



## Working Paper:

# Using Text Messaging to Guide Students on the Path to College

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Finding effective strategies to convey timely financial aid and college enrollment information to students and their families continues to be a high priority for high schools, higher education institutions, and governmental agencies. We discuss text messaging as an effective, scalable strategy to provide students and their families with information and support to navigate the college transition process. Through analysis of recipient-level responses to personalized, automated text messages and counselor focus groups, we provide evidence of text messaging as a viable and efficient communication approach. Texting provides a mechanism to connect students with individualized and professional support, while facilitating opportunities for meaningful interaction between students and counselors related to educational decisions, tasks, and processes.

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## USING TEXT MESSAGING TO GUIDE STUDENTS ON THE PATH TO COLLEGE

*Benjamin L. Castleman, Laura Owen, Lindsay C. Page & Bryan Stephany*

### I. INTRODUCTION

Socioeconomic inequalities in college access have emerged as a top state and federal policy concern. Despite ongoing effort to improve college affordability and academic readiness for higher education, disparities in college entry and completion by family income have widened over time (Bailey & Dynarski, 2012). Recently, policymakers and researchers have focused on how informational barriers and limited access to professional advising contribute to the stubborn persistence of these inequalities. Students and families from economically-disadvantaged backgrounds often overestimate the cost of attending college net of financial aid and may be unaware of or daunted by the complexity of federal financial aid applications (Bettinger et al, 2012; ACSFA, 2005; Avery & Kane, 2004; Grodsky & Jones, 2007). Academically-accomplished, low-income students typically have little access to school or community-based college advising, and potential first-generation college goers may not receive informed advice about postsecondary options from their parents. This lack of access to counseling may contribute to the phenomenon of academic mismatch, as many students from low-income households do not apply to or attend the quality of postsecondary institution to which they have the academic credentials to gain acceptance (Bowen, Chingos, & McPherson, 2009; Hoxby & Avery, 2013; Smith, Pender, & Howell, 2012).

Several experimental interventions demonstrate that providing students with personalized and simplified information and access to professional advising can generate substantial increases in the rate at which students complete financial aid applications, matriculate in college, and attend institutions that are academically well-matched (Bettinger et al, 2012; Castleman & Page, 2014b, 2014c; Castleman, Page & Schooley, 2014; Hoxby & Turner, 2013, Owen & Eakin, 2014). Nevertheless, high schools, colleges, and governmental agencies are often limited in their ability to effectively communicate information or offer assistance to students and families. For instance, the federal government and numerous states have invested in college search engines, such as the White House Scorecard, to provide students with better information about college options. Yet, the efficacy of these tools is constrained by students' lack of awareness or exposure—or simply lack of internet access—in economically-disadvantaged communities (Castleman, forthcoming; Kling et al., 2012). Further, while colleges and universities rely primarily on email to communicate with students, only three percent of adolescents report exchanging emails on a daily basis (Lenhardt, 2012).

In this paper, we discuss text messaging as an effective and scalable strategy to provide guidance and support throughout students' college trajectories. Text messaging offers several advantages as a means of communicating with adolescents. First, texting is the predominant means by which young people communicate; even among the lowest-income families, the considerable majority of students have cell phones, and over 90 percent of mobile users text on a daily basis (Lenhardt, 2012). Text messages can be automated and personalized to send consolidated and timely information, customized to each student's circumstances, to a large volume of recipients. Texts can prompt students to complete tasks before their attention is diverted and can minimize relational barriers to accessing professional assistance by enabling students to seek help simply by responding to a text (Castleman & Page, 2014b, 2014c).

Recently, we have experimentally evaluated text messaging interventions designed to mitigate summer melt, a phenomenon in which college-intending high school graduates fail to transition successfully to college (Castleman & Page, 2014d). We sent students, and in some cases their families, personalized text reminders to provide information about required pre-matriculation tasks and to offer individualized assistance with those tasks. We have additionally experimented with using a similar text-based strategy to encourage financial aid renewal and college persistence among college freshmen. Through these studies, we demonstrate that personalized text messaging can generate improvements in both college entry and persistence (Castleman & Page, 2014a; 2014b; 2014c).

In this paper, we rely on two sources of evidence to explore in greater depth how students and counselors respond to and utilize text messaging as a means of communication. First, we analyze recipient-level responses to personalized, automated text message reminders and the text-based interactions that ensue between students and counselors. Second, we report on focus groups and interviews conducted with counselors to understand their experience with text messaging as a means of communicating with students.

