Efficacy, expectancy, or the sense of mattering? Academic procrastination in online study

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Article Info	ABSTRACT
	Past studies reported that academic procrastination (AP) was contingent upon students' educational self-efficacy (ASE) and the expectancy-value belief (EV), which were developed through social interaction. When teaching and learning in most universities were altered into online learning (OL) during the pandemic, students' social interaction was more inclined toward online communication, especially through social networking sites (SNS); a phenomenon that has been reported to alter their sense of societal mattering (SM), the sense that they matter to the society. We hypothesized that SM moderates the mediation of EV on the association between ASE and AP. We purposively recruited 361 university students who must study fully online from home during the outbreak and asked them to respond to the designated scales. The bootstrap analysis with 5,000 samples and a 95% confidence interval showed that the moderated mediation hypothesis was supported. Students who believe that they can perform well tend to value their tasks higher, and therefore had a lower rate of procrastination. However, this mediation did not occur among students who do not think that they matter enough to the university as a society.

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1. INTRODUCTION

The social distancing requirements during the coronavirus outbreak have forced educational stakeholders to online learning [1]. The phenomenon was followed by several changes, including the decrease on the students' learning attitude and motivation [2], as well as the lack of controlling mechanism that led students to problematic and irresponsible internet usage and academic procrastination [3], furthermore, interpersonal connection between students and their educators was also affected [4]. This study investigated whether academic procrastination (AP) is predicted by the factors that were altered during the lockdown policy as well as online learning protocol, such as the students' efficacy in online learning, their expectancy-value, and their sense of mattering.

Defined as the voluntary postponement of a predetermined task despite expecting outcomes to be less than desired due to this delay [5], academic procrastination (AP) had been recorded as prevalent since before the pandemic. For instance, 70% of university students from Guilan University of Medical Sciences were reported to have experienced moderate procrastination and more than 10% have reported severe procrastination [6]. In addition to that, procrastination was found to have a significant relationship with anxiety [7], depression [8], as well as life satisfaction [9]. The situation became more concerning when it was

reported that even before the pandemic, AP in the online learning environment negatively affected students' academic achievement more than in the physical learning environment [10].

This suggests that students need to have high self-efficacy in online learning [11]. Academic self-efficacy refers to a student's belief that they can succeed academically [12]. That said, before the pandemic, self-efficacy has been considered a significant predictor of AP [13], [14]. Since the last decade, students have had little motivation to complete academic tasks in the face of adversity unless they feel that their activities will result in desired outcomes [15], [16].

In line with that, some has reported negative correlation between AP and academic self-efficacy (ASE) [17]–[20]; they advocated that students who believe in their learning capability will not procrastinate. These reports were denied by the finding of Graff [14] who stated that self-efficacy has a positive relationship with AP, as well as the works of Malkoç and Mutlu [21], who stated that the relationship between AP and ASE is mediated by an underlying motivational process.

While the studies had underlined the significant link between the AP and ASE, and this study aims to investigate the link further because the ASE might be altered by the compulsory online learning policy. Furthermore, we were also interested in studying the underlying motivational proses between ASE and AP. As explained by The Expectancy-Value Theory of Achievement Motivation [22], students will be more motivated to engage in activities which they expect to perform well and perceive to be valuable. Their expectation to perform well is related to the basic theory of self-efficacy [23], which explain the perception of one's ability in performing a task. The perception that the task is valuable can be broken down into four categories based on the expectancy value theory [24], attainment value, intrinsic value, utility value, and cost value.

Studies over decades have reported that self-efficacy is a significant predictor of task value [25], [26]. It was also reported more recently that when the students were confident in finishing a task but perceived that the task is not valuable, they would have lower persistence in learning when academic stress increased [27]. Furthermore, Wu and Fan [28] reported that while students who has high ASE but perceived the academic task as more costly had a higher tendency to be involved in AP.

In the context of this study, the mediation of expectancy value (EV) on the relationship between ASE and AP was tested under the situation where the students were mostly adhering to the lockdown protocol and compulsory online study. Casale and Flett [29] advocated that during the lockdown period amidst the outbreak, individuals were more inclined towards to social media and digital communication that limit their encounters with individuals they did not plan to meet, and in the long run, it led to the feelings of isolation because individuals would not feel that they matter to the larger society anymore.

