How social media use is related to student engagement and creativity: investigating through the lens of intrinsic motivation

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ABSTRACT

Recent research reveals that the social media usage has been rapidly increased in higher education. Yet we know a little about the consequences of social media use among students. The current study is an attempt to understand how and when the use of social media by the students is related to their academic engagement and creativity. We collected the primary data from 267 graduate and undergraduate students enrolled at different universities situated in the Hefei city of the Anhui province of China. Findings reveal that social media use by the students is positively related to their creativity and academic engagement through intrinsic motivation while cyberbullying plays a boundary condition role on these relationships such that the direct and indirect relationships are weak when cyberbullying is higher. Important practical and theoretical implications as well as limitations and directions for future research have been discussed.

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1. Introduction

In the recent era, the utilisation of social media platforms in human life has increased rapidly (Anser et al. 2020; Sugimoto et al. 2017). Social media is being used for a variety of purposes, including messaging, emailing, knowledge sharing, chatting, advertising, buying and selling, booking of airlines and hotels, and studying. In 2019, the number of social media users was 3.84 billion people, and every year this number is increasing at the rate of 9% (“Global Digital Report 2019-We Are Social,” 2019). People think that nowadays, social media does not belong to a particular sector of society, but has become part of the life of everyone, including students (Anser et al. 2020). Students utilise social media for various purposes, such as communication, sharing of ideas, and collaboration (Mäntymäki and Riemer 2016).

The literature on social media reveals that it has become a hot topic of debate among the scholars of social sciences, including the researchers in the area of management information system (MIS). Although a handful of studies have been conducted to explain the reasons for the excessive usage of social media, still literature on the consequences of using social media is limited, especially for higher education students. Taking up this research gap, we attempt to explore the association among use of social media and its positive consequences, for example, academic engagement and creativity.

Researchers argue that an important characteristic of higher education students is creativity (Allina 2018; Richardson and Mishra 2018; Soh 2017) which has become the key characteristic of students and an essential twenty-first-century skill (Chan and Yuen 2014; Robinson 2001; Wagner 2014). Wagner (2014), is of the view that student creativity should be promoted for the reason that creative students think out of the box and present novel solutions to the problems. Researchers have argued that social media utilisation increases the students’ cognitive and creative abilities (Holdgaard and Klastrup 2014; Hu et al. 2017; Sigala and Chalkiti 2015). The engagement of the students is referred to ‘the amount of physical and psychological energy that the student devotes to the academic work’ (Koranteng, Wiafe, and Kuada 2018, 11). The engagement of a student is the passion, concentration, and hope that they reveal during their study (Posner and Posner 2009). Christenson, Reschly, and Wylie (2012) argue that the idea of academic engagement has been grown from students’ attention in the classroom to a full construct that is based on emotional, cognitive, and behavioural parts that further lead to students’
motivation for learning. In this modern age, students’ engagement and creativity are derived from the usage of social media. For instance, social media usage of students may increase the students’ intrinsic motivation leading to the students’ academic engagement and student creativity.

Intrinsic motivation is positively associated with student outcomes (Bempechat and Shernoff 2012; Saeed and Zyngier 2012). Specifically, research has found a positive association of students’ intrinsic motivation with student engagement (Malik et al. 2020; Yu et al. 2019) and creativity (Du et al. 2019; Soh 2017). We believe that student’s intrinsic motivation is positively associated with social media utilisation by students, which, as a result, leads to student engagement & creativity. The theories of motivation guide that the external factors affect individuals’ intrinsic motivation for learning (Garske and Arkes 1982; McAuley, Duncan, and Tammen 1989). In our model, we take student use of social media as a factor that boosts student intrinsic motivation to learn, therefore, facilitating his/her engagement and creativity. Usage of social media by students may motivate them in several ways, for instance, by showing examples of other high achieving students, by providing facilities in terms of easily available study material, and by connecting them with other students working in the same field.

