Sense of Coherence and Academic Procrastination: Coping Strategies as Mediators

Poh Chua SIAH*, Leela Murugan, Ling Qian LOO, Man Ting TAN and Swee Mee TAN

Universiti Tunku Abdul Rahman, Kampar Campus, Malaysia

ABSTRACT

Academic procrastination is commonly found among undergraduates in different countries. Studies showed academic procrastination could be relevant to personality. Nonetheless, no study has examined the relationships between a Sense of Coherence and procrastination among undergraduate students. Studies revealed associations between academic procrastination and coping strategies, academic performance and sense of Coherence, and sense of Coherence and coping strategies. However, no analysis has been found examining the mechanism that connects the three variables to students' academic procrastination. Using the personality-coping-outcome theory as a framework, the present study hypothesized that coping strategy is the mediator for the effects of a Sense of Coherence (SOC) on academic procrastination. 99 undergraduates were recruited using a purposive sampling method through an online survey. The results showed that a Sense of Coherence has a direct effect and is partially mediated by a problem-focused coping strategy for academic procrastination. The findings support applying the personality-coping-outcome theory as a framework to understand the mechanism associated with a sense of Coherence and academic procrastination among undergraduates. More actions could be taken to cultivate the Sense of Coherence among undergraduates and to improve the use of problem-focused coping, a possible strategy to reduce academic procrastination commonly found among undergraduates.

Keywords: Academic procrastination; coping strategies; Sense of Coherence; undergraduates; problem-focused coping

Introduction

Academic procrastination is commonly found among undergraduates in different countries. Zakeri et al. (2013) defined academic procrastination as an unwise behavior involving the postponement of academic assignments or functions throughout the process until the last minute or, even worse, until missing the deadline. Steel (2007) estimated over 75% of college students were academic procrastinators who usually did assignments, papers writing, or exam preparation when deadlines were close. Ferrari et al. (2005) also stated that 75% to 95% of students from the US, Australia, and the UK had academic problems with procrastination. Bakar and Khan (2016) reported that 79% of undergraduates in a university in Johore, Malaysia, could be categorized as procrastinators or severe procrastinators.

According to several reports, academic procrastination has negatively affected students' academic performance and psychological health. Regarding physical health, Sirois et al. (2015) reported that students with procrastination problems might experience sleep deprivation due to continual waking moments in between sleep. They found it challenging to sleep back again; thus, they felt unrest after waking up the following day. Regarding mental health, Beutel et al. (2016) revealed that procrastination projected negative relationships with psychological well-being and mental health, as procrastination would increase one's levels of stress and anxiety. Andangsari et al. (2018) researched 320 undergraduate students in Indonesia. Their findings suggested that academic procrastination positively correlates with emotional and social loneliness.

Regarding academic performance, Duru and Balkis (2017) recruited 348 undergraduate students in Turkey. The findings revealed that students' procrastination is associated with low self-esteem, academic achievement, and personal well-being. Morris and Fritz (2015) initiated a survey among 107 undergraduates from a university in the United States, and they detected a significant correlation between high procrastination levels and low coursework marks.

Academic Procrastination and Sense of Coherence

Academic procrastination can be relevant to personality. Zhang et al. (2018) recruited 1184 undergraduate students in China and found that academic procrastination is negatively linked to a person's self-regulation ability. Siah et al. (2019, 2021) also concluded that grit and external locus of control personality is negatively associated with procrastination among Malaysian undergraduates. Besides, Karatas (2015) scrutinized the relationship between procrastination and big-five personality among 475 Turkish undergraduate students. Their findings showed that academic procrastination is negatively related to the conscientiousness and extraversion of this group of undergraduate students.

However, to our knowledge, we did not find any studies examining the relationships between a Sense of Coherence and procrastination among undergraduate students. The claim has been further supported by Mayer and Boness (2011) in their comments that a Sense of Coherence has been

well-researched in various disciplines, such as psychology, sociology, and medical sciences, but very few in transcultural and educational work contexts. Lindström and Eriksson (2011) also contended that only a small amount of studies examined a Sense of Coherence, which was seldom promoted in an educational setting.

