Messaging Matters: The Impact of Advising Micromessages on Student Affect and Behavior across Diverse University Campuses

Tonya M. Buchanan, Central Washington University
Aaron Brown, University of Texas at Arlington
Patrizia Chirco, University of Bern
Danielle Klein, University of Texas at Arlington
Ashley M. Purgason, University of Texas at Arlington

Across two experimental university studies, we examined how small changes in language embedded in advising communications influence student outcomes (e.g., support, persistence) and explored the utility of advising micromessages congruent with growth mindset and appreciative advising for diverse student populations. We found that micromessages embedded within hypothetical advisor emails increased anticipated positive student outcomes, including feelings of support and persistence. In line with our hypotheses and attribution-based intervention research with nontraditional and/or marginalized students, the positive effect of micromessaging appears greater for first-generation students and students of color. This research highlights opportunities to shape consequential student outcomes through small, strategic language changes. Empowering advisors with thoughtfully crafted language improves students' sense of support and persistence and may reduce achievement gaps.

Academic advisors and student perceptions of advising can play an essential role in student engagement and persistence. Given high rates of attrition among first-year college students (Alex-itch, 2002; Walker et al., 2017), relevant academic advising approaches should help students navigate the transition into college and the degree planning process in ways that surpass the transactional task of course scheduling. Because academic advisors play a key role in student development and achievement (Al-Asmi & Thumiki, 2014; He & Hutson, 2016), creating conditions where students feel comfortable accessing advisor support is essential in allowing for a more collaborative student-advisor relationship. Going beyond pre-scriptive advising elevates the academic advising process above mere information conveyance, especially for those who need more involved interventions and support. Communicating to students in a way that encourages their openness to the shared messaging invites students into a more proactive approach and creates conditions of learning. Advising messaging and its impact on a range of important student outcomes is the focus of this work. Specifically, we explore the utility of advising micromessages congruent with a growth mindset and appreciative advising across two studies with diverse student samples.

Theoretical Framework and Background
Growth Mindset

The idea that intelligence is malleable rather than simply heritable has been extensively researched (Duyme et al., 1999; Sauce & Matzel, 2018; van IJzendoorn et al., 2005). Studies on learned helplessness highlight that experiences influence motivation (Seligman & Maier, 1967). Applications of attribution theory suggest that perceiving failure as a lack of effort—rather than ability—influences how people react to difficulties, increasing their desire to improve (Demetriou, 2011; Weiner & Kukla, 1970).

The concept of growth (vs. fixed) mindset stems from the idea that the brain is constantly changing and building new connections (Kania et al., 2017; Nelson, 1999). Growth mindsets posit that intelligence is malleable and that challenges and setbacks should be embraced as learning opportunities (Dweck, 2000, 2006). However, a growth mindset is not only about the brain's plasticity and embracing learning opportunities. When students are taught they can overcome academic difficulties with patience, effort, and the support of others, they show more resilience when experiencing adversity—important when facing life challenges (Yeager & Dweck, 2012,

2020). Indeed, studies on mindset interventions have shown promising results across disciplines regarding student academic achievement (Miller, 2019; Yeager et al., 2019).

In addition to the direct impact of student mindset, the perceived mindset of others in the educational setting can also powerfully impact a student's emotions and behaviors. In a recent experimental longitudinal study, Muenks et al. (2020) found that, regardless of their own mindsets, students taking STEM classes who thought their professors held a fixed mindset regarding intelligence reported higher levels of psychological vulnerability (e.g., being afraid to say something wrong in the classroom). Therefore, they engaged less during lectures and showed less interest in STEM subjects. In other words, students' academic performance and experiences are reliably predicted by whether or not people they perceive as an authority (e.g., advisors, professors) hold a fixed mindset. Interestingly, in classrooms where STEM professors reported having a fixed mindset, the racial achievement gap was twice as large as those same classes taught by professors with a growth mindset, suggesting that students belonging to marginalized groups may be especially affected by the mindset of the professionals they encounter (Canning et al., 2019). This finding is important to consider given the growing need to recruit and retain a more diverse workforce in STEM fields (LaCosse et al., 2021).

Appreciative Advising

Academic advisors have an opportunity to influence students' socioemotional experiences, academic accomplishments, and motivation during their time in higher education. Relationally supportive environments influence a person's growth and motivation (Ryan et al., 1997) and positively impact student academic success (Black & Deci, 2000). Advisor support strongly contributes to student achievement and long-term success, especially for nontraditional, underrepresented, or marginalized students. For example, research suggests that academic advisor support contributes to the persistence of underrepresented groups such as women of color in STEM graduate programs (Primé et al., 2015; Wilkins-Yel et al., 2022).

Appreciative advising is a student-centered approach that focuses on advisor support to improve the student-advisor relationship (Truschel, 2008). Through this philosophy, advisors strive for warmth and connection, recognize past achievements, encourage students, and provide goal-oriented guidance (Bloom et al., 2008). Appreciative advising differs from a traditional advising framework because it explicitly connects academic planning to building meaningful and nurturing relationships with students, and it encourages students to reach their potential and achieve their goals through a series of outlined phases. An appreciative advising approach positively impacts retention, achievement (Ohrt, 2016; Truschel, 2008), and the first-year experience by fostering a sense of belonging and acceptance and increasing general well-being (Hutson, 2010).