We are trying to make some valuable contributions to the literature on social media by developing and empirically testing our model. For example, we identify whether the utilisation of social media is linked to outcomes, such as student academic engagement and student creativity. Second, we are not only exploring the link concerning the student social media usage and its constructive academic outcomes, but we also describe the mediating mechanism in this relationship in the form of intrinsic motivation. Third, extending our research to examine a comprehensive model on the usage of social media of students, we are investigating cyberbullying as a boundary condition. Cyberbullying is an abusive, threatening, and insulting behaviour of individuals that they adopt while using the internet (Neto and Barbosa 2019). Cyberbullying is a recent concept that has gained a lot of popularity among scholars of information systems. Research studies argue that cyberbullying negatively affects individuals’ outcomes (Kowalski et al. 2016; Whittaker and Kowalski 2015). We believe that cyberbullying may affect the link between student utilisation of social media and intrinsic motivation so that this relationship will be weak for the students who are fronting higher cyberbullying on social media during their academic activities. Investigating cyberbullying as a boundary condition in our model adds value to our research as this helps us to understand the condition in which student utilisation of social media is linked with affirmative outcomes. Figure 1 explains our model;

2. Theory and hypotheses development

2.1. Student use of social media

The tradition of social media in all walks of life has been increased rapidly in the recent years (Anser et al. 2020; Rauniar et al. 2014). Past researches revealed that social media is getting popular among students, and recent researchers have noted the considerable influence of social media utilisation in academia (Friesen and Lowe 2012; Greenhow and Lewin 2016; Malik et al. 2020). Research studies have identified an association in among social media usage and learning (Tarantino, McDonough, and Hua 2013) and students’ academic engagement (Koranteng, Wiafe, and Kuada 2018; Rutherford 2010). Astin (1984, 297) initially presented the concept of student engagement as ‘the amount of physical and psychological energy that the student devotes to the academic experience’. For instance, Kuh (2009) states that student effort and time that a student spends in academic activities to achieve the desired academic results is called student engagement. The student engagement comprises several factors, for example, engaging in the academic experience, interacting with teachers and other fellow students, participating in co-curricular activities (Pascarella and Terenzini 2005), becoming part of a learning community (Almarghani and Mijatovic 2017) and becoming part of student discussions (Cunha, van Kruistum, and van Oers 2016), and sharing of information and ideas (Osatuyi 2013). We believe that social media platforms such as ResearchGate, Academia.edu, LinkedIn, Facebook, etc provide such a learning community to the students, which facilitates their engagement in academic activities. Several other studies have already advocated for the positive impact of technology and social media on the student engagement (Cakir 2013; Chen, Lambert, and Guidry 2010; Schindler et al. 2017). Researchers have found that students with internet access are more involved in classes than those students who have less or no access to social networking sites (Rashid and Asghar 2016). Here we make this hypothesis;

H1a: The usage of social media by students is associated positively with students’ academic engagement

Creativity refers to ‘the interaction among aptitude, process, and the environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context’
Creativity and innovation are considered to be important instruments for scientific progress. García-García, Chulvi, and Royo (2017), suggest that learning enhances individuals’ creativity. The social-media is considered an excellent tool of learning in this modern age (W. M. Al-Rahmi et al. 2018; Lin et al. 2016; Sutherland and Jalali 2017). Hu et al. (2017); Malik et al. (2020) reveal that the student’s utilisation of social media may increase the learners’ creativity in the field of academia. Researchers believe that the exchange of knowledge and networking is the reason why the use of social media enhances individuals’ creativity and innovation. Deng, Wang, and Zhao (2016), argued that environmental factors affect individuals’ creativity. A student’s environment includes his social circle, family, friends, and school climate. Environmental factors can hinder or facilitate students’ creativity. Social media provides a social environment for students of higher education, which may facilitate their creativity. Jahnké, Haertel, and Wildt (2017), are of the view that creativity in the students of higher education has become more relevant in the twenty-first century. Creative students have more curiosity, come up with novel ideas and out of the box solutions. The use of social media allow students to satisfy their curiosity (Thomas and Vinuales 2017). This discussion lead us to understand that social media usage by the students is definitely linked with the student’s creativity. Therefore, we developed a hypothesis that is;