Sense of Coherence has been defined as a global orientation that expresses the extent to which one has a pervasive, enduring. However, emotional feelings of confidence steered from these: (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable (comprehensibility), (2) the resources are available to meet the demands posed by these stimuli (manageability), (3) these demands are challenges, worthy of investment and engagement of life that make sense emotionally (meaningfulness) (Antonovsky, 1987).

Some research was initiated to scrutinize the relationship between a Sense of Coherence and academic performance among undergraduates. Siddiqui et al. (2021a) recruited 110 undergraduate dental students in Malaysia, and they detected that a Sense of Coherence is effectively relevant to academic performance. Colomer-Pérez et al. (2019) surveyed 921 First-year students taking a program for Nursing Assistant certification in Spain. The findings showed that students with more robust levels of Sense of Coherence in the Nursing course were related to greater motivation to pursue something desirable. Eventually, they would obtain higher academic performance.

Since there is a positive relationship between a Sense of Coherence and academic performance, it is hypothesized that a Sense of Coherence will be negatively linked to academic procrastination. However, we did not spot any relevant past research in the literature review on the present study.

Sense of Coherence, Coping, and Academic Procrastination

The relationship between a Sense of Coherence and better academic performance can be related to coping strategies. According to the Transactional theory of stress and coping (Lazarus & Folkman, 1987), coping is a regular changing cognition of an individual's behavioral endeavor. The coping process will enable the individual to tolerate or manage oneself with external or internal demands perceived as taxing or beyond one's coping resources.

On the whole, a group of researchers further classified coping strategies into different categories with particular characteristics, and three prominent types of coping strategies were identified subsequently. The three most studied categories are namely problem-focused coping, emotion-focused coping, and avoidance coping. Problem-focused coping is also known as task-oriented coping. The individual will try to adopt problem-solving and decision-making skills, or directly approach the source of stress to alter or eliminate the stressful situation. Emotion-focused coping is also defined as emotion-oriented coping. The target will attempt to reduce or regulate psychological anxieties, sometimes just by altering the meaning of stressful events cognitively. This does not make the situation better (Baqutayan, 2015). Avoidant coping is a form of defensive

regulation in which individuals tend to neglect, distort or even escape from the stressful demand (Pour et al., 2016).

Meanwhile some studies have verified the associations between a Sense of Coherence and coping strategies. Mayer and Boness (2011) claimed that individuals with a higher level of Sense of Coherence possess higher confidence and can react to challenging situations more flexibly. Therefore, they manage to enhance coping strategies indirectly for a quality life. A sense of Coherence helps people to pay attention to their adapting or coping styles and causes them to remain healthy in distressing circumstances (Mayer et al., 2019).

Abu-Kaf and Khalaf (2020) conducted a study on 170 Arab undergraduate students. They found that a Sense of Coherence is negatively correlated with avoidant coping but positively reflected in active coping. Similarly, Konaszewsk et al. (2021) examined 632 Polish undergraduates and suggested that a Sense of Coherence is ultimately projected in task-oriented coping but negatively reflected in emotion-oriented coping.

Besides research claims on the associations between a Sense of Coherence and coping, some other studies also revealed the connection between coping and academic procrastination. Kandemir et al. (2014) investigated 374 undergraduates in Turkey. They found that academic procrastination relates to avoidant but discordantly correlates with active planning coping.

Similar research was done by Sirois and Kitner (2015). They surveyed 1003 undergraduate students. The findings showed that procrastinators used maladaptive coping strategies to escape negative emotions for a short period. Also, Gareau et al. (2019) recruited 258 students from a Canadian university. They claimed that students with higher levels of academic procrastination were more likely to use disengagement-oriented coping strategies, ultimately leading them to lower academic achievement levels.

Studies revealed that there is an association between academic procrastination and coping (Gareau et al., 2019; Kandemir et al., 2014; Sirois & Kitner, 2015), academic performance and Sense of Coherence (Colomer-Pérez et al., 2019; Siddiqui et al., 2021a), and lastly Sense of Coherence and coping strategies (Abu-Kaf & Khalaf, 2020; Krok, 2016; Yang et al., 2021). These findings may indicate there could be a mechanism that connects the three variables. However, to our knowledge, no study has been conducted to examine the mechanism.