In addition to the positive effects appreciative advising has on students, particularly those belonging to racial and ethnic minority groups (Harper, 2019), strength-based advising philosophies can help disrupt the cycle of poverty; low socioeconomic status is a major predictor of lower educational achievements (Dietrichson et al., 2017). For example, one study demonstrated how appreciative advising increased graduation rates among women in Appalachia, many of whom struggled to complete postsecondary degrees because of high poverty rates (Pulcini, 2016). Given that first-generation college students are from predominantly non-white and low-income backgrounds (National Center for Education Statistics, n.d.), students from these underrepresented groups make a compelling potential candidate group for appreciative advising research as they may be most impacted.

Micromessaging: Language Matters

The way academic advisors use language to communicate with students has a tremendous impact on students' emotional and academic outcomes. In many cases, communication reduces gaps and stereotype threats amongst underrepresented student identities (Powell et al., 2013; Seidel et al., 2015). For example, intentionally using microaffirmations—subtle emotionally supportive messages that imply admiration or respect—has great potential for promoting inclusion, building rapport, and improving students' academic environment and well-being (Powell et al., 2013; Rowe, 2008; Seidel et al., 2015). In management and organizational literature, microaffirmations are small behaviors that promote a welcoming and inclusive work environment, especially for people who feel excluded and invisible (Rowe, 2008). Similarly, when used in

academic settings by advisors, microaffirmations can help students accept constructive feedback and feel seen and welcomed, potentially resulting in better academic performance (Powell et al., 2013).

The positive effects of microaffirmations, particularly on first-generation college students, have been a topic of empirical interest for decades (Ellis et al., 2019; Estrada et al., 2018; Rendon, 1994). When faculty members are approachable and provide a learning environment where students are seen as qualified learners, students exhibit increased feelings of self-worth and are more likely to perceive their contribution to the college experience as valuable. When used strategically to counteract feelings of rejection, micromessaging effectively reduces stress due to discrimination (Stephens et al., 2014). Consequently, students show an increased sense of belonging and motivation to persevere; as a result, their chances of graduating improve (Bensimon, 2007; Ellis et al., 2019).

Recently, Kyte et al. (2020) explored the relationship between advisor micromessaging and positive student outcomes (e.g., academic confidence, perceived support). In a qualitative research study, interviews were conducted with focus groups of students who were shown two hypothetical advisor emails containing micromessages congruent with language based on either a growth mindset (i.e., framing challenges as opportunities to learn and grow) or appreciative advising (i.e., highlighting warmth and connection and recognizing past successes). After reading each email, students discussed how they were affected by the message, compared the emails, and were encouraged to think about which made them feel more supported and boosted their confidence. Overall, students preferred the email containing the growth mindset because they "had opportunities to learn, and that new strategies could support their growth and success" (Kyte et al., 2020, p. 41). This research suggests that students perceive the fine nuances of micromessages and highlights that the intentional use of messaging techniques can improve students' sense of social belonging, academic achievement, and retention, especially for students experiencing marginalization in their educational journey.

Current Research: Aims and Hypotheses

Whether advisor messages are framed to encourage a growth mindset or take on an appreciative advising perspective, the effects of such messages benefit students' well-being and have powerful and lasting effects on their academic careers (Gehringer et al., 2021; Hutson, 2010; Paunesku et al., 2015; Primé et al., 2015; Yeager & Dweck, 2020). Further, research on growth mindset, appreciative advising, and microaffirmations highlights the importance of such topics for students with underrepresented identities, such as first-generation students and students of color. To date, the examination of the relationship between the use of micromessaging and the potential benefit to students has largely been qualitative (Harrison & Tanner, 2018; Kyte et al., 2020; Soria et al., 2017), making it challenging to draw causal conclusions. Additionally, no known research has examined the impact of student membership in an underrepresented group on these potential effects. Hence, this work seeks to replicate and expand upon the research conducted by Kyte et al. (2020) on micromessages in advising communications.

Replication and expansion occurred across two studies and university settings by applying an experimental design with quantitative measures of positive student outcomes (e.g., support, confidence, persistence), the incorporation of a control condition (primarily policy-based communication), and the examination of the impact of such messaging on students in underrepresented groups. Based on previous research, we primarily focused on those who identified as first-generation students, students of color, or both.

Research Questions

Each study addressed the following research questions:

RQ1: What are the effects of micromessaging used in advisor communication on outcomes such as students' perceptions of support, confidence, and persistence?

RQ2: Are these effects more pronounced for students belonging to underrepresented groups (i.e., first-generation college students and students of color)?

We expected that participants who received either growth mindset or appreciative advising micromessages from their academic advisors would exhibit more positive student outcomes compared to those who received information-only advising micromessages. We also explored

Table 1. Demographic Information for Participants in Study 1

Characteristic	N	%	M	SD
GPA			3.33	0.71
Age	-	-	20.30	4.78
Gender				
Female	117	72.2	-	-
Male	45	27.8	-	-
Race				
White	108	66.7	-	-
Hispanic, Latina/o, Chicana/o	25	15.4	-	-
Asian/Pacific Islander	10	6.2	-	-
Black/African American	5	3.1	-	-
Multiracial	5	3.1	-	-
Other	5	3.1	-	-
Native American/American Indian	3	1.9	-	-
Did not respond	1	0.6		

Note. Percentages may not total 100 due to rounding.

potential differences between the two micromessaging conditions. In line with Kyte et al. (2020), we explored whether participants who received growth mindset micromessages from their hypothetical academic advisor would exhibit more positive student outcomes compared to participants exposed to appreciative advising micromessages. We examined the impact of advising micromessages across positive student outcomes overall and specific outcomes using multivariate analysis of variance (MANOVA) and follow-up analyses. Finally, consistent with the extensive research on the exponential impact of attribution-based interventions (e.g., growth mindset) on students belonging to underrepresented groups (Walton & Cohen, 2011; Yeager et al., 2016), we also explored how the effect of the micromessages might differ based on student identity. Specifically, we hypothesized that the positive effect of micromessaging would be greater for students of color and first-generation college students. We examined the interaction between student identity and micromessaging on positive student outcomes via multiple regression, controlling for other demographic variables.

