Impact of Technology-Mediated Communication on Student Evaluations of Advising

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The field of academic advising lags behind other similar fields in the use of technologically mediated communication modalities shown to improve academic outcomes. We investigated student satisfaction with undergraduate advising by examining the ways communication methods, such as social media, between student and advisor relate to student satisfaction. Results showed that although advisors rarely communicated with students via social media, text messaging, or instant messaging, the number of face-to-face advising meetings was positively predicted by advisor use of instant messaging and text messaging and negatively predicted by their use of Facebook. Furthermore, e-mail communication positively predicted a student's positive view of the advising experience, but communicating through Twitter predicted negative views of advising.

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In their integral role as guides through college, advisors encourage student identity development and academic achievement during their undergraduate career. Effective advising hinges on open communication, and although traditional methods of conversation remain valuable to student–advisor interactions, advisors must address the changing communication methods used by students. Like the undergraduates they support, advisors must transition into the digital age. Social media, texting, instant messaging, and e-mail provide the primary means for many important social interactions (Lenhart, 2015); therefore, to initiate contact and remain connected to students, advisors must engage in these nontraditional forms of communication. By examining the prominence of social media, instant messaging, texting, and e-mail in student–advisor relationships, we explain the ways typical communication methods influence student satisfaction with advising. The increased understanding may reshape advisor thinking about advisor–advisee communications.

Social Media

The majority of college students in the United States utilize social networking sites and the number of users increases each year (Smith, Rainie, & Zickhur, 2011). A study of college students attending several universities in the Midwest reported that more than 90% of participants used Facebook (Wiley & Sisson, 2006). These findings align with those from more recent research showing that between 90 and 94% of college students use Facebook (Dahlstrom, de Boor, Grunwald, & Vockley, 2011; Junco, 2012a; Wise, Skues, & Williams, 2011). Additionally, sites such as Yik Yak, Instagram, Twitter, and Tumblr are popular with adolescents and young adults, including college students (Junco, 2015; Madden et al., 2013). Despite the popularity of social media among college students, little research explains the impact of social media on advising. In regard to this research, the field of advising lags behind others that feature studies on ways social media applies to classroom teaching, supports online course work, and promotes student engagement (Tess, 2013).

Researchers have examined the relationships between use of social media and important higher education outcomes, such as student engagement, the establishment and maintenance of interpersonal relationships, and academic performance (Ellison, Steinfield, & Lampe, 2007, 2011; Junco, 2012a, 2012b; Junco, Heiberger, & Loken, 2011; Valenzuela, Park, & Kee, 2009). They have also looked at undergraduates' leveraging of Facebook to bolster their offline social connections. For instance, studies show that undergraduates employ Facebook to increase their social capital (Ellison et al., 2007) and that engaging in social information seeking on Facebook significantly predicts user perceptions of social capital (Ellison et al., 2011).

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Some studies show connections between social media use and student engagement. For instance, Junco (2012b) found that using Facebook in certain ways can improve student engagement. Nehls and Smith (2014) measured the use of Facebook and its relationship to engagement for transfer students. They analyzed Facebook usage patterns of students across 15 different higher education institutions and categorized posts into subcategories related to social interaction and academic integration. Although the most popular academic postings related to advising and planning, students interacted online with each other more than with institutional employees.

Nehls and Smith (2014) noted that students accessed social media to address academic questions despite the availability of the information elsewhere online, implying that institutional representatives can enhance student engagement through social media. To that end, Junco et al. (2011) found that first-year seminar instructors were able to use Twitter to improve overall student engagement and academic performance in all of their courses. However, Junco, Elavsky, and Heiberger (2013) found that academic benefits depend upon the ways instructors employed Twitter, suggesting that educators need to focus on relevant communication when using this medium.

Advisors and other institutional personnel can utilize Facebook to help students transition and adjust to college. Russell, Nazione, and Smith (2012) examined Facebook as a source of *memorable messages* for first-year students as they navigate the college experience. The authors defined *memorable messages* as "verbal messages which may be remembered for extremely long periods of time and which people perceived as [having] a major influence on the course of their lives" (Russell et al., 2012, p. 108). While the investigators narrowly focused on content-only communications from a single site, the findings supported the contention that social media serve as robust platforms for establishing and maintaining connections (Russell et al., 2012).

