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EDUCATIONAL PSYCHOLOGY | RESEARCH ARTICLE

Examining the impact of psychological capital on academic achievement and work performance: The roles of procrastination and conscientiousness

Abdul Saman¹ and Hillman Wirawan^{2,3*}

² **Abstract:** This study aimed at investigating the effect of Psychological Capital (PsyCap) on students' academic achievement and employees' performance through procrastination at different levels of conscientiousness. The proposed theoretical model was examined using a moderated-mediation regression technique. The first group of participants comprised 1,670 university students from four major universities in the city of Makassar. Most of them were female (73.7%) with ages ranged from 17 to 24. The second group consisted of 400 employees (female, 57.5%) from five major organisations representing both private and public sectors in Makassar. The findings suggested that the students' PsyCap had a negative direct impact on academic procrastination, but procrastination did not significantly impact students' cumulative Grade-Point Average (GPA). The negative effect of PsyCap on students'

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Hillman Wirawan ⁴ current PhD student at the School of Psychology, Deakin University. He completed his MA in Industrial and Organisational Psychology at Montclair State University funded by the Fulbright Scholarship from 2014 to 2016. He is currently a recipient of the Australia Awards Scholarship and Deakin University Postgraduate Research Scholarship (2020 – 2023). He is also a lecturer, psychologist, and researcher in the area of Industrial and Organizational Psychology at Universitas Hasanuddin. His research interests include employees' Psychological Capital, Abusive Supervision, and Leadership in Organisations.

PUBLIC INTEREST STATEMENT

This study aims at investigating the carry-over effect of procrastination from higher education to workplace. After completing degrees, students are expected to work in various workplaces. They learn some skills and knowledge to help them perform in the workplace. However, procrastination could be one of the attitudes they have learned throughout the academic years. To investigate the effect of procrastination, this study collected data from both students and employees in Makassar, Indonesia. This study suggested that PsyCap may lower students' procrastination but committing procrastination did not directly harm the students' GPA. Students' PsyCap could reduce the frequency of procrastination significantly only if the students had low conscientiousness. Meanwhile, employees might exhibit higher work performance if they have high PsyCap and low procrastination. Conscientiousness would not have significant impact on employees. Although procrastination was less harmful for students' academic achievement, it still could lower employees' performance. Low conscientiousness will enhance the buffering effect of PsyCap on students' procrastination, while high PsyCap will reduce the negative effect of procrastination on employees' performance.

procrastination was stronger when students had low conscientiousness compared to high conscientiousness. On the other hand, employees' PsyCap negatively predicted work procrastination and positively impacted the employees' work performance. The results also indicated that procrastination negatively mediated the effect of PsyCap on employees' performance. In brief, conscientiousness moderated the PsyCap-GPA relationship for students, while procrastination negatively mediated the PsyCap-employees' performance relationship.

Subjects: Education; Higher Education; Organisational Studies; Counseling; Psychology

Keywords: Academic; Psychological Capital; Procrastination; Work Performance; Conscientiousness

1. Introduction

Procrastination has been an attractive topic for many researchers in the educational field. It was found that procrastination was the results of poor self-regulation and time management (Senécal et al., 1995). Furthermore, the research also showed that students who possessed intrinsic motivation tended to procrastinate less compared to those who had extrinsic motivation (Senécal et al., 1995). These results indicate that self-encouragement can help students to be more committed to finishing their assignments on time.

Apart from self-regulation, some studies have found the negative effect of procrastination. For instance, procrastination inflicted students' low academic achievements to the point of even impeding students' academic completion (Orpen, 1998a). A meta-analysis showed a consistent finding where procrastination decreased students' academic achievement (Ryung & Hee, 2015). Even though students are finally able to complete the assignments, it will be more likely that they only show a low quality result. Low quality assignments will lead to poor academic achievement that will eventually make the students disengaged from academic tasks.

In general, procrastination has been explored in the academic field and becomes one of undesired variables that can negatively affect students' academic achievement. However, not all students who put off their assignments will automatically fail in their academic endeavour or have low academic achievements. Some of them might practice active procrastination, which is advantageous under some circumstances. Active procrastination is not the same as the type of procrastination that leads to failure in studies, but it is considered as students' management strategy in dealing with work demands (Chu & Choi, 2005).

Thus, what we should focus on is the type of procrastination that negatively affects the students' achievement. Furthermore, procrastination demands further investigation so that educational experts and practitioners can deal with this problem as well as managing factors that can contribute to procrastination. Although some antecedents of procrastination have been identified, conducting further study is necessary. Aside from self-regulation (Kadzikowska-wrzonek, 2018; Senécal et al., 1995) and emotional regulation (Eckert et al., 2016), other personal aspects could determine individual persistent procrastination (Kim et al., 2017). Some personality traits show a negative relationship with procrastination. For example, people with a high level of conscientiousness tended to complete their assignments on time with more organized manner, thus it was unlikely that they would commit to passive procrastination (Kim et al., 2017).

The effect of procrastination on employees and organizational outcomes has been studied by some scholars (Meirav, 2018; Metin et al., 2018