Study 1

Considering previous research on the positive effects of advising communications (Kyte et al., 2020; Wrench & Punyanunt-Carter, 2008), the purpose of the present study was to experimentally explore the effect of different types of micromessages from advisors on student outcomes such

as reported confidence, perceptions of support, and persistence.

Methods

After conducting an *a priori* power analysis and receiving approval from the Institutional Review Board (IRB), we sampled 162 ($M_{age} = 20.3$, $SD = 4.78$) undergraduate students enrolled in psychology courses at a public comprehensive university in the Pacific Northwest (see Table 1 for detailed demographic information). Participants completed the study electronically on a personal device and received course credit for participation. After providing informed consent, participants were asked to imagine having contacted their advisor about dropping a challenging class; they were then randomly assigned to read one of three advisor email replies (see Appendix A). Two of these advisor communications were modeled after micromessages from Kyte et al. (2020) and were written using either growth mindset or appreciative advising language. The control message contained policy information without micromessaging related to either growth mindset or appreciative advising. Participants were then asked a series of questions to assess anticipated affective and behavioral outcomes identified by Kyte et al. (2020). For example, participants rated questions such as, "How supported would you feel by your advisor?" and "How likely would you be to give up on the course after this interaction?" using a 7-point Likert scale. Before debriefing, participants

Figure 1. Scree Plot (Study 1)
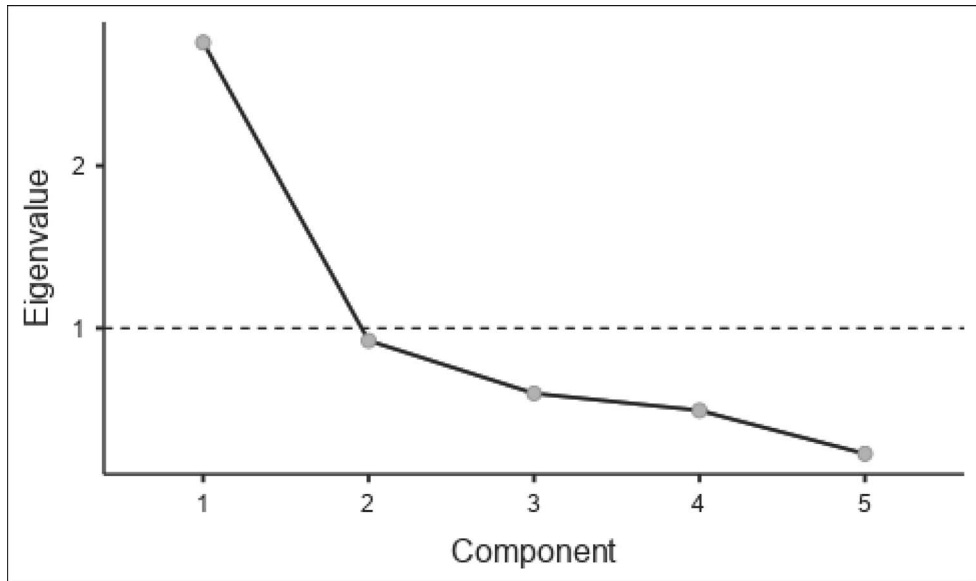
answered attention check and demographic questions.

We examined the impact of the independent variable messaging condition (i.e., randomly assigned advisor communication) on the dependent variable of positive student outcomes (i.e., support, persistence, resource seeking, follow-up, confidence) via MANOVA and follow-up analyses (ANOVA and planned contrasts). Finally, we explored the interaction the predictor variables of messaging type (micromessages vs. control) and student identity had on the dependent variable of positive student outcomes (controlling for gender, age, and GPA) using multiple regression.

Results

Positive Student Outcomes[1]

When conducting a principal component factor analysis of affective and behavioral student outcomes, the results supported a one-factor solution, with the first eigenvalue of 2.76 and all subsequent λs < .93 (see Figure 1 for scree

plot). Consequently, we combined the items (reverse scoring items when appropriate) into a single index of student outcomes, with larger scores reflecting more positive student outcomes (α = .78) for the regression analysis. Descriptive statistics for the combined index of positive student outcomes and the individual items are presented in Appendix B.

The Effect of Micromessaging on Positive Student Outcomes[2]

The first goal of Study 1 was to compare the effectiveness of appreciative and growth mindset micromessaging over exclusively information-based responses in advising communications. Results of the MANOVA, conducted to examine the overall effect of messaging conditions on positive student outcomes as our dependent variable, suggested that the effect of messaging was significant, $F(5, 156) = 3.76$, $p = .003$. Consistent with our hypotheses, *a priori* follow-up analyses suggested that micromessaging conditions created more positive student outcomes compared to information-only

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[1] While the test for normality pointed to data that was not normally distributed, Positive Student Outcomes D (162) = .17, p < .001, the values for skew (-.98) and kurtosis (.25) showed that our measures were well within the cutoff ranges recommended (Mertler & Vannatta, 2010). Given that normality tests such as the Kolmogorov-Smirnov are overly conservative for larger samples (Field, 2013; Tabachnick & Fidell, 2013), a normal distribution was assumed.

