnering with schools in diverse districts, and waiving application fees for students in financial need, among other efforts, will be interpreted by the current administration and adjudicated by the court system. Nonetheless, it is clear that, from a student experience perspective, diversity on campus matters.

As already discussed, however, increasing representation is not a magic bullet. It is just the first step, as our data show.

Factor 2: Cultivate an Inclusive Culture

Increase Sincerity, Consistency, and Accountability in Inclusion. Our data reveal that students' perceptions of how sincere an institution's efforts are to promote racial-ethnic and social-class inclusion strongly predict belonging affordances. How can institutions best embody this sincerity in practice? One issue is how institutions talk about their values. For instance, while equal treatment is a fundamental value, when institutions advocate only for colorblind values, they may seem insincere in their commitment to diversity, particularly if they are not yet diverse (Purdie-Vaughns et al., 2008). Simple colorblindness can also feel to students of color like a willful erasure or ignorance of their distinct identities and experiences (Celeste et al., 2019; Markus et al., 2000; Wilton et al., 2015). A more effective approach can be to articulate a multicultural philosophy that explicitly recognizes and values the diverse social and cultural backgrounds of all students, including majority-group students (Jansen et al., 2015; Plaut, 2014; Ryan et al., 2007; Stevens et al., 2008). This can reduce belonging gaps between students of color and White students (Celeste et al., 2019). One study found that advocating multicultural values, even in a brief statement, narrowed racial achievement gaps in GPA over 2 years (Birnbaum et al., 2021). It also matters *how* institutions advocate for diversity. While many institutions emphasize the instrumental benefits of diversity—such as in enhancing competitiveness, or the benefits of learning in diverse contexts—these rationales tend to resonate more with White students (Starck et al., 2021) and can alienate students from marginalized communities (Georgeac & Rattan, 2023). Emphasizing the inherent moral value of diversity can be more effective in fostering a sense of belonging among students from marginalized groups.

Another common pitfall is when institutions vocally commit to diversity but fail to follow through (Ponce de Leon et al., 2024). Superficial efforts, like using diverse images in promotional materials without real strategies for increasing diversity (Pippert et al., 2013), or making public statements condemning racist incidents without implementing relevant policy changes (Cole & Harper, 2017), are readily seen as insincere (Derricks et al., 2023; Spoor et al., 2014; Valandra et al., 2022) and can erode belonging among marginalized student groups (Kroeper et al., 2022c; Wilton et al., 2020). Instead, evidence suggests that accountability is key for institutions to be seen as sincerely embracing diversity (Leslie, 2019; Ragland & Sommers, 2024; Varty, 2022). For example, Wilton et al. (2020) found that tangible diversity markers, like diverse organizational charts or employee testimonials about climate, are more effective than vague statements about diversity in fostering feelings of inclusion. Similarly, Kroeper et al. (2022c) showed that, compared to organizations that merely highlighted gender diversity in promotional materials, organizations with policies and practices in place for recruiting and retaining more women were seen as more sincerely dedicated to diversity, reducing belonging uncertainty among women. These findings collectively emphasize the need for sincere, actionable commitments to diversity, equity, and inclusion.

Reduce Identity Threat Our data indicate that identity threat predicts reduced belonging affordances. To mitigate these threats, institutions may begin by

measuring and understanding the specific threats present on their own campus (Kroeper et al., under review). Then, institutions can take steps to remedy them (Kennedy & Brauer, 2024). For example, institutions can affirm diverse "ways of being," rather than expecting students to conform to a cultural default (Cheryan & Markus, 2020; Covarrubias et al., 2016; Stephens et al., 2019; Williams et al., 2021). One field experiment found that a panel discussion surfacing the differences in first- and continuing-generation students' experiences in coming to college remedied the social-class achievement gap over the first year of college (Stephens et al., 2014). In another study, a brief reading-and-writing exercise that conveyed that it is possible to be both independent and interdependent in college strongly raised grades among first-generation and racial-ethnic minority students over the first year (Yeager et al., 2016a, 2016b, Experiment 3 "cultural fit" intervention). Institutions can also incorporate academic programs and student groups of particular relevance to diverse students, addressing the issues they care about and who they aspire to become (e.g., ethnic studies programs and courses; multicultural centers and affinity groups; Bonilla et al., 2021; Fong et al., 2023; Muraki et al., 2024; Santa-Ramirez, 2022), as well as increase the diversity of their faculty, as ingroup role models can signal to students that their group is valued on campus (Pietri et al., 2018, 2019). Teaching practices and existing curricula can also be structured to represent multicultural perspectives, ensuring that it is relevant and aligned with the values and goals of a diverse student body (Belanger et al., 2020; Cheryan & Markus, 2020; Harackiewicz et al., 2016; Jehangir, 2010; Ladson-Billings, 1995; Norman et al., 2022; Williams et al., 2021).

Reduce Bias We found that experiences of bias predict lower belonging affordances, highlighting the need for institutions to reduce bias in their campus communities. Well-communicated procedures for reporting and addressing incidents of bias serve not only as a reactive measure but also as a clear statement of institutional values (Derricks et al., 2023). When biased incidents do occur, it is important for institutions to respond with direct action, as marginalized students generally prefer that their experiences are actively acknowledged and addressed, rather than ignored or dismissed (Boysen, 2013; Santa-Ramirez, 2022). Psychological research also offers innovative approaches to mitigate bias and establish norms of group-based respect (Okonofua et al., 2022). For instance, Murrar et al. (2020) showed that posters and brief videos that broadcast inclusive peer norms in college classrooms fostered more inclusive behaviors among students, and enhanced feelings of belonging and boosted achievement among students in minoritized groups. Another study found an "Inclusivity Page" included in course syllabi enhanced classroom experiences for students from marginalized backgrounds and, for younger students, improved GPA years into the future (Campbell et al., 2024). A third study found a multistep program including self-affirmation, which can open people to recognizing and addressing their own biases, combined with strong evidence and stories communicating how girls' and women's STEM ability is often underestimated, led boys to recognize more math and science ability in girls (Cyr et al., 2024).

Factor 3: Expand Opportunities to Develop Strong Relationships

We found that the development of close peer friendships and mentoring relationships on campus predicts greater belonging affordances. How can institutions expand opportunities to build strong relationships on campus?

Facilitating Peer-to-Peer Relationships A thriving campus community—with diverse, engaged student groups, a range of activities, and vibrant residential life—affords belonging to more students. There is nothing magic about this. Yet, if talking with and surveying students reveals that some student groups have easier access to these opportunities than others, this is an opportunity for change.

We have reviewed evidence that both intra- and intergroup friendships facilitate belonging for underserved students. It can be helpful, then, to consider how the campus environment affords both kinds of friendships. The availability of intragroup friendships depends, first, on an adequate representation of ingroup members on campus (Kumar et al., 2019; Van Gilder et al., 2024). Affinity groups and cultural centers can also help students connect with others who share similar experiences and interests, deepening an understanding of and commitment to their background, community, and identity (Brannon, 2023; Myers et al., 2019; Patton, 2023; Tachine et al., 2017).

It is also important to facilitate spaces for students from diverse backgrounds to come together, interact, and build friendships, such as in campus residences and residential programs, extracurricular offerings, and classes (Albuja et al., 2024; Shook & Clay, 2012; Watkins et al., 2007). In designing these spaces, it can be helpful to consider how students can use them to express and share both similarities *and differences* so as to foster deeper understanding and more meaningful connections. Indeed, if underrepresented students feel that important aspects of their identity go unseen or are unwelcome, they are unlikely to feel fully included (Plaut et al., 2011; Sanchez et al., 2022; Schroeder & Fishbach, 2024; Smith et al., 2022; see also Brannon & Walton, 2013). It can also be important to take intentional steps to help students reappraise the anxiety that can arise when talking about differences. One randomized controlled trial offered Black and White friends the opportunity to reflect on how experiencing anxiety when talking about race-related experiences with friends is normal and, further, it can reflect a mutual commitment to the friendship, immediately before the Black friend shared a race-related experience with their White friend. As compared to when friends only had this conversation without the friendship-affirming reflection, Black friends in the friendship-affirming condition reported feeling more authentic with their White friend and closer to them as long as 2–6 months later (Sanchez et al., under review).

Facilitating Faculty-Student Mentoring Relationships Developing mentor relationships with faculty and administrators—where students feel seen, valued, cared for, and believed in—is a foundation of student belonging and success (Allen et al., 2018; Chhuon & Wallace, 2014; Kraft et al., 2023). Yet, faculty can be less

responsive to outreach from students in historically marginalized groups (Milkman et al., 2015); first-generation and racial-ethnic minority students may not have equal access to institutional knowledge detailing how they can initiate and build such relationships (Laiduc & Covarrubias, 2022); and cross-identity mentoring relationships may involve challenges, such as concerns about bias or mistrust (Cohen & Steele, 2002; Cohen et al., 1999).

How can institutions facilitate these relationships? One approach is to establish formal mentoring programs, for instance where students are assigned a faculty mentor. While such programs can be helpful (e.g., Hu & Ma, 2010), top-down approaches can elicit less motivation and commitment from both mentors and mentees than student-initiated relationships (Spencer et al., 2016, 2019; see also Schwartz et al., 2013; for demonstrations of the power of student-initiated or "natural" mentors, see Kraft et al., 2023; Walton et al., 2021). Therefore, in general, we suggest that institutions seek to *facilitate* these relationships. This may involve talking about faculty mentoring as normal and important to both students and faculty; creating ubiquitous spaces for students and faculty to interact closely, whether in small classes, social events (such as invitations for faculty to attend dinners in undergraduate dining halls), or co-teaching opportunities, and supports for student participation and leadership in research or service activities with faculty; and by valuing mentoring in faculty promotion and retention (López et al., 2024).

As with peer friendships, it can be helpful to think about how to facilitate both same-group and cross-group mentor relationships. Indeed, there is strong evidence, albeit earlier in schooling, that students of color fare better when they have same-race teachers (Dee, 2004; Gershenson et al., 2022; Redding, 2019; see also Odle et al., 2023). Minoritized students may also hesitate to approach faculty and administrators who do not share their background, as a consequence of prior experiences with racism and/or concerns about cultural misunderstandings (Van Gilder et al., 2024). Therefore, one way to strengthen relationships is to ensure an adequate racial-ethnic and social class diversity among faculty and administrators on campus.

Yet most faculty members are not members of underrepresented racial-ethnic groups. Therefore, institutions may also offer mentorship training for faculty and administrators that enhances cultural awareness (Byars-Winston et al., 2023; Womack et al., 2020). Such programs help mentors develop awareness of their own identities, understand power dynamics in mentor–mentee relationships, and build skills for navigating identity divides constructively. In a randomized-controlled trial, mentors who received such training reported greater understanding of how their racial-ethnic identity influenced their mentoring and felt more confident mentoring students across diverse groups compared to untrained mentors (Byars-Winston et al., 2023). Corroborating these reports, mentees of trained mentors agreed that their mentors more respectfully addressed race and ethnicity and created opportunities for them to broach these topics too (for other approaches to promote mentor–mentee trust, see also Yeager, 2024; Yeager et al., 2014a, 2014b).

