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Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample

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ABSTRACT

This paper uses a mixed-methods approach to examine the relation between online academic disclosure and academic performance. A multi-ethnic sample of college students ($N = 261$; male = 66; female = 195; M age ≈ 22 years) responded to open-ended questions about their Facebook use. Thematic analysis revealed that over 14% of the Facebook wall posts/status updates ($N = 714$) contained academic themes; positive states were more frequent than negative and neutral states and students with lower GPAs expressed negative states more often. A path analysis suggested that academic performance may determine college students' Facebook use, rather than the reverse. Implications for student support services are discussed.

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1. Introduction

Social media use has become common among young adults in college (Lenhart, Purcell, Smith, & Zickuhr, 2010). Facebook, one of the more popular social media applications has over 1.26 billion users worldwide (Smith, 2014). It was originally limited to those with a university email (Yadav, 2006); although, it was subsequently opened up to anyone with an email address (Brenner, 2013), college students continue to be the majority of Facebook users (Dahlstrom, Grunwald, de Boor, & Vockley, 2011; Duggan & Smith, 2013; Smith & Caruso, 2010). In the U.S., 71% of Facebook users are college students (Duggan & Brenner, 2013).

There is now a solid body of work linking emerging adults' social media use and key transitional and psychosocial developmental tasks – including identity and intimacy (see Coyne, Padilla-Walker, & Howard, 2013; Michikyan & Subrahmanyam, 2012; Wilson, Gosling, & Graham, 2012, for a review). Research to date has also revealed that college students' social media use is linked to their academic lives – including online academic disclosure (Deng & Tavares, 2013; Selwyn, 2009) and academic performance (Junco, 2012a) and engagement (Junco, 2012b; Junco, Heiberger, & Loken, 2010). Less clear is students' use of

social media as they negotiate academic activities and challenges and adjust to college. In this paper, we examined how a U.S.-sample of college students utilized their academic disclosure on Facebook to confer meaning to their academic activities (e.g., taking an exam), roles (e.g., as a student, peer), and responsibilities (e.g., studying for an exam), expectations (e.g., expect higher grades), and events (on- or off-campus) (Smith & Wertlieb, 2005), thus reconstructing their offline university experiences on social media.

Adopting a mixed methods approach, we conducted a qualitative and quantitative analysis of our participants' academic disclosure via their Facebook wall posts/status updates. Such an in-depth and nuanced examination of the students' Facebook activity will reveal the meanings and affective states of their online disclosure related to academic activities, roles, responsibilities, expectations, and events. Additionally, using participants' own words about their academic and college experience will inform our understanding of the issues students encounter during their transition and adjustment to college life and enable us to capture their "voice" or personal sense of navigating through these concerns. Furthermore, despite the increasing research in this area, no study to date has qualitatively documented online academic disclosure in a sample of college students in the U.S. nor studied the quantitative relation between such online disclosure and offline academic performance.

Extant research on the relation between U.S.-based college students' Facebook use and academics has been via survey studies (Junco, 2012a, 2012b; Kirschner & Karpinski, 2010; Pasek, More, & Hargittai, 2009; Paul, Baker, & Cochran, 2012) that have yielded contradictory results (e.g., Junco, 2012a; Kolek & Saunders, 2008;

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Pasek et al., 2009). They have used correlational (e.g., Ogedebe, Emmanuel, & Musa, 2012) and regression-based (e.g., Junco, 2012a) models to examine the relation between academic performance and Facebook use. Thus, an important empirical question is whether academic performance (as measured by self-reported grade-point-average, GPA) predicts Facebook use or whether Facebook use predicts academic performance. The present study will use path analysis to examine which of these two possible hypotheses is better supported.

1.1. The role of Facebook in college life

For many students, college is a time of transition, adjustment, and development. During this period, many young adults (aged 18–29) also called emerging adults, experience uncertainty and changes in their self-concept, relationships, social roles, work and education (Arnett, 2007). For instance, they may be faced with the task of developing a sense of a college student identity by exploring academic roles and responsibilities (Burke & Reitzes, 1991), making new friends or network of support, as well as adjusting to new lifestyles in order to meet the demands of college (Yazedjian & Toews, 2006; Yazedjian, Toews, Sevin, & Purswell, 2008). They rely on their social networks comprised of mentors, family members, friends, and peers to alleviate some of the newly-posed apprehensions and to succeed academically (see Syed, Azmitia, & Cooper, 2011, for a review). Research reveals that university experience may be complex and multifaceted, and pupils construct narratives of student identity, academic roles, expectations and responsibilities out of interactions within their social contexts (Yazedjian et al., 2008).