[2] Assumptions underlying the *a priori* power analyses for Studies 1 and 2 examining differences in positive student outcomes between growth messaging, appreciative advising, and information-only conditions were based on a medium effect size (d = .50), a = .05, and power (1 − β) set at .80. The targeted sample size (G*Power 3.1) was N = 159 (Faul et al., 2007).

Figure 2. Positive Student Outcomes for each Messaging Condition (Study 1)
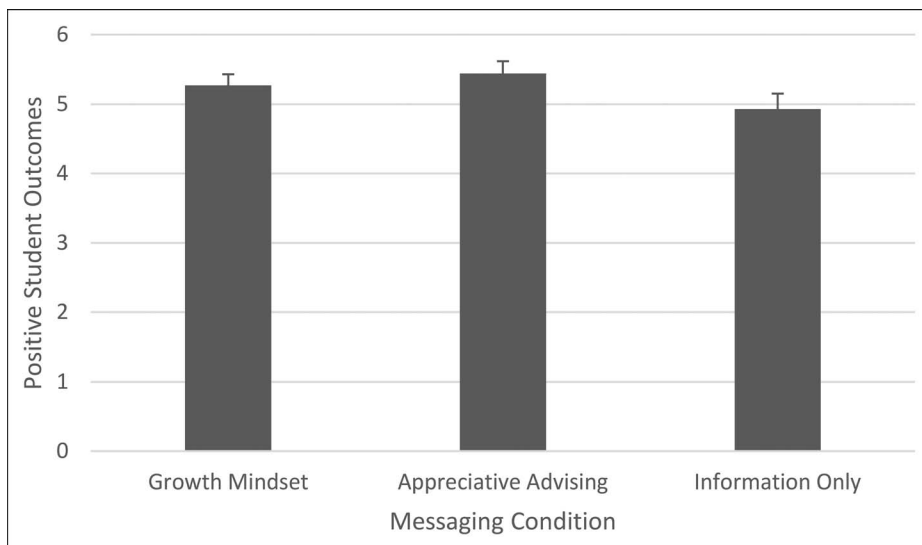
communications, $t(159) = 2.53$, $p = .03$ (see Figure 2). Our sample demonstrates that the overall positive effect of appreciative and growth mindset communications on positive student outcomes was not significantly different, $t(159) = -.82$, $p = .69$.

Next, we examined the impact of messaging condition on each of our positive student outcomes individually using ANOVA and *a priori* follow-up analyses. We observed an effect of messaging condition for feelings of support, $F(2, 159) = 5.43$, $p = .005$, and our behavioral measure of persistence, $F(2, 159) = 3.63$, $p = .030$. The same pattern emerged: compared to information-only communications, appreciative and growth mindset micromessaging led students to report feeling higher levels of support, $t(160) = 2.99$, $p = .003$, and fewer intentions to give up in the face of challenge, $t(160) = 2.63$, $p = .009$. Again, differences between the appreciative and growth mindset conditions were not significant (all $ps > .36$).

Given the research suggesting that educational interventions involving growth mindset and related attribution-based theories often have more profound impacts on students of color and first-generation students (Walton & Cohen, 2011; Yeager et al., 2016), we next examined how the message type might affect students from underrepresented groups compared to members of the racial majority and continuing-generation students. As per our hypotheses and given the lack

of differences between the appreciative advising and growth mindset micromessaging conditions, we ran a multiple regression analysis—controlling for age, gender, and grade point average—predicting positive student outcomes from messaging condition (appreciative/growth mindset vs. information only), student identity (minority/first-generation vs. majority/continuing generation), and their interaction.

The regression model was significant, $F(6,132) = 2.50$, $p = .03$, $R^2 = .10$, as were both main effects (see Table 2 for full regression model and coefficients). Specifically, we again saw that students involved in the micromessaging condition ($\beta = .66$, $p = .01$) reported more positive outcomes compared to those in the information-only condition. We also found a significant effect of student identity ($\beta = -.46$, $p = .04$), with white, continuing-generation students reporting more positive outcomes than students belonging to one or more of our underrepresented groups. The interaction between messaging condition and student identity approached, but did not reach, the threshold for statistical significance, though results conformed to the pattern predicted ($\beta = .63$, $p = .08$). Although micromessaging conditions led to more positive outcomes for students in general, the effect was more pronounced for students of color and first-generation students (see Figure 3). The mathematical model for this equation is:

Table 2. Regression Coefficients for Predicting Anticipated Positive Student Outcomes (Study 1)

PREDICTOR	B	SE	t	p	β	95% CI
Intercept	6.29	.55	11.36	<.001	-	
Gender	.33	.20	1.66	.10	.31	[-.06, .68]
Age	-.02	.02	-1.24	.22	-.10	[-.27, .06]
GPA	-.11	.13	-.89	.37	-.08	[-.25, .09]
Underrepresented Identity	-.49	.23	-2.11	.04*	-.46	[-.89, -.03]
Message Type	-.71	.25	-2.87	.01*	-.66	[-1.12, -.21]
Underrepresented Identity* Message Type	.67	.38	1.76	.08	.63	[-.08, 1.34]

Note. $R^2 = .10$, $F(6,132) = 2.50$, $p = .03$. *$p < .05$

Positive Student Outcomes
$$= 6.29 + .33(\text{gender}) - .02(\text{age}) - .11(\text{GPA})$$
$$- .49(\text{student identity}) - .71(\text{message type})$$
$$+ .67(\text{student identity} \times \text{message type})$$

Discussion

Study 1 was designed to experimentally investigate the impact of micromessages within advisor communications on a range of positive student outcomes. The results indicate that micromessages related to either growth mindset or appreciative advising were effective in increasing positive student outcomes overall and feelings of support and persistence specifically. We also found further support for the importance of considering student-identity factors when examining educational interventions, as micromessages appeared to have the greatest impact on students of color and first-generation students.