Selwyn's (2009) analysis of the Facebook accounts of more than 600 students provides further evidence that undergraduates use Facebook to learn about the cultural norms and mores of their new peer group to aid in their social integration. The students in Selwyn's sample accessed Facebook to exchange practical and academic information, reflect on the college experience, and demonstrate their identities as college students.

Advising Communication

Despite ratings of academic advising as a top predictor of college students' success and satisfaction during their undergraduate careers (Anderson, Motto, & Bourdeaux, 2014, p. 27), many students have reported dissatisfaction with their advising experiences (Goomas, 2012). As Millennial students continue to pervade higher education, administrators must rework academic systems and faculty members as well as advisors must adapt behaviors to meet students' changing expectations (Junco & Mastrodicasa, 2007). Adaptations include updating advisor communication practices to include methods, such as employing social media, congruent with students' digital lifestyles (Nehls & Smith, 2014). To understand the ways a mode of communication influences advising, the following review includes literature on factors with an impact on student satisfaction with advising, communication of advising practices in online spaces, and the impact of social media on higher education.

Advisors meet student communication and interaction expectations in a variety of ways, but published studies primarily feature research on information content and advising style rather than communication mode. Barbuto, Story, Fritz, and Schinstock (2011) examined the relationship between advising styles (as measured by assessment of transactional and transformational leadership behaviors), student satisfaction with advising, and student-rated advisor effectiveness. They found student satisfaction positively correlated with a style known as *positive transformational advising* through which advisors communicate with the student about a vision for the future, exude passion for student development, and demonstrate commitment to serve as a positive influence over students' lives.

Christian and Sprinkle (2013) compared student perceptions of advising to their ideal visions for advising, which included expectations for advisor availability for meetings and for collaborations in the advising process. Neither Barbuto et al. (2011) nor Christian and Sprinkle addressed student preferences for receiving information from their advisor or their preferred mode of interaction.

Through academic advising, student behavior and institutionally controlled conditions intersect to influence student achievement. Young-Jones, Burt, Dixon, and Hawthorne (2013) compared advising style with academic success (as measured by GPA) and examined the extent to which contact with an advisor predicted student responsibility, self-efficacy, study skills, and perceived support. Findings

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revealed that one factor positively affected perceived levels of student support: meeting with the advisor at least once a semester. However, Young-Jones et al. found no relationship between the number of contacts, time spent with the advisor, and academic outcomes.

Anderson et al. (2014) applied the expectancy violations theory as a lens to compare student expectations of advisor behaviors. They identified communication as a key element for successful advisor–student relationships and suggested that advisors and students discuss expectations of communication in the advising process early in the relationship. They also recommended that, based on these early conversations with students, advisors adapt to meet expectations or transfer the student to a more compatible advisor. This recommendation applies to the manner in which students prefer to receive communication from an advisor including those methods relevant for today's students, such as social media.

Web-based systems have transformed advising. Phillips (2013) provided an overview of the online advising system utilized by Arizona State University (ASU), explaining that advising was conducted more effectively and efficiently through this system. Specifically, relatively simple advising tasks (such as learning about course prerequisites) are now completed online by ASU students, allowing advisors to focus on advanced areas of advising, such as interpreting requirement information and facilitating decision making (Phillips, 2013). The ASU program effectively flips the advising environment in the same way that some instructors have flipped classroom education: Content is delivered online and processed in offline meetings (EDUCAUSE, 2012). According to the Phillips study, advisors communicated more effectively and efficiently by using available student-tracking data, and the ASU system also increased advisor availability so they could meet with students and interact in a timely manner.

Feghali, Zbib, and Hallal (2011) came to similar conclusions of the impact of an online advising system implemented at the American University of Beirut (AUB). Like the system at ASU, students accessed basic functions of advising at AUB, such as information on course requirements and sequencing, through the online system, increasing the number of students who can interact with advisors and thus improving the quality of student–advisor communication.

Herndon (2011) analyzed the implementation of a student support web site for advising students in which social media made up one aspect of the system. Herndon concluded that social networks proved critical in introducing and amplifying the use of the web site by students.