Facebook is an online social context, and young people's online networks include the people they know offline (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). Research has demonstrated that the affordances of Facebook – including posting on walls (commenting), uploading photos, and updating status (discussing one's thoughts and whereabouts) make it relatively easy for users to present and share an array of important life issues (Coyne et al., 2013; Michikyan & Subrahmanyam, 2012; Wilson et al., 2012). Aside from using social media for communication (Arnett & Schwab, 2013), young people use online contexts to address some of the key developmental issues that they face offline (Michikyan & Subrahmanyam, 2012; Pempek, Yermolayeva, & Calvert, 2009; Subrahmanyam et al., 2008; Subrahmanyam & Šmahel, 2011).

For instance, emerging adults report using social media such as MySpace and Facebook for self-presentation of different aspects of their identity (Manago, Graham, Greenfield, & Salimkhan, 2008), and for emotional self-disclosure (Manago, Taylor, & Greenfield, 2012). For college students then, using online contexts to share their college experiences with friends (who may also be in college) may be an important activity. In fact, one study has shown that university students in the U.K. use wall posts (a Facebook feature) to exchange information about school work and share learning experiences, which often may involve disclosure of affective states regarding academically-related activities (Selwyn, 2009). Consequently, Selwyn suggested that academic disclosure on Facebook may facilitate emotional closeness (or intimacy) and help shape a sense of student identity. Taken together, findings concerning youth social media use imply that online presentation of a multifaceted self may parallel – although not necessarily mirror – many of the important life issues that young people experience offline as they transition into adulthood (Subrahmanyam & Šmahel, 2011).

1.2. Facebook use and academic outcomes

In a content analysis study of students' Facebook wall posts that was conducted in the U.K., Selwyn (2009) found that 4% of the

68,169 of posts (analyzed over an 18-week period) included academic disclosure reflecting academically-related activities, and events. Interestingly, students' comments often illustrated their sense of academic incompetency and disengagement. At the same time, students' wall posts also displayed instances of moral support, and their overall college experience – including student role and identity exploration. Based on this pattern, the researcher noted that, "Facebook has become an important site for the informal, cultural learning of 'being' a student, with online interactions and experiences allowing roles to be learnt, values understood and identities shaped" (Selwyn, p. 171). From an examination of the posts in Selwyn (2009), it appears that students also disclosed various affective states related to their academic disclosure. To better understand students' construction of their academic experience on Facebook, Selwyn (2009) recommended that participants be asked to self-interpret their online academic activities, including their posts and comments. The present study incorporated this recommendation using a U.S.-based college sample, and also analyzed participants' wall posts/status updates for affective tones.

A related question is whether college students' Facebook use helps or hinders academic outcomes (Junco, 2012a, 2012b; Kirschner & Karpinski, 2010; Pasek et al., 2009) and research on this question has produced contradictory findings. Kirschner and Karpinski found that Facebook users reported lower GPAs and tended to spend less time on their studies compared with those who did not use Facebook. Conversely, Kolek and Saunders (2008) found no difference in overall GPA between Facebook users and non-users. Additionally, Junco (2012a) found a negative association between time spent on Facebook and grades. However, Pasek et al. found no link between Facebook use and grades. It is noteworthy that Pasek et al. used a single, dichotomous question as to whether or not participants used Facebook, and this may have limited their findings. In a subsequent study, Junco (2012b) found a negative relationship between academic engagement, and Facebook time and activities (i.e., posting photographs), yet there was also a positive association between academic engagement and online activities related to commenting on Facebook content and creating events on Facebook.

In sum, extant evidence is equivocal about the relation between social media use and academic outcomes and better understanding of the nature of this relationship has important implications for future research and interventions. In particular, when designing interventions to enhance student success and retention, it is important to know whether Facebook activities lead to changes in academic performance or whether changes in academic performance drive students to engage in Facebook activities. The present study will address this important issue.