H1b: The usage of social media by students is associated positively with students’ creativity. Intrinsic Motivation as a Mediator

Zhang and Bartol (2010, 111) defined intrinsic motivation as 'the extent to which an individual is inner-directed, is interested in, or fascinated with a task, and engages in it for the sake of the task itself'. Researchers argue that when an individual’s intrinsic motivation is absent, the individual pays less attention to the work because of the lack of interest and enjoyment (Grant and Ashford 2008; Zhang and Bartol 2010). We believe that the utilisation of social media may increase the individual’s intrinsic motivation as social media by students may enhance their interest in academia (W. Al-Rahmi and Othman 2013; Wang, Tchernev, and Solloway 2012). Intrinsic motivation is important for individuals’ performance and work engagement (Hendijani et al. 2016; Skinner and Chi 2012). Researchers believe that high intrinsic motivation in individuals leads them to be engaged and to work creatively (Malik et al. 2020; Tan et al. 2019). Researchers believe that when individuals find interest in their work, they become self-motivated and perform better (Menges et al. 2017). Social involvement theory (Astin 1984) supports our assumption as this theory suggests that there are social factors that increase the involvement of individuals in their work by increasing their interest in that work. Drawing on the assumptions of this theory, we believe that students’ interest in educational activities can be enhanced through the utilisation of social media, which will create more engagement and creativity of students. Past study has also found similar findings – for instance, Kim and Drumwright (2016) argued that social media usage may enhance individuals intrinsic motivation. Hassan-dra, Goudas, and Chroni (2003), believe that the social factors such as media may enhance intrinsic motivation. Malik et al. (2020), identified that the utilisation of social media is connected positively with the intrinsic motivation of students which further leads to higher academic performance. Researchers for instance, Bolkan (2015); Reeve (2012); Saeed and Zyngier (2012) have theorised an affirmative association among intrinsic motivation and academic performance of students. Instead, a
handful of research scholars have also suggested a relationship between students’ intrinsic motivation and innovation and creativity (Gu, He, and Liu 2017; Jaquith 2011; Moneta and Siu 2002). These research highlights motivate us to suppose that intrinsic motivation may play the mediating role in the associations of student social media utilisation and its consequences (e.g. the students’ academic engagement and student creativity). Thus, we draw this hypothesis;

H2a: There is a mediating role of students’ intrinsic motivation in the association between social media usage and student engagement

H2b: There is a mediating role of students’ intrinsic motivation in the association between social media usage and student creativity

2.2. Cyberbullying as a moderator

Rafferty and Vander Ven (2014, 364), described cyber-bullying as ‘repeated unwanted, hurtful, harassing, and or threatening interaction through electronic communication media’. Though technology has resulted in uncountable benefits in our lives, the adverse impact of technology on human life in the form of cyberbullying is a harsh reality. There are severe consequences of cyberbullying, which vary from psychological disorders to suicides (Cénat et al. 2014; Goldman 2010; Schneider et al. 2012). Cyberbullying is harmful for every segment of individuals, but it is particularly critical for students as they are mostly young and become easy victims of bullying on the internet (W. M. Al-Rahmi et al. 2019; Hinduja and Patchin 2017).

Recently, the concept of cyberbullying has gained popularity due to the extensive use of social media (Byrne, Vessey, and Pfeifer 2018; Lowry et al. 2016). Researchers believe that with the rapid growth of social media usage, cyberbullying has been increased, which results in severe psychological problems among the victims (Donoghue and Meltzer 2018; Olenik-Shemesh and Heiman 2017). Research reveals that cyberbullying resulted in social media targeting the students using social media for academic purposes may decrease their intrinsic motivation (Goodboy, Martin, and Goldman 2016). Therefore, the students who are the victims of cyberbullying are supposed to be less motivated, less engaged in study, and less creative. This is possible as researchers, for instance, Raskauskas and Stoltz (2007) suggested that bullies are involved in harassment, mocking, and threatening behaviour, which may harm the intrinsic motivation of a student resulting in less engagement and creativity at his his/her part. Some empirical research studies have also found the negative impact of cyberbullying on student engagement (Cross et al. 2015; Yang et al. 2020) and student innovation and creativity (Kinga et al. 2014; Pérez-Fuentes et al. 2019). Thus this consideration leads us to assume that cyberbullying may moderate the association between social media utilisation by the students and its encouraging results. For instance, relationships will be weak for students who face severe bullying on the social media platform. Therefore, we hypothesised that;

H3a: Cyberbullying moderates the relationship between student use of social media and their intrinsic motivation.

