



## Social Media Addiction and Academic Adjustment: The Mediating or Moderating Effect of Grit Personality

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### ARTICLE INFO

#### Article History:

Received 18.02.2020

Received in revised form

16.06.2020

Accepted 11.06.2020

Available online

12.09.2020

### ABSTRACT

The high attrition rate among Malaysian tertiary students have drawn the attention of educators and policy makers, and poor academic adjustment is regarded as one of the factors. Therefore, it is important to find out factors that are relevant to their poor academic adjustment so that intervention programs can be designed to improve their adjustment. Social media addiction and the grit personality have found to be significant factors that affect academic performance. However, it is not clear how the three variables interact with each other. Accordingly, this study adopts the essentialist and contextual perspectives to examine the relationships among these three variables, especially whether grit is a mediator or moderate for the relationship. 210 undergraduates were recruited by using the purposive sampling method and were asked to fill in a questionnaire. Partial Least Squares Structural Equation Modelling was used to analyze the data. The results showed that social media addiction is negatively associated with grit personality and academic adjustment, and grit is positively associated with academic adjustment. In addition, grit is a statistical mediator rather than a statistical moderator for the effect of social media addiction on academic lifestyle. The findings support the contextual perspective on personality that grit personality is a state that can be changed by certain social context. The findings reveal the importance of providing a positive social context for tertiary students who are undergoing a transition period, so that their grit personality can be developed and thus enhance their academic adjustment.

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#### Keywords:

academic adjustment, social media addiction, grit, tertiary education, Malaysia

### 1. Introduction

Poor academic adjustment has been found to be an important factor that is relevant to the high attrition rate among Malaysian tertiary students, and poor academic adjustment is also found to be relevant to the social media addiction and grit personality. However, it is not clear whether the relationship between social media addiction and academic adjustment are moderated or mediated by grit personality. If grit is a mediator, it indicates the grit level can be affected by the external environment. Therefore, it will be important to create a supportive environment to improve the grit level of tertiary students, so that their academic adjustment can be improved. If grit is a moderator, it indicates different levels of grit personality can be interacted with social media addiction. Therefore, it is important to focus on students with lower levels of grit to assist them to reduce their addiction on social media, so that their academic adjustment can be improved.

The number of students enrolled in tertiary education in Malaysia has increased from 277 185 in 2003 to 373 209 in 2013 (Malaysia Ministry of Higher Education, 2015). Nonetheless, it is estimated that 3000 out of 168 000 college students who pursued their studies for certificate and diploma would not be able to graduate, and only 83000 out of 100000 students who went for their degree program are able to finish their program (Lajjun,

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<http://dx.doi.org/10.17220/ijpes.2020.03.013>

2012). In other words, the dropout rate of tertiary undergraduates in Malaysia is about 17.5% (Govindarajo & Kumar, as cited in Ang, Lee, & Dipolog-Ubanan, 2019) and thus drawn the attention from educators and policy makers.

The high attrition rate among tertiary students can be attributed to their problems in academic adjustment (Baker, 2004). Academic adjustment is known as the ability of an individual to maintain positive interactions with an academic setting, as well as being able to cope with the requirements and demands of the academic setting to achieve academic success (van Rooij, Jansen, & van de Grift, 2018). Academic adjustment involves three dimensions: academic lifestyle, academic motivation and academic achievement. The academic lifestyle is about the discrepancy between the role as a student and individual, the academic achievement is about the level of satisfaction on academic progress and performance, and academic motivation is the strength of motivation to continue and complete the academic study (Anderson, Guan, & Koc, 2016).

Studies have been conducted to find out the factors that are associated with poor academic adjustment. Van Rooij et al. (2018) proposed a conceptual framework to examine the effects of motivation and behavioral factors on academic adjustment. They recruit 243 first year undergraduates in the Netherlands to fill in a questionnaire, and they found that intrinsic motivation, degree program satisfaction and self-regulatory study behaviors are positively associated with academic adjustment.