1.3. The present study

Although research has shown a link between college students' social media use and academics, we need a better picture of their academic experiences on social media sites such as Facebook. As students negotiate their way through college, do they engage in online disclosure about their academic experiences? If they do, are these disclosures positive or negative in tone and are they reflective of the students' academic experiences? Even though Facebook use is associated with academic performance (e.g., Junco, 2012a), the direction of influence in this relationship remains an open question. To address these questions, the study adopted a mixed-methods approach; first, we qualitatively analyzed participants' Facebook wall posts/status updates for themes related to academically-related activities, roles, responsibilities, expectations, and events, as well as for various affective states. This approach also allowed us to test whether college students with lower GPAs shared more negative states or whether students with

higher GPAs expressed more positive states in their academic disclosure. Next, we tested the direction of the relation between academic performance and Facebook use with a path analysis. The two path models made it possible to identify the best fitting model (Lleras, 2005) for the relation between academic performance and Facebook use. Since prior research has shown that youths' offline concerns drive their online behaviors (Michikyan, Subrahmanyam, & Dennis, 2014; Valkenburg & Peter, 2011), we expected that academic performance would predict Facebook activities—and not the reverse. Furthermore, we expected that Facebook activities would be more strongly related to academic performance than to the amount of time spent on the site since the former would capture behavioral involvement and active engagement of cognitive resources. As Facebook use may involve a variety of activities, we included an inclusive measure of Facebook activities.

2. Method

2.1. Participants

We recruited a total of 261 college students (195 female, 66 male); ages 18–30 ($M = 21.92$, $SD = 2.76$) from a large urban university in Southern California. Those who were 18 years of age and older and were Facebook users were eligible to participate. The racial/ethnic distribution resembled the population in the Southern California, and was as follows: 19% Asian, 5% Black, 57% Latino/a, 10% White, and 9% other racial/ethnic groups. The mean self-reported Grade Point Average (GPA) was 2.44 ($SD = .98$). The GPA is a weighted average of a student's grades on all courses taken until that point (although we did not ask participants to report the number of courses that their GPA was based on). Note that individual course grades can range from F (0 points) to A (4 points).

2.2. Measures

2.2.1. Demographics

We asked participants to report their age, gender, race/ethnicity, current college standing, and GPA.

2.2.2. Facebook use questionnaire

The questionnaire contained open-ended questions about participants' average daily use of Facebook. Facebook time (FBT) included the average amount of time (in minutes) per day participants spent on Facebook. Facebook activities (FBA) included participants' average number of daily logins, status updates, wall posts, and perceived activeness on the site (measured on a 5-point Likert-style scale, 1 = *not at all* to 5 = *very active*). For parsimony, we transformed all Facebook activity items to z-scores, and then computed the mean ($\alpha = .69$).

2.2.3. Facebook photos and wall posts/status updates questionnaire

This qualitative questionnaire contained a series of open-ended questions about participants' Facebook photos and wall posts/status updates. On the questionnaire, we asked participants to (1) select three Facebook photos and wall posts/status updates that best captured who they were, (2) explain the meanings of the content and statements, and (3) provide their reasons as to why such photos and statements were important to them. Our decision to analyze participants' wall posts/status updates for academic disclosure was based on suggestions from prior studies (e.g., Selwyn, 2009).

Table 1

Coding categories and definitions for Facebook wall posts/status updates.

Category	Definition
<i>Academic disclosure</i>	
	Contains explicit references to academically-related activities, roles, responsibilities, expectations, and events (e.g., terms such as studying, exam, term paper, etc.)
<i>Affective states in academic disclosure</i>	
Positive	Contains explicit positive tone (e.g., excitement, optimism)
Negative	Contains explicit negative tone (e.g., anxiety, frustration, pessimism)
Neutral	Contains neither a positive nor a negative affective state

2.3. General procedure

The procedures were approved by the University's Institutional Review Board (# 09-110). Students were recruited through the subject pool. They were asked to sign up for the study and report to the lab to complete the survey via the online survey hosting site, www.surveymonkey.com, for course credit. On the survey, we requested that participants have their Facebook profile open in another "tab," so they could browse through their photos and wall posts/status updates and select three of each that best captured who they were.

2.3.1. Coding scheme and procedure

In order to analyze college students' academic disclosure on Facebook, the first author developed a binary coding scheme (0 = No, 1 = Yes) based on prior research (e.g., Selwyn, 2009), and used a thematic analysis (Joffe, 2011) to search for themes related to academic activities and terms (Table 1). Academic statements were also coded for affective tone (either positive, negative, or neutral). Next, the first author and two research assistants independently coded a random sample comprising 20% of the wall posts/status updates. Since there were no disagreements between the coders, the first author and the research assistants then coded the rest of the wall posts/status updates ($n = 714$) based on participants' explanation for their statements. The kappas for the inter-rater reliability were calculated for each category (positive state, $\kappa = 1.00$; negative state, $\kappa = 1.00$; neutral state, $\kappa = 1.00$), and were in perfect agreement (Viera & Garrett, 2005).