H3b: The is a moderating role of cyberbullying on the association between students’ use of social media and academic engagement through intrinsic motivation

H3b: The is a moderating role of cyberbullying on the association between students’ use of social media and student creativity through intrinsic motivation

3. Methodology

3.1. Procedure and people

The data required for this research were collected through a survey conducted in the Anhui Province of P.R. China. The research population includes the undergraduate and postgraduate students enrolled in the universities of Hefei city. The authors distributed online survey links to the target population through WeChat/email. The data was collected during July 2019 to August 2019 wherein a total of 267 useable responses were collected in a response to 850 delivered questionnaires (31.4% response rate). Of the total 267 participants, 56.92% were female students, 57.30% were in the age group of 21–25 years, and 52.44% were graduate students Table 1.

3.2. Measures

To measure the usage of social media by our respondents, we used a 14-items scale developed by Ali-
Hassan, Nevo, and Wade (2015). The intrinsic motivation of our students was measured with a four-item scale developed by Jaramillo et al. (2007). A six-items scale from the studies of Zhang and Bartol (2010) and Meng, Tan, and Li (2017) was used for measuring student creativity in our research. To measure student engagement we used a six-item scale developed by Stearns et al. (2007). Cyberbullying was assessed with a three items scale developed by Lacey and Cornell (2013). All these questions were designed on a five-point Likert scale where 1= Strongly disagree and 5= strongly agree. The values of cornbach’s alpha as reported in Table 2 for all scales are higher than the minimum acceptable value of 0.70.

### 4. Analysis and results

#### 4.1. Validity and reliability

To establish construct validity, factor loadings of all the items of the variables of our study were computed. Results reported in our Table 2 reveal that the item loading are higher than the threshold value of 0.60 as recommended by Hair et al. (2017). For establishing the convergent validity of our model, we examined composite reliability (CR), average variance extracted (AVE), and Cronbach alpha (CA), of all the constructs. Results indicate that CR and CA of all the constructs were higher than the threshold value of 0.70, and AVE values were higher than the threshold value of 0.50 as recommended by past studies (Fornell and Larcker 1981; Hair et al. 2016; Nunnally and Bernstein 1978).

To examine the discriminant validity, we followed the procedure recommended by Fornell and Larcker (1981). We checked the square root values of the AVE of all the constructs with their inter-correlations. Table 3 reports that the correlation values of all the constructs with their inter-correlations.

| Variable Name                  | Loadings   | CA      | CR      | AVE   |
|-------------------------------|------------|---------|---------|-------|
| Social Media Usage            | 0.581-0.873| 0.76    | 0.94    | 0.71  |
| Intrinsic Motivation          | 0.538-0.814| 0.81    | 0.87    | 0.68  |
| Student Creativity            | 0.751-0.953| 0.82    | 0.91    | 0.82  |
| Cyber bullying                | 0.841-0.915| 0.88    | 0.89    | 0.76  |
| Student Engagement            | 0.841-0.881| 0.90    | 0.91    | 0.83  |

Note: Loadings:= Factor Loading, CA = Cronbach’s alpha; CR = composite reliability; AVE = average variance extracted.

Since all answers in our data we self-reported, we took several measures to avoid common method variance (CMV) in our data. For instance as a procedural remedy following the recommendations of Podsakoff, MacKenzie, and Podsakoff (2012), we ensured our participants about the maintenance of their anonymity and about the confidentiality of the information provided by them. We then applied Herman single factor test to assess the possible threat of CMV in our study (Podsakoff, MacKenzie, and Podsakoff 2012). Results indicate that the first factor has a value of 32.8%, therefore there is no such issue of CMV.