Similar to self-regulation, grit personality has also found to be a factor that relevant to academic adjustment in university. Duckworth, Peterson, Matthews and Kelly (2007) define grit as a positive personality that is based upon an individual's passion for his or her long-term goals and perseverance. They characterize gritty individuals by their capacity to withhold against challenges and to put in as much effort as possible to overcome different challenges, but still able to maintain interests, passion and the amount of effort into a task despite failing many times.

Studies found that grittier students are more likely to remain successfully in school, to have higher academic performance and academic satisfaction, and graduate from their high school (Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Siah, Ong, Tan, Sim, & Thoo, 2018). Eskreis-Winkler et al. (2014) conducted a study by recruiting 4813 high school juniors from public schools in Chicago to fill in a self-report questionnaire. They found that grit is a significant predictor for the retention in high schools, even after controlling the school motivation, academic conscientiousness perceived supports from schools, teachers, parents and peers, standardized achievement tests, and some demographic information. Siah et al., (2018) conducted a survey by recruiting 400 undergraduates from Malaysia. Their results also found that grit is positively associated with Grade point average and Cumulative Grade point average. In addition, Siah et al (2019) recruit 430 undergraduates from Malaysia also found that grit is negatively associated with academic procrastination.

Besides personality, addiction on the internet has also been found to be associated with poor academic adjustment and performance (Lepp, Barkley, & Karpinski, 2014). Social media or social networks are websites or software where people create profiles and can access through various platforms and devices for various social activities such as file sharing, chatting, online gaming, etc. (Bányai et al., 2017). According to a report from Malaysian Communications and Multimedia Commission (2018), visiting social networking platforms were the most common activities for Internet users, and the most popular communication and social networking platforms are WhatsApp and Facebook. In addition, about half of internet users are adults in their 20's and 30's. Among full time students, 70.7% currently enrolled in college.

The reasons that undergraduates are more likely to become addicted to social media can be because the internet offers users high autonomy, opportunities for identity exploration, and a space free of parental control, and thus undergraduates found that the internet is highly appealing (Reinecke et al., 2018). In addition, undergraduates are under the transition period that they need to explore and develop their own identity, and they are more likely to be attracted by pleasurable experience brought by the social media that provides immediate gratifications, such as playing games and watching videos (Thatcher, Wretschko, & Fridjhon, 2008).

Studies found that social media addiction is related to the personality of undergraduates. Social media addiction is an addiction that stems from the excessive usage of social media websites like Facebook, Instagram and Twitter, and people with this addiction is hard to control their urge to use the social media (Hou, Xiong,

Jiang, Song, & Wang, 2019). Adolescents and young adults who are high in self-control are less vulnerable to the risk of addiction while compared to other age groups (Ni, Qian, & Wang, 2017). Similar to self-control, grittier individuals have also found to be less addicted to internet and mobile phone addiction (Maddi et al., 2013; Siah, 2016; Siah et al., 2019). Maddi et al. (2013) recruited 425 undergraduates at a public university in California to complete a survey study, they found that grit is negative correlated with problematic internet usage. Also, Siah (2016) recruited 214 undergraduates at a university in Malaysia to complete a survey study. He also found a negative association between grit and mobile phone addiction. Moreover, Siah et al. (2019) recruited 430 undergraduates at a university in Malaysia to complete a survey study, they also found a negative association between grit and internet addiction.

### **1.1 Research Aims**

Even though studies have shown the associations among grit, internet addiction and academic adjustment, in our knowledge, no study has been conducted to examine the mechanism among these three variables. Chaplin (2007) proposed a mediator and moderator model to understand the possible roles played by personality in a relationship, whether personality is a mediator or a moderator for the relationship between variables. The mediator and moderator models are conceptually similar to the essentialist and contextualist perspectives on personality that proposed by Caspi et al. and Specht et al. (Caspi, Roberts, & Shiner, 2005; Specht, Egloff, & Schmukle, 2011).

The essentialist perspective on personality claims that personality is a genetic trait that is stable and difficult to be changed, so personality is more likely to play the role as a moderator, and thus studies adopt this perspective concern on how different personalities interact with each other or how personality and situation interact with each other and thus create certain psychological outcomes (Caspi et al., 2005; Chaplin, 2007; Specht et al., 2011). Based on this perspective, we expected that grit is a moderator for the effects on social media addiction on academic adjustment.