3. Results

3.1. Facebook use

Participants reported spending an average of over two hours and forty minutes per day on Facebook. Female participants reported spending more minutes per day, on average, on Facebook than their male counterparts ($M = 159.61$ vs. $M = 102.31$; $t_{(259)} = -3.28$, $p < .001$). Seventy percent of the participants reported logging into their Facebook profiles at least six times a day, 87% reported updating their status at least twice per day, and 78% reported posting at least four wall posts per day on Facebook.

3.2. Academic disclosure on Facebook

There was a total of 714 wall posts/status updates (13 participants elected not to provide a wall post/status update), and over 14% reflected academic disclosure; approximately 7% reflected positive states, 5% reflected negative states, and nearly 2% reflected neutral states. Though the examples below have been edited in order to protect participants' anonymity and confidentiality, the meaning and essence of participants' responses have been preserved. The sample responses reflect participants' posts and their

meanings/explanations as to why their statements were important to them. Furthermore, to reach a deeper understanding of the meanings participants ascribed to their academic disclosures and affective states, we also provide context for their statements and explanations.

For some of our participants, being a student in college was an important aspect of their self that they shared on their Facebook wall. Some of the wall posts/status updates that participants selected to broadcast their student identity or “update” friends about their whereabouts and location at the University also reflected neutral tones. As a 24-year-old female student posted,

“@ (name of the University)...this means that this is my location for the day... [this is important to me because]... it captures that I am a student, this is who I am.” [female, 24].

“I am studying in the library... [this is important to me because]... it shows who I am and because I am at the stage of my life where I decided to take my education seriously.” [male, 20].

In their wall posts/status updates, participants also expressed their sense of student identity and role transitions, and academic community.

“I miss high school, college is driving me insane... [this is important to me because]... recently I’ve been having a tough time balancing school and my life on the same level. I miss having it so easy in high school.” [female, 20].

““I loved the comment about me making u pass me a test lol that brought back so many memories.=D .. [this is important to me because]... it captures the good times I had in high school with friends.” [female, 23].

“MIDTERMS HERE WE COME!!:(... [this is important to me because]... it shows how hard I have to work this week, and look forward to completing a task and I’m just letting my other peers know that we are in this together!” [female, 19].

“Last day of Spanish Class!:(... [this is important to me because]... describes my Spanish major, my interest in learning Spanish and my love for the class and professor. It also lets me tell my classmates on Facebook that i’m gonna miss them!” [female, 23].

Similarly, students’ wall posts/status updates reflected a sense of school membership, identification, and pride.

“...let’s go (name of the University)... [this is important to me because]... it captures myself buying into the University’s program. For anyone who plays sports, they know that the team must buy into the system and come together in order to be successful. This marked the day i bought in and identified myself as a (name of the University mascot) and true member of the (name of the University) WBB team.” [female, 21].

Time management and studying are critical for success in college, and this was reflected in our participants’ posts. Instances of putting off school work featured prominently in many of our participants’ selections.

“first all-nighter of the quarter! Let’s do work for that mid-term!!! ... [this is important to me because]... it shows that I tend to procrastinate when it comes to school.” [male, 23].

“Got a 10 page paper due @ 4 and I’m only on page 5...ay ay...procrastinating again!!... [this is important to me because]... I am always in my own little world....waiting and waiting thinking time is always on my side....such a procrastinator.” [female, 20].

“yup, gonna be late to class... [this is important to me because]... it shows that I was already lagging getting to class and so I thought I’d document it. I tend to run late even though I allow myself plenty of time to get ready.” [male, 26].

Another participant (female, 23) also described how being on Facebook distracted her from completing a course paper:

“i always procrastinate... [this is important to me because]... it captures who I am in a way, because we [Ref. friend] both procrastinate, and do things last minute. This was for one of our classes and the paper was due the next day. We happened to be on Facebook at the same time we were doing this paper, which distracted us the most.” [female, 23].

Related to studying, participants selected posts that reflected their sense of academic responsibilities, expectations, and negotiations. For instance, a 21-year-old male participant noted:

“studying for midterms... [this is important to me because]... i’m very responsible and i know i need to study to pass my classes.” [male, 21].

“aaahaaa...done with studying!!! Woohoo!! [this is important to me because]... I had just finished 3-days’ worth of studying for an exam, and it shows that I am always doing homework or studying.” [female, 22].

“I just passed up an opportunity for cupcakes to keep studying!! I just died a little inside... It means I chose to study instead of go out with friends to eat a cupcake... [this is important to me because]... I absolutely love pastries, but I also feel school is important, so I bypassed my love for sweets for studying.” [female, 22].