Several broad themes emerge from our investigation. First, the extent of text-based interaction between students and counselors stemming from automated outreach suggests that texting is a viable approach to communicate with students about educational decisions, tasks, and processes. Texting can be utilized to provide students with information and advice and to facilitate further student-counselor interaction. Second, because text messaging is viewed by students as an instantaneous mode of communication, text-based communication is likely to be most effective when counselors are prepared to respond to outreach from students upon the distribution of automated messages. Finally, related to the transition from high school to college, the text

interaction data discussed below highlights how challenging pre-enrollment college processes can be, particularly for low-income and first-generation college-intending students.

In Section II, we provide context for our use of text-based communication to provide students with information and support regarding college transition tasks. In Section III, we discuss our data and analytic strategies. We present results in Section IV and conclude with a discussion in Section V.

## II. USING TEXT MESSAGING TO MITIGATE SUMMER MELT

Large shares of college-intending high school graduates fail to transition to college directly after high school (Castleman & Page, 2014b, 2014d). Until recently, this summer transition has been largely overlooked by educational research and policy. Yet, during this period, students must complete a host of complex tasks, many related to college financing, but simultaneously lack access to professional guidance or direction. These circumstances lead many students to falter in realizing their postsecondary plans.

Personalized text messaging holds promise for improving rates of postsecondary matriculation among these college-intending students. Texting is an efficient means of informing students about required pre-matriculation tasks and of simplifying the steps required for completing these tasks. In our interventions, we collaborated with both school districts and student-serving non-profit organizations to send students and (in some instances) parents ten automated, personalized reminders of required summer tasks. For example, messages reminded students to log on to their college's web portal to access and complete paperwork; register for orientation and placement tests; and, where appropriate, waive health insurance fees. The messages also provided reminders about tasks like FAFSA filing, establishing a tuition payment plan, and paying the fall tuition bill. Messages incorporated institution- and task-specific web links to guide students directly to relevant web pages. Thus, students with smart phones and data plans were able to complete tasks directly from their phones.

Message delivery relied on four pieces of information: each student's cell phone number, each student's intended college, college-specific web links, and task completion dates corresponding to the topic of each message. Participating agencies collected student information from senior year exit surveys and provided a list of the colleges in which 80–90 percent of their students typically enroll, based on historic enrollment data from the National Student Clearinghouse. For these colleges, we assembled detailed information on the summer tasks required of incoming freshmen.

To deliver the customized text messages, we worked with two different technology providers: Signal Vine and OneLogos Education Solutions.<sup>1</sup> These providers also hosted online portals from which counselors managed text communication with students.

In prior interventions in which counselors conducted summer outreach, participating staff cited texting as the most effective means of reaching students (Arnold, Chewing, Castleman & Page, 2013). Therefore, in addition to streamlining the distribution of information, text-based outreach may be a particularly efficient means of connecting students to support. Each automated message invited recipients to message back to obtain one-on-one support. Particularly in the school context where counselors manage large caseloads, this allowed counselors to communicate efficiently with students and, we hypothesize, can serve to mitigate barriers to help seeking that exist where students lack strong personal relationships with counselors (Civic Enterprises, 2012).

Text-based outreach may also impact students' postsecondary outcomes by nudging them to complete required tasks on an appropriate timeline. Work by Karlan et al (2010) on the benefit of low-touch reminders to increase savings behavior implies that competing demands for students' time and lack of attention to the future consequences of missing deadlines may lead students to mismanage their time and fail to complete required college-going tasks. Therefore, "nudges" may help students to focus and manage their time in the college planning and transition processes (Thaler & Sunstein, 2008). Since students from college-educated families are more likely to receive such nudges from other sources (e.g. parents, college consultants, etc.), students from lower-income, non-college educated families may benefit particularly from this text-based outreach (Castleman & Page, 2014b).

Text-based communication also holds additional promise, given its cost effectiveness and potential for increasing counselors' efficiency. For example, in one of our text-based summer melt interventions, the summer outreach and support cost approximately \$7 per student, inclusive of counselor time to provide follow up support (Castleman and Page, 2014c).