Factor 4: Expand Productive Learning Opportunities

We find that the development of a sense of purpose, and the belief that the institution recognizes students' potential for intellectual growth, predict greater belonging affordances. Many campuses already provide valuable opportunities for growth and for students to develop a direction that resonates with them, but as our data suggest, there may be a need to expand access to such opportunities to all students. How can institutions build on their current offerings to expand productive learning opportunities?

Facilitating the Development of Purpose Several factors can interfere with the opportunity students have to develop a sense of direction or purpose in college. First, if curricula omit topics of particular relevance to communities of color, or the achievements of people of color, students from these communities may feel that coursework does not speak to them, their communities, or their values (Bonilla-Silva & Peoples, 2022; Solórzano et al., 2000). This is one reason ethnic studies programs and other forms of culturally sustaining pedagogy matter (Covarrubias, 2024; Gray et al., 2018; Museus et al., 2018). Second, higher education leaders tend to prioritize the development of independent over interdependent values. Yet students from first-generation backgrounds tend to value both independent and interdependent values, creating a cultural clash that, for instance, makes academic work feel more difficult (Stephens et al., 2012a, 2012b, 2012c). While past research on these dynamics has not explicitly considered purpose, if colleges can help students from first-generation backgrounds develop the interdependent values they (also) prize, these students may feel that college is more a place for them.

Colleges can implement specific exercises to help students build connections to coursework. For instance, inviting students to reflect on how course content in introductory biology and chemistry courses is relevant to them and their communities can improve student achievement and often narrow achievement gaps along social-class and/or racial-ethnic lines (Asher et al., 2023; Diekman et al., 2024; Hecht et al., 2019; Hulleman & Harackiewicz, 2020). Similarly, but more broadly, inviting students to reflect on how foundational learning tasks can help them address problems that matter to them can enhance motivation on learning tasks and performance in math and science courses (Yeager et al., 2014a, 2014b). It is also helpful for universities to move away from "find your passion" rhetoric, which implies that interests are *found* not *developed*. One study found that a structured exercise to offer students a growth mindset about academic interests before college raised interest and performance in math and science classes among undergraduates who began college identified more with the humanities and social sciences (O'Keefe et al., 2023). These are ways institutions and faculty can help students connect coursework with the problems they care about and the kinds of persons they would like to become.

Promoting Growth Mindset Institutional Cultures To foster growth mindset cultures within an institution, schools can begin by conveying—through words, policy, and

practice—that *all* students are seen as capable of progress and success (Fredericks et al., 2021; Kroeper et al., 2022a, 2022b; Murphy et al., 2021, 2025). An institution might, for example, encourage faculty to draft syllabus statements that affirm all students' potential and normalize that learning involves making and (rebounding from) mistakes (Canning et al., 2022; Ozier, 2023). Such messages can be reiterated in interactions with students, especially during critical moments such as after exams. For example, randomized controlled field experiments find that simple emails sent to students throughout a course, affirming a faculty member's belief in the student's potential to improve and support for doing so, improve minoritized students' perceptions of professors, course grades, and even their persistence through college and graduation rates (Canning et al., 2024; Carrell & Kurlaender, 2023). Providing numerous opportunities for practice and consistent, actionable feedback on student work also communicates that growth is expected and valued (Kroeper et al., 2022a, 2022b). Reflective assignments that encourage students to track their learning progress can be integrated into curricula too (Black & Wiliam, 2009), so that final grades better reflect progress *and* mastery—ensuring that students are recognized for sustained improvement, not just initial understanding.

Limitations and Future Directions

In this paper, we identified four institutional factors that predict belonging affordances across diverse institutional contexts and identity groups: (1) greater in-group representation, (2) more inclusive cultures, (3) greater opportunities for strong relationships, and (4) greater opportunities for productive learning. However, several limitations should be noted to help guide future research. First, our analyses are exploratory and, although suggestive, do not establish causal relationships between these factors and belonging affordances. Future research using experimental or longitudinal designs could provide stronger evidence for how specific institutional practices—or combinations of practices—shape opportunities to belong. Second, while our use of LIGs allows for a detailed analysis of belonging affordances across identity groups, data collection constraints across institutions, combined with statistical power considerations, limited our ability to further disaggregate student groups. However, meaningful differences likely exist within these broad categories. For example, research suggests considerable variation in how Asian students experience college, depending on their ethnic backgrounds (e.g., East Asian vs. Southeast Asian vs. Native Hawaiian and Pacific Islander; Lieng et al., 2024). Furthermore, as LIGs in this study were defined by race/ethnicity and social class, future research, with sufficient power, could examine how belonging affordances vary across and within additional identity dimensions—such as gender, sexuality, or international student status—as well as at the intersection of these identities.

Conclusion

We began this paper by contrasting two students, Jaylen and Jordan. While Jaylen enjoyed a wonderful place in her college, Jordan struggled to belong. Throughout this paper, we have explored *what institutions can do* to create environments where more students feel like Jaylen, belonging and connected, and fewer feel like Jordan, isolated and unsupported.

Using novel data from the College Transition Collaborative's massive trial of the social-belonging intervention, a trial including 22 institutions that broadly represent colleges and universities in the USA, we found that opportunities to belong vary systematically both across and within institutions and identity groups. Some identity groups are systematically afforded greater opportunities to belong (e.g., White students, continuing-generation students) than others (e.g., Black and Asian students, first-generation students). These results suggest that Jaylen's experience is more likely among continuing-generation students and by White students, and Jordan's among first-generation college students and students of color. However, we also observed considerable variability across post-secondary contexts: belonging experiences do not reduce to specific identity characteristics. The question, then, is *what institutions can do* to better serve their students, whomever they are, in developing a sense of belonging at their institution. Importantly, while all institutions successfully fostered opportunities for belonging for some student groups, none did so for all identity groups it served. All institutions can build on their success to reach more students.

Drawing on past research and theory, we identified and quantified four classes of institutional factors that predict belonging affordances at the identity-group level. Institutions can target these factors to expand opportunities for belonging: (1) increasing the representation of students from diverse groups; (2) cultivating an inclusive culture by sincerely committing to equity and inclusion, addressing biases, and mitigating identity threats; (3) expanding opportunities for students to develop strong relationships with peers and with faculty; and (4) broadening opportunities for productive learning experiences, so all students find relevance and purpose in their academic endeavors, in settings that encourage and value growth.

Expanding opportunities for belonging for students from all groups is something higher education leaders can do. It will take two broad steps. The first involves listening to and learning from students. They are the experts in the student experience. The second involves proactively expanding belonging opportunities, particularly for those student groups that are not yet well served, at least in part by focusing on the four opportunities described here. In so doing, higher education institutions can realize the equity and excellence they seek to achieve and ensure that every student, regardless of their background, can have an experience like Jaylen's.

Author Contribution K. M. K., G. M. W., and M. G. wrote the original draft of the paper. All authors revised and edited the paper. M. G. and K. T. U. E. analyzed data; K. M. K. and M. G. produced data visualizations and compiled supplementary materials.

Data Availability Data are available upon request from the corresponding authors.

Declarations

Conflict of Interest The authors declare no competing interests.

References

Akcinar, E. N., Carr, P. B., & Walton, G. M. (2011). Interactions with men and whites matter too. *Psychological Inquiry, 22*(4), 247–251. https://doi.org/10.1080/1047840X.2011.625606

Albuja, A. F., Gaither, S. E., Sanchez, D. T., & Nixon, J. (2024). Testing intergroup contact theory through a natural experiment of randomized college roommate assignments in the United States. *Journal of Personality and Social Psychology*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/pspa0000393

Alderman, D. H., & Rose-Redwood, R. (2020). The classroom as "toponymic workspace": Towards a critical pedagogy of campus place renaming. *Journal of Geography in Higher Education, 44*(1), 124–141. https://doi.org/10.1080/03098265.2019.1695108

Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review, 30*(1), 1–34. https://doi.org/10.1007/s10648-016-9389-8

Asher, M. W., Harackiewicz, J. M., Beymer, P. N., Hecht, C. A., Lamont, L. B., Else-Quest, N. M., Priniski, S. J., Thoman, D. B., Hyde, J. S., & Smith, J. L. (2023). Utility-value intervention promotes persistence and diversity in STEM. *Proceedings of the National Academy of Sciences, 120*(19), e2300463120. https://doi.org/10.1073/pnas.2300463120

Astin, A. W., & Bayer, A. E. (1971). Antecedents and consequences of disruptive campus protests. *Measurement and Evaluation in Guidance, 4*(1), 18–30. https://doi.org/10.1080/00256307.1971.12022476

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Belanger, A. L., Joshi, M. P., Fuesting, M. A., Weisgram, E. S., Claypool, H. M., & Diekman, A. B. (2020). Putting belonging in context: Communal affordances signal belonging in STEM. *Personality and Social Psychology Bulletin, 46*(8), 1186–1204. https://doi.org/10.1177/0146167219897181

Benner, A. D., & Wang, Y. (2017). Racial/ethnic discrimination and adolescents' well-being: The role of cross-ethnic friendships and friends' experiences of discrimination. *Child Development, 88*(2), 493–504. https://doi.org/10.1111/cdev.12606

Berger, J. B., & Milem, J. F. (1999). The role of student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education, 40*(6), 641–664. https://doi.org/10.1023/A:1018708813711

Bettencourt, G. M. (2021). "I belong because it wasn't made for me": Understanding working-class students' sense of belonging on campus. *The Journal of Higher Education, 92*(5), 760–783. https://doi.org/10.1080/00221546.2021.1872288

Binning, K. R., Doucette, D., Conrique, B. G., & Singh, C. (2024). Unlocking the benefits of gender diversity: How an ecological-belonging intervention enhances performance in science classrooms. *Psychological Science*, 09567976231221534. https://doi.org/10.1177/09567976231221534

Binning, K. R., Kaufmann, N., McGreevy, E. M., Fotuhi, O., Chen, S., Marshman, E., Kalender, Z. Y., Limeri, L., Betancur, L., & Singh, C. (2020). Changing social contexts to foster equity in college science courses: An ecological-belonging intervention. *Psychological Science, 31*(9), 1059–1070. https://doi.org/10.1177/0956797620929984

Birnbaum, H. J., Stephens, N. M., Townsend, S. S. M., & Hamedani, M. G. (2021). A diversity ideology intervention: Multiculturalism reduces the racial achievement gap. *Social Psychological and Personality Science, 12*(5), 751–759. https://doi.org/10.1177/1948550620938227

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability, 21*(1), 5–31. https://doi.org/10.1007/s11092-008-9068-5

Bolger, N., Zuckerman, A., & Kessler, R. C. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology, 79*(6), 953–961. https://doi.org/10.1037/0022-3514.79.6.953

Bonilla, S., Dee, T. S., & Penner, E. K. (2021). Ethnic studies increases longer-run academic engagement and attainment. *Proceedings of the National Academy of Sciences, 118*(37), e2026386118. https://doi.org/10.1073/pnas.2026386118

Bonilla-Silva, E., & Peoples, C. E. (2022). Historically white colleges and universities: The unbearable whiteness of (most) colleges and universities in America. *American Behavioral Scientist, 66*(11), 1490–1504. https://doi.org/10.1177/00027642211066047