Students’ social networks (e.g., friends, romantic partners, and peers) may play an important role in academic success, and indeed, participants’ posts also reflected this. For example, a 24-year-old female participant chose this post:

“studying with bf ... finals time = crunch time 8]... [this is important to me because]... I value my education so I make sure I do what I need to do to succeed and my boyfriend really helps me with memorizing so I usually study with him.” [female, 24].

“Library... with (name of the friend) :)... [this is important to me because]... I tend to study a lot.” [female, 18].

Another student (female, 20) selected a statement that a friend posted on her Facebook wall that she seemed to identify with. In the statement, the friend referenced school and success, and seemed to reinforce student-role identity, while at the same time expressed kind wishes for her birthday.

“So to the quiet but hardworking and diligent student Happy Birthday ;D I don’t see you around school all too often but I know you’re doing your best and i’m sure that you can take anything that comes your way... I truly wish you many blessings and good fortune on this special day and no matter how many obstacles may come your way i’ll wish for your success and I’ll be happy to help should you need any. I hope that all your dreams and desires come true best wishes and much love :D... [this is important to me because]... I am a hardworking student who enjoys school very much and would rather stay home and study than go out to party on weekends...”. [female, 20].

Exams, term papers, and grades are among the most important elements of students’ academic lives and not surprisingly, they featured prominently in many of our participants’ selections. The students’ responses also reflected some of the academic challenges

they experienced with their course work or on their exams and academic outcomes.

“Gotta study for my bio test tomorrow... [this is important to me because]... even though I go on Facebook and spend some time on there, I do take my school work seriously. It is a priority and I believe this status shows that I work hard and study.” [female, 20].

“Finally finished the toughest 10 pg paper i have ever had to do. Now just have to worry about the presentation... [this is important to me because]... this shows I am a hard working person and Im also in college trying to get an education.” [male, 21].

“I GOT AN A- ON MY MIDTERM :) Someone past their midterm which they didn't expect... [this is important to me because]... this capture me... sometimes I think I did bad on my work but most of the times I do good in my classes.” [female, 19]

“got an A on the first anatomy/physiology midterm... [this is important to me because]... it shows that I try really hard at school :)” [female, 24].

“TOTALLY PASSED OUR MIDTERM :) cheeeeah... [this is important to me because]... I am bragging about getting an A.” [male, 24].

In their academic disclosure, students shared feelings of incompetence, supplication and a plea for moral support as they tackled their studies.

“psychology class is blowing my mind : / need help asap!!!... [this is important to me because]... this captures who i am and because i'm always busy and need help with my class whenever i have a big exam coming up.” [female, 20].

Participants also shared their sense of commitment and accomplishment in their studies on their Facebook wall despite the challenges they faced outside of school/academia.

“I'm so proud of myself. I got straight A's again this quarter despite the fact that my life has flipped upside down. Goes to show that STRENGTH is NOT JUST in numbers, but also in the individual that DOES NOT let himself fall... [this is important to me because]... I believe that I'm a person with a strong character and someone who strives to achieve the best. Also because I believe that even when times are hard, no one should give up.” [female, 22].

Students seemed to employ different strategies to remain motivated, focused, and committed to their studies. For instance, a 22-year-old female participant noted:

“3 more weeks of school left, which is 6 more class days!!! Gotta stay focused, gotta stay focused..... curse senioritis!!!! I am counting down the days of school left for this quarter, but since I graduate this year, I am starting to feel the lag... [this is important to me because]... I always count down the days left in the quarter so that I can keep motivated to stay on task with homework and studying.” [female 22].

For others, taking a break from studies or academically-related mental tasks, and relaxing may be a way to relieve stress and improve productivity and creativity.

“Beautiful Sunday! Last day to chill before studying for midterms... [this is important to me because]... again, I study hard and I need to get good grades in order to feel good, but I am the kind of person that does intellectual stuff during the week and my weekends which start from Fridays, I do not do anything but just chill and relax. There is no way I turn one page of a book on the weekend. Weekends are for me, not for school.” [female, 25].

Some of the wall posts/status updates that reflected students' sense of optimism and a determined effort to overcome some of the academic challenges they faced also reflected positive tones. For example, a 19-year-old female participant posted exuberantly about her grade:

“GUESS WHO GOT A B ON HER BIO EXAM!!! I DID!... [this is important to me because]... I studied really hard in order to improve my grade and it paid off.” [female, 19].

However, participants also expressed their frustration, anxiety, and stress especially when studying for an exam or when undertaking other academically-related activities. The statements were less about supplication or asking friends for help with school work, and more about expressing affective states perhaps to “let off steam” or to garner moral support from friends.