Research Questions

Advising has been linked to many positive student outcomes, including satisfaction, positive morale, persistence, academic success, and career choice (Barbuto et al., 2011). Findings from past research suggest that scholars and practitioners should continue exploring a variety of communication modes, including social media, to meet student expectations and build relationships. For example, advisors who post informative messages via social media create the opportunity to maintain connections with advisees (Russell et al., 2012) in a way that reaches students and improves their satisfaction, specifically during times between in-person meetings.

Although social media features may prove useful in enhancing the advising relationship, little scholarship has been conducted in this area. Complicating the outcomes of practice and findings on social media impact, institutional representatives, including faculty members and advisors, typically do not maximize their uses of these technologies; that is, when they do use them their posts often feature static information not conducive to interactive, multidirectional communication (Davis, Diel-Amen, Rios-Aguilar, & Sacramento González Canché, 2015). Indeed, researchers prompt educators to engage with students on social media to help students attain desired outcomes of a college education and promote psychosocial development (Junco, 2014). For example, results show that use of social media can have a substantial impact on student engagement, academic performance, and relationship building and maintenance such that the use of new communication technologies should yield benefits for academic advising participants (Ellison et al., 2007, 2011; Junco, 2012a, 2012b; Junco et al., 2011; Nehls & Smith, 2014; Russell et al., 2012). Therefore, we chose the following research questions for this study:

RQ1. How do students communicate with their advisors?

RQ2. Does communication method predict offline meetings with advisors?

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RQ3. Does communication method predict satisfaction with advising?

Methods

Participants

Participants attended a large, 4-year, primarily residential public university in the southeastern United States. Recruitment e-mails were sent to a random sample of 4,500 undergraduates stratified by gender, race and ethnicity, and class standing. The students received a link to a survey hosted on SurveyMonkey.com through their university-sponsored e-mail accounts. Students who did not immediately participate received two reminders one week apart. Participants were offered a $10 Amazon.com gift card as an incentive. A total of 706 surveys were completed for a 15.7% response rate. Of the 706 students, 550 reported that they had met with their advisor in the past year. In this paper, we report on analyses conducted with the subset of 550 students.

Instruments and Measures

Demographics. Students were asked to select their gender (male/female) and ethnicity (African American, Asian American, Hispanic/Latino, Native American, White/Caucasian, or other). Parental education was used as a proxy for socioeconomic status through responses to the question, "What is the highest level of formal education obtained by your parents?" followed by prompts for *Parent/Guardian 1* and *Parent/Guardian 2*. We coded parental education using a 5-point Likert scale: 1 = *Less than high school degree*; 2 = *High school degree*; 3 = *Some college*; 4 = *College graduate (for example: B.A., B.S., B.S.E)*; and 5 = *Advanced graduate (for example: master's, professional, J.D., M.B.A, Ph.D., M.D., Ed.D.)*. We used the reported highest parental education level for these analyses.

As one of the consistently strongest predictors of overall college performance and related to multitude of academic outcomes, high school GPA was used as a control variable in these analyses (DeBerard, Spielmans, & Julka, 2004; Geiser & Santelices, 2007; Williford, 2009). We included high school GPA in the analyses to parse out the variance in the predictors attributable to preexisting student differences in academic ability and to place the other predictors in context. Specifically, high school GPA was used to control for the likelihood of a relationship between a student's academic ability and her or his propensity to meet with an advisor (i.e., students with history of academic success may meet with their college advisors more frequently than those with average or below average academic profiles). Students gave researchers permission to obtain their high school GPAs, which they had submitted to the university during the admissions process. High school grades were measured on a 4.0 scale ranging from 0.0 for F to 4.0 for A.

Advising. Students reported the frequency with which they communicated with their advisor via Facebook, Twitter, instant messaging (IM), texting, phone, and e-mail. These frequency items were coded using a 5-point, positively anchored Likert scale ranging from 1 = *Never*; 2 = *Rarely* (25%); 3 = *Sometimes* (50%); 4 = *Somewhat frequently* (75%); and 5 = *Very frequently* (100% of the time). Students who reported no meeting with an advisor in the past academic year received no further questions about academic advising. Students who had met with their academic advisor were provided a text box to enter the number of times they had met. To evaluate satisfaction with advising, students responded with the degree to which they strongly agreed or disagreed, on a 5-point positively anchored Likert scale, with the following statements: "My academic advising experience is a positive one" and "I am satisfied with the advisement provided by my advisor."