Bowman, N. A., Logel, C., Lacosse, J., Canning, E. A., Emerson, K. T. U., & Murphy, M. C. (2023). The role of minoritized student representation in promoting achievement and equity within college STEM courses. *AERA Open, 9*, 23328584231209956. https://doi.org/10.1177/2332858423 1209957

Bowman, N. A., Logel, C., LaCosse, J., Jarratt, L., Canning, E. A., Emerson, K. T. U., & Murphy, M. C. (2022). Gender representation and academic achievement among STEM-interested students in college STEM courses. *Journal of Research in Science Teaching, 59*(10), 1876–1900. https://doi.org/10.1002/tea.21778

Boysen, G. A. (2013). Confronting math stereotypes in the classroom: Its effect on female college students' sexism and perceptions of confronters. *Sex Roles, 69*(5–6), 297–307. https://doi.org/10.1007/s11199-013-0287-y

Brady, S. T., Cohen, G. L., Jarvis, S. N., & Walton, G. M. (2020). A brief social-belonging intervention in college improves adult outcomes for Black Americans. *Science Advances, 6*(18), eaay3689. https://doi.org/10.1126/sciadv.aay3689

Brannon, T. N. (2023). Pride-and-prejudice perspectives of marginalization can advance science and society. *Current Directions in Psychological Science, 32*(1), 73–80. https://doi.org/10.1177/09637214221121818

Brannon, T. N., & Lin, A. (2021). "Pride and prejudice" pathways to belonging: Implications for inclusive diversity practices within mainstream institutions. *American Psychologist, 76*(3), 488–501. https://doi.org/10.1037/amp0000643

Brannon, T. N., Markus, H. R., & Taylor, V. J. (2015). "Two souls, two thoughts", two self-schemas: Double consciousness can have positive academic consequences for African Americans. *Journal of Personality and Social Psychology, 108*(4), 586–609. https://doi.org/10.1037/a0038992

Brannon, T. N., & Walton, G. M. (2013). Enacting cultural interests: How intergroup contact reduces prejudice by sparking interest in an out-group's culture. *Psychological Science, 24*(10), 1947–1957. https://doi.org/10.1177/0956797613481607

Browman, A. S., & Destin, M. (2016). The effects of a warm or chilly climate toward socioeconomic diversity on academic motivation and self-concept. *Personality and Social Psychology Bulletin, 42*(2), 172–187. https://doi.org/10.1177/0146167215619379

Brown, T. M., & Rodríguez, L. F. (2009). School and the co-construction of dropout. *International Journal of Qualitative Studies in Education, 22*(2), 221–242. https://doi.org/10.1080/09518 390802005570

Byars-Winston, A., Rogers, J. G., Thayer-Hart, N., Black, S., Branchaw, J., & Pfund, C. (2023). A randomized controlled trial of an intervention to increase cultural diversity awareness of research mentors of undergraduate students. *Science Advances, 9*(21), eadf9705. https://doi.org/10.1126/sciadv.adf9705

Campbell, T. A., & Campbell, D. E. (1997). Faculty/student mentor program: Effects on academic performance and retention. *Research in Higher Education, 38*(6), 727–742. https://doi.org/10.1023/A:1024911904627

Campbell, T. A., & Campbell, D. E. (2007). Outcomes of mentoring at-risk college students: Gender and ethnic matching effects. *Mentoring & Tutoring: Partnership in Learning, 15*(2), 135–148. https://doi.org/10.1080/13611260601086287

Campbell, M. R., Kennedy, K. R., Miller, A., & Brauer, M. (2024). A brief pro-diversity social marketing intervention improves grades and well-being of students from marginalized groups. *Personality and Social Psychology Bulletin*. https://doi.org/10.1177/01461672241279082

Canning, E. A., LaCosse, J., Kroeper, K. M., & Murphy, M. C. (2020). Feeling like an imposter: The effect of perceived classroom competition on the daily psychological experiences of first-generation college students. *Social Psychological and Personality Science, 11*(5), 647–657. https://doi.org/10.1177/1948550619882032

Canning, E. A., Muenks, K., Green, D. J., & Murphy, M. C. (2019). STEM faculty who believe ability is fixed have larger racial achievement gaps and inspire less student motivation in their classes. *Science Advances, 5*(2), eaau4734. https://doi.org/10.1126/sciadv.aau4734

Canning, E. A., Ozier, E., Williams, H. E., AlRasheed, R., & Murphy, M. C. (2022). Professors who signal a fixed mindset about ability undermine women's performance in STEM. *Social Psychological and Personality Science, 13*(5), 927–937. https://doi.org/10.1177/19485506211030398

Canning, E. A., White, M., & Davis, W. B. (2024). Growth mindset messages from instructors improve academic performance among first-generation college students. *CBE-Life Sciences Education, 23*(2), ar14. https://doi.org/10.1187/cbe.23-07-0131

Carey, R. M., Stephens, N. M., Townsend, S. S. M., & Hamedani, M. G. (2022). Is diversity enough? Cross-race and cross-class interactions in college occur less often than expected, but benefit members of lower status groups when they occur. *Journal of Personality and Social Psychology, 123*(5), 889–908. https://doi.org/10.1037/pspa0000302

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education, 47*(1), 1–32. https://doi.org/10.1007/s11162-005-8150-9

Carr, P. B., & Walton, G. M. (2014). Cues of working together fuel intrinsic motivation. *Journal of Experimental Social Psychology, 53*, 169–184. https://doi.org/10.1016/j.jesp.2014.03.015

Carrell, S. E., & Kurlaender, M. (2023). My professor cares: Experimental evidence on the role of faculty engagement. *American Economic Journal: Economic Policy, 15*(4), 113–141. https://doi.org/10.1257/pol.20210699

Carter, E. R., Brady, S. T., Murdock-Perriera, L. A., Gilbertson, M. K., Ablorh, T., & Murphy, M. C. (2019). The racial composition of students' friendship networks predicts perceptions of injustice and involvement in collective action. *Journal of Theoretical Social Psychology, 3*(1), 49–61. https://doi.org/10.1002/jts5.27

Celeste, L., Baysu, G., Phalet, K., Meeussen, L., & Kende, J. (2019). Can school diversity policies reduce belonging and achievement gaps between minority and majority youth? Multiculturalism, color-blindness, and assimilationism assessed. *Personality and Social Psychology Bulletin, 45*(11), 1603–1618. https://doi.org/10.1177/0146167219838577

Chang, M. J., Sharkness, J., Hurtado, S., & Newman, C. B. (2014). What matters in college for retaining aspiring scientists and engineers from underrepresented racial groups. *Journal of Research in Science Teaching, 51*(5), 555–580. https://doi.org/10.1002/tea.21146

Cheryan, S., & Markus, H. R. (2020). Masculine defaults: Identifying and mitigating hidden cultural biases. *Psychological Review, 127*(6), 1022–1052. https://doi.org/10.1037/rev0000209

Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging: How stereotypical cues impact gender participation in computer science. *Journal of Personality and Social Psychology, 97*(6), 1045–1060. https://doi.org/10.1037/a0016239

Chhuon, V., & Wallace, T. L. (2014). Creating connectedness through being known: Fulfilling the need to belong in U.S. high schools. *Youth & Society, 46*(3), 379–401. https://doi.org/10.1177/0044118X11436188

Clark, R., Anderson, N. B., Clark, V. R., & Williams, D. R. (1999). Racism as a stressor for African Americans: A biopsychosocial model. *American Psychologist, 54*(10), 805–816. https://doi.org/10.1037/0003-066X.54.10.805

Cohen, G. L., spsampsps Steele, C. M. (2002). A barrier of mistrust: How negative stereotypes affect cross-race mentoring. In J. Aronson (Ed.), *Improving Academic Achievement* (pp. 303–327). Academic Press. https://doi.org/10.1016/B978-012064455-1/50018-X

Cohen, G. L., & Garcia, J. (2008). Identity, belonging, and achievement: A model, interventions, implications. *Current Directions in Psychological Science, 17*(6), 365–369. https://doi.org/10.1111/j.1467-8721.2008.00607.x

Cohen, G. L., Steele, C. M., & Ross, L. D. (1999). The mentor's dilemma: Providing critical feedback across the racial divide. *Personality and Social Psychology Bulletin, 25*(10), 1302–1318. https://doi.org/10.1177/0146167299258011

Cohen, L. L., & Swim, J. K. (1995). The differential impact of gender ratios on women and men: Tokenism, self-confidence, and expectations. *Personality and Social Psychology Bulletin, 21*(9), 876–884. https://doi.org/10.1177/0146167295219001

Cole, E. R., & Harper, S. R. (2017). Race and rhetoric: An analysis of college presidents' statements on campus racial incidents. *Journal of Diversity in Higher Education, 10*(4), 318–333. https://doi.org/10.1037/dhe0000044

Covarrubias, R. (2024). On being accepted: Interrogating how university cultural scripts shape personal and political facets of belonging. *Educational Psychology Review, 36*(4), 136. https://doi.org/10.1007/s10648-024-09970-2

Covarrubias, R., Herrmann, S. D., & Fryberg, S. A. (2016). Affirming the interdependent self: Implications for Latino student performance. *Basic and Applied Social Psychology, 38*(1), 47–57. https://doi.org/10.1080/01973533.2015.1129609

Covarrubias, R., Laiduc, G., Quinteros, K., & Arreaga, J. (2023). Lessons on servingness from mentoring program leaders at a Hispanic Serving Institution. *Journal of Leadership, Equity, and Research, 9*(2), 75–91.