“still working on this paper, i might actually get some sleep tonight though. whoa, that concept seems foreign, lol!... [this is important to me because]... this shows the stress finals put me under.” [female, 21].

“stressing out. I need a break... which probably means a Disneyland trip, asap... [this is important to me because]... I have been stressing out in school lately especially because of classes and course registration. This status captures who I am because I just want to take a break from everything for one day. Disneyland would probably be the best place to take this break since it is the happiest place on earth. It is also convenient since I am a Disneyland Annual Pass Holder.” [female, 23].

Participants' statements also revealed that they frequently used emoticons (e.g., :) or ☺ and :/ or ☹), to express both positive and negative states. Often to amplify their affective states, they used letter repetition, excessive punctuation (e.g., Woohoooo!!!), and capitalization (e.g., I GOT AN A).

3.3. The relation between GPA and Facebook use

To examine the direction of the relation between GPA and Facebook use, we used two path analysis models in AMOS 20.0. We operationalized all variables as measured variables, and evaluated the model fit using the standard model fit criteria: the comparative fit index (CFI), and the root mean square error of approximation (RMSEA): CFI > .95 and RMSEA < .05 (Kline, 2011). We used the mean scores in the path models and included Facebook time (FBT) as a model covariate (Figs. 1 and 2).

In the first model, we estimated direct paths from GPA to Facebook activity (FBA) level. As expected, the resulting model had a good fit to the data, $\chi^2(1) = 1.01$, p ns; CFI = 1.00; NFI = .99; RSMEA = .01 (Fig. 1). GPA negatively predicted Facebook activity level ($\beta = -.12$, $p = .05$), suggesting that those college students with lower GPAs reported engaging in greater levels of activities on Facebook.

In the second model, we estimated direct paths from Facebook activity (FBA) level to GPA. Although Facebook activity levels negatively predicted GPA, the resulting model had a poor fit to the data, $\chi^2(1) = 96.92$, $p < .001$; CFI = .01; RSMEA = .61 (Fig. 2).

3.4. The relation between GPA and academic disclosure of affective states on Facebook

To explore whether students with lower GPAs (2.4 and below) disclosed more negative states compared with students with higher GPAs (2.5 and above), we used an independent t -test analysis ($p = .100$). Compared to students with higher GPAs, those with lower GPAs were more likely to disclose negative affective states in their academic disclosure on Facebook, $t(712) = 1.78$, $p = .075$. We

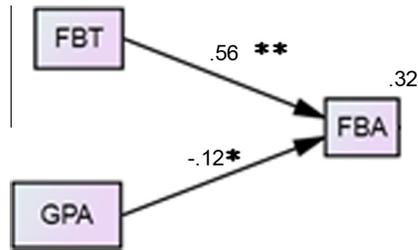


Fig. 1. Direct path model. GPA predicting Facebook activities (FBA); Facebook time (FBT) is controlled for in the model. * $p < .05$, ** $p < .001$.

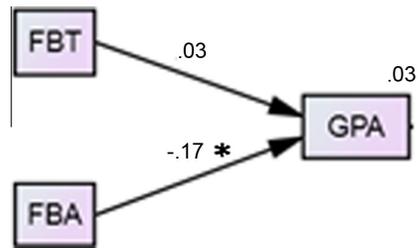


Fig. 2. Direct path model. Facebook activities (FBA) predicting GPA; Facebook time (FBT) is controlled for in the model. * $p < .01$.

found no group differences between GPA and positive affective states in academic disclosure on Facebook. With regard to their academic disclosure, students with lower GPAs chose nine wall posts/status updates that reflected negative affective states, eight that reflected positive affective states, and one that reflected neutral states, whereas students with higher GPAs chose 30 that reflected negative states, 42 that reflected positive states, and 11 that reflected neutral states.

4. Discussion

In this study, we applied a mixed-methods approach to examine how a U.S.-sample of college students utilized their academic disclosure on Facebook to confer meaning to their academic lives, thus reconstructing their offline university experiences on social media. To do this, we qualitatively analyzed participants' Facebook wall posts/status updates for academic disclosure – including academic activities, roles, responsibilities, expectations and events. Additionally, we tested the direction of influence in the relationship between academic performance and Facebook use, and identified the best fitting model.