Data Analyses

We downloaded raw survey data in an SPSS file directly from SurveyMonkey.com and analyzed them using SPSS Statistics 22. We compiled descriptive statistics to illustrate the demographic characteristics of the sample as well as to illustrate frequency of advisor meetings and communication with advisors. We conducted three separate hierarchical (blocked) regressions to examine whether the method of communication with advisors was related to the number of offline student meetings with advisors and student satisfaction with advising. Satisfaction with advising was measured using participant responses to the "My academic advising experience is a positive one" and "I am satisfied with the advisement provided by my advisor" items.

Categorical variables were dummy coded for the regression analyses. The reference categories for these variables were female, Asian students, and some college as highest parental education.

The blocks, in order, were demographic variables (gender, race and ethnicity, and highest parental education level), high school GPA, and

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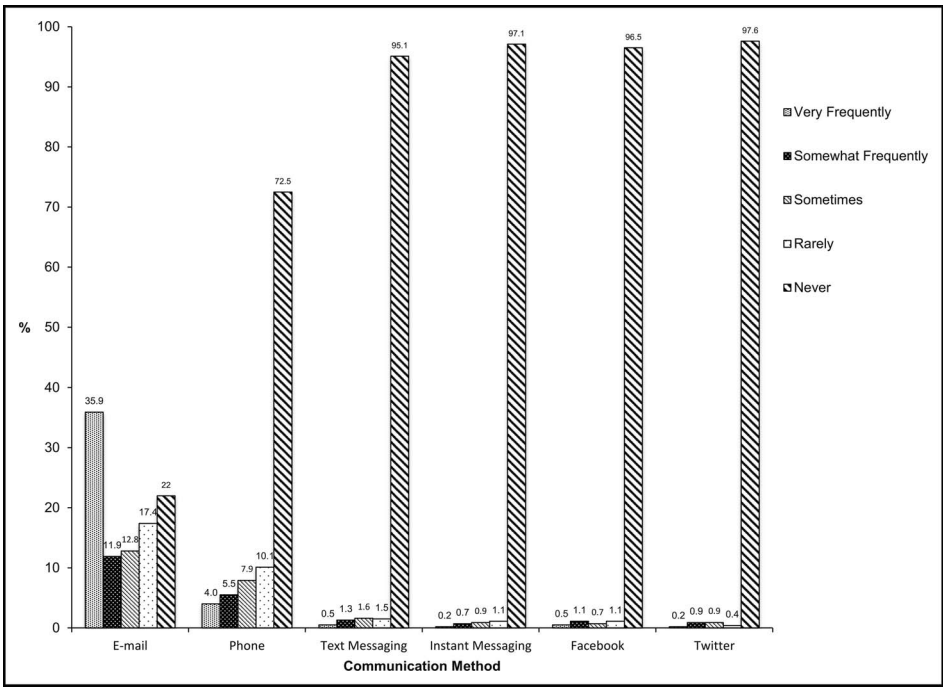
Figure 1. Frequency of communicating with advisor via e-mail, phone, text messaging, IM, Facebook, and Twitter ($N = 546$)



method of communication with advisor. To ensure that data met assumptions necessary for regression analyses, we tested for homoscedasticity, collinearity, and important outliers through collinearity diagnostics and examinations of residuals. The SPSS curve estimation procedure was used to plot linear, logarithmic, quadratic, cubic, and logistic functions, which we used to examine linearity. We found that all variables met the requirements of linearity necessary to proceed with a regression analysis.

Results

Descriptive Statistics

Of the participants who completed the survey, 66% self-identified as female and 34% as male. With respect to race and ethnicity, 68% of students listed Caucasian as their race, 21% of the sample identified as Latino, 12% Asian American, 9% African American, and 11% other. The gender and race/ethnicity composition of the participants was roughly similar to the gender and race/ethnicity composition of the overall university population, with the study sample featuring a slight overrepresentation of female, Caucasian, and Asian students. Students reported meeting with their advisor a mean of 3.097 times in the past year with a standard deviation of 5.19. Figure 1 shows the student reports of frequency in communicating with their advisor via e-mail, phone, text messaging, IM, Facebook, and Twitter.