#### 4.2. Descriptive statistics

Table 3 reports the values of descriptive statistics and inter-correlations. These values have provided us a preliminary support to our hypothesised relationships.

#### 4.3. Hypotheses testing

We tested our hypotheses utilising SPSS PROCESS macros. Results reported in Table 4 reveal that the usage of social media by students is positively associated with students’ intrinsic motivation ($B = 0.036$, $t = 4.72$, and $p < 0.001$), students’ creativity ($B = 0.13$, $t = 2.11$, and $p < 0.05$), and students’ engagement in academia ($B = 0.14$, $t = 2.25$, and $p < 0.05$), supporting our hypotheses H1a and H1b. The results further show that students’ intrinsic motivation mediates the relationship between the usage of social media by students and students’ engagement (effect $= .081$, se $= .01$, LLCI: 0.076, ULCI: 0.094), and creativity (effect $= .018$, se $= .01$, LLCI: 0.017, ULCI: 0.045), supporting our hypotheses, H2a, and H2b.

Our results further reveal that cyberbullying is negatively associated with students’ engagement in academia ($B = −0.11$, $t = −2.08$, and $p < 0.01$) and the interaction term between students’ use of social media and Cyberbullying is significant ($B = −0.18$, $t = −3.35$, and $p < .001$), thereby supporting our H3a. These results validate the moderating role of Cyberbullying on the association between usage of social media usage by students and students’ intrinsic motivation.

We also performed the moderated mediation analyses using PROCESS macros in SPSS. To analyse the conditional indirect effects of students’ use of social media on student engagement and student creativity through students’ intrinsic motivation, we examined Cyberbullying across the levels (i.e. at 1 SD above the mean, and at 1 SD below the mean). Table 5 indicates that the indirect effect of students’ use of social media on student engagement is weak at +1SD (effect $= −0.01$, LLCI: $−0.052$, ULCI: $−0.002$) that when it is at −1SD (effect $= −0.04$, LLCI: $−0.118$, ULCI: $−0.006$). The indirect effect of the usage of social media by students on creativity is weak at higher level of
cyberbullying, i.e. when it is at +1SD (effect = −0.01, LLCI: −0.056, ULCI: −0.002) than at lower level of cyberbullying, i.e. when it is at −1SD (effect = −0.05, LLCI: −0.124, ULCI: −0.005). These results have supported our moderated mediation hypotheses 3b and 3c.

We also plotted a graphical diagram to understand the moderating role of Cyberbullying on the relationship between students’ use of social media and students’ intrinsic motivation. Figure 2 reveals that the relationship between students’ use of social media and students’ intrinsic motivation is weaker at the higher level of Cyberbullying.

5. Discussion

The current research was intended to answer the questions, whether, how, and when the student’s social media utilisation is related to their creativity and engagement in academia. The findings reveal a positive link among social media utilisation and the engagement and creativity of higher education students. The results of this study further reveal that intrinsic motivation intermediates the association among students’ utilisation of social media and its outcomes, for example, students’ engagement and creativity. Moreover, we found cyberbullying as a boundary condition variable in our model. Our results reveal that the link between the utilisation of social media and its positive outcomes through intrinsic motivation is weak for students who are fronting higher bullying on the internet. Our results are in line with student involvement theory (Astin 1984) and recent research, which has shown an association among social media utilisation by the students and its positive consequences, such as student creativity and academic performance (Malik et al. 2020) and engagement (Junco 2012).