Our analysis of the text-message and focus group data is guided by several key questions. First, to what extent does text-based outreach foster interactions between students and counselors? Second, what was the focus of the text-based communications that did occur? What questions did students ask and what were the most salient topics that arose in interactions with counselors? Third, what do the texts indicate about college entry barriers that students face in the summer months and

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<sup>1</sup> For more information about Signal Vine, see [www.signalvine.com](http://www.signalvine.com). For more information about OneLogos, see [www.onelogos.com](http://www.onelogos.com).

how text-based communication can help students to overcome those barriers? Finally, what lessons can we learn from implementation across sites to inform future use of text-based outreach to support students in their college transition and in achieving other educational milestones?

### III. RESEARCH DESIGN

In summer 2013, we implemented text-based interventions targeting recent high school graduates in multiple sites with multiple partners. These included Boston, Springfield and Lawrence, MA in partnership with uAspire, a college-affordability focused non-profit organization, MA; Baltimore, MD in partnership with College Bound, a local college access organization; and Austin, TX through a multi-district collaboration facilitated by the Austin Chamber of Commerce.<sup>2</sup> Qualitative data sources from these sites include the actual text messages sent between counselors and students and counselor focus groups and interviews. In this paper, we examine the text message content to learn how text messaging can be used to support students in navigating summer challenges and how students and counselors use text messaging as a means of communication. Through the focus groups, we investigate counselors' experiences with the summer outreach, generally, and with text messaging as a mode of communication. From the counselors, we also derived recommendations on how to improve future iterations of the intervention to maximize the benefit to students.

The text message data that we analyze here derive from the implementation of the summer 2013 intervention in the uAspire sites. Students in these sites were primarily from low-income households, with more than 85 percent qualifying for Pell Grants and over 60 percent with expected family contributions of zero to the cost of college. Approximately one-third of students were would-be first-generation college goers. Across sites, 1,098 of the 2,661 students in the sample were randomly assigned to receive text-based outreach.

We analyzed the text-message interaction data using an *interpretive* approach (Hatch, 2002). We began by reading the messages multiple times to gain a sense of the text data overall. Then, we reviewed and recorded our initial impressions in analytical memos. After studying the memos for salient interpretations, we re-examined the message transcripts to identify and code instances where interpretations were supported. Through multiple reviews of the data, we fine-tuned our

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<sup>2</sup> This represented our second summer of text-based interventions. In the summer of 2012, we implemented similar interventions in the three uAspire sites and in Dallas, TX through the Dallas Independent School District. For more information on our summer 2012 interventions, see Castleman & Page (2014c).

interpretations and revised our coding scheme. Finally, we selected excerpts from the data to support our interpretations.

At the conclusion of the intervention implementation period, we conducted focus groups with participating counselors to gain a better understanding of how counselors interacted with the summer outreach and text-based communication. We utilized purposeful sampling to select participants and facilitate obtaining information-rich cases (Patton, 1990). We recruited focus group participants from among counselors who utilized the text-based communication to reach students in the Austin, TX and Baltimore, MD sites. Twenty-nine counselors participated in a focus group. Each focus group was moderated by a counselor educator and taped, transcribed and coded by a research team using constant comparative analysis (Corbin & Strauss, 2008; Krueger & Casey, 2009; Lincoln & Guba, 1985).

#### IV. RESULTS

In the Massachusetts sites, students received messages between July 9 and August 26. Of those selected for outreach, just over one-third responded to at least one text message. Among students who did respond, the number of texts students sent averaged nearly five and ranged from 1 to 35.<sup>3</sup> In Figure 1, we illustrate the timing of students' incoming messages. Students were most responsive at the beginning of the campaign, and the highest volume of incoming texts occurred on days when automated messages were distributed.

Counselors overwhelmingly perceived the summer outreach to have had a positive impact on students and recognized the essential role they played during this transition period. One counselor stated:

We help steward them and prepare them throughout the entire year. We are creating for them a path to follow while we have them, and at the most critical possible time for their matriculation we are gone. So it's like...the story of Hansel and Gretel... they are following these bread crumbs and all of a sudden the bread crumbs are gone and they have no idea where to go. They've had someone helping them and then we are gone.

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<sup>3</sup> Incoming text messages that were obvious corrections were discarded prior to analysis. For example, if a respondent misspelled a word and followed up their original misspelled text with a correction, then we made this correction in the original message and discarded the correction message. Split messages were also combined into single continuous messages.

While a few counselors had utilized text messaging to engage students during the school year, for most this was a new form of communication with students. Early into the summer outreach, counselors quickly recognized the benefit of text messaging as a mode of outreach.