However, the contextualist perspective on personality claims that personality is a state that is possible to change due to the rapid physical, cognitive, and social changes, so personality is more likely to play the role as a mediator, and thus studies adopt this perspective concerns on the issue of why a relationship occurs (Caspi et al., 2005; Chaplin, 2007; Specht et al., 2011). Based on this perspective, we expected that social media addiction among undergraduates would affect their grit level and thus affect their academic adjustment.

The hypotheses of this study are as follows:

H1: social media addiction is negatively associated with academic adjustment

H2: grit is positively associated with academic adjustment

H3: social media addiction is negatively associated with grit

H4: grit is a moderator for the effect of social media addiction on academic adjustment.

H5: grit is a mediator for the effect of social media addiction on academic adjustment.

The conceptual framework is shown in Fig 1.

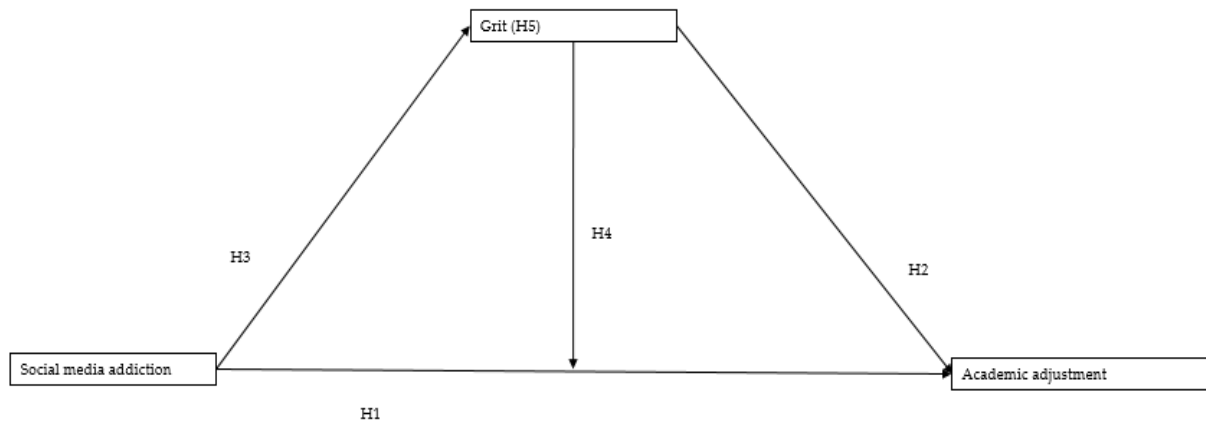


Fig 1. Conceptual framework

## 2. Method

### 2.1. Participants

A total of 225 questionnaires were distributed to undergraduates at a university. As 15 questionnaires are incomplete, so the valid questionnaire is 210 and the response rate is 93.33%. This sample size is larger than the priori power analysis by G\*power program which indicates that a sample size of 77 would be sufficient when there are three predictors, with a power of 0.8, an alpha of 0.05 and a medium effect size. Among the participants, 60.95% were females and their mean of age was 15.09 (SD = 1.65).

### 2.2. Instruments

A questionnaire was designed. On the cover page: an introduction of the purpose of the study, information about confidentiality, and their right of not participating was given. After that, participants were asked to fill in their demographic information and three measurements.

#### 2.2.1. Demographic Information

In this section, participants were asked to fill in their gender and age.

#### 2.2.2. Academic Adjustment Scale

This academic adjustment scale consists of nine items (Anderson et al., 2016). Participants were asked to tick a number to indicate the extent that each item applies to them (1 = rarely applies to me to 5 = always applies to me). The sample items are 'I am enjoying the lifestyle of being a university student' and 'I am satisfied with my ability to learn at university'. The test-retest reliability is .72, and the academic adjustment scale is also found to be significant correlated with the college adjustment test and the academic motivation scale.