Study 2

Although the results of Study 1 were both theoretically intriguing and practically encouraging, given that this was the first known experimental investigation of these types of micromessages on student outcomes, we considered it important to conduct further studies. In Study 2, we sought to replicate the procedure of Study 1 and examine the effects of advising micromessaging on positive outcomes for students from another university with its own group of unique student characteristics.

Method

This study included 155 undergraduate students ($M_{\text{age}} = 23.7$, $SD = 9.91$) enrolled at an R1, urban-serving public university in the Southwest

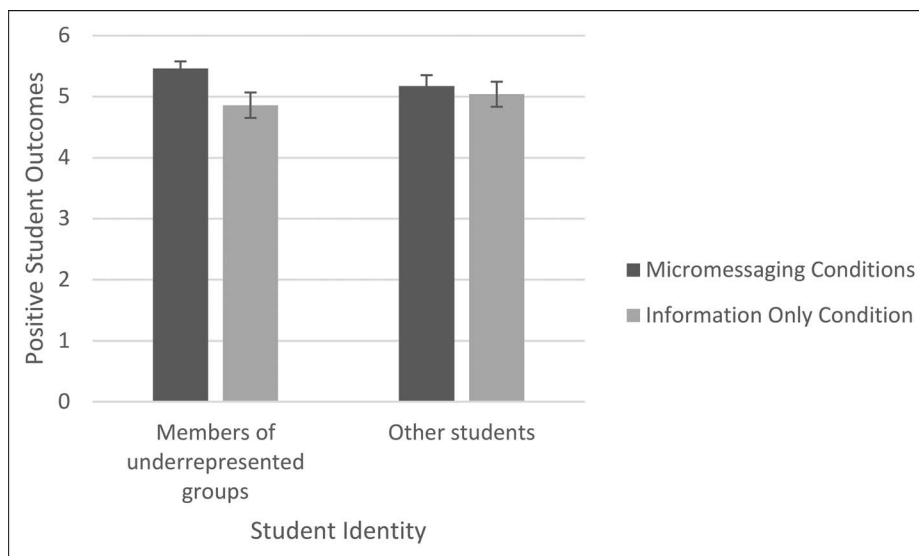**Figure 3.** Student Identity x Messaging Type Interaction on Positive Student Outcomes (Study 1)

Table 3. Demographic Information for Participants in Study 2

Characteristic	*N*	*%*	*M*	*SD*
Age	-	-	23.7	9.91
Gender				
Female	107	69.0	-	-
Male	42	27.1	-	-
Nonbinary	6	3.9		
Race				
White	62	40	-	-
Hispanic, Latina/o, Chicana/o	43	27.7	-	-
Asian/Pacific Islander	23	14.8	-	-
Black/African American	13	8.4	-	-
Middle Eastern	6	3.9	-	-
Multiracial	6	3.9	-	-
Native American/American Indian	1	0.6	-	-
Other	1	0.6		

Note. Percentages may not total 100 due to rounding.

(see Table 3 for participant demographic information). We contacted participants enrolled in first-year experience courses via email and informed them about the possibility of participating in an online study for a chance to win a raffle prize. The methodology mirrored that of Study 1: researchers obtained IRB approval and participants provided informed consent and were asked to imagine they had emailed their advisor about the possibility of dropping a difficult class. Any references to university policies governing withdrawal from courses were adapted in the advisor replies to reflect the language used by the university where Study 2 was conducted. All other aspects of the messages were identical to Study 1. After being randomly assigned to read one of the three advisor replies, participants were asked the same student outcome questions presented in Study 1. All participants answered a battery of demographic questions before they were debriefed and thanked for their participation. We examined the impact of the independent variable messaging condition on the dependent variable of positive student outcomes via MANOVA and follow-up analyses (ANOVA and planned contrasts). We then explored the interaction of the predictor variables of messaging type and student identity on the dependent variable positive student outcomes (controlling for gender and age) using multiple regression.

Results

Replicating Study 1, results of the MANOVA suggested differences between messaging conditions on student outcomes, $F(5, 155) = 2.60$, $p = .03$. Our *a priori* follow-up analyses showed that micromessaging conditions lead to more positive student outcomes compared to information-only communications, $t(159) = 1.72$, $p = .04$ (see Figure 4). In this sample, posthoc tests showed that the overall positive effect of micromessaging (vs. information-only control) was significant for growth mindset communication only, $t(158) = 2.08$, $p = .04$.

The multiple regression analysis examining the impact of messaging type mirrored results of Study 1 in that the interaction between messaging condition and student identity conformed to the predicted pattern but did not reach the threshold for significance ($\beta = .71$, $p = .08$). Micromessaging conditions led to more positive outcomes for students of color and first-generation students but appeared to have little additional benefit for other students (see Figure 5).

Discussion

Results of Study 2 replicate the positive impact of micromessages compared to information-only communications for overall positive student outcomes found in Study 1. Interestingly, similar to Kyte et al. (2020), growth mindset micromessages were a more successful communication strategy in this sample. Once more, the pattern of results suggests that the effects of micromessaging in advisor communications may be felt most keenly by first-generation college students and students of color.