The Personality-Coping-Outcome Theory may provide a framework to validate the relationship between the three variables. This theory proposes that personality influences one's adoption of coping strategies distinctively. In other words, when an individual encounters a stressful situation, their personality traits will determine the coping strategy they will apply. Eventually, the strategy adopted will affect the adjustment to deal with the scenario or experiences (Gallagher, 1996). Some studies reported that the mediating effect of coping styles influences personality and psychological outcomes. For example, a study surveyed 150 Malaysian undergraduate students found that coping strategy is a mediator for the effects of locus of control on procrastination (Siah et al., 2021).

According to another study researching 2357 secondary students in China, the results supported that the mediating effect of coping styles affects Big Five personalities. The findings also showed that coping styles partially or fully mediated life satisfaction (Xu et al., 2017). Moreover, a study investigated 412 Chinese undergraduates who studied introductory psychology and found that coping strategies mediated the effect of maladaptive perfectionism on depression (B. Zhang & Cai, 2012).

Aims of the Study

Based on the literature review, previous studies revealed an association between academic procrastination and coping (Gareau et al., 2019; Kandemir et al., 2014; Sirois & Kitner, 2015). Academic performance and Sense of Coherence (Colomer-Pérez et al., 2019; Siddiqui et al., 2021b), and lastly, Sense of Coherence and coping strategies (Abu-Kaf & Khalaf, 2020; Krok, 2016; Yang et al., 2021), we predict that similar associations will be found in this study. Importantly, as no study has examined the mechanism that associates the three variables, namely Sense of Coherence, academic procrastination, and coping strategies, we adopted the Personality-Coping-Outcome theory proposed by Gallagher (1996) as a framework. It aims to envisage that a coping strategy mediates the effects of a Sense of Coherence on academic procrastination. Aitken Procrastination Inventory (Aitken, 1982) was used to measure academic procrastination. This measurement is reliable and applied to undergraduates from Turkey, China, and South Korea. A shortened version of the orientation to life Questionnaire derived from the original SOC-29 developed by Antonovsky (1987) was used to measure the Sense of Coherence that the same author proposed. Lastly, Brief-COPE that was a shortened version of the original COPE Inventory developed by Carver (1997), was used to measure coping strategies. According to the review conducted by Kato (2013), this inventory is the most frequently used coping measurement.

The conceptual framework and hypothesis are as follows:

1. Sense of Coherence is negatively associated with academic procrastination
2. Coping strategies are related to academic procrastination
   2a. problem coping is negatively associated with academic procrastination
   2b. Emotion coping is positively associated with academic procrastination
   2c. Avoidant coping is positively associated with academic procrastination
3. Sense of Coherence is associated with coping strategies
   3a. Sense of Coherence is positively associated with problem coping
   3b. Sense of Coherence is negatively associated with emotional coping
   3c. Sense of Coherence is negatively avoidant coping
4. Coping strategies are mediators for the effects of Sense of Coherence on academic procrastination
   4a. problem coping is a mediator for the effects of Sense of Coherence on academic procrastination

4b. Emotion coping is a mediator for the effects of Sense of Coherence on academic procrastination

4c. Avoidant coping is a mediator for the effects of Sense of Coherence on academic procrastination

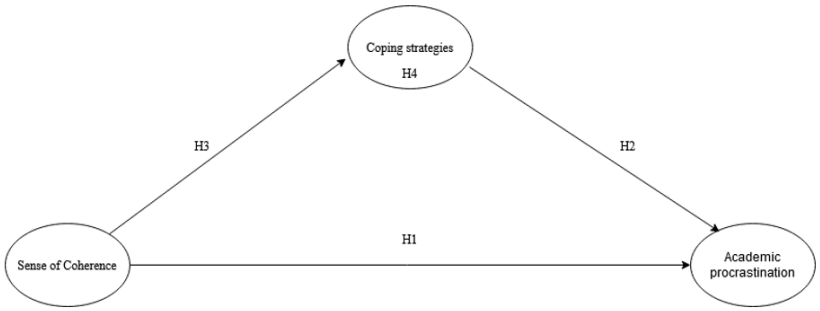

Figure 1: Conceptual Framework

Research method

Research Design

A cross-sectional survey in the research design was administered in this quantitative study. This design is a relatively faster and cost-efficient method that could measure exposure and outcome simultaneously, and thus the associations between these variables can be calculated (Setia, 2016).