The findings of this research are noteworthy in the field of information system research and in the literature on education and social media as per our identification of positive association between the usage of social media by students and academic engagement and creativity. The results of research show that in this digital age, social media utilisation by students is an essential driver of creativity and engagement in academic activities. Our research does not only establish a relationship among the use of social media and its better and positive outcomes, but it also highlights the underlying psychological mechanism in these relationships in the form of intrinsic motivation. This research elucidates that the students’ social media utilisation for the purposes of learning leads to higher intrinsic motivation, which is consequently related to the engagement and creativity of learners in academia. Our findings are similar to the past research showing the utilisation of social media is related to positive student outcomes, e.g. student communication (Ruleman 2012), performance (Malik et al. 2020), the exchange of ideas (Ahmed et al. 2019) and motivation (Malik et al. 2020). Student motivation is an important factor that enhances student engagement (Martin 2007) and creativity (Hennessey

### Table 3. Means, standard deviation, and correlations.

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------|---|----|---|---|---|---|---|---|---|
| Age      | NA | NA | 1 |   |   |   |   |   |   |
| Gender   | NA | NA |   | 1 |   |   |   |   |   |
| Education Level | NA | NA |   |   | 1 |   |   |   |   |
| Social Media Usage | 2.99 | 0.69 |   |   |   | 1 |   |   |   |
| Intrinsic Motivation | 3.43 | 1.03 |   |   |   |   | 1 |   |   |
| Student Engagement | 3.71 | 0.81 |   |   |   |   |   | 1 |   |
| Student Creativity | 3.48 | 0.66 |   |   |   |   |   |   | 1 |
| Cyberbullying | 3.87 | 0.74 |   |   |   |   |   |   |   |

Note: N = 267, *p<0.05, **p<0.01, M = mean; SD = standard deviation. Values in bold and italic are square root of AVEs.

Table 4. Regression results.

| Independent variable | Mediator | Dependent variables |  |  |  |  |  |  |
|----------------------|----------|---------------------|---|---|---|---|---|---|
|                      | Intrinsic motivation | Student engagement | Student creativity |
|                      | B         | SE       | t       | R²   | B   | SE       | t       | R²   |
| Constant             | 3.15      | 0.41     | 7.68    | 0.28 | 2.89 | 0.32     | 9.01*** | 0.48 | 3.05 | 0.35     | 8.68** | 0.29 |
| Intrinsic Motivation | 0.31      | 0.08     | 4.22**  | 0.35 | 0.06 | 3.83*    | 0.09    | 0.05 | 2.08* |
| Social Media Usage   | 0.32      | 0.04     | −7.12***| 0.14 | 0.07 | 2.03*    | 0.061   | 0.01 | 0.051 | 0.074  | 0.029 | 0.01 | 0.009 |
| Cyberbullying        | −0.29     | 0.04     | −4.32** | 0.14 | 0.07 | 2.03*    | 0.061   | 0.01 | 0.051 | 0.074  | 0.029 | 0.01 | 0.009 |

Note: Unstandardised regression coefficients are shown; Bootstrap sample size = 5000; LLCI = Bias corrected lower limit confidence interval; ULCI = Bias corrected upper limit confidence interval; Significant at: *p < 0.05; **p < 0.01; and ***p < .001.
tutions, teachers, students, and parents should realise the positive application of social media in academia and should encourage the students to utilise the platforms of social media, say Researchgate, Scribd, LinkedIn, Academia.edu, etc. The utilisation of social media can increase intrinsic motivation of students, which is subsequently associated with students’ engagement and creativity. Our findings suggest that relevant stakeholders should recognise the usefulness of social media, which is linked positively with students’ intrinsic motivation. Thus, a higher intrinsic motivation is not only associated with the engagement of students and the creativity, but the previous finding have shown the relationship between students’ intrinsic motivation and many other positive outcomes such as students achievements (Griffin 2016) and students success (Augustyniak et al. 2016).

Our findings further highlight that though the social media usage by the students is connected positively to student creativity, and the engagement but these relationships are weak when students face cyberbullying. The finding implies that the students, teachers, and academic institutes need to find out the ways of how to avoid cyberbullying. Students should be careful of bullies and their negative role and impact during academic activities in social media. On the other hand, institutes can specifically arrange training for students to avoid bullying on social media. Institutions, in particular, teach their students to use the latest, popular, and social media tools that can enhance their intrinsic motivation in academic activities. Workshops, conferences, and seminars can be arranged for this specific purpose of learning the effective utilisation of social media. Tools like bully tracer software and other similar practices can also be used to avoid cyberbullying when using social media for academic purposes. Similarly, governments can play a prominent and significant role in reducing the amount and frequency of cyberbullying.