4.1. Academic disclosure on Facebook

We found that college students reconstructed some of their offline academic experiences on their Facebook wall posts/status updates. The results from our thematic analysis showed that our respondents used their wall posts/status updates to disclose information about their academic selves and lives including their identity as a student and member of the academic community, their engagement in academic activities and their strategies for coping with academic challenges. When self-reflecting on their chosen wall posts/status updates, participants focused on their development, achievements and failures and demonstrated their attempts to disclose these aspects of themselves. The fact that 14% of the wall post or updates chosen by participants in the present study reflected academic disclosure demonstrates that their college life

is a salient part of their identity. We can compare this to Selwyn's (2009) study, which found that only about 4% of British college students' Facebook total posts over an 18-week period reflected academic-related activities. In our study, we did not examine all posts made by students, but instead asked them to choose those which reflected who they were and what was important to them. While 14% is still not a large portion, we must consider that young adults' identities are composed of various aspects and roles, including their personal life, family, ethnic and cultural values, religion, etc. (Subrahmanyam & Šmahel, 2011). Thus, these results demonstrate that academic domain is one of the aspects of identity that are regularly explored and presented by students on social networking sites such as Facebook. More specifically, thematic analysis revealed that some of the statements reflected participants' academic roles and the importance of their engagement in academically-oriented activities. For instance, a 22 year-old female participant expressed on Facebook that she had to, "bypass[ed] my love for sweets for studying," as she "feel[s] school is important". Another example further illustrates this point: a male participant chose to provide the following statement that best captured who he was: "I'm studying at the library. . . [it is important to me because] it shows who I am and because I am at the stage of my life where I decided to take my education seriously". Such a response suggests that students use sites like Facebook to document their sense of student-role identity exploration and to demonstrate their commitment to this aspect of their self. Other students demonstrated similar levels of pride in their student identity by describing their affiliation with their university and broadcasting their academic accomplishments. By making such statements on Facebook, these young adults may be further cultivating and consolidating their student identity by making public declarations to others (Subrahmanyam, 2007).

Another key developmental concern for college-aged young adults is intimacy (Arnett, 2007). Our findings also indicate that college students may share instances of college life with friends and others via Facebook, who might also be in college. Participants explained that sharing information on important academic tasks and events was a way of updating their friends, family members, and others about their school and learning experiences. Such self-disclosure about students' academic experiences may help increase intimacy and social connection with important people in their lives. An important feature of intimacy is disclosure of affective states (Laurenceau, Barrett, & Pietromonaco, 1998), and our analysis showed that students disclosed an array of affective states on Facebook regarding academically-related activities, roles, responsibilities, expectations, and events. In fact, participants' chosen Facebook wall posts/status updates included frequent instances of positive states regarding academically-related activities, followed by negative states, and neutral states. For instance, a 19 year-old female college student expressed her excitement by posting, "GUESS WHO GOT A B ON HER BIO EXAM!!! I DID!". While students expressed their optimism and excitement about completing important tasks (e.g., research proposal papers) successfully, they also shared their frustration and stress as a result of hectic schedules, school requirements and responsibilities. It appeared that our participants were using Facebook to "vent" as well as to broadcast various affective states concerning issues related to academics. Furthermore, such statements may ultimately help them to cope with these difficulties by receiving support from others in response to this disclosure (Valkenburg & Peter, 2011). Interestingly, students also used different strategies (e.g., emoticons, letter repetition) to amplify their affective states online. This is similar to what has been demonstrated in the literature concerning social interactions and emotional bonding in online contexts (e.g., Sherman, Michikyan, & Greenfield, 2013). Thematic analysis of participants' explanations enabled us to bring out the meanings

of college students' online academic disclosure, in a manner not done before. For example, "checking in" (a feature of Facebook) at the University, as one student put it, was a way to show her sense of commitment to school and studies.

4.2. The relation between GPA and Facebook use

Next, we used a path analysis to test the directionality of academic performance and Facebook use, and to provide a model for this relationship. As hypothesized, the model for academic performance predicting Facebook activity level had a good fit. Our results support the assertion that college students' academic performance may determine their Facebook use, rather than the reverse. Specifically, participants with lower GPAs tended to engage in greater levels of activities on Facebook. This result is consistent with other research findings that youths' offline concerns drive their online behavior (Valkenburg & Peter, 2011). It is possible that the only time we will observe trends in the reverse direction (or real-world impact on GPA) is when students engage in substantial levels of activities on Facebook, as this might take away from their study related activities. However, our findings imply that students who are experiencing difficulties at college and who are not fully engaged in their studies may be those who are most likely to turn to Facebook for distraction and entertainment or even to cope with their frustrations. Although this study is cross-sectional and correlational in nature, it does provide a first step in assessing the direction of this relationship, which can be further examined with experimental or longitudinal research. For example, quasi-experimental research could examine the extent to which students who are assigned to online learning communities could use such forums to access greater support and resources to improve their academic performance.