Figure 4. Positive Student Outcomes for each Messaging Condition (Study 2)
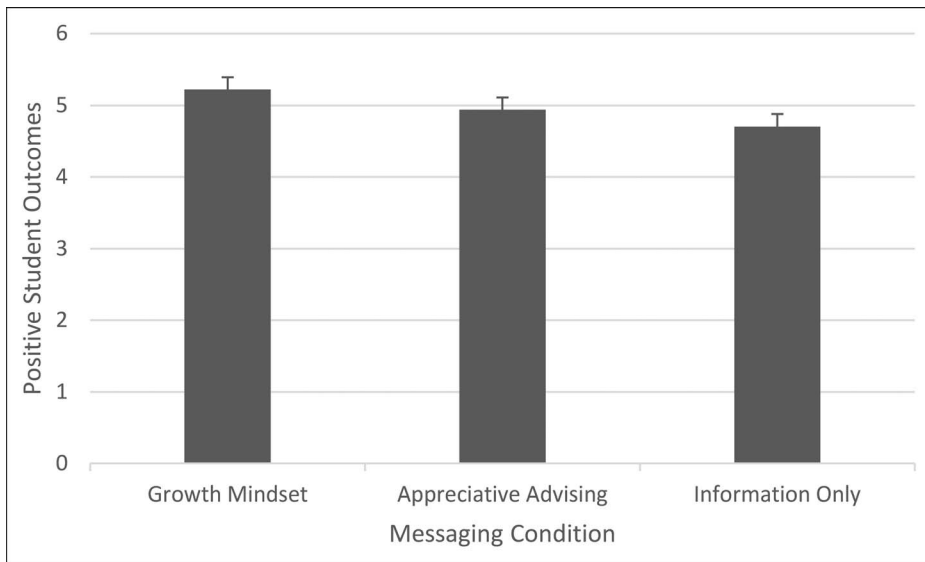

General Discussion

The primary purpose of this study was to examine how everyday communication and guidance from an academic advisor may influence positive student outcomes. Our findings support the work by Kyte et al. (2020), suggesting that, independent of formal lessons or academic interventions (e.g., lectures, presentations, tutoring), mundane daily interactions can have a profound impact on students' perception of support as well as feelings of persistence. Here, we build on the qualitative work of Kyte et al. (2020) by investigating the potential benefits of micromessaging to students attending diverse universities in different regions of the country. Within both studies, growth mindset and appreciative advising messages increased positive student outcomes (both affective and behavioral responses) compared to an information-only control condition. Our work further affirms burgeoning research on the potential of

Figure 5. Student Identity x Messaging Type Interaction on Positive Student Outcomes (Study 2)
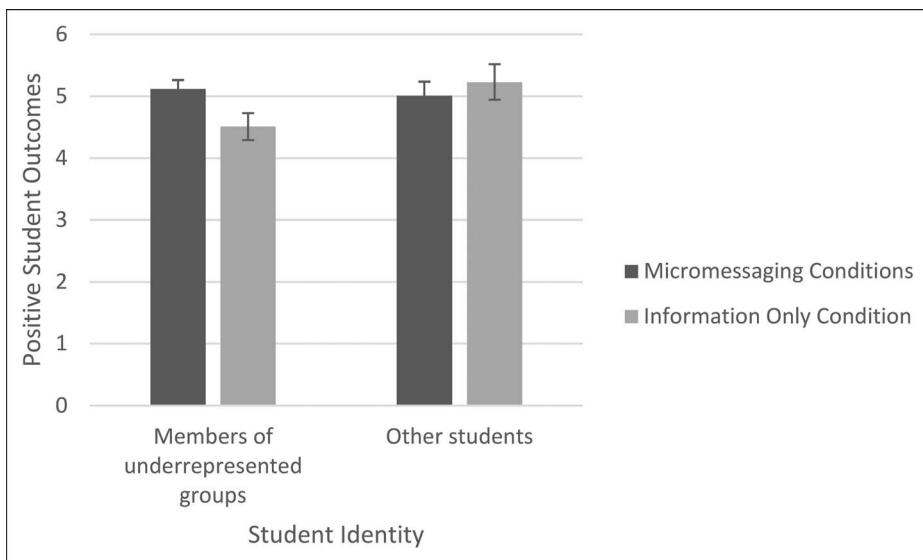
micromessaging to improve student-advisor communications and relationships—research emphasizing the benefits of growth mindset when students face challenges (Yeager & Dweck, 2020), and the utilization of core concepts by advisors connected with appreciative advising and decision-making. Importantly, our research suggests that such micromessaging may have an even greater impact on first-generation college students and students of color, indicating that how we use language matters, especially when it involves individuals from underrepresented populations who often face more challenges or adversity (e.g., less preparation for college, limited access to resources, stereotype threat). Although we found a similar pattern of results across our studies, the interaction between student identity and micromessaging did not reach the level of statistical significance. These results could be due to relatively small numbers of participants in various conditions and/or the size of observed effects. Future research should continue to explore this interesting pattern of results with larger samples.

Implications for Academic Advising Practice

This research validates the importance of thoughtfully designed communications—predesigned messages—that utilize core principles found within growth mindset and appreciative advising theories (Kyte et al., 2020). Carefully drafted templates created based on common challenges faced by students could be housed in a central repository accessible to academic advisors for purposeful implementation throughout the academic year. For example, once academic advisors have identified the most common challenges each term (e.g., midterms, drop deadlines), they may access reporting tools that can help them identify and communicate with students at risk of dropping out or those requesting information about course withdrawal.