#### 2.2.3. Social Media Addiction Scale (SMAS) – Student Form (SF)

This SMAS-SF consists of 29 items (Sahin, 2018). Participants were asked to tick a box to indicate the extent that they agreed with each item (1= strongly disagree to 5 = strongly agree). Examples of the items are "A life without social media becomes meaningless for me" and "I notice that my productivity has diminished due to social media". The internal consistency coefficient was .93 and the construct validity was also supported by the confirmatory factor analysis.

#### 2.2.4. Short Grit Scale (Grit-S)

This scale consists of eight items (Duckworth & Quinn, 2009). Four items are reversed. Participants were asked to tick a box to indicate the extent that each item describes them well (1 = very much like me and 5 = not like me at all). Sample items are 'I have achieved a goal that took years of work' and "my interests change from

year to year". The internal consistency ranges from .73 to .83 across four different samples, and the construct validity was also supported by the confirmatory factor analysis.

### 2.3. Procedure

After getting approval from the Ethical and Scientific Committee of the university, the questionnaires were distributed to undergraduates at a university using the purposive sampling method. Purposive sampling is a type of non-probability sampling method where the sample selection is based on the fit of the sample for the purpose of the study with special inclusion and exclusion criteria (Daniel, 2011). In this study, the criterion of sample is that the participants should be undergraduates. Undergraduates were approached at different locations at the university that most undergraduates can be found, including the library and cafeterias. Students are approached and the aims of the survey were introduced first, and then their consent to answer the questionnaire were asked. Those who agreed to fill in the questionnaire were then informed of their right of withdrawal from the study anytime they want to and the confidentiality of the data. The questionnaire was collected after they completed the survey. The whole process took about 10 to 15 minutes.

### 2.4. Data analysis

The data was keyed in an excel file. Partial Least Square Structural Equation Modelling was analyzed by SmartPLS program (version 3). At the first stage, the measurement model assessment was conducted to examine the reliability and validity of the measurements. The construct reliability and discriminate validity of all measurements were examined first, and followed by examining any collinearity issue among the measurements. The structural model assessment was then run to examine the path coefficients based on the conceptual framework.

## 3. Results

### 3.1. Measurement Model

#### 3.1.1. Construct Reliability and Discriminant Validity

The composite reliability values of all the three measurements are .79 for academic adjustment, .82 for grit and .89 for social media addiction. All values are exceeded the recommended value of .7 (Hair Jr, Hult, Ringle, & Sarstedt, 2016). Accordingly, the findings suggested that the constructs reliability are acceptable. In addition, the discriminant validity of all measurements are also acceptable as the heterotrait-monotrait ratios of all results are below the critical values of .85 (Henseler, Ringle, & Sarstedt, 2015); .68 for academic adjustment and grit, .45 for academic adjustment and social media addiction, and .43 for grit and social media addiction.

#### 3.1.2. Coefficient of Determination, Effect Size and Collinearity Statistics of Measurements

The results of the analyses were shown in Table 1. No collinearity issue was found as the variance inflation factor of all scales were also below 5 (Hadi, Abdullah, & Sentosa, 2016). Both grit and social media addiction explain 32.5% of the total variance of academic adjustment, which is a large effect size. In addition, social media addiction has a moderate effect size on grit,  $f^2 = .18$ , and grit has a large effect size on academic adjustment,  $f^2 = .25$ .

**Table 1.** Coefficient of Determination ( $r^2$ ), Effect Size ( $f^2$ ) and Collinearity Statistics ( $VIF$ ) of Measurements

Dependent variables	Predictors	$r^2$	$f^2$	$VIF$
Grit		.15		
	Social media addiction		.18	1.00
Academic adjustment		.33		
	Social media addiction		.06	1.18
	Grit		.25	1.29
	Grit x social media addition		.02	1.09

### 3.2. Structure Model

As shown in Table 2, after controlling gender and age, social media addiction not only affects grit level but also academic adjustment,  $ps < .01$ . In addition, grit also affects academic adjustment,  $p < .001$ . The results failed to reject the hypotheses one, two and three.