Furthermore, our results demonstrated an inverse relationship between academic performance and Facebook activity level and there was no significant relationship found between academic performance and Facebook time. This suggests that online activities may be a better predictor of academic performance than the amount of time spent since activities reflect more behavioral involvement and may require more active engagement of cognitive resources. Therefore, how college students use their time on social media to engage in different types of activities may be more revealing than the amount of time that they spend on the sites like Facebook. One reason for this may be that time spent on Facebook is not an adequate metric of use, especially for those students who may report being "on-line" most of the time. Such students may not be actively using the site all of the time. Instead, the number of posts they make or online activities may be more reflective of the amount of actual identity and academic explorations they are doing on social media (Junco et al., 2010).

4.3. The relation between GPA and affective states in academic disclosure on Facebook

Overall, students with higher GPAs tended to engage in more academic disclosure than those with lower GPAs. This indicates that students with strong academic performance place greater centrality and pride in their academic identity and wish to demonstrate this identity to others they know in the online context. Our findings also showed that students with lower GPAs were more likely than their counterparts to disclose negative affective states in their academic disclosure on Facebook. It appears that those students who may be having difficulty in college may use Facebook to "vent" about their learning experiences so as to garner moral support from their social networks (Selwyn, 2009). Thus, such students may be using Facebook for coping with the frustrations they are experiencing. Academic disclosure reflecting

negative affective states could also be seen a cry for help from students who are experiencing intense academic and adjustment issues. The use of Facebook to access support and signal distress has been reported by others as well (Egan & Moreno, 2011; Ellison, Steinfield, & Lampe, 2007).

5. Limitations and future directions

The study had a few shortcomings. Perhaps requesting wall posts/status updates specific to college students' academic disclosure might have provided an array of academically-related activities and learning experiences. However, we believe that asking participants for self-relevant Facebook wall posts/status updates as opposed to academically-related posts may have (a) increased the generalizability of the study's findings, (b) helped to capture the importance of school and learning in their self-concepts, and (c) reduced priming effects and social desirability. While we acknowledge that in-depth interviews may be necessary to fully capture the multiplicity of issues related to academic activities on Facebook, we believe that using a qualitative questionnaire offered a glimpse of students' academic disclosure on sites like Facebook, and provided anonymity to share with us topics that may otherwise have been sensitive to discuss in person.

Moreover, self-reported GPA might have increased the likelihood of inaccuracy due to exaggeration and/or selective memory. Thus, using participants' actual GPA (as stated on their transcripts) and additional measures of academic performance such as course grades, scores on their term papers, and exams could perhaps enhance our understanding of the relationship between academic performance and social media use. Moreover, to better understand the role of social media in college students' academic experiences in the U.S., researchers should consider using academic motivation and achievement measures. Furthermore, since students' activities on Facebook play an important role in academic performance, future studies should also explore whether specific types of Facebook activities such as Words with Friends, and Triviador Mundo (knowledge testing trivia battles with strategies) have positive or negative effects on academic outcomes. Finally, longitudinal data are necessary to understand the long term effects of Facebook use on academic outcomes.

6. Implications for student support services

This study provided preliminary evidence that U.S.-based college students use Facebook to disclose their learning experiences, and they express an array of academically-related issues on the site. Importantly, our findings indicate that college students who may be experiencing difficulty in school and may be underperforming (as indicated by lower GPA) use social media to garner support. Therefore, student support services could use sites like Facebook to identify youth who may be at risk for academic problems, while keeping in mind privacy concerns. Based on our results, it may also be possible for educators and mentors to use Facebook with students who are underperforming in college to provide academic and moral support.

College is a time of transition as many students move to different towns, cities and even to different countries. This adjustment period calls for the development of new networks of support. Consistent with our findings on students' academic experiences, it is possible that first-year students, first-generation college students as well as immigrant students may use online sites such as Facebook for academic and adjustment concerns. Therefore, educators and student support services may consider using these online sites to assuage some of these developmental, transitional as well as academic concerns and provide assistance for those students

who may be facing greater challenges in these areas during their adjustment to college life. Research shows that support from mentors, family members, friends, and peers plays an important role in academic success (Syed et al., 2011). Since students' online social networks include people from their offline lives (e.g., family members) (Subrahmanyam et al., 2008), families and friends as well as educators and mentors may use social media to promote academic success. One possibility may be to foster and strengthen learner identities (Lawson, 2014) using sites like Facebook. Finally, since our findings also highlight that ethnic minority youth in the U.S. use Facebook in their academic experiences, educators should consider the use of social media to promote greater academic engagement and identification among ethnic minority youth.

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