One important implication of the study is the potential for underrepresented student populations to benefit from micromessages. For instance, advisors conducting proactive outreach to increase student engagement or action, especially for first-generation students, could leverage a timely growth mindset message using key elements of appreciative advising to increase feelings of support, student effort, and ultimately the student's likelihood for persistence. Proactive advising is well-documented in advising literature as an effective tool to help students reach their educational goals (Denley, 2014; Ohrt, 2016;

Schwebel et al., 2012). When coupled with micromessaging, it has the potential to increase positive student outcomes, especially for those students most in need of support, resources, and validation.

Crafting such messages using growth mindset (Dweck, 2006) and appreciative advising (Bloom et al., 2008) takes intentionality and the ability to communicate in a simple and relatable way. In practice, messages using the growth mindset should focus on effort, strategizing, emphasizing persistence despite challenges, and other elements that convey that intelligence is malleable (Dweck, 2006). When crafting an email or text message using growth mindset constructs, we suggest reframing by

- using language that helps the student see challenges as valuable learning moments,
- communicating a willingness to plan with the student on innovative approaches to the problem, and
- encouraging student effort and the use of campus resources.

Messages based on appreciative advising theory may emphasize basic elements such as

- building rapport by communicating approachableness,
- acknowledging student successes beyond course grades, and
- including encouraging language that helps students set high aspirations.

Limitations and Future Directions

While the convenience sample recruited for this research might limit the generalizability of the findings, the demographic information collected suggests that participants represent the larger population of college students across these two universities. Importantly, unlike much of the research in behavioral science, college students were the population of interest in these studies (vs. simply a convenient source of participants).

The timing of the research and the different populations sampled at two universities should also be considered when generalizing our findings. While in Study 2 we recruited students enrolled in first-year experience courses, Study 1 involved participants enrolled in general psychology courses during only one term. Recruiting from first-year experience courses and popular psychology introductory courses allowed us to

reach a broad range of students in their early college careers who were most likely to benefit from advisor micromessaging.

Our participants from underrepresented groups included individuals who identified as students of color, first-generation college students, or both. Although students from these underrepresented groups may share many of the same challenges in university experience, they are likely to face unique adversities and have different lived experiences. While in the present study we did not examine each of these group memberships separately due to issues of statistical power (some group combinations of racial/ethnic identity and first/continuing generation identities were too small to draw meaningful conclusions about an entire population), future studies should recruit larger, more diverse samples and investigate the potential differences among these groups (e.g., students of color who are first-generation vs. continuing-generation students). In fact, as both studies reported a greater micromessaging impact for first-generation college students and students of color, future research should explore how these micromessages may impact students differently based on a variety of demographic factors. Specifically, exploring additional variables, such as class standing or socioeconomic status, may yield insightful and important results. Further, it would be worthwhile to disaggregate racial and ethnic groups based on first-generation status to find distinctive results pertaining to either underrepresented populations or to observe how the intersections of characteristics may affect outcomes of interest.

The use of hypothetical scenarios warrants caution when interpreting and generalizing the findings. In addition to concerns related to social desirability bias, which may lead participants to respond in ways they believe are desired and deemed positive by society (Grimm, 2010; Lanz et al., 2022), participants may not be able to forecast their response to the scenario if it were to happen. Although neither socially desirable responding nor deficits in forecasting ability would explain our results, we recommend that future research examine similar messages using mindset and appreciative advising language in an actual advising situation. Doing so could test how such messages influence student action and achievement over time. Regarding the actual implementation of such advising micromessages, a replication of this study that examines different types of communication modalities (e.g., text nudges vs. email nudges) or communications based on different student challenges (e.g., failing to meet a certain milestone, setting up advising appointments earlier) would benefit the larger field of advising.

Lastly, psychological constructs, such as mindsets, should not be interpreted as static, binary, or even the same across contexts. Indeed, people are complex and may be especially growth-oriented at work (e.g., learning how to use a new technology) while adopting a fixed approach to learning within the context of one's personal life (e.g., learning how to prepare healthier meals). While oversimplifying mindset to a binary psychological approach to all life circumstances would be misguided (Dweck, 2017), the extensive literature on growth mindset (Duyme et al., 1999; Sauce & Matzel, 2018; van IJzendoorn et al., 2005) supports the notion that psychological constructs, such as mindset, enable a better understanding of student learning and engagement while improving educational achievement.

Conclusion

Increasing retention, persistence, and completion rates, while closing achievement gaps, is imperative for institutions of higher education and contributes to their reputational and fiscal health. Academic advisors play a critical role in these efforts, as they are often the only staff/faculty members who will communicate with a student or visit with them one-to-one. This work emphasizes the importance of advisors' daily interactions with students to positively impact their probability of persistence and their feelings of support. Empowering advisors with communication toolkits containing carefully developed language is one practical application of this research. It may help these key student-support members directly contribute to closing achievement gaps as they incorporate the type of messaging described here, especially for first-generation students and students of color. This study adds to the extensive and long-standing body of research that demonstrates how much words matter, and highlights the opportunities we have to shape consequential student outcomes through small changes in language embedded in everyday advising communications.

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Authors' Notes

Tonya M. Buchanan is an associate professor of psychology at Central Washington University. She holds a PhD in Social Psychology from Miami University and master's and bachelor's degrees from Miami University and Arizona State University. Dr. Buchanan is a social psychologist and social cognition researcher, and she has taught a variety of classes ranging from research methods

and statistics to social justice and social cognition. Dr. Buchanan's research explores the role of identity, emotion, and heuristics in (social) judgments and decision-making, with a focus on issues of bias and equity. She can be reached at tbuchanan@cwu.edu.