### 5.1. Practical implications

Our research has some practical contributions for academicians, students, and the general public. First, our results highlight the significance of technology, such as the benefits of social media in education. In particular, it tells us that the utility of social media shouldn’t only be considered for recreational purposes but it has several other benefits in academia as it increases the engagement and creativity of learners in academic activities. This study suggests that educational institutions, teachers, students, and parents should realise the positive application of social media in academia and should encourage the students to utilise the platforms of social media, say Researchgate, Scribd, LinkedIn, Academia.edu, etc. The utilisation of social media can increase intrinsic motivation of students, which is subsequently associated with students’ engagement and creativity. Our findings suggest that relevant stakeholders should recognise the usefulness of social media, which is linked positively with students’ intrinsic motivation. Thus, a higher intrinsic motivation is not only associated with the engagement of students and the creativity, but the previous finding have shown the relationship between students’ intrinsic motivation and many other positive outcomes such as students achievements (Griffin 2016) and students success (Augustyniak et al. 2016).

### 5.2. Limitations and future directions

Our findings should be seen in the light of its limitations. For example, our study used the cross-sectional research design, which has a threat of common method variance (CMV). We have taken procedural remedies such as keeping the confidentiality and anonymity of respondents and statistically testing to ensure that there is no such issue of CMV. However still, we believe that a longitudinal research design or an experimental laboratory study may enhance the validity of testing our model. Second, our model tested intrinsic motivation as a mediating variable between the association of social media utilisation by the students and its optimistic outcomes. Future scholars can find alternative

| Dependent variable creativity | Effect | SE | LLCI | ULCI |
|------------------------------|-------|----|------|------|
| −1 (Low)                     | 0.025 | 0.05 | 0.14 | 0.06 |
| +1 (High)                    | 0.022 | 0.03 | 0.013 | 0.044 |

| Dependent variable Engagement | Effect | SE | LLCI | ULCI |
|-------------------------------|-------|----|------|------|
| −1 (Low)                      | 0.08  | 0.19 | 0.057 | 0.023 |
| +1 (High)                     | 0.07  | 0.13 | 0.036 | 0.153 |

Note: Unstandardised regression coefficients are shown; LLCI = 95% Bias corrected lower limit confidence interval; ULCI = 95% Bias corrected upper limit confidence interval.
explanations for this relationship. For example, students’ self-efficacy may be one reason why students’ utilisation of social media is allied with positive results in academia. Third, future researchers can explore other ultimate outcomes of social media usage by students, such as well-being and career exploration. Fourth, we tested cyberbullying as the boundary condition in our model; future researchers can identify some other moderating variables in this model. A moderating variable at the second stage of our model can be of great value. Finally, as we conducted our study in a single country (a collectivistic culture), testing of our model in other contexts, countries, and cultures can generate different findings. Future researchers can, therefore, test our model in other countries and regions of the world with different cultures. Particularly testing in an individualistic culture will be of great interest.

6. Conclusion

Students’ intrinsic motivation in academia is an important factor which helps them to be academically engaged and creative. Our study found that student use of social media is positively related with students’ intrinsic motivation which is subsequently related to students’ engagement and students’ creativity in academia. This is an important finding in the era of digital technologies which helps us to understand why and how social media use by students is related to their academic engagement and creativity. In addition, we investigate cyberbullying as phenomena which play the boundary condition role on the association between student use of social media and its positive outcomes. The findings of our study inform that students’ use of social media is associated with positive study outcomes (such as intrinsic motivation, students engagement, and student creativity) only when students experience less cyberbullying on social media. Highlighting cyberbullying as phenomena which can harm the relationship between usage of social media by students and its positive academic outcomes, our study has thus contributed substantially to the literature on social media usage and cyberbullying.

Disclosure statement
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