Regressions

Face-to-face meetings with advisor. The combination of independent variables in the final model predicted 18% of the variance in number of in-person meetings with advisors: F (16, 481) = 7.761 ($p \leq .001$). The values of all variance inflation factors (VIFs) were lower than 4, indicating low multicollinearity among the predictors. The highest VIF values were found for communicating with advisor via Facebook, Twitter, and IM, suggesting a common factor driving frequency of communication with advisors via these tools. As shown in Table 1, results of the regression analysis indicated that communicating with one's advisor via IM ($\beta = .216$, $p \leq .01$) and via text messaging ($\beta = .219$, $p \leq .001$) positively predicted the number of meetings with the advisor.

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Table 1. Hierarchical regression model exploring how demographics, high school GPA, and communication method predict number of offline meetings with advisor ($N = 498$)

	Block 1 Demographics	Block 2 HS GPA	Block 3 Communication Method
Independent Variables	**β**	**β**	**β**
Male	.071	.045	.020
African American	.122*	.098	.078
Latino	−.009	−.018	−.028
Other ethnicity	.008	−.002	−.021
White	.027	.007	.001
Less than high school	.009	.010	−.004
High school	.010	.003	.006
College graduate	.011	.034	.031
Advanced grad degree	.103	.137*	.105
High school GPA		−.180***	−.136**
Facebook			−.187*
Twitter			.150
Instant Messenger			.216**
E-mail			.076
Text messaging			.219***
Phone			.004
Adjusted R^2	.007	.036***	.179***

Note. β = Beta, the standardized regression coefficient
*$p < .05$. **$p < .01$. ***$p < .001$.

However, high school GPA (β = −.136, $p \leq .01$) and communicating with one's advisor via Facebook (β = −.187, $p \leq .05$) were negative predictors of number of meetings with the advisor.

Satisfaction with advising. The model predicting reported satisfaction with advising was not significant: F (16, 490) = 1.206, p = .259. However, the model predicting a positive advising experience was significant and it explained 2.1% of the variance: F (16, 490) = 1.67, $p \leq .05$. All VIF values were lower than 4 with the highest VIF values for communicating with advisor via Facebook, Twitter, and IM. Table 2 shows that communicating with one's advisor via e-mail (β = .188, $p \leq .001$) was positively related to a positive advising experience while communicating with one's advisor via Twitter (β = −.189, $p \leq .05$) was negatively related.

RQ1: How Do Students Communicate With Their Advisors?

Descriptive statistics show that most students communicate with their advisors via e-mail: 61% of students said that they e-mailed with their advisor more than rarely. In contrast, 18% of students communicated with their advisors via phone, 4% via text message, 2% via IM, 3% via Facebook, and 2% via Twitter. Most institutions require students to communicate with institutional personnel using university-provided e-mail accounts and for over two decades e-mail has evolved as an acceptable method of professional communication in and out of the academy.

RQ2: Does Communication Method Predict Offline Meetings With Advisors?

The hierarchical linear regression showed that communication method predicts the number of offline meetings with advisors. Specifically, results showed statistically significant positive relationships for communicating with one's advisor via IM or text messaging and number of in-person meetings with advisors; that is, the more students communicated with their advisors via IM and texting the more offline advising meetings they reported. Conversely, communicating with advisors via Facebook was negatively related to number of advising meetings. Lastly, high school GPA was negatively related to the number of offline meetings with an advisor; the lower a student's high school GPA, the more times they met with their academic

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Table 2. Hierarchical regression model exploring how demographics, high school (HS) GPA, and communication method predict positive advising experience ($N = 507$)