Covarrubias, R., Laiduc, G., & Valle, I. (2022). What institutions can learn from the navigational capital of minoritized students. *Journal of First-Generation Student Success, 2*(1), 36–53. https://doi.org/10.1080/26906015.2022.2065109

Cyr, E. N., Kroeper, K. M., Bergsieker, H. B., Dennehy, T. C., Logel, C., Steele, J. R., Knasel, R. A., Hartwig, W. T., Shum, P., Reeves, S. L., Dys-Steenbergen, O., Litt, A., Lok, C. B., Ballinger, T., Nam, H., Tse, C., Forest, A. L., Zanna, M., Staub-French, S., … Spencer, S. J. (2024). Girls are good at STEM: Opening minds and providing evidence reduces boys' stereotyping of girls' STEM ability. *Child Development*, *95*(2), 636–647. https://doi.org/10.1111/cdev.14007

Dasgupta, N., Scircle, M. M., & Hunsinger, M. (2015). Female peers in small work groups enhance women's motivation, verbal participation, and career aspirations in engineering. *Proceedings of the National Academy of Sciences, 112*(16), 4988–4993. https://doi.org/10.1073/pnas.1422822112

Datnow, A., Hubbard, L., & Mehan, H. (2002). Extending educational reform. *Taylor & Francis*. https://doi.org/10.4324/9780203993965

Davis, M., Dias-Bowie, Y., Greenberg, K., Klukken, G., Pollio, H. R., Thomas, S. P., & Thompson, C. L. (2004). "A fly in the buttermilk": Descriptions of university life by successful Black undergraduate students at a predominately White southeastern university. *The Journal of Higher Education, 75*(4), 420–445. https://doi.org/10.1080/00221546.2004.11772266

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist, 26*(3–4), 325–346. https://doi.org/10.1080/00461520.1991.9653137

Dee, T. S. (2004). Teachers, race, and student achievement in a randomized experiment. *The Review of Economics and Statistics, 86*(1), 195–210. https://doi.org/10.1162/003465304323023750

Deil-Amen, R., & Rosenbaum, J. E. (2003). The social prerequisites of success: Can college structure reduce the need for social know-how? *The ANNALS of the American Academy of Political and Social Science, 586*(1), 120–143. https://doi.org/10.1177/0002716202250216

Demszky, D., Williams, C. L., Brady, S. T., Subrahmanya, S., Gaudiello, E., Walton, G. M., & Eichstaedt, J. C. (under review). *Computational language analysis reveals that process-oriented thinking about belonging aids the college transition.*

Dennehy, T. C., & Dasgupta, N. (2017). Female peer mentors early in college increase women's positive academic experiences and retention in engineering. *Proceedings of the National Academy of Sciences, 114*(23), 5964–5969. https://doi.org/10.1073/pnas.1613117114

Derricks, V., Pietri, E. S., Dinh, T., & Johnson, I. R. (2023). Examining the context and content of organizational solidarity statements on Black Americans' expectations of identity safety. *Personality and Social Psychology Bulletin*, 01461672231208508. https://doi.org/10.1177/01461672231208508

Destin, M. (2020). Identity research that engages contextual forces to reduce socioeconomic disparities in education. *Current Directions in Psychological Science, 29*(2), 161–166. https://doi.org/10.1177/0963721420901588

Diekman, A. B., Brown, E. R., Johnston, A. M., & Clark, E. K. (2010). Seeking congruity between goals and roles: A new look at why women opt out of science, technology, engineering, and mathematics careers. *Psychological Science, 21*(8), 1051–1057. https://doi.org/10.1177/0956797610377342

Diekman, A. B., Joshi, M. P., White, A. D., Tran, Q.-A.N., & Seth, J. (2024). Purpose reflection benefits minoritized students' motivation and well-being in STEM. *Scientific Reports, 14*(1), 1. https://doi.org/10.1038/s41598-023-50302-1

Drake, J. K. (2011). The role of academic advising in student retention and persistence. *About Campus, 16*(3), 8–12. https://doi.org/10.1002/abc.20062

Ellis, J. M., Powell, C. S., Demetriou, C. P., Huerta-Bapat, C., & Panter, A. T. (2019). Examining first-generation college student lived experiences with microaggressions and microaffirmations at a predominately White public research university. *Cultural Diversity and Ethnic Minority Psychology, 25*(2), 266–279. https://doi.org/10.1037/cdp0000198

Ellsworth, D., Harding, E., Law, J., & Pinder, D. (2022). *Racial and ethnic equity in US higher education*. McKinsey & Company. https://www.mckinsey.com/industries/education/our-insights/racial-and-ethnic-equity-in-US-higher-education#/

Emerson, K. T. U., & Murphy, M. C. (2014). Identity threat at work: How social identity threat and situational cues contribute to racial and ethnic disparities in the workplace. *Cultural Diversity and Ethnic Minority Psychology, 20*(4), 508–520. https://doi.org/10.1037/a0035403

Emerson, K. T. U., & Murphy, M. C. (2015). A company I can trust? Organizational lay theories moderate stereotype threat for women. *Personality and Social Psychology Bulletin, 41*(2), 295–307. https://doi.org/10.1177/0146167214564969

Erman, S., & Walton, G. M. (2014). Stereotype threat and antidiscrimination law: Affirmative steps to promote meritocracy and racial equality in education. *Southern California Law Review, 88*(2), 307–378.

Fisher, A. J., Mendoza-Denton, R., Patt, C., Young, I., Eppig, A., Garrell, R. L., Rees, D. C., Nelson, T. W., & Richards, M. A. (2019). Structure and belonging: Pathways to success for underrepresented minority and women PhD students in STEM fields. *PLoS ONE, 14*(1), e0209279. https://doi.org/10.1371/journal.pone.0209279

Fong, C. J., Adelugba, S. F., Garza, M., Pinto, G. L., Gonzales, C., Zarei, P., & Rozek, C. S. (2024). A scoping review of the associations between sense of belonging and academic outcomes in postsecondary education. *Educational Psychology Review, 36*(4), 138. https://doi.org/10.1007/s10648-024-09974-y

Fong, C. J., Owens, S. L., Segovia, J., Hoff, M. A., & Alejandro, A. J. (2023). Indigenous cultural development and academic achievement of tribal community college students: Mediating roles of sense of belonging and support for student success. *Journal of Diversity in Higher Education, 16*(6), 709–722. https://doi.org/10.1037/dhe0000370

Fredericks, A., Engerman, K., & McKayle, C. M. (2021). Providing the opportunity to learn: Unpacking the role of mindsets and leadership in broadening participation in STEM at HBCUs. *American Journal of Applied Psychology, 10*(5), 110. https://doi.org/10.11648/j.ajap.20211005.12

Freeman, T. M., Anderman, L. H., & Jensen, J. M. (2007). Sense of belonging in college freshmen at the classroom and campus levels. *The Journal of Experimental Education, 75*(3), 203–220. https://doi.org/10.3200/JEXE.75.3.203-220

Fryberg, S. A., & Markus, H. R. (2007). Cultural models of education in American Indian, Asian American and European American contexts. *Social Psychology of Education, 10*(2), 213–246. https://doi.org/10.1007/s11218-007-9017-z

Garces, L. M., & Jayakumar, U. M. (2014). Dynamic diversity: Toward a contextual understanding of critical mass. *Educational Researcher, 43*(3), 115–124. https://doi.org/10.3102/0013189X14529814

Gehlbach, H., Brinkworth, M. E., King, A. M., Hsu, L. M., McIntyre, J., & Rogers, T. (2016). Creating birds of similar feathers: Leveraging similarity to improve teacher–student relationships and academic achievement. *Journal of Educational Psychology, 108*(3), 342–352. https://doi.org/10.1037/edu0000042

Gelman, A. (2015). The connection between varying treatment effects and the crisis of unreplicable research: A bayesian perspective. *Journal of Management, 41*(2), 632–643. https://doi.org/10.1177/0149206314525208

Georgeac, O. A. M., & Rattan, A. (2023). The business case for diversity backfires: Detrimental effects of organizations' instrumental diversity rhetoric for underrepresented group members' sense of belonging. *Journal of Personality and Social Psychology, 124*(1), 69–108. https://doi.org/10.1037/pspi0000394

Gershenson, S., Hart, C. M. D., Hyman, J., Lindsay, C. A., & Papageorge, N. W. (2022). The long-run impacts of same-race teachers. *American Economic Journal: Economic Policy, 14*(4), 300–342. https://doi.org/10.1257/pol.20190573

Gilbertson, M. K., Brady, S. T., Ablorh, T., Logel, C., & Schnitker, S. A. (2022). Closeness to God, spiritual struggles, and wellbeing in the first year of college. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.742265

Gillen-O'Neel, C. (2021). Sense of belonging and student engagement: A daily study of first- and continuing-generation college students. *Research in Higher Education, 62*(1), 45–71. https://doi.org/10.1007/s11162-019-09570-y

Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and women's representation in mathematics. *Journal of Personality and Social Psychology, 102*(4), 700–717. https://doi.org/10.1037/a0026659

Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *The Journal of Early Adolescence, 13*(1), 21–43. https://doi.org/10.1177/0272431693013001002

Gopalan, M., & Brady, S. T. (2019). College students' sense of belonging: A national perspective. *Educational Researcher*, 0013189X19897622. https://doi.org/10.3102/0013189X19897622

Graham, S., Kogachi, K., & Morales-Chicas, J. (2022). Do I fit in: Race/ethnicity and feelings of belonging in school. *Educational Psychology Review, 34*(4), 2015–2042. https://doi.org/10.1007/s10648-022-09709-x

Gray, D. L., Ali, J. N., McElveen, T. L., & Sealy, M. (2022). The cultural significance of "we-ness": Motivationally influential practices rooted in a scholarly agenda on Black education. *Educational Psychology Review, 34*(4), 1985–2013. https://doi.org/10.1007/s10648-022-09708-y

Gray, D. L., Hope, E. C., & Matthews, J. S. (2018). Black and belonging at school: A case for interpersonal, instructional, and institutional opportunity structures. *Educational Psychologist, 53*(2), 97–113. https://doi.org/10.1080/00461520.2017.1421466

Green, D. J., Kroeper, K. M., & Murphy, M. C. (2024). Cuing disparities: The consequences of race-based social stressors for academic achievement. *Journal of Community & Applied Social Psychology, 34*(1), e2747. https://doi.org/10.1002/casp.2747

Hahn, P. R., Murray, J. S., & Carvalho, C. M. (2020). Bayesian regression tree models for causal inference: Regularization, confounding, and heterogeneous effects (with discussion). *Bayesian Analysis, 15*(3), 965–1056. https://doi.org/10.1214/19-BA1195

Hallinan, M. T. (2008). Teacher influences on students' attachment to school. *Sociology of Education, 81*(3), 271–283. https://doi.org/10.1177/003804070808100303

Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Priniski, S. J., & Hyde, J. S. (2016). Closing achievement gaps with a utility-value intervention: Disentangling race and social class. *Journal of Personality and Social Psychology, 111*(5), 745–765. https://doi.org/10.1037/pspp0000075

Hausmann, L. R. M., Schofield, J. W., & Woods, R. L. (2007). Sense of belonging as a predictor of intentions to persist among African American and White first-year college students. *Research in Higher Education, 48*(7), 803–839. https://doi.org/10.1007/s11162-007-9052-9

Hecht, C. A., Bryan, C. J., & Yeager, D. S. (2023a). A values-aligned intervention fosters growth mindset–supportive teaching and reduces inequality in educational outcomes. *Proceedings of the National Academy of Sciences, 120*(25), e2210704120. https://doi.org/10.1073/pnas.2210704120

Hecht, C. A., Dweck, C. S., Murphy, M. C., Kroeper, K. M., & Yeager, D. S. (2023b). Efficiently exploring the causal role of contextual moderators in behavioral science. *Proceedings of the National Academy of Sciences, 120*(1), e2216315120. https://doi.org/10.1073/pnas.2216315120

Hecht, C. A., Harackiewicz, J. M., Priniski, S. J., Canning, E. A., Tibbetts, Y., & Hyde, J. S. (2019). Promoting persistence in the biological and medical sciences: An expectancy-value approach to intervention. *Journal of Educational Psychology, 111*(8), 1462–1477. https://doi.org/10.1037/edu0000356

Hoffman, M., Richmond, J., Morrow, J., & Salomone, K. (2002). Investigating "sense of belonging" in first-year college students. *Journal of College Student Retention: Research, Theory & Practice, 4*(3), 227–256. https://doi.org/10.2190/DRYC-CXQ9-JQ8V-HT4V

Hu, S., & Ma, Y. (2010). Mentoring and student persistence in college: A study of the Washington State Achievers Program. *Innovative Higher Education, 35*(5), 329–341. https://doi.org/10.1007/s10755-010-9147-7

Hulleman, C., & Harackiewicz, J. (2020). The utility-value intervention. In G. M. Walton & A. J. Crum (Eds.), *Handbook of Wise Interventions*. Guilford Publications.