The Theory of Marginality and Mattering [30] posits the sense that we matter to the society enables us to engage in enriching behavior. With the transition of conventional in-person classes into online classes, there might be an alteration in the societal mattering among the students. To remain connected with their community (university), they had to rely on the social media or online portals [31]. We considered societal mattering as a significant factor in this study because it was also associated with increased academic self-efficacy, student engagement, relatedness, and academic motivation, all of which would increase study-related behaviors [32]. We hypothesized that societal mattering would interact with ASE and EV in predicting AP. The hypothetical model can be seen in Figure 1.
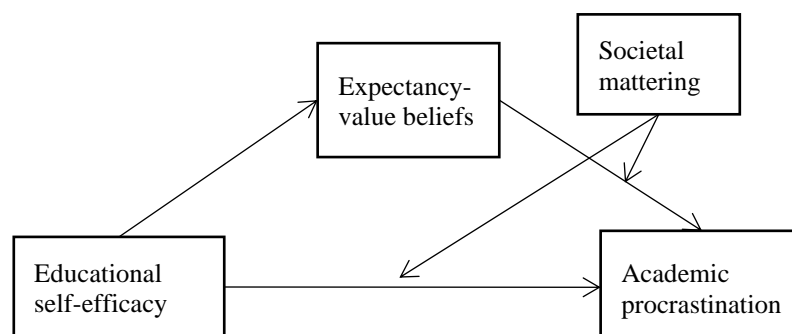

Figure 1. The moderated mediation hypothesis

2. RESEARCH METHOD

2.1. Participants and procedures

In the beginning, 425 students who studied in universities in Indonesia and Malaysia were approached. However, only 361 participants were chosen because the rest did not fulfil the criteria of studying 100% online or did not register to the universities in the two aforementioned countries. There was no compensation given, as the participation was voluntary. Demographically, the participants consisted of 152 women, 112 men, and 97 identified as neither men nor women. By nationality, there were 219(60.7%) Indonesians, 134(37.1%) Malaysians, and eight (2.2%) other nationalities. As many as 178(49.3%) of them were registered as students in universities in Indonesia, and 183(50.7%) from universities in Malaysia; 326(90.3%) in bachelor degree programs, 19(5.3%) were in master programs, and 16(4.4%) were taking their doctoral degree. The scales, combined with demographic items and an informed consent form were converted into an online form, and the link was distributed across universities through professors and other staff in the respective institutions. Snowballing was also practiced as the participants were asked to distribute the link among their peers.

2.2. Materials

All the scales used in this current study have been cleared by the Ethics Review Board of our university. The focal predictor variable, ASE was measured by the Educational Self-Efficacy Scale by Imperial College London [33], the 5-item sample scale measures the overall sense that students have that they can achieve academic outcomes, without being grounded within a specific discipline or profession; the reliability of this scale in measuring our data was $\alpha=.87$. The mediator variable, EV was gauged by extracting two subcomponents (Self-efficacy for learning and performance subcomponent from the expectancies component and task value subcomponent from the values component) of the motivated strategy for learning questionnaire (MSLQ) [34]. The rationale of utilizing motivated strategy for learning questionnaire was because it shares a common basis construct as the expectancy-value model, which is the social-cognitive model of motivation [35], specifically, the Expectancies component and Values component of the questionnaire are what make the expectancy-value model much more social-cognitive in nature [36], [37]. A total of 14 items were used in this study with eights items measuring expectancy-related beliefs and six items measuring task-value beliefs with the reliability of $\alpha=.95$.

The moderator variable of societal mattering (SM) was measured by the total score on the University Mattering Scale [38]. The University Mattering Scale was chosen based on the reason that our studied population was university students. The 5-Likert scale of 24 items measured our moderator variables with the reliability of $\alpha=.93$.

3. RESULTS AND DISCUSSION

The data was analyzed by employing the bootstrap method with 5000 samplings at a 95% confidence interval with the help of PROCESS Macro [39] for SPSS. Model 15 was chosen to test the moderated mediation hypothesis. Table 1 summarizes the path analysis. The results suggested that the link between ASE and AP was not significant after controlling for EV. The interaction between ASE and SM in predicting AP was not significant either, yet the interaction between SM and EV significantly predicted AP. Table 2 depicts in which level of SM the contribution of EV was significant on AP. In this results report, the values of the moderator variable of SM W in conditional tables are the 16th, 50th, and 84th percentiles.

Table 1. Summary of the path analysis

Path	Coefficient	(Boot)SE	(Boot)LLCI	(Boot)ULCI
Model ASE→AP	.79	.14	.53	1.09
ASE→EV	1.68	.095	1.49	1.87
ASE→AP	.88	.53	-.17	1.93
EV→AP	-.65	.22	-.1.07	-.22
SM→AP	-1.05	.27	-1.59	-.51
ASE*SM→AP	-.04	.02	-.07	.00
ASE*EV→AP	.04	.01	.02	.05

*Significant = the range between LLCI and ULCI does not contain zero.

Table 2 shows that the effect of EV was not significant on AP among participants with low levels of SM. Furthermore, the summary of the conditional indirect effect, or the significance of the conditional mediation of EV is depicted in Table 3. As illustrated in Table 3, the mediation of EV was significant when SM was at moderate and higher levels. It was also reported that the index of moderated mediation was

significant [Index=.06, BootSE=.015, LCI (.03, .09)], which means that the SM significantly moderated the mediation of EV. The report that ASE as a model was a significant predictor of AP (before controlling for EV and SM) indicated that EV fully mediated the link between ASE and AP in the condition of moderate and high levels of SM.

Table 2. The conditional direct effect of EV on AP

Moderator	Effect	SE	LLCI	ULCI
20.00	.08	.08	-.08	.24
28.00	.37	.07	.24	.50
36.00	.66	.10	.47	.85

*Significant=the range between LLCI and ULCI does not contain zero

Table 3. The indirect effect of ES on AP through EV

SM Level	Effect	BootSE	BootLLCI	BootULCI
20.00	.134	.13	-.10	.39
28.00	.62	.12	.40	.86
36.00	1.11	.20	.70	1.48

*Significant=the range between BootLLCI and BootULCI does not contain zero

3.1. Discussion

The findings suggested that EV fully mediated the association between ASE and AP, which showed that students with high ASE will positively predict EV, and thus elicit lower academic procrastination. However, this indirect effect is only true among students with moderate and high levels of SM. This demonstrated the important role of university mattering in students to reduce the tendency to procrastinate through their beliefs about study-related tasks.

Our results have shown consistency with past studies which reported that ASE is a significant positive predictor of EV [25], [26]. Similar to the current findings, past studies reported that students' perceived basic academic skills such as study techniques and coping with exam situations contributed greatly to the activation of academic expectations and task value [18]. Furthermore, students who felt more confident about their academic ability or perceived the task as important were less likely to engage in procrastination behaviors such as delay and missing deadlines [28]. This showed that ASE played an important role in reducing the tendency to procrastinate if students also perceived the task as important and valuable. In other words, students who have high ASE might tend to procrastinate, if they do not perceive the task value positively. This explanation showed consistency with past studies which reported the mediating role of underlying beliefs about the task in students' self-efficacy and tendency to procrastinate [21], [40], thus strengthening the findings of a full mediation in this study.

Nevertheless, results showed that EV fully mediated ASE and AP, in the condition of moderate and high levels of SM. This suggested that students who did not feel that are capable of doing their tasks well and do not believe that they matter to the university tend to procrastinate their work, whether they perceive the task as valuable or not. Past studies reported compulsory online learning (OL) decreased connectedness to classmates but increased connectedness to professors through Zoom [4]. The increase in connectedness to lecturers or professors of the institution may suggest an increase in how students feel they matter to the university, and therefore alter how students value the task given by the lecturer, in this instance, students' EV about assignments or exams, which in turn lowers tendency to procrastinate. This explanation also showed consistency with the expectancy-value theory which contends that one's expectancy and value are affected by perceptions of task difficulty, self-schema, and personal goals, which in turn are affected by perceptions of others' attitudes and expectations, emotive memories, socialization, and interpretations of past results [24]. In other words, EV of university students may be guided by their university community, including lecturers, their peers, and the university management team.

On the contrary, students with low societal mattering may not form EV based on their SM. As they lacked attachment to the university [41], which may prevent them from actively seeking engagement with the university community. If students felt that they did not matter or mattered minimally to the university, their EV would not influence AP, but their ASE might have a direct effect on AP. Results showed that ASE positively predicted AP for students with low SM. This finding was contrary to previous studies which reported that ASE negatively predicted AP [17], [19], [20]. The inconsistency may be because students who have higher self-efficacy and a lower tendency to procrastinate tend to engage in self-regulatory behaviors [11] and possess good study skills or habits [16]. However, there might be a change in learning patterns during compulsory OL as students might not be ready or willing to embrace the idea of OL [1].

On the other hand, current findings showed consistency with a past study that reported that students tend to procrastinate in OL for assignments due to the readily accessible online study materials, whereby perceived competence to complete assignments is based on the study materials provided at convenience, and therefore might presume more time to complete assignments and increase the tendency to delay the task [10]. Our results demonstrated that the reason or motivation for a task might not matter to students who perceived low levels of SM, as their ASE based on past learning experience provided the confidence for completion of the task. Therefore, students who felt that they do not matter to the university might perceive the lesser need for task value, and as past learning experience provided feedback for completion of a task, given the online resources and extra time at hand due to the lockdown during the pandemic, students may tend to procrastinate more.

Overall, in the context of compulsory OL, there is an increase in academic procrastination [3] and a change in connectedness within and to the learning institution [4]. Results showed no significant conditional indirect effect of EV on AP among students with low levels of SM. This suggests that for students who felt that they did not matter to the university, task value might in turn not matter to them, therefore their ASE predicted their AP, based on their past learning experience. Furthermore, past studies also reported that students felt increased connectedness to their professors and decreased connectedness to peers in compulsory OL as compared to learning before the pandemic [4]. This suggests an alteration in students' SM, which might increase the way students value study-related tasks and engage in study-related behaviors, as compared to procrastinating during OL. This explanation provided supportive evidence for our results that showed that EV fully mediated ASE and AP, in the condition of moderate and high levels of SM.

4. CONCLUSION

Current findings reported that EV fully mediated the relationship between ASE and AP, in the condition of moderate and high SM. The findings added to the literature of SM in the OL context, whereby a change in social patterns during the pandemic may affect students' perceived SM, which in turn may alter their academic expectations and task value beliefs, and therefore contribute to their engagement in study-related tasks. The encouraging results also contributed to the prevention and intervention of AP in compulsory OL, where institutions are encouraged to improve students' ASE in the online environment, which contributes greatly to their task value beliefs, thus eliciting a lesser tendency to procrastinate. Self-efficacy is developed by interpreting information from four primary sources, namely mastery experience, vicarious experience, social persuasion, and physiological and affective states. However, due to the lack of access to the conventional classroom environment, there might be an alteration in the primary sources of efficacy-related information. Thus, institutions can provide resources that improve OL experience and knowledge, as well as increase online communication and interaction through social network sites in learning management systems to build students' ASE in OL.

Besides, the change in social patterns during the pandemic may affect students' SM, which also affects students' EV and AP. Thus, institutions can focus on increasing SM by providing opportunities for involvement in online settings, making university resources available online, increasing interactions with lecturers and staff, and allowing students' input in important institutional matters. All of them will help enhance students' university mattering and strengthen their motivation to learn and achieve in OL.

As this study was conducted on university students who study fully online, this result may only apply to OL settings. Moreover, as this study was done on a small and localized sample, hence the findings should only be true for university students from Malaysia and Indonesia. Hence, the suggestion is to replicate this study when universities transitioned back to conventional classes.

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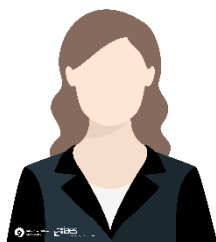
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