	Block 1 Demographics	Block 2 HS GPA	Block 3 Method of Communication
Independent Variables	**β**	**β**	**β**
Male	−.010	−.008	−.013
African American	.019	.021	.034
Latino	−.009	−.008	−.014
Other ethnicity	−.001	−.001	.003
White	.003	.005	.006
Less than high school	−.031	−.031	−.037
High school	.034	.034	.046
College graduate	−.034	−.036	−.045
Advanced grad degree	−.035	−.038	−.036
High school GPA		.014	.027
Facebook			.083
Twitter			−.189*
Instant Messenger			−.027
E-mail			.188***
Text messaging			.091
Phone			.003
Adjusted R^2	−.013	−.015	.021**

Note. β = Beta, the standardized regression coefficient
*$p < .05$. **$p < .01$. ***$p < .001$.

advisor in the past year. In this model, communication method was more strongly predictive of number of advising meetings than high school GPA. Furthermore, the three significant communication methods (Facebook, IM, and text messaging) showed roughly the same level of predictive strength for number of advising meetings.

RQ3: Does Communication Method Predict Satisfaction With Advising?

The model predicting overall advising satisfaction by communication method did not yield significant results. However, communication method was significantly predictive of a positive advising experience. Using e-mail to communicate with advisors was positively predictive of advising experience, whereas using Twitter was negatively predictive of advising experience. In this model, the communication methods (Twitter and e-mail) demonstrated equivalent strength of predicting advising experience. Additionally, high school GPA was not predictive of a positive student experience with advising. Of particular note, although data on specific communication methods predicted advising experience, it did not predict a student's overall satisfaction with advising.

Discussion

Perceived Purposes of Communication Technology

Although students use Facebook and other social media platforms for social interaction, e-mail continues to be the most popular method for advising communication. This unsurprising result stems from encouragement that students and advisors receive to use their university e-mail accounts for official correspondence. In addition, advisors may eschew other popular technologically mediated communication over fears that outreach through these often used platforms will constitute an invasion into students' private territory. Such thinking is reflective of an advisor's worldview in regard to their students' digital lives.

Higher education professionals may subscribe to an adult normative perspective through which they view student use of technology (Junco, 2014). Harboring an adult normative perspective, advisors may perceive no academic or professional benefit to using the technologies that students use in their personal lives. This

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viewpoint may lead to beliefs that would affect other aspects of advising practice; for example, advisors may be uncomfortable calling students on their cell phones because they consider them to be used solely for social purposes.

Communication Methods and Advising Meetings

Barbuto et al. (2011) found that student satisfaction was positively correlated with positive transformational advising. Among other concerns, advisors who engage in positive transformational advising show an interest in and a passion for student development. To practice positive transformational advising, practitioners must first meet with students to engage in the educational and developmental work that characterizes academic advising. Research results indicate that in-person meetings with advisors are related to a student's perceived level of support (Young-Jones et al., 2013). In the past, advisors e-mailed to engage advisees and arrange meetings with them. However, in today's connected society, student development transpires in online spaces just as much, if not more, than in offline settings (Junco, 2014). Indeed, research shows that use of social media in educationally relevant ways can help improve a host of outcomes including levels of student engagement and academic performance as well as peer relationships and connections with faculty and staff (Ellison et al., 2007, 2011; Junco, 2012, 2012b; Junco et al., 2011; Nehls & Smith, 2014; Tess, 2013; Valenzuela et al., 2009).

Academic advisors have an opportunity to meet students where they are and to bolster their engagement in the advising process. Our study shows the importance of using communication technologies other than e-mail because communication method was the strongest predictor of the number of times a student met in person with an advisor. For example, the data indicated that almost 15% of the variance in number of meetings with advisors was explained by communication method, which compares favorably to the less than 1% of the variance explained by demographic characteristics and less than 4% by high school GPA. However, while the model showed that communication via text messaging and IM strongly and positively predicted number of in-person advising meetings, communication via Facebook was a strong negative predictor of on-site meetings.

A number of reasons may explain the discrepancy between use of text and IM as positive predictors and Facebook as a negative predictor of in-person meetings. Advisors may feel more comfortable using text messaging and IM as platforms for advising communication with students. At the time we conducted this study, few advocated the use of Facebook to connect with and communicate with advisees, and therefore, advisors had little guidance for Facebook use (the instances of institutionally published guidelines tend to be based in an adult normative perspective); however, the opposite could also hold true: Advisors who use Facebook with their students may be pioneering innovative uses of social media in academic advising, and they may conduct a larger portion of advising through Facebook than through offline meetings. In fact, because of the large student population at the university where these data were collected, advisors may use Facebook to reach a large group of students efficiently as advocated by those who encourage technology use in advising.