Participants

We recruited 99 undergraduates between 19-24 years of (M=22.36, SD=1.28) to participate in the survey. Among them, 24.2% were males, and 75.8% were females. The sample size is larger than the estimated sample size of 85 calculated using the G*Power program (Faul et al., 2007), in which $f^2 = .15$, $\alpha = .05$, power= .80, and the number of predictors = 4.

Measurements

Demographic Information. Before responding to items in the questionnaire, demographic information of the targeted participants, such as their ages, gender, and nationality, was collected.

Orientation to Life Questionnaire. We used a shortened version of the questionnaire derived from the original SOC-29 developed by Antonovsky (1987). It consists of 13 items total, and five are reversed scored. Participants were asked to answer the items on a 7-point Likert scale (1= very rarely or never, 7 = very often). One of the sample items is "I keep my assignments up to date by doing my work regularly from day to day". Cronbach's alpha reliability ranged between .70 to .92 (Opheim et al., 2014). A higher mean score indicated a stronger Sense of Coherence.

Brief-COPE. Brief-COPE was a shortened version of the original COPE Inventory developed by Carver (1997). It consists of 28 items. Participants were asked to answer the items on a 4-point Likert scale (1 = I haven't been doing this at all, 4 = I've been doing this a lot). There are three factors tested: emotion-focused coping (10 items), problem-focused coping (six items), and avoidant coping (12 items) (Su et al., 2015). A sample item of emotional focus coping is "I've been getting emotional support from others"; for problem-focused coping, "I've been taking action to try to make the situation better"; and avoidant coping, "I've been giving up the attempt to cope". The Cronbach's alpha of the three coping strategies was .72 for emotion-focused, .84 for problem-focused, and .75 for avoidant coping (Cooper et al., 2008). A higher mean score indicates more frequent use of coping strategies.

Aitken Procrastination Inventory. Aitken Procrastination Inventory was ed by Aitken (Aitken, 1982). It comprised 19 items, in which nine items were reversed scored. Participants must answer the items on a 5-point Likert scale (1 = False, 5 = True). The Cronbach's alpha of the scale was reported as .89 (Kandemir et al., 2014). A higher mean score implied higher academic procrastination.

Procedure

After getting approval from the University Scientific and Ethical Committee, an online self-reported questionnaire was generated using Qualtrics online survey platform. Qualtrics online anonymous link was distributed through personal social networking sites, including WeChat, WhatsApp, Messenger, Instagram, and Facebook. The research applied purposive sampling to recruit participants. In the present study, the inclusive criteria are these: 1) The participants are undergraduate students, aged between 18 to 24 years old, 2) Malaysians, and 3) They are currently studying at universities in Malaysia. On the first page of the questionnaire, participants were presented with informed consent. They were informed of the study's purpose, their volunteer participation without coercion, and assurance of participant confidentiality. Participants were also notified that they reserved the right to withdraw from the study without any prejudice or penalty charge. In addition, participants were required to tick a box to ensure they had met the study's inclusion criteria. Only participants who had consented could progress to the online self-reported questionnaire. It took about one month to complete the data collection. Data were then extracted from Qualtrics for data analyses.

Data Analyses

Data cleaning was conducted first to examine the normality of the data. Next, the SPSS program was used for descriptive analyses, and lastly, the SmartPLS program was applied to analyze the partial least squares structural equation modeling to examine the hypotheses (Willaby et al., 2015).

Results

Data Cleaning

Skewness and kurtosis were used to examine the normality of perfectionism, coping strategies, and academic adjustment. The skewness and kurtosis values of all measurements are between -2.0 and +2.0 (Kim, 2013), so the normality of the data for all measurements is acceptable (see Table 1). No missing data was found.

Table 1: Skewness and Kurtosis of the Variables

Measurements	Skewness	Kurtosis
Academic procrastination	.11	.42
Emotion-focused coping	.09	.40
Problem-focused coping	-.63	.75
Avoidant coping	.33	-.47
Sense of Coherence	-.58	1.36

Measurement Model

Construct Reliability. One of the items in emotion-focused coping was removed as the composite reliability is below the recommended value of .7 (Hair Jr et al., 2016). The final composite reliabilities of all the measurements ranged from .73 to .89 (Table 2). Correspondingly, the findings suggested that the latent constructs of all measurements are acceptable.