**Table 2.** Path coefficients of all measurements

	Hypotheses	Beta	SE	T values	P Values
<b><u>Direct effect</u></b>					
Social media addiction → Academic adjustment	H1	-0.23	.07	3.37	.001
Grit → Academic adjustment	H2	0.47	.07	7.17	< .001
Social media addiction → Grit	H3	-0.39	.07	5.73	< .001
<b><u>Control variable</u></b>					
Age → academic adjustment		-0.06	.07	0.94	.349
Gender → academic adjustment		-0.01	.07	0.01	.990
<b><u>Moderating effect</u></b>					
Social media addiction x Grit → Academic adjustment	H4	0.09	.05	1.77	.077
<b><u>Mediating effect</u></b>					
Social media addiction → Grit → Academic adjustment	H5	-0.18	.04	4.37	< .001

### 3.3. Mediating and Moderating Effects

As shown in Table 2, the specific indirect effect indicated that grit is the statistical mediator for the effect of social media addiction on academic adjustment,  $p < .001$ . Following the decision tree from Zhao (2010), the results indicate a complementary mediation as the direct effect of social media addiction on academic adjustment is also significant,  $p = .001$ . Therefore, the contextualist or the mediator model is supported. However, as the interaction effect between social media addiction and grit on academic adjustment is not significant,  $p = .077$ , and also has a small effect size on academic adjustment ( $f^2 = .02$ ). Therefore, the essentialist or the moderator model is not supported.

## 4. Discussion

Poor academic adjustment has found to be a factor that is relevant to the high attrition rate in tertiary education, it is therefore important to find out factors that are relevant to their poor academic adjustment. Studies found that both social media addiction and grit personality have a significant relationship with academic adjustment, and grit has a significant relationship with internet and mobile addiction. Nonetheless, the relationships among the three variables have not been examined. This study aims to adopt the existential and contextual approaches to examine this issue. Based on the existential approach, it is expected that grit is a moderator for the effects of social media addiction on academic adjustment. However, based on the contextualist approach, it is expected that grit is a mediator for the effects of social media addiction on academic adjustment.

Firstly, the results found that social media addiction is negatively associated with academic adjustment but grit is positively associated with academic adjustment. The results are not surprising as they are consistent with the findings from other studies which found that internet addiction and mobile phone addiction affect

academic adjustment of students (Maddi et al., 2013; Siah, 2016), and also a meta study which conclude that grit has a strong positive relationship with academic performance (Credé et al., 2017).

Secondly, the results support the mediator model rather than the moderator model to understand the roles played by grit personality in the relationships between social media addiction and academic adjustment. In other words, grit personality can be changed by the social context instead of a state that is not changeable.

It could be because undergraduates experience a transitional period and thus increase their chance of depending on social media to cope with their problems. The frequent use of social media would reduce undergraduates' grit level to pursue their long-term goal and hence create more difficulty in academic adjustment. These findings are consistent with the contextual perspective on personality that indicates that a personality is a state that can be changed in certain social context.

## 5. Limitation

However, the interpretation of the findings should be cautions. Since only undergraduates from a university are recruited, the findings may not be able to generalize to all undergraduates. More studies with different populations are required to examine the robustness of the finding. In addition, as cross-sectional design is used in this study and all variables are simultaneously assessed, it is important to be aware of the predictive limitations and future study may consider to use a longitudinal design to examine the cause and effect relationship.

## 6. Conclusion

The results are alarming as many undergraduates face the social context that make them easily be addicted to internet for the pleasure of getting immediate gratification, as many of them have just left their homes and stayed with friends or alone, so they are easily use the social media as a way to cope with their loneliness, personal relationships and stress (Reinecke et al., 2018). Accordingly, it is important for educators and policy makers to provide undergraduates a supportive ecology context to assist them to undergo a transitional period of life (Tezci, Sezer, Gurgan, & Aktan, 2015). A supportive environment in the university, such as providing university accommodation so that tertiary students can stay in the campus with proper guidance and arranging more activities for students to spend their time in, not only would enhance undergraduates' passion and motivation to study well, but also would improve the development of their positive personality. With strategies to encourage students to engage in more activities that are positive for their development may able to prevent their addiction in social media.

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