Hurtado, S., Milem, J., Clayton-Pedersen, A., & Allen, W. (1999). *Enacting diverse learning environments: Improving the climate for racial/ethnic diversity in higher education*. ERIC Clearinghouse on Higher Education, One Dupont Circle, N. https://eric.ed.gov/?id=ED430514

Hurtado, S., Alvarez, C. L., Guillermo-Wann, C., Cuellar, M., spsampsps Arellano, L. (2012). A model for diverse learning environments. In J. C. Smart, spsampsps M. B. Paulsen (Eds.), *Higher Education: Handbook of Theory and Research: Volume 27* (pp. 41–122). Springer Netherlands. https://doi.org/10.1007/978-94-007-2950-6_2

Hurtado, S., & Ruiz Alvarado, A. (2015). *Discrimination and bias, underrepresentation, and sense of belonging on campus* [Report]. HERI. https://vtechworks.lib.vt.edu/handle/10919/83064

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education, 70*(4), 324–345. https://doi.org/10.2307/2673270

Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., & Allen, W. R. (1998). Enhancing campus climates for racial/ethnic diversity: Educational policy and practice. *The Review of Higher Education, 21*(3), 279–302.

Hussain, M., & Jones, J. M. (2021). Discrimination, diversity, and sense of belonging: Experiences of students of color. *Journal of Diversity in Higher Education, 14*(1), 63–71. https://doi.org/10.1037/dhe0000117

Inwood, J. F. J., & Martin, D. G. (2008). Whitewash: White privilege and racialized landscapes at the University of Georgia. *Social & Cultural Geography, 9*(4), 373–395. https://doi.org/10.1080/14649360802033882

Jansen, W. S., Otten, S., & van der Zee, K. I. (2015). Being part of diversity: The effects of an all-inclusive multicultural diversity approach on majority members' perceived inclusion and support for organizational diversity efforts. *Group Processes & Intergroup Relations, 18*(6), 817–832. https://doi.org/10.1177/1368430214566892

Jayakumar, U. M., & Museus, S. D. (2012). Mapping the intersection of campus cultures and equitable outcomes among racially diverse student populations. In S. D. Museus & U. M. Jayakumar (Eds.), *Creating Campus Cultures: Fostering Success Among Racially Diverse Student Populations* (pp. 1–27). Routledge.

Jehangir, R. (2010). Stories as knowledge: Bringing the lived experience of first-generation college students into the academy. *Urban Education, 45*(4), 533–553. https://doi.org/10.1177/0042085910372352

Jenkins, D. A., Tichavakunda, A. A., & Coles, J. A. (2021). The second ID: Critical race counterstories of campus police interactions with Black men at Historically White Institutions. *Race Ethnicity and Education, 24*(2), 149–166. https://doi.org/10.1080/13613324.2020.1753672

Johnson, J. M., Scott, S., Phillips, T., & Rush, A. (2022). Ivy issues: An exploration of black students' racialized interactions on Ivy League campuses. *Journal of Diversity in Higher Education*. https://doi.org/10.1037/dhe0000406

Kahu, E. R., Ashley, N., & Picton, C. (2022). Exploring the complexity of first-year student belonging in higher education: Familiarity, interpersonal, and academic belonging. *Student Success, 13*(2), 10–20. https://doi.org/10.3316/informit.544244789917082

Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. *American Journal of Sociology, 82*(5), 965–990. https://doi.org/10.1086/226425

Kaplan, A. (2023). A framework for approaching policy-oriented educational psychology research. *Educational Psychologist, 58*(4), 229–243. https://doi.org/10.1080/00461520.2023.2253301

Kaplan, A., Cromley, J., Perez, T., Dai, T., Mara, K., & Balsai, M. (2020). The role of context in educational RCT findings: A call to redefine "evidence-based practice." *Educational Researcher, 49*(4), 285–288. https://doi.org/10.3102/0013189X20921862

Kardosh, R., Sklar, A. Y., Goldstein, A., Pertzov, Y., & Hassin, R. R. (2022). Minority salience and the overestimation of individuals from minority groups in perception and memory. *Proceedings of the National Academy of Sciences, 119*(12), e2116884119. https://doi.org/10.1073/pnas.2116884119

Keels, M., Durkee, M., & Hope, E. (2017). The psychological and academic costs of school-based racial and ethnic microaggressions. *American Educational Research Journal, 54*(6), 1316–1344. https://doi.org/10.3102/0002831217722120

Keller, J., & Sekaquaptewa, D. (2008). Solo status and women's spatial test performance: The role of individuation tendencies. *European Journal of Social Psychology, 38*(6), 1044–1053. https://doi.org/10.1002/ejsp.490

Kennedy, K. R., spsampsps Brauer, M. (2024). Inclusive teaching practices and other strategies to promote equity and belonging. In C. A. Sanderson spsampsps R. Totton (Eds.), *Teaching Social Psychology*. Edward Elgar Publishing, Inc. https://www.elgaronline.com/edcollchap/book/9781035327133/book-part-9781035327133-14.xml

Kraft, M. A., Bolves, A. J., & Hurd, N. M. (2023). How informal mentoring by teachers, counselors, and coaches supports students' long-run academic success. *Economics of Education Review, 95*, 102411. https://doi.org/10.1016/j.econedurev.2023.102411

Kroeper, K. M., spsampsps Murphy, M. C. (2017). Supporting college and career readiness through social psychological interventions. In K. L. McClarty, K. D. Mattern, spsampsps M. N. Gaertner (Eds.), *Preparing Students for College and Careers* (1st ed., pp. 142–152). Routledge. https://doi.org/10.4324/9781315621975-13

Kroeper, K. M., Hernandez-Colmenares, A., Green, D. J., Williams, H. E., Kuzdal, A., Ospina, J., Moore, C. A., Agarwal, G., Heckler, A. F., Crocker, J., Fujita, K., Murphy, M. C., & Spencer, S. J. (under review). *How do you measure a threat in the air? Testing the universal, dynamic, and multifaceted nature of social identity threat*.

Kroeper, K. M., Fried, A. C., & Murphy, M. C. (2022a). Towards fostering growth mindset classrooms: Identifying teaching behaviors that signal instructors' fixed and growth mindset beliefs to students. *Social Psychology of Education, 25*(2), 371–398. https://doi.org/10.1007/s11218-022-09689-4

Kroeper, K. M., Hildebrand, L. K., Jiang, T., Hernandez-Colmenares, A., Brown, K., Wilk, A. V., Spencer, S. J., Heckler, A. F., & Fujita, K. (2025). The recursive cycle of perceived mindset and psychological distress in college. *Social Psychological and Personality Science, 16*(1), 15–26. https://doi.org/10.1177/19485506241247384

Kroeper, K. M., Muenks, K., Canning, E. A., & Murphy, M. C. (2022b). An exploratory study of the behaviors that communicate perceived instructor mindset beliefs in college STEM classrooms. *Teaching and Teacher Education, 114*, 103717. https://doi.org/10.1016/j.tate.2022.103717

Kroeper, K. M., Williams, H. E., & Murphy, M. C. (2022c). Counterfeit diversity: How strategically misrepresenting gender diversity dampens organizations' perceived sincerity and elevates women's identity threat concerns. *Journal of Personality and Social Psychology, 122*(3), 399–426. https://doi.org/10.1037/pspi0000348

Krusemark, S. (2012). The campus as stage: A qualitative study of the hypervisibility and invisibility of African American female identity in the built campus environment. *Journal of Research on Women and Gender, 4*, 25–51.

Kumar, R., McKether, W., & Adams, A. (2019, April). Belongingness uncertainty: A comparative study of African-American engineering students' experiences at PWI and HBCU. *Annual Meeting Program American Educational Research Association*. American Educational Research Association. https://par.nsf.gov/biblio/10162666-belongingness-uncertainty-comparative-study-african-american-engineering-students-experiences-pwi-hbcu

LaCosse, J., Canning, E. A., Bowman, N. A., Murphy, M. C., & Logel, C. (2020). A social-belonging intervention improves STEM outcomes for students who speak English as a second language. *Science Advances, 6*(40), eabb6543. https://doi.org/10.1126/sciadv.abb6543

LaCosse, J., Murphy, M. C., Garcia, J. A., & Zirkel, S. (2021). The role of STEM professors' mindset beliefs on students' anticipated psychological experiences and course interest. *Journal of Educational Psychology, 113*(5), 949–971. https://doi.org/10.1037/edu0000620

Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory into Practice, 34*(3), 159–165. https://doi.org/10.1080/00405849509543675

Laiduc, G., & Covarrubias, R. (2022). Making meaning of the hidden curriculum: Translating wise interventions to usher university change. *Translational Issues in Psychological Science, 8*(2), 221–233. https://doi.org/10.1037/tps0000309

Langhout, R. D., Drake, P., & Rosselli, F. (2009). Classism in the university setting: Examining student antecedents and outcomes. *Journal of Diversity in Higher Education, 2*(3), 166–181. https://doi.org/10.1037/a0016209

Leslie, L. M. (2019). Diversity initiative effectiveness: A typological theory of unintended consequences. *Academy of Management Review, 44*(3), 538–563. https://doi.org/10.5465/amr.2017.0087

Levin, S., Van Laar, C., & Foote, W. (2006). Ethnic segregation and perceived discrimination in college: Mutual influences and effects on social and academic life. *Journal of Applied Social Psychology, 36*(6), 1471–1501. https://doi.org/10.1111/j.0021-9029.2006.00068.x

Lewis, C., Bruno, P., Raygoza, J., & Wang, J. (2019). Alignment of goals and perceptions of computing predicts students' sense of belonging in computing. *Proceedings of the 2019 ACM Conference on International Computing Education Research*, 11–19. https://doi.org/10.1145/3291279.3339426

Lewis, J. A., Mendenhall, R., Ojiemwen, A., Thomas, M., Riopelle, C., Harwood, S. A., & Browne Huntt, M. (2021). Racial microaggressions and sense of belonging at a historically White university. *American Behavioral Scientist, 65*(8), 1049–1071. https://doi.org/10.1177/0002764219859613

Lewis, K. R., & Shah, P. P. (2021). Black students' narratives of diversity and inclusion initiatives and the campus racial climate: An interest-convergence analysis. *Journal of Diversity in Higher Education, 14*(2), 189–202. https://doi.org/10.1037/dhe0000147

Lieng, N., Morín, J. L., Huynh, Q.-L., & Oh, J. S. (2024). *A framework for more intentional and equity-minded race data disaggregation* (169). Association for Institutional Research. https://eric.ed.gov/?id=ED664659

Limeri, L. B., Asif, M. Z., Bridges, B. H. T., Esparza, D., Tuma, T. T., Sanders, D., Morrison, A. J., Rao, P., Harsh, J. A., Maltese, A. V., & Dolan, E. L. (2019). "Where's my mentor?!" Characterizing negative mentoring experiences in undergraduate life science research. *CBE-Life Sciences Education, 18*(4), ar61. https://doi.org/10.1187/cbe.19-02-0036

Locks, A. M., Hurtado, S., Bowman, N. A., & Oseguera, L. (2008). Extending notions of campus climate and diversity to students' transition to college. *The Review of Higher Education, 31*(3), 257–285.

Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology, 73*(1), 91–103. https://doi.org/10.1037/0022-3514.73.1.91

Logel, C., Le Forestier, J. M., Witherspoon, E. B., & Fotuhi, O. (2021). A social-belonging intervention benefits higher weight students' weight stability and academic achievement. *Social Psychological and Personality Science, 12*(6), 1048–1057. https://doi.org/10.1177/1948550620959236

Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., von Hippel, W., & Bell, A. E. (2009). Interacting with sexist men triggers social identity threat among female engineers. *Journal of Personality and Social Psychology, 96*(6), 1089–1103. https://doi.org/10.1037/a0015703

Logel, C. R., Walton, G. M., Spencer, S. J., Peach, J., & Mark, Z. P. (2012). Unleashing latent ability: Implications of stereotype threat for college admissions. *Educational Psychologist, 47*(1), 42–50. https://doi.org/10.1080/00461520.2011.611368

Loo, C. M., & Rolison, G. (1986). Alienation of ethnic minority students at a predominantly White university. *The Journal of Higher Education*. https://doi.org/10.1080/00221546.1986.11778749

López, C. M., Kelly, K., Maloles, C., Avila, K., & Nolasco, C. (2024). Critical approaches to mentorship: Creating access and equity for undergraduate research experiences. *Journal of Diversity in Higher Education*. https://doi.org/10.1037/dhe0000531

Lord, C. G., & Saenz, D. S. (1985). Memory deficits and memory surfeits: Differential cognitive consequences of tokenism for tokens and observers. *Journal of Personality and Social Psychology, 49*(4), 918–926. https://doi.org/10.1037/0022-3514.49.4.918

Mallett, R. K., Mello, Z. R., Wagner, D. E., Worrell, F., Burrow, R. N., & Andretta, J. R. (2011). Do I belong? It depends on when you ask. *Cultural Diversity and Ethnic Minority Psychology, 17*(4), 432–436. https://doi.org/10.1037/a0025455

Markus, H. R., Steele, C. M., & Steele, D. M. (2000). Colorblindness as a barrier to inclusion: Assimilation and nonimmigrant minorities. *Daedalus, 129*(4), 233–259.

McGuire, W. J., McGuire, C. V., Child, P., & Fujioka, T. (1978). Salience of ethnicity in the spontaneous self-concept as a function of one's ethnic distinctiveness in the social environment. *Journal of Personality and Social Psychology, 36*(5), 511–520. https://doi.org/10.1037/0022-3514.36.5.511

McPartlan, P., Solanki, S., Xu, D., & Sato, B. (2020). Testing basic assumptions reveals when (not) to expect mindset and belonging interventions to succeed. *AERA Open*. https://doi.org/10.1177/2332858420966994

Mendoza-Denton, R., & Page-Gould, E. (2008). Can cross-group friendships influence minority students' well-being at historically White universities? *Psychological Science, 19*(9), 933–939. https://doi.org/10.1111/j.1467-9280.2008.02179.x

Milkman, K. L., Akinola, M., & Chugh, D. (2015). What happens before? A field experiment exploring how pay and representation differentially shape bias on the pathway into organizations. *The Journal of Applied Psychology, 100*(6), 1678–1712. https://doi.org/10.1037/apl0000022

Miller, A. L., Williams, L. M., & Silberstein, S. M. (2019). Found my place: The importance of faculty relationships for seniors' sense of belonging. *Higher Education Research & Development, 38*(3), 594–608. https://doi.org/10.1080/07294360.2018.1551333

Morales, E. M. (2014). Intersectional impact: Black students and race, gender and class microaggressions in higher education. *Race, Gender & Class, 21*(3/4), 48–66.

Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences, 109*(41), 16474–16479. https://doi.org/10.1073/pnas.1211286109

Muenks, K., Canning, E. A., LaCosse, J., Green, D. J., Zirkel, S., Garcia, J. A., & Murphy, M. C. (2020). Does my professor think my ability can change? Students' perceptions of their STEM professors' mindset beliefs predict their psychological vulnerability, engagement, and performance in class. *Journal of Experimental Psychology: General*, Advance online publication. https://doi.org/10.1037/xge0000763

Muenks, K., Sievers, J., Kroeper, K. M., & Canning, E. A. (in press). Exploring effects of mixed mindset messages from instructors. *Motivation Science*. https://doi.org/10.1037/mot0000381

Muenks, K., Kroeper, K. M., Canning, E. A., & Murphy, M. C. (2024). Instructor mindset beliefs and behaviors: How do students and instructors perceive them? *Social Psychology of Education, 27*(6), 2883–2899. https://doi.org/10.1007/s11218-024-09948-6

Muragishi, G. A., Aguilar, L., Carr, P. B., & Walton, G. M. (2023). Microinclusions: Treating women as respected work partners increases a sense of fit in technology companies. *Journal of Personality and Social Psychology*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/pspi0000430

Muraki, E. J., Atay, E. J., Chadwick, L., van der Wijk, G., Mori, C. M., Murry, A. T., & Exner-Cortens, D. (2024). Affinity and allyship groups to advance inclusion in postsecondary institutions: A systematic scoping review. *Journal of Diversity in Higher Education*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/dhe0000543

Murphy, M. C., Fryberg, S., Brady, L., Canning, E. A., & Hecht, C. (2021). Global mindset initiative paper 1: Growth mindset cultures and teacher practices. *SSRN*. https://doi.org/10.2139/ssrn.3911594

Murphy, M. C., Emerson, K. T. U., Kroeper, K. M., & Green, D. J. (2025). The evolution of mindset research: Forging connections across individuals, situations, and cultures. *Advances in Experimental Social Psychology*.

Murphy, M. C., Gopalan, M., Carter, E. R., Emerson, K. T. U., Bottoms, B. L., & Walton, G. M. (2020). A customized belonging intervention improves retention of socially disadvantaged students at a broad-access university. *Science Advances, 6*(29), eaba4677. https://doi.org/10.1126/sciadv.aba4677

Murphy, M. C., Kroeper, K. M., & Ozier, E. M. (2018). Prejudiced places: How contexts shape inequality and how policy can change them. *Policy Insights from the Behavioral and Brain Sciences, 5*(1), 66–74. https://doi.org/10.1177/2372732217748671

Murphy, M. C., Richeson, J. A., Shelton, J. N., Rheinschmidt, M. L., & Bergsieker, H. B. (2013). Cognitive costs of contemporary prejudice. *Group Processes & Intergroup Relations, 16*(5), 560–571. https://doi.org/10.1177/1368430212468170

Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science, 18*(10), 879–885. https://doi.org/10.1111/j.1467-9280.2007.01995.x

Murphy, M. C., & Taylor, V. J. (2012). The role of situational cues in signaling and maintaining stereotype threat. In M. Inzlicht & T. Schmader (Eds.), *Stereotype Threat: Theory, Process, and Application* (pp. 17–33). Oxford University Press.

Murphy, M. C., & Zirkel, S. (2015). Race and belonging in school: How anticipated and experienced belonging affect choice, persistence, and performance. *Teachers College Record, 117*, 1–40. https://doi.org/10.1177/016146811511701204

Murrar, S., Campbell, M. R., & Brauer, M. (2020). Exposure to peers' pro-diversity attitudes increases inclusion and reduces the achievement gap. *Nature Human Behaviour*, 1–9. https://doi.org/10.1038/s41562-020-0899-5

Museus, S. D., Yi, V., & Saelua, N. (2018). How culturally engaging campus environments influence sense of belonging in college: An examination of differences between White students and students of color. *Journal of Diversity in Higher Education, 11*(4), 467–483. https://doi.org/10.1037/dhe0000069

Myers, K., Trull, L. H., Bryson, B. J., & Yeom, H. S. (2019). Affinity groups: Redefining brave spaces. *Journal of Baccalaureate Social Work, 24*(1), 1–18. https://doi.org/10.18084/1084-7219.24.1.1

Norman, J. B., Fuesting, M. A., Geerling, D. M., Chen, J. M., Gable, S. L., & Diekman, A. B. (2022). To pursue or not to pursue STEM? Faculty behavior enhances student involvement in STEM roles

by signaling role-specific support. *Social Psychological and Personality Science, 13*(2), 583–594. https://doi.org/10.1177/19485506211035003

O'Keefe, P. A., Dweck, C. S., & Walton, G. M. (2018). Implicit theories of interest: Finding your passion or developing it? *Psychological Science, 29*(10), 1653–1664. https://doi.org/10.1177/0956797618780643

O'Keefe, P. A., Horberg, E. J., Dweck, C. S., & Walton, G. M. (2023). A growth-theory-of-interest intervention increases interest in math and science coursework among liberal arts undergraduates. *Journal of Educational Psychology, 115*(6), 859–876. https://doi.org/10.1037/edu0000798

Odle, T., Gottfried, M., Miller, T., & Andrews, R. (2023). Who's matched up? Access to same-race instructors in higher education. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4478744

Offidani-Bertrand, C., Velez, G., Benz, C., & Keels, M. (2022). "I wasn't expecting it": High school experiences and navigating belonging in the transition to college. *Emerging Adulthood, 10*(1), 212–224. https://doi.org/10.1177/2167696819882117

Okonofua, J. A., Harris, L. T., & Walton, G. M. (2022). Sidelining bias: A situationist approach to reduce the consequences of bias in real-world contexts. *Current Directions in Psychological Science*, 09637214221102422. https://doi.org/10.1177/09637214221102422

Ornstein, A. (2019). Wealth, legacy and college admission. *Society, 56*(4), 335–339.

Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *The Review of Higher Education, 30*(4), 363–389.

Ozier, E. M. (2023). *Motives matter: Communicating STEM faculty mindset beliefs through course syllabi* [Indiana University]. https://www.proquest.com/openview/2bcfe8379918eeabfcbdbe5d12a37500/1?pq-origsite=gscholar&cbl=18750&diss=y

Palmer, R., & Gasman, M. (2008). "It takes a village to raise a child": The role of social capital in promoting academic success for African American men at a Black college. *Journal of College Student Development, 49*(1), 52–70.