Aaron Brown holds a doctoral degree in Public Affairs from the University of Nevada, Las Vegas and currently serves as assistant vice provost for academic advising at The University of Texas at Arlington. Dr. Brown, a low-income and first-generation college graduate, has more than 20 years of higher education experience working in a variety of roles including associate dean for student development and achievement, first-year experience instructor, director of the Academic Success Center and TRIO Student Support Services, and elected member of the faculty senate. Dr. Brown's primary research interests include academic advising, motivation, and qualitative research. Dr. Brown can be reached at aaron.brown2@uta.edu.

Patrizia Chirco is a nontraditional, first-generation Social Psychology doctoral student at the University of Bern and an instructor of Psychology at Central Washington University. She holds a Master of Science in Experimental Psychology and a bachelor's degree in Psychology with minors in Sociology and Ethnic Studies from Central Washington University. Patrizia is a social psychologist in training and teaches a variety of classes, including statistics, research methods, introduction to psychology, social psychology, and substance/drug abuse. Her research focuses on social justice issues, partic-

ularly the effects of the categorization of people from underrepresented groups based on the intersections of their phenotypical traits such as skin tone and the groups they belong to (e.g., immigrant) on interpersonal judgments. She can be reached at patrizia.chirco@cwu.edu.

Danielle Klein is the director of new student courses at The University of Texas at Arlington. She holds a PhD in Educational Leadership, Research, and Counseling from Louisiana State University, with a focus on Higher Education and Curriculum Studies. She received her bachelor's degree in Literature from the University of Buffalo, a master's degree in Literature from the University of Colorado, Boulder, and a master's degree in Education from Teachers College, Columbia University. Her research interests are in curriculum theory, design, and development; her current research focuses on student success, pedagogy, and classroom learning. She can be reached at Danielle.klein@uta.edu.

Ashley M. Purgason serves as an associate vice provost for student success at The University of Texas at Arlington. She holds a PhD in Population Health Sciences from The University of Texas Medical Branch in Galveston, Texas, and master's and bachelor's degrees in Biology from The University of Texas at Arlington. Dr. Purgason is a radiation biologist and a toxicologist by training and has taught at multiple universities. After completing research at the NASA Johnson Space Center on proton exposure in mammalian models, Dr. Purgason transitioned to focus on student success and retention work. She can be reached at purgason@uta.edu.

Appendix A. Growth Mindset, Appreciative, and Informational Messages

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Informational Control Group Email Message

Dear [Student],

Thank you for reaching out to me. Withdrawals are permitted through the first 2/3rds of instruction. If you decide to drop this course within that timeframe, the withdraw will be noted on your transcript as a "W" (or "Q" for semester withdrawal) and will not be calculated into your grade point average. As you decide, consider the resources on campus (e.g., professor's office hours, the tutoring center homepage, peer mentoring, the writing center).

Let me know if you have any questions. You can also make an advising appointment before making a final decision to talk about it more.

Best, [Your Advisor]

Appreciative Advising Email Message

Dear [Student],

Thank you for reaching out to me. Withdrawals are permitted through the first 2/3rds of instruction. If you decide to drop this course within that timeframe, the withdraw will be noted on your transcript as a "W" (or "Q" for semester withdrawal) and will not be calculated into your grade point average.

As you decide, know that many students struggle with challenging coursework at one time or another and that these challenges can be overcome just like ones you may have faced in the past. I'm always happy to answer questions about policies and I would encourage you to go even further and take advantage of some of the resources on campus that can help you to be successful in the classroom in this and all of your future classes. In particular, in addition to your professor's office hours, check out the tutoring center homepage, peer mentoring, and the writing center.

Let me know if you have any questions and feel free to come in for an advising appointment before making a final decision. I'm happy to talk with you about it more.

Best,

[Your Advisor]

Growth Mindset Email Message

Dear [Student],

Thank you for reaching out to me. Withdrawals are permitted through the first 2/3rds of instruction. If you decide to drop this course within that timeframe, the withdraw will be noted on your transcript as a "W" (or "Q" for semester withdrawal) and will not be calculated into your grade point average.

As you decide, know that all students struggle with challenging coursework at one time or another and that the most challenging classes can be opportunities to develop better learning strategies. I'm glad that you reached out to ask about the policy and I would encourage you to go even further and take advantage of some of the resources on campus that can help your hard work pay off the most in this and all of your future classes. In particular, in addition to your professor's office hours, check out the tutoring center homepage, peer mentoring, and the writing center.

Let me know if you have any questions and feel free to come in for an advising appointment before making a final decision. I'm happy to strategize with you about campus resources and options.

Best,

[Your Advisor]

Note: As this was a replication study of Kyte et al. (2020), the growth mindset and appreciative advising letters were as similar as possible to the original. We made some slight changes based on the institution's actual withdrawal policies. This study added a control condition (i.e., informational).

Appendix B Descriptive Statistics for Student Outcome Measures in Study 1

	Positive Student Outcomes	Resource Seeking	Follow Up	Support	Confidence	Persistence
Mean	5.22	5.28	5.75	5.63	5.20	4.22
Standard deviation	1.06	1.42	1.36	1.57	1.49	1.47

Appendix C Descriptive Statistics for Student Outcome Measures in Study 2

	Positive Student Outcomes	Resource Seeking	Follow Up	Support	Confidence	Persistence
Mean	4.98	5.33	5.40	5.40	4.82	4.11
Standard deviation	1.28	1.71	1.81	1.77	1.60	1.57