Discriminant Validity. HTMT ratio was used to examine the discriminant validity. Henseler et al. (Henseler et al., 2015) suggested that an HTMT ratio above .85 can be regarded as low discriminant validity. As shown in Table 2, the discriminant validities of all measurements are below .85.

Table 2: Compositive and Discriminant Validities of all Measurements

	Total item	Composite Reliability	1	2	3	4
1. Academic procrastination	18	.82				
2. Emotion-focused coping	10	.78	.46			
3. Problem-focused coping	4	.81	.59	.81		
4. Avoidant coping	12	.78	.47	.61	.41	
5. Sense of Coherence	12	.75	.65	.49	.53	.64

Coefficient of Determination, Effect Size and Collinearity Statistics of Measurements. The results of the analyses are shown in Table 3. The variance inflation factor of all scales is also below 5, indicating no collinearity issue (Hadi et al., 2016). Besides, the results also reveal a large effect

size of the predictors on academic procrastination, R^2 = .42, and a medium effect size of Sense of Coherence on avoidant and problem-focused coping, R^2 = .18 (Cohen, 1992). The primary effect size among the predictors is from the Problem-focused coping on academic procrastination, f^2 = .15, and Sense of Coherence on the problem and avoidant coping, f^2 = .22.

Table 3: Coefficient of Determination (r^2), Effect Size (f^2) and Collinearity Statistics (VIF) of Measurements

Exogenous	Endogenous	r^2	f^2	VIF
Academic procrastination		.42		
	Emotion-focused coping		.01	1.63
	Problem-focused coping		.15	1.71
	Avoidant coping		.02	1.36
	Sense of Coherence		.12	1.52
Emotion-focused		.07		
	Sense of Coherence		.07	1.00
Problem-focused		.18		
	Sense of Coherence		.22	1.00
Avoidant coping		.18		
	Sense of Coherence		.22	1.00

Structural Model

Table 4: Results of the Structural Equation Modelling

	Hypothesis		Beta	Std Error	T value	P Values*
Academic procrastination						
Sense of Coherence → Academic procrastination	H1	-.34	-.35	.13	2.55	.006
Problem-focused → Academic procrastination	H2a	-.40	-.38	.12	3.30	.001
Emotion-focused → Academic procrastination	H2b	.04	.01	.15	.25	.400
Avoidant coping → Academic procrastination	H2c	.10	.13	.11	.92	.180
Coping strategies						
Sense of Coherence → Problem-focused	H3a	.43	.47	.10	4.24	< .001
Sense of Coherence → Emotion-focused	H3b	.25	.34	.19	1.36	.087
Sense of Coherence → Avoidant coping	H3c	-.43	-.47	.11	3.95	< .001
Mediating effect						
Sense of Coherence → Problem-focused → Academic procrastination	H4a	-.17	-.18	.07	2.41	.008
Sense of Coherence → Emotion-focused → Academic procrastination	H4b	.01	.02	.06	.17	.433
Sense of Coherence → Avoidant coping → Academic procrastination	H4c	-.04	-.06	.06	.79	.216
Control variables						
Gender		-.20	-.18	.22	.92	.179
Age		.02	.01	.09	.19	.423

Note: * one-tailed test

As shown in Table 4, after controlling gender and age, a Sense of Coherence is positively associated with academic procrastination, p = .006. Besides, a problem-focused coping strategy is

positively associated with academic procrastination, $p = .001$. Moreover, a Sense of Coherence is positively associated with problem-focused coping strategy but negatively associated with avoidance-focused coping strategy, $ps < .001$.

Mediating Effect. As shown in Table 4, only the specific indirect effect of a Sense of Coherence on academic procrastination through the problem-coping strategies is significant, $p = .008$. Besides, since the direct impact of a Sense of Coherence on academic procrastination is also substantial, $p = .006$, the result indicates a complementary mediating effect (Zhao et al., 2010).

Discussion

Academic procrastination is a common issue among undergraduate students. As studies have revealed the negative consequences of academic procrastination on academic performance, it is essential to find out factors relevant to academic procrastination to tackle the issue. Personality and coping strategies are two factors mentioned in past studies. However, no study has examined the relationships between a Sense of Coherence and academic procrastination and the mechanism that links these variables. Using the personality-coping-outcome theory as a framework, we predict that coping strategies mediate the effects of a Sense of Coherence on academic procrastination.