A lot of our kids were just surprised: “You texted me!” ...you catch their attention right away, and even the kids who just get the text and never did actually make any response—it’s very helpful...because a lot of students need that (information).

Overall, counselors largely viewed text messaging as a viable pathway for reaching and communicating with students over the summer months.

To examine the substance of the text-based communications between students and counselors, we focused first on the questions students posed in response to the automated outreach. Across students, we recorded a total of 1,856 incoming text messages. In nearly one-third of these messages students posed questions. By examining these questions, we highlight the specific challenges students face and the areas in which they seek support in the college-going process.

We coded questions into several categories. Most commonly, students’ questions pertained to financial aid, confirming our prior findings that issues related to financial aid and college affordability pose the most substantial challenges for students during these summer months. Questions focused on how to complete the FAFSA; problems with aid applications; obtaining more financial aid; how to get a work study job; and understanding tuition bills. Example questions and the date on which they were received are as follows:

- *When do we find out if we received the scholarship? (July 10, 2013)*
- *When will I get my financial aid packet? such as what the state approved me for FAFSA?(July 22, 2013)*
- *Is it okay to pay for my fee in scholarships? I’m only asking because the scholarship won’t actually get to the school until my classes start (July 25, 2013)*
- *How’s my financial [aid] going? How do I pay for the work study?(August 22, 2013)*
- *Hey what’s up, i am trying to setup my stafford direct loan mpn but i don’t know how much should i use or what should be my interest rate, help? (August 22, 2013)*
- *Ok how can i find out if my fin aid has work studies? (August 26, 2013)*

These questions are indicative of students’ lack of clarity around the timing and processes associated with financial aid. Even late in the summer, near the time of the beginning of the academic year, students still struggle with basic questions related to their financial aid, such as whether their aid package includes work study.



Also common were questions regarding setting up meetings with counselors and navigating pre-matriculation processes such as registering for orientation, taking placement tests, and waiving health insurance fees. As above, many questions reflect students' general confusion about their pre-matriculation college-going tasks. For example, in response to a reminder to log onto the college's web-based student portal, one student texted, "*do i have to log in? what do i need to do in there?*" (July 12, 2013) This response reflects a lack of understanding of the types of information available on the portal and of the processes the college expected the student to complete there. Other students' responses reflected uncertainty about whether they were on top of all of their required tasks: "*so far i've paid for college, got all my shots + physical. chose my classes, what else am i missing?*" (August 12, 2013). Still other students asked for guidance with specific tasks, "*do you know how to register for orientation?*" (July 17, 2013).

Finally, questions from students also illustrated the power and immediacy of text-based communication for scheduling face-to-face counselor interactions:

- *are you guys open today? (July 11, 2013)*
- *Who do I ask to see when I come? (July 10, 2013)*
- *i will see if i could stop by today, should i bring anything with me? (July 25, 2013)*

In this way, the text-based interaction provided students and counselors with an efficient means of scheduling and planning for in-person interactions.

In addition to students' questions, we also focused on the content of communication among those students who engaged most substantially over the summer. By examining the text-based student-counselor interactions for these students, we gain further insight into the enrollment barriers that students faced and the potential for students and families to receive meaningful support via text-based communication. Our analysis of these cases highlighted just how complicated the college financing and enrollment process is for students. To illustrate the depth of interaction that is viable via interactive text messaging, we report in detail on two students' interactions with uAspire advisors during the summer.<sup>4</sup>

Patricia first took up the opportunity to communicate via text with a uAspire advisor at the end of July:

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<sup>4</sup> All students are given pseudonyms to protect their identity.

Message text	Date	Time
i have a question. i am going to be paying for things all by myself, so does that technically make me an independent student? can i ask the school for more help with financial aid in that case?	7/25/13	9:12 AM
are u under 24 yrs old? if yes, and ur parents have provided u any type of support in the last 3 yrs, you are considered a dependent student	7/25/13	9:37 AM
i am 18. my mother cannot help pay for anything, i am paying for it all so is there anything i can do? can i ask the school for help anyway even though im a dependent student?	7/25/13	9:40 AM
my mother cannot help me pay for anything at all. so is there anything i can do for more help? what should i ask the school?	7/25/13	9:50 AM
u can appeal the fin aid office for more aid. it sometimes will work. please come to our walk in hrs t,w,f 10-4 or th 1-7, 31 st james ave #520. we can help	7/25/13	9:53 AM
i will see if i could stop by today, should i bring anything with me?	7/25/13	9:55 AM
great! any info the school has sent to u via mail and e-mail, including all your fin aid info	7/25/13	9:58 AM