Paradies, Y., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., Gupta, A., Kelaher, M., & Gee, G. (2015). Racism as a determinant of health: A systematic review and meta-analysis. *PLoS ONE, 10*(9), e0138511. https://doi.org/10.1371/journal.pone.0138511

Patton, L. D. (Ed.). (2023). *Culture centers in higher education: Perspectives on identity, theory, and practice*. Routledge. https://doi.org/10.4324/9781003443971

Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology, 49*, 65–85. https://doi.org/10.1146/annurev.psych.49.1.65

Pietri, E. S., Drawbaugh, M. L., Lewis, A. N., & Johnson, I. R. (2019). Who encourages Latina women to feel a sense of identity-safety in STEM environments? *Journal of Experimental Social Psychology, 84*, 103827. https://doi.org/10.1016/j.jesp.2019.103827

Pietri, E. S., Johnson, I. R., & Ozgumus, E. (2018). One size may not fit all: Exploring how the intersection of race and gender and stigma consciousness predict effective identity-safe cues for Black women. *Journal of Experimental Social Psychology, 74*, 291–306. https://doi.org/10.1016/j.jesp.2017.06.021

Pippert, T. D., Essenburg, L. J., & Matchett, E. J. (2013). We've got minorities, yes we do: Visual representations of racial and ethnic diversity in college recruitment materials. *Journal of Marketing for Higher Education, 23*(2), 258–282. https://doi.org/10.1080/08841241.2013.867920

Plaut, V. C. (2014). Diversity science and institutional design. *Policy Insights from the Behavioral and Brain Sciences, 1*(1), 72–80. https://doi.org/10.1177/2372732214550164

Plaut, V. C., Garnett, F. G., Buffardi, L. E., & Sanchez-Burks, J. (2011). "What about me?" Perceptions of exclusion and Whites' reactions to multiculturalism. *Journal of Personality and Social Psychology, 101*(2), 337–353. https://doi.org/10.1037/a0022832

Plummer, D. L., Allison, J., Stone, R. T., & Powell, L. (2016). Patterns of adult cross-racial friendships: A context for understanding contemporary race relations. *Cultural Diversity & Ethnic Minority Psychology, 22*(4), 479–494. https://doi.org/10.1037/cdp0000079

Ponce de Leon, R., Carter, J. T., & Rosette, A. S. (2024). Sincere solidarity or performative pretense? Evaluations of organizational allyship. *Organizational Behavior and Human Decision Processes, 180*, 104296. https://doi.org/10.1016/j.obhdp.2023.104296

Purdie-Vaughns, V., Steele, C. M., Davies, P. G., Ditlmann, R., & Crosby, J. R. (2008). Social identity contingencies: How diversity cues signal threat or safety for African Americans in mainstream institutions. *Journal of Personality and Social Psychology, 94*(4), 615–630. https://doi.org/10.1037/0022-3514.94.4.615

Ragland, K. P., & Sommers, S. R. (2024). Can I see myself there? How Black potential applicants use diversity cues to learn about graduate program climate. *Journal of Experimental Psychology: General*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/xge0001571

Rattan, A., Savani, K., Komarraju, M., Morrison, M. M., Boggs, C., & Ambady, N. (2018). Meta-lay theories of scientific potential drive underrepresented students' sense of belonging to science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology, 115*(1), 54–75. https://doi.org/10.1037/pspi0000130

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. SAGE.

Redding, C. (2019). A teacher like me: A review of the effect of student–teacher racial/ethnic matching on teacher perceptions of students and student academic and behavioral outcomes. *Review of Educational Research, 89*(4), 499–535. https://doi.org/10.3102/0034654319853545

Robinson, S. J. (2013). Spoketokenism: Black women talking back about graduate school experiences. *Race Ethnicity and Education, 16*(2), 155–181. https://doi.org/10.1080/13613324.2011.645567

Rolón-Dow, R., Covarrubias, R., & Guerrón Montero, C. (2022). Shallow inclusion: How Latinx students experience a Predominantly White Institution "doing diversity work." *Journal of Leadership, Equity, and Research, 8*(2), 135–157.

Rubin, M., Evans, O., & Wilkinson, R. B. (2016). A longitudinal study of the relations among university students' subjective social status, social contact with university friends, and mental health and well-being. *Journal of Social and Clinical Psychology, 35*(9), 722–737. https://doi.org/10.1521/jscp.2016.35.9.722

Rude, J., & Herda, D. (2010). Best friends forever? Race and the stability of adolescent friendships. *Social Forces, 89*(2), 585–607. https://doi.org/10.1353/sof.2010.0059

Ryan, C. S., Hunt, J. S., Weible, J. A., Peterson, C. R., & Casas, J. F. (2007). Multicultural and colorblind ideology, stereotypes, and ethnocentrism among Black and White Americans. *Group Processes & Intergroup Relations*, *10*(4), 617–637. https://doi.org/10.1177/1368430207084105

Sanchez, M. E. (2019). Perceptions of campus climate and experiences of racial microaggressions for Latinos at Hispanic-Serving Institutions. *Journal of Hispanic Higher Education, 18*(3), 240–253. https://doi.org/10.1177/1538192717739351

Sanchez, K. L., Kalkstein, D. A., & Walton, G. M. (2022). A threatening opportunity: The prospect of conversations about race-related experiences between Black and White friends. *Journal of Personality and Social Psychology, 122*(5), 853–872. https://doi.org/10.1037/pspi0000369

Sanchez, K. L., Kalkstein, D. A., Hirschi, Q., Corrington, A., Pinedo, A., Brannon, T. N., Stewart, D., Hard, B. M., Harrington, H. M., Templeton, E., & Walton, G. M. (under review). *Uncomfortable because we care: A friendship-affirming appraisal of race talk strengthens Black-White friendships over time*.

Santa-Ramirez, S. (2022). A sense of belonging: The people and counterspaces Latinx undocu/DACA-mented collegians use to persist. *Education Sciences, 12*(10), 10. https://doi.org/10.3390/educsci12100691

Schroeder, J., & Fishbach, A. (2024). Feeling known predicts relationship satisfaction. *Journal of Experimental Social Psychology, 111*, 1–15. https://doi.org/10.1016/j.jesp.2023.104559

Schwartz, S. E. O., Rhodes, J. E., Spencer, R., & Grossman, J. B. (2013). Youth initiated mentoring: Investigating a new approach to working with vulnerable adolescents. *American Journal of Community Psychology, 52*(1), 155–169. https://doi.org/10.1007/s10464-013-9585-3

Shelton, J. N., Turetsky, K. M., & Park, Y. (2023). Responsiveness in interracial interactions. *Current Opinion in Psychology, 53*, 101653. https://doi.org/10.1016/j.copsyc.2023.101653

Shook, N. J., & Clay, R. (2012). Interracial roommate relationships: A mechanism for promoting sense of belonging at university and academic performance. *Journal of Experimental Social Psychology, 48*(5), 1168–1172. https://doi.org/10.1016/j.jesp.2012.05.005

Shook, N. J., & Fazio, R. H. (2008). Interracial roommate relationships: An experimental field test of the contact hypothesis. *Psychological Science, 19*(7), 717–723. https://doi.org/10.1111/j.1467-9280.2008.02147.x

Slaten, C. D., Elison, Z. M., Lee, J.-Y., Yough, M., & Scalise, D. (2016). Belonging on campus: A qualitative inquiry of Asian international students. *The Counseling Psychologist, 44*(3), 383–410. https://doi.org/10.1177/0011000016633506

Slaten, C. D., Yough, M. S., Shemwell, D. A., Scalise, D. A., Elison, Z. M., & Hughes, H. A. (2014). Eat, sleep, breathe, study: Understanding what it means to belong at a university from the student perspective. *Excellence in Higher Education, 5*(1), 1. https://doi.org/10.5195/ehe.2014.117

Smith, E. N., Yeager, D. S., Dweck, C. S., & Walton, G. M. (2022). An organizing framework for teaching practices that can "expand" the self and address social identity concerns. *Educational Psychology Review, 34*(4), 2197–2219. https://doi.org/10.1007/s10648-022-09715-z

Smith, W. A., Mustaffa, J. B., Jones, C. M., Curry, T. J., & Allen, W. R. (2016). 'You make me wanna holler and throw up both my hands!': Campus culture, Black misandric microaggressions, and racial battle fatigue. *International Journal of Qualitative Studies in Education, 29*(9), 1189–1209. https://doi.org/10.1080/09518398.2016.1214296

Solórzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions, and campus racial climate: The experiences of African American college students. *The Journal of Negro Education, 69*(1/2), 60–73.

Spencer, R., Gowdy, G., Drew, A. L., & Rhodes, J. E. (2019). "Who knows me the best and can encourage me the most?": Matching and early relationship development in youth-initiated mentoring relationships with system-involved youth. *Journal of Adolescent Research, 34*(1), 3–29. https://doi.org/10.1177/0743558418755686

Spencer, R., Tugenberg, T., Ocean, M., Schwartz, S. E. O., & Rhodes, J. E. (2016). "Somebody who was on my side": A qualitative examination of youth initiated mentoring. *Youth & Society, 48*(3), 402–424. https://doi.org/10.1177/0044118X13495053

Spoor, J. R., Jetten, J., & Hornsey, M. J. (2014). Overplaying the diversity card: When a superordinate group overrepresents the prevalence of a minority group. *Group Processes & Intergroup Relations, 17*(2), 161–177. https://doi.org/10.1177/1368430213497063

Starck, J. G., Sinclair, S., & Shelton, J. N. (2021). How university diversity rationales inform student preferences and outcomes. *Proceedings of the National Academy of Sciences, 118*(16), e2013833118. https://doi.org/10.1073/pnas.2013833118

Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. *Advances in Experimental Social Psychology, 34*, 379–440. https://doi.org/10.1016/S0065-2601(02)80009-0

Stellino, M. (2020, September 11). College students push for race and ethnic studies classes to be required. *The Hechinger Report*. https://hechingerreport.org/college-students-push-for-race-and-ethnic-studies-classes-to-be-required-but-some-campuses-resist/

Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012a). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology, 102*(6), 1178–1197. https://doi.org/10.1037/a0027143

Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students' academic performance and all students' college transition. *Psychological Science, 25*(4), 943–953. https://doi.org/10.1177/0956797613518349

Stephens, N. M., Hamedani, M. G., & Townsend, S. S. M. (2019). Difference matters: Teaching students a contextual theory of difference can help them succeed. *Perspectives on Psychological Science, 14*(2), 156–174. https://doi.org/10.1177/1745691618797957

Stephens, N. M., Markus, H. R., & Fryberg, S. A. (2012b). Social class disparities in health and education: Reducing inequality by applying a sociocultural self model of behavior. *Psychological Review, 119*(4), 723–744. https://doi.org/10.1037/a0029028

Stephens, N. M., Townsend, S. S. M., Markus, H. R., & Phillips, L. T. (2012c). A cultural mismatch: Independent cultural norms produce greater increases in cortisol and more negative emotions among first-generation college students. *Journal of Experimental Social Psychology, 48*(6), 1389–1393. https://doi.org/10.1016/j.jesp.2012.07.008

Stevens, F. G., Plaut, V. C., & Sanchez-Burks, J. (2008). Unlocking the benefits of diversity: All-inclusive multiculturalism and positive organizational change. *The Journal of Applied Behavioral Science, 44*(1), 116–133. https://doi.org/10.1177/0021886308314460

Strayhorn, T. L. (2018). *College students' sense of belonging: A key to educational success for all students* (2nd ed.). Routledge. https://doi.org/10.4324/9781315297293

Strayhorn, T. L. (2023). Widening the aperture on college students' sense of belonging: A critical ecological perspective. In T. Lowe (Ed.), *Advancing Student Engagement in Higher Education Reflection, Critique and Challenge*. Taylor & Francis.