Another possibility may explain the results showing Facebook as a negative predictor of advising meetings: Perhaps advisors who were communicating with students via Facebook were engaged in the types of boundary violations that make many technologically inexperienced advisors nervous about using social media at all. In other words, some advisors may engage in more social and less professional communications with students. Although all plausible explanations, a small percentage of students reportedly used Facebook (and text messaging and IM) to communicate with their advisors.

Communication Methods and Advising Experiences

Communication method did not predict overall satisfaction with advising; however, communication method was predictive of a positive advising experience. Using e-mail to communicate with advisors was related to a more positive advising experience, but using Twitter to communicate with advisors was related to a more negative advising experience. However, the overall model predicted slightly more than 2% of the variance and communication method predicted slightly less than 4% of the variance in student reports of positive advising experiences, and this relatively small effect size, compared to the model predicting number of meetings with advisors, should add perspective to the interpretation.

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Despite this point of consideration, a similar pattern emerged in which one technology was positively related and another was negatively related to positive advising experience, aligning with suggestions that the number of advising visits may reflect greater advisor familiarity and comfort with e-mailing advisees. In practice, an advisor not using e-mail with an advisee likely does not engage in other aspects of advising seen by the students as helpful. Furthermore, lack of universal guidance on the use of social media with advisees may lead to advisor use of Twitter for more social than academic purposes.

Future Research

Further research should examine the pattern of negative and positive relationships to determine more fully the effect of using social technologies with advisees. Some areas of concern may include questions about social versus academic outcomes (e.g., rapport building versus learning); guidelines useful for setting boundaries, adhering to privacy laws, and determining policy; and advisor and student perceptions of professional and unprofessional use of technology for advising. The results of such inquiries may clarify the extent to which advisors should use social media to engage students as some of the research suggests and whether such efforts prove effective or counterproductive.

A final, particularly noteworthy discovery suggests that communicating with one's advisor via phone was not related to any of the three outcomes measured in this study. Therefore, the second most-used communication modality by advisors had no impact on whether students met with their advisors or their satisfaction with advising. Because this is the first study on the relationship between technology and advising meetings and satisfaction, further investigation on the substitutes for the phone may yield interesting results. For example, students rarely talk on the phone and prefer text messaging (Lenhart, 2015), so a study comparing the benefits of texting over phone calls may provide useful information on effective methods for communicating information and setting up meetings. At the very least, students may see the advisor's willingness to text as responsive, which may enhance the quality of the advising relationship. As some advisors complain that their advisees do not communicate with them via e-mail, a grievance supported by research on preferred communication methods (Lenhart, 2015), research on alternative technologies for relating advising information seems welcomed as well as warranted.

Limitations

One of the findings of this study is also one of its limitations: Few students in this sample reported using text messaging, IM, Facebook, or Twitter with their advisors. The findings do not elucidate whether few advisors use these technologies with students in general or at this institution in particular. In any case, additional research should focus on establishing prevalence rates of communication technologies (other than e-mail) in different regions of the country, with different types of institutions, and at campuses that strongly promote the use of emerging technologies in educational settings.

An important methodological limitation of this study stems from the inability to determine cause and effect from the correlational nature of the design. For instance, student use of text messaging to communicate with advisors correlated with the number of advising meetings; however, the direction of the effect between text messaging and meeting number cannot be determined with certainty. This finding may imply that students who communicated with their advisors via text messaging were more likely to meet with them, but it could also suggest that students predisposed to meet with an advisor communicate more with their advisor via text messaging. In fact, the current study may capture an unmeasured variable that relates to both meetings with advisors and a propensity to communicate using text messaging, such as a facet of advising style, advisee personality, or some combination of the two.

The use of self-reported estimates of communication with advisors via different technologies and counts of advising meetings may lead to biased estimates. Therefore, we recommend that future researchers design a variety of measures for evaluating time spent communicating with advisors and number of meetings (perhaps through phone log data and data collected directly from advisors or advising centers). Lastly, for the model intended to examine positive advising experience, the proportion of variance predicted by the independent variables was relatively low, which indicated that a large proportion of variance could be explained by other variables.