In this set of exchanges, Patricia utilized the text-based communication with uAspire to ask to ask a number of questions. The advisor was able to use text messaging to respond in the moment to Patricia's question about independent student status and additional sources of financial aid. This set of messages is indicative of students' expectation that text-messaging is an instantaneous form of communication. Patricia sent the third message above at 9:40 AM. When she did not receive a response within the next 10 minutes, she sent essentially the same message again. This exchange ended with the uAspire advisor encouraging Patricia to come to the uAspire office for in-person support.

Later that day, Patricia responded to an automated uAspire message to indicate that she has unmet financial need due to the fact that the cost of health insurance is included in her total cost of college attendance.

<b>Message text</b>	<b>Date</b>	<b>Time</b>
hi from uaspire! is ur college bill affordable? a payment plan can help [school specific URL for payment plan]. call ur fin aid office [phone number] or text us for info.	7/25/13	12:09 PM
it is affordable to some extent but i also need to pay for my insurance, and other things. so i need more help. anything could help.	7/25/13	12:19 PM
what type of health insurance do you have?	7/25/13	2:58 PM
i dont have any	7/25/13	3:11 PM
you may be enrolled in free care if that is the case. why don't you stop by our office for that we can go over some of your options?	7/25/13	3:20 PM
Ok	7/25/13	3:21 PM
we are open today until 7pm and tomorrow from 10-4pm. hope to see you soon	7/25/13	3:27 PM

The communication between the counselor and Patricia is brief but effective in identifying an area of need for Patricia and in encouraging her to seek in-person support from an advisor. Despite receiving that support, a subsequent automated message sent a few days later prompted Patricia to report on uncertainty related to the timing of her tuition bill:

<b>Message text</b>	<b>Date</b>	<b>Time</b>
uaspire reminder: fall bill due 8/15. do u have a good plan for paying ur bill? need help? questions about loans? text us, or visit our walk-in hrs!	7/29/13	12:09 PM
my bill has not been posted yet. i believe that they may post it after i take my placement test and have my orientation.	7/29/13	12:15 PM
have u set up a time to take the placement tests and attend orientation?	7/29/13	12:40 PM
yes i have.	7/29/13	12:41 PM
ok great. u should call [school name] to confirm that your bill is on hold until those are completed: [school number]	7/29/13	1:02 PM
ok thanks	7/29/13	1:03 PM

Here, Patricia appears on top of the tasks that she needs to accomplish and is able to receive assurance from uAspire that she is progressing appropriately. Taken together, Patricia was able to receive timely support and guidance and was able to enroll successfully for her fall semester.

Jennifer also engaged with uAspire substantially over the summer months. Unlike Patricia, however, she was not able to overcome financial aid related challenges. Jennifer responded early in the summer to the first automated message and shared with a uAspire advisor that she had not been able to obtain a financial aid package because her father owed back taxes and therefore cannot obtain a tax transcript for his 2012 income taxes:

Message text	Date	Time
hi Jennifer, it's uaspire! we helped w/ur financial aid in hs & we're open all summer to help with any fin aid issues. save this # to text us for help.	7/9/13	12:00 PM
okay, thank you. but i never received my financial award letter for [college]. i called the school, they told me they need my father's tax transcript. is there a way you guys can help me?	7/10/13	1:38 PM
sure! do you have a copy of your father's taxes? you can bring them in to our office and we will help with that.	7/10/13	2:43 PM
yes i do, but they said they need my dad tax transcripts, but when irs send my father transcripts it doesn't show the transcripts, it only said only how much he has to pay back.	7/10/13	3:02 PM
does your father owe the irs money? if yes, he has to pay that before taxes are complete, then you can get a transcript	7/10/13	4:57 PM
ohh maybe that's why & when i called [name of college] they said the same thing	7/10/13	6:44 PM
yea ask your dad and try to figure that out asap!	7/11/13	10:33 PM

Unfortunately, a full month later, Jennifer was still struggling with the fact that her father had not yet completed paying his 2012 income taxes, and the family judged that taking on two sets of payments – both tax repayment and a tuition payment plan – would not be feasible:

Message text	Date	Time
hi from uaspire - how's everything going for college? need help w/college forms? questions about your bill, loans or financial aid? we have walk-in hrs all wk!	8/12/13	12:10 PM

Message text	Date	Time
hello, i cannot register for classes yet because they need my father's tax transcripts & to receive it he gotta pay the money he owes back first.	8/12/13	12:17 PM
that makes sense. do you have enough money to set up a payment plan to start paying, and then once your fin aid goes through you will get reimbursed?	8/12/13	1:25 PM
i don't know i would have to talk to my dad about, but does that mean i would pay with my own money by the time?	8/12/13	2:13 PM
yes it would mean u pay your bill in smaller portions until your financial aid goes through. do you know when your dad is going to be able to pay for his taxes?	8/12/13	2:20 PM
he's starting to pay now, but i think it would pointless to be paying two bills at the same time	8/12/13	2:39 PM
it depends when he would be done paying. if its soon, then starting a payment plan lets you register for classes and ur fin aid could go through quickly	8/12/13	2:42 PM
ohh ok ima talk to him about it and i will let you guys know & he said he' d pay quick, but do you know how much the payment plan will cost.	8/12/13	2:45 PM
that depends how much your bill is. the payment plan splits it up, but if the bill is a lot, the payment plan will be a lot	8/12/13	3:07 PM
yeahh that's why i don't want pay two bills at the same time.	8/12/13	3:10 PM
ok well sounds like once your dad finishes paying you need to get his tax transcript and turn that in so you can get fin aid. let us know if u need help!	8/12/13	4:59 PM

Finally, at the end of the summer, Jennifer responded to uAspire's last automated message to indicate that her father is still paying back his taxes:

Message text	Date	Time
hi Jennifer. this is the last summer text from uaspire! have a great year!! to reach us anytime for college fin aid help, call us: 617-778-7195.	8/26/13	12:11 PM
thank you, ima need to see you guys as soon as my father [is] done paying his taxes back.	8/26/13	1:52 PM

While this prevented Jennifer from matriculating on time in the fall, she wrote to uAspire several days later to indicate that he had finished paying his taxes and to ask for assistance with next steps in getting to college. In sum, although Jennifer was not able to manage the timely transition to college that fall, she did receive personalized and focused support from uAspire and guidance on receiving additional help upon her father's completion of paying back taxes. The facility with which the uAspire advisors utilized the text-based communication allowed Jennifer to communicate efficiently with uAspire and to develop a sufficiently strong relationship with the advisor that she chose to follow up with uAspire independently once she was ready to pursue financial aid.

Although text messaging is no longer a novel communication method, in general, it is not currently a mainstream mode of communication between counselors and students. As is common when beginning any new initiative, challenges occur. One challenge related to variation across sites in norms associated with how students addressed the counselor from whom they were receiving outreach. In some sites, it was typical for students to address counselors by their first name. In other sites, more formal titles were customary. Regardless, across sites, first outgoing messages began as follows: "Hey (*student's name*), this is (*counselor's first name*) from (*school district/organization*)." As one counselor explained, however, "kids don't know my first name, and had no idea who this message was from. I think that caused more dissonance than confidence." This feedback provides useful insight that automated messaging – text based or otherwise – should attend carefully to the communication norms of the context in which it is implemented.

A second challenge related to implementing the automated text messaging in sites where students and counselors already communicated via text. The challenge arose from the fact that the automated messages were sent from a number different from counselors' existing numbers. For counselors already utilizing texting, confusion occurred when students received messages from unfamiliar cell phone numbers. "They'd get the text and text my phone and say, 'somebody just texted me about such and such' and I'd respond 'that's me'. 'Did you change your number? Someone was texting me to see if I'm ready for school'." This same counselor underscored that after confusion about the new number was alleviated, the text-based outreach worked seamlessly: "Once students knew it was from me, it worked great, and it was very helpful."

Additionally, certain questions from students, for example, "*are you still there?*" highlight a third challenge. Namely, texting is broadly considered a means of immediate communication, and students anticipate rapid response to their outreach. In some instances, there were brief delays

between a student's incoming message and the counselor's response. Because student response is most likely to occur soon after automated messages are distributed, outreach should be scheduled for a time when students are likely to engage with the message and when counselors are able to respond to student follow up. To facilitate this rapid response, one counselor recommended adding an alert system to the text platforms:

I'd have liked an alert when it was in between texting of a mass text messages, because some students would text that number in between messages, asking me a completely different question and I wouldn't see it until a couple days later. So if we got an alert or message that said 'Oh, you have unread messages, to let us know to go check'.

Related to this point, while students communicate regularly via text, counselors rely heavily on email as a primary mode of communication. Therefore, the more text messaging platforms are able to be integrated into current communication systems, the more effective they will likely be. As one counselor recommended, it would be helpful "...if the text messages can be sent to our emails...for me it was difficult with everything else going on...to remember to go on a separate website to log on to contact students who weren't already contacting my phone or email."

Despite these challenges, the content of the communication together with feedback from participating counselors indicate that counselors and students responded positively to the text-based outreach and that students were able to communicate with specificity regarding the key issues with which they were dealing during the summer months. Aside from the small number of students who refused help or requested that the messages stop, in few instances did students indicated dissatisfaction with the outreach and support they were receiving. Rather, the general tone of the messages was positive and engaged. Feedback from counselors was consonant with this assessment. As one counselor indicated:

I definitely think it's an awesome program. I see the benefits of it, and to be honest I feel I'm still reaping the benefits of the program because I have had a couple students who have come by as a result of those messages... so after the program they are still coming in...it would be great if the program will continue.

## V. DISCUSSION

The text-based outreach was successful in supporting students during their college transition. It served as a low-cost and efficient strategy to provide students with timely information and to connect them with individualized, professional support when it was needed. Using texting as a

means of communication reduced barriers for students to ask “small” questions, to seek support with challenging tasks, or simply to seek reassurance with their progress. The text-based prompts served as a means of encouraging students to report on the challenges they faced in real time. Students may have been less likely to ask the same questions or express confusion if doing so required talking to someone on the phone or scheduling an in-person meeting to begin a conversation. In this way, the text-based communication also reduced the gap in time between students experiencing a problem or challenge and obtaining a solution with the help of a counselor. As the messages above reveal, the text-based communication also became a means of encouraging students to set up a face-to-face meeting with a counselor. Therefore, the text communication served as a gateway for students to receive additional guidance both digitally and in-person.

Second, the text-based communication – and particularly the ability to automate message distribution – increased counselor efficiency. As the counselors reported, rather than devoting attention to administrative tasks, such as scheduling appointments and providing basic information, they were able to dedicate increased time to interacting with students and providing them with meaningful, timely support. Strategies like texting may be important for increasing the level of support that students are able to receive, especially given that student-to-counselor ratios in U.S. high schools are typically well above the 250:1 ratio recommended by the American School Counselor Association (Carrell & Carrell, 2006).

In considering incorporating text messaging into communication systems with students, our interventions to-date have highlighted a number of strategies for increasing its efficacy. First, timely data are needed. This includes cell phone contact information as well as any data that will be used to further customize the messages themselves. In this intervention, for example, we utilized information on each student’s intended college to customize the content of automated text outreach. Both contact information and other supporting data elements should be gathered from students as close as possible to the start of the outreach to ensure the most accurate and up to date information possible.

Nevertheless, because cell phone numbers do change, it is important to incorporate systems for updating this contact information on a regular basis. In addition, it will likely not be possible to reach all students via text, both because of changes in contact information and because some students may opt not to receive text-based communication. Therefore, while the purpose of these interventions was to test text-messaging exclusively, in practice, a broader communication strategy is needed in order to reach those students not reachable via text.



In the interventions described here, students received automated messages, and students and counselors interacted via text in a free-form way. This combination can lead to some confusion. For example, we observed instances in which a student and counselor communicated (free-form) on a topic that was subsequently the focus of an automated message. In one case, the uAspire advisor gracefully averted any confusion by concluding a text interaction with a note that an automated message was forthcoming: “we are sending an auto text on Monday about health insurance, you can just ignore that.” This requires that counselors have a strong sense of the automated content so that they can provide students with such stage directions. Another approach is for counselors to cancel certain messages for students they know to have completed the associated tasks.

Finally, it bears reiterating that text messaging is a form of instantaneous communication. A text-based communication strategy (different from using texting simply for providing alerts) is unlikely to be successful if there is a long lag time in between messages. Therefore, automated messages, which typically serve as the catalyst for a student-counselor interaction, should be distributed at a time when students are able to focus attention on the initial message and when counselors are able to respond rapidly to student response. With these best practices in mind, text-based communication has potential to provide better support to students in the transition from high school to college as well as with other key milestones in their educational trajectories.

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Figure 1. Distribution of student messages sent to uAspire advisors over time