Stubblebine, A. M., Gopalan, M., & Brady, S. T. (2024). Who feels like they belong? Personality and belonging in college. *PLoS ONE, 19*(1), e0295436. https://doi.org/10.1371/journal.pone.0295436

Students for Fair Admissions, Inc. v. President and Fellows of Harvard College, 20–1199 (Supreme Court of the United States June 29, 2023).

Tachine, A. R., Cabrera, N. L., & Yellow Bird, E. (2017). Home away from home: Native American students' sense of belonging during their first year in college. *The Journal of Higher Education, 88*(5), 785–807. https://doi.org/10.1080/00221546.2016.1257322

Taylor, S. E., Fiske, S. T., Etcoff, N. L., & Ruderman, A. J. (1978). Categorical and contextual bases of person memory and stereotyping. *Journal of Personality and Social Psychology, 36*(7), 778–793. https://doi.org/10.1037/0022-3514.36.7.778

Thébaud, S., & Charles, M. (2018). Segregation, stereotypes, and STEM. *Social Sciences, 7*(7), 7. https://doi.org/10.3390/socsci7070111

Thelamour, B., George Mwangi, C., & Ezeofor, I. (2019). "We need to stick together for survival": Black college students' racial identity, same-ethnic friendships, and campus connectedness. *Journal of Diversity in Higher Education, 12*(3), 266–279. https://doi.org/10.1037/dhe0000104

Tinto, V. (1988). Stages of student departure: Reflections on the longitudinal character of student leaving. *The Journal of Higher Education.* https://doi.org/10.1080/00221546.1988.11780199

Trail, T. E., Shelton, J. N., & West, T. V. (2009). Interracial roommate relationships: Negotiating daily interactions. *Personality and Social Psychology Bulletin, 35*(6), 671–684. https://doi.org/10.1177/0146167209332741

Trainor, C. (2025). *Dear colleague letter.* Department of Education, Office for Civil Rights. https://www.ed.gov/media/document/dear-colleague-letter-sffa-v-harvard-109506.pdf

Trawalter, S., Hoffman, K., & Palmer, L. (2021). Out of place: Socioeconomic status, use of public space, and belonging in higher education. *Journal of Personality and Social Psychology, 120*(1), 131–144. https://doi.org/10.1037/pspi0000248

Valandra, Fields, L., Sebree, W., & Sober, W. (2022). Navigating an anti-Black campus climate: #black@pwi. *Race Ethnicity and Education*, 1–18. https://doi.org/10.1080/13613324.2022.2088720

Van Gilder, B. J., Amacher, A., & Ault, M. K. (2024). Whiteness, marginalization, and exclusion: An analysis of Tongan students' experiences in U.S. institutions of higher education. *Journal of International and Intercultural Communication, 17*(1), 56–82. https://doi.org/10.1080/17513057.2023.2285767

Varty, C. (2022). *I'll believe it when I see it: Widespread use of organizational diversity statements undermines perceived sincerity and organizational attraction* [York University]. http://hdl.handle.net/10315/40752

Walton, G. M., spsampsps Brady, S. T. (2020a). "Bad" things reconsidered. In *Applications of social psychology: How social psychology can contribute to the solution of real-world problems* (pp. 58–81). Routledge/Taylor spsampsps Francis Group. https://doi.org/10.4324/9780367816407-4

Walton, G. M. (2021). Stop telling students, "You belong!" *Education Week.* https://www.edweek.org/leadership/opinion-stop-telling-students-you-belong/2021/11

Walton, G. M., Murphy, M. C., Logel, C., Yeager, D. S., Goyer, J. P., Brady, S. T., Emerson, K. T. U., Paunesku, D., Fotuhi, O., Blodorn, A., Boucher, K. L., Carter, E. R., Gopalan, M., Henderson, A., Kroeper, K. M., Murdock-Perriera, L. A., Reeves, S. L., Ablorh, T. T., Ansari, S., … Krol, N. (2023). Where and with whom does a brief social-belonging intervention promote progress in college? *Science*, *380*(6644), 499–505. https://doi.org/10.1126/science.ade4420

Walton, G. M., & Brady, S. T. (2017). The many questions of belonging. In A. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of Competence and Motivation* (2nd ed., pp. 272–293). Guilford Press.

Walton, G. M., & Brady, S. T. (2020b). The social-belonging intervention. In G. M. Walton & A. J. Crum (Eds.), *Handbook of Wise Interventions: How Social-Psychological Insights Can Help Solve Problems* (p. 47). Guilford Press.

Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology, 92*(1), 82–96. https://doi.org/10.1037/0022-3514.92.1.82

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. https://doi.org/10.1126/science.1198364

Walton, G. M., Cohen, G. L., Cwir, D., & Spencer, S. J. (2012). Mere belonging: The power of social connections. *Journal of Personality and Social Psychology, 102*(3), 513–532. https://doi.org/10.1037/a0025731

Walton, G. M., Logel, C., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2015a). 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. https://doi.org/10.1037/a0037461

Walton, G. M., Murphy, M. C., & Ryan, A. M. (2015b). Stereotype threat in organizations: Implications for equity and performance. *Annual Review of Organizational Psychology and Organizational Behavior, 2*(1), 523–550. https://doi.org/10.1146/annurev-orgpsych-032414-111322

Walton, G. M., Okonofua, J. A., Remington Cunningham, K., Hurst, D., Pinedo, A., Weitz, E., Ospina, J. P., Tate, H., & Eberhardt, J. L. (2021). Lifting the bar: A relationship-orienting intervention reduces recidivism among children reentering school from juvenile detention. *Psychological Science, 32*(11), 1747–1767. https://doi.org/10.1177/09567976211013801

Walton, G. M., & Spencer, S. J. (2009). Latent ability: Grades and test scores systematically underestimate the intellectual ability of negatively stereotyped students. *Psychological Science, 20*(9), 1132–1139. https://doi.org/10.1111/j.1467-9280.2009.02417.x

Walton, G. M., Spencer, S. J., & Erman, S. (2013). Affirmative meritocracy. *Social Issues and Policy Review, 7*(1), 1–35. https://doi.org/10.1111/j.1751-2409.2012.01041.x

Walton, G. M., & Wilson, T. D. (2018). Wise interventions: Psychological remedies for social and personal problems. *Psychological Review, 125*(5), 617–655. https://doi.org/10.1037/rev0000115

Walton, G. M., & Yeager, D. S. (2020). Seed and soil: Psychological affordances in contexts help to explain where wise interventions succeed or fail. *Current Directions in Psychological Science, 29*(3), 219–226. https://doi.org/10.1177/0963721420904453

Watkins, N. D., Larson, R. W., & Sullivan, P. J. (2007). Bridging intergroup difference in a community youth program. *American Behavioral Scientist, 51*(3), 380–402. https://doi.org/10.1177/0002764207306066

Whitten, D., James, A., & Roberts, C. (2020). Factors that contribute to a sense of belonging in business students on a small 4-year public commuter campus in the Midwest. *Journal of College Student Retention: Research, Theory & Practice, 22*(1), 99–117. https://doi.org/10.1177/1521025117726520

Williams, K. L., Russell, A., & Summerville, K. (2021). Centering blackness: An examination of culturally-affirming pedagogy and practices enacted by HBCU administrators and faculty members. *Innovative Higher Education, 46*(6), 733–757. https://doi.org/10.1007/s10755-021-09562-w

Wilton, L. S., Bell, A. N., Vahradyan, M., & Kaiser, C. R. (2020). Show don't tell: Diversity dishonesty harms racial/ethnic minorities at work. *Personality and Social Psychology Bulletin*, 0146167219897149. https://doi.org/10.1177/0146167219897149

Wilton, L. S., Good, J. J., Moss-Racusin, C. A., & Sanchez, D. T. (2015). Communicating more than diversity: The effect of institutional diversity statements on expectations and performance as a function of race and gender. *Cultural Diversity and Ethnic Minority Psychology, 21*(3), 315–325. https://doi.org/10.1037/a0037883

Womack, V. Y., Wood, C. V., House, S. C., Quinn, S. C., Thomas, S. B., McGee, R., & Byars-Winston, A. (2020). Culturally aware mentorship: Lasting impacts of a novel intervention on academic administrators and faculty. *PLoS ONE, 15*(8), e0236983. https://doi.org/10.1371/journal.pone.0236983

Wu, D. J., Thiem, K. C., & Dasgupta, N. (2022). Female peer mentors early in college have lasting positive impacts on female engineering students that persist beyond graduation. *Nature Communications, 13*(1), 1. https://doi.org/10.1038/s41467-022-34508-x

Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., Hinojosa, C. P., Paunesku, D., Romero, C., Flint, K., Roberts, A., Trott, J., Iachan, R., Buontempo, J., Yang, S. M., Carvalho, C. M., … Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature*, 1–6. https://doi.org/10.1038/s41586-019-1466-y

Yeager, D. S. (2024). *10 to 25: The science of motivating young people: A groundbreaking approach to leading the next generation—and making your own life easier*. Simon and Schuster.

Yeager, D. S., Henderson, M. D., D'Mello, S., Paunesku, D., Walton, G. M., Spitzer, B. J., & Duckworth, A. L. (2014a). Boring but important: A self-transcendent purpose for learning fosters academic self-regulation. *Journal of Personality and Social Psychology, 107*(4), 559–580. https://doi.org/10.1037/a0037637

Yeager, D. S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., Hessert, W. T., Williams, M. E., & Cohen, G. L. (2014b). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General, 143*(2), 804–824. https://doi.org/10.1037/a0033906

Yeager, D. S., Romero, C., Paunesku, D., Hulleman, C. S., Schneider, B., Hinojosa, C., Lee, H. Y., O'Brien, J., Flint, K., Roberts, A., Trott, J., Greene, D., Walton, G. M., & Dweck, C. S. (2016a). Using design thinking to improve psychological interventions: The case of the growth mindset

during the transition to high school. *Journal of Educational Psychology, 108*(3), 374–391. https://doi.org/10.1037/edu0000098

Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research, 81*(2), 267–301. https://doi.org/10.3102/0034654311405999

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., Duckworth, A. L., Urstein, R., Gomez, E. M., Markus, H. R., Cohen, G. L., & Dweck, C. S. (2016b). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences, 113*(24), E3341–E3348. https://doi.org/10.1073/pnas.1524360113

Zhao, X., & Biernat, M. (2017). "Welcome to the U.S". but "change your name"? Adopting Anglo names and discrimination. *Journal of Experimental Social Psychology, 70*, 59–68. https://doi.org/10.1016/j.jesp.2016.12.008

Authors and Affiliations

Kathryn M. Kroeper[1] · **Maithreyi Gopalan[2]** · **Katherine T. U. Emerson[3]** · **Gregory M. Walton[4]**

✉ Kathryn M. Kroeper
   kroeperk@sacredheart.edu

✉ Gregory M. Walton
   gwalton@stanford.edu

[1] Department of Psychology, Sacred Heart University, Fairfield, CT, USA

[2] Department of Education Studies, University of Oregon, Eugene, OR, USA

[3] Equity Accelerator, Indiana University, Bloomington, IN, USA

[4] Department of Psychology, Stanford University, Stanford, CA, USA