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Implications for Advising Practice

Although our findings support the notion that e-mail prevails as the most commonly used communication tool between advisors and their advisees, the analysis also shows that other communication technologies may serve as productive and viable alternatives for communicating with students. Indeed, use of student-relevant communication tools, such as text and IM, was related to more face-to-face advising meetings. Although at first glance the finding that communication with advisees using Facebook negatively related to the number of face-to-face advising meetings may suggest facebook as an unpromising platform, the finding may also suggest that productive advising is conducted through this medium. The negative relationship may result from lack of guidelines for advising through Facebook, and it suggests that more specific policies may encourage advisors to use social technologies with advisees. This possible explanation aligns with previous research that shows that technologies with a social component can be co-opted to engage students in educationally relevant ways that lead to positive outcomes (Junco, 2014; Junco et al., 2011).

The results of the current study suggest that advisors undertake specific action to further communication with students:

- Advisors must understand that students are open to communicating with them using a wide range of modalities and that the modalities are not the strongest predictors of success. For instance, the ways advisors relate to undergraduates through platforms such text messaging, Facebook, and Twitter matter more than the modality used; just as many advisors conduct face-to-face meetings with students, not all advisors effectively leverage these meetings to support student growth. The negative relationships between advising frequency and satisfaction found in connection with Facebook and Twitter may reflect inappropriate uses of social media. Other research has shown that these platforms can be used to engage students in educationally relevant ways so they reap benefits that enhance learning (Junco et al., 2013).
- Practitioners and administrators need to assess initially and continuously students' preferences for technologically mediated communication. Our research suggests that delineating between social and educational uses of technologies may help advisors determine the focus of the conversation and affect decisions for technology use. Furthermore, advisee needs may change as students move through their academic programs, so some of the connection and support strategies required by first-year students will evolve as they advance toward graduation.
- The advisor bears responsibility for ensuring that the quality of interaction with students meets the needs of the student regardless of the technology tools chosen. In other words, advisors should focus on professional communications that serve to strengthen the advisor–advisee relationship and that communicate clear boundaries between professional and social uses of communication technologies. Not only will this approach establish and build upon rapport with students, advisors can use it to model appropriate uses of social media in professional settings, a skill critical to graduating students entering the workforce.
- Along with others at the institution, advisors need to create guidelines for communicating with students via social media. Advisors may need to counter existing guidelines or beliefs that suggest it appropriate to abstain from such contact with students. Advisors and others must prepare to meet resistance to explain the productive opportunities for communication with advisees on these platforms. Appropriate guidelines should include the input of other professionals as well as students so they strike the proper balance between adult and youth normative viewpoints (see Junco, 2014).
- Training on appropriate uses of social media should be included as part of advisor on-boarding and professional development. These training initiatives should align with communication guidelines and focus on educationally relevant processes in the use of social technologies with students.

Summary

Although a small proportion of students in the current study reported communicating with their advisors via text messaging, IM, Facebook, and

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Twitter, other research shows that using such technologies for academic-based communications can improve important educational and developmental outcomes for college students (Ellison et al., 2007, 2011; Junco, 2012a, 2012b; Junco et al., 2011; Nehls & Smith, 2014; Tess, 2013; Valenzuela et al., 2009).The findings of our study generally aligned with this line of inquiry: Some technologies, presumably used in educationally relevant ways, were related to positive advising outcomes. Specifically, we found that text messaging and IM were strong positive predictors of in-person advising meetings, and e-mail was a predictor of students reporting a positive advising experience.

In addition to the benefits discovered with the use of e-mail, text, and IM, we contend that these technologies are congruent with today's students' digital lifestyles. To communicate with advisees using these methods sends a message that an advisor is interested in reaching them where they are. In addition, the brevity of text and IM leads to efficient communication when short messages suffice. These short messages can connect advisors with students in ways that encourage face-to-face meetings to initiate or continue advising interactions. Work by both researchers and advisors should focus on explaining the ways these technologies are used and subsequently develop and promote effective practices for advisors in using these technologies with their students.

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