Firstly, the results showed that a Sense of Coherence is negatively associated with academic procrastination. These results are consistent with other past studies that claimed a positive association between a Sense of Coherence and better academic performance (Colomer-Pérez et al., 2019; Siddiqui et al., 2021a). Since academic procrastination is related to poorer academic performance, it is not surprising to find out that a Sense of Coherence is negatively associated with academic procrastination.

Secondly, the results also showed that a Sense of Coherence is positively associated with problem-focus coping but negatively with avoidant coping. These findings are robust as similar findings were reported by other studies conducted in other countries, such as in Arab (Abu-Kaf & Khalaf, 2020), China (Yang et al., 2021), and Poland (Terelak & Budka, 2014). Nonetheless, we did not find a negative association between a Sense of Coherence and emotional coping. This finding is different from the result claimed by Krok (2016) and Konaszewsk et al. (2021) in their studies on Polish participants. Both reported a negative association between Sense of Coherence and emotion-oriented coping. These differences could be related to the employment of different coping measurements. Therefore, future studies should use similar coping measures to examine the robustness of the findings.

Thirdly, the findings in the current study merely suggested that problem-focused coping is negatively associated with academic procrastination. These results are consistent with other past studies, concluding that engagement-oriented coping is negatively associated with academic procrastination (Gareau et al., 2019). Nonetheless, the results of the present study also showed that two coping strategies, avoidance, and emotional coping, are not relevant to procrastination. These

nonsignificant findings may be due to the two coping strategies, which do not involve actions taken as problem-solving coping and eventually resulted in the emergence of nonsignificant direct effects.

Lastly, the results also partially support the mediation hypothesis: Problem-focus coping is solely a complemental mediator for the effects of a Sense of Coherence on academic procrastination. In other words, undergraduate students with a higher Sense of Coherence are less likely to have the problem of academic procrastination. It is partially because of their use of problem-focus coping. These findings are consistent with the conceptual definition of Sense of Coherence: Individuals with a higher Sense of Coherence are more likely to manage, comprehend and understand the meaning of a stressful situation (Antonovsky, 1993); thus, they are more likely to use a constructive approach to examine potential resources in coping with the situation.

Conclusion

On the whole, the present study's findings suggest that both Sense of Coherence and problem-focused coping strategies are associated with academic procrastination. In addition, problem-focus coping is the mediator or the effect of a Sense of Coherence on academic procrastination.

Implication

In terms of theoretical implications, the findings support the application of personality-coping-outcome theory in academic procrastination. The theory may provide a framework to understand the mechanism associated with a Sense of Coherence, coping strategies, and academic procrastination among undergraduate students. In terms of practical implications, the findings suggest that academic procrastination can be tackled in two ways. Firstly, since a Sense of Coherence directly affects academic procrastination, the results indicated that more precautions should be taken to instill a Sense of Coherence among undergraduate students. For example, the university management may further create a conducive environment for students by giving more general resistance and resources for individual support and improving their self-efficacy (Mato & Tsukasaki, 2019), such as providing a formal health curriculum in the course structure, enhancing students' engagement with families and communities, and improving learning environment with more activities (Jensen et al., 2022). Secondly, since problem-coping indirectly affects the Sense of Coherence in academic procrastination, more workshops may be conducted to promote awareness of using appropriate coping strategies among undergraduate students. These workshops may include a school-based Yoga program (Frank et al., 2014) and cognitive-behavioral and mindfulness intervention (Mendelson et al., 2015).

Limitation

Extra caution should be taken in interpreting the findings in the current research. As we were using purposive sampling to examine the relationships among the variables, the findings may not be able

to be generalized to the whole population. Since the participants of the survey were from one of the universities in Malaysia, more studies recruiting different samples are needed to examine the robustness of the findings. Besides, as the research used a cross-sectional design, the researcher should be more vigilant when making a cause-effect explanation. Moreover, the findings of this study are based on a statistical model; as a result, it may not be able to meet the condition of cause-effect interpretation, such as the time-order relationship and the elimination of alternative causal explanations (Shaughnessy et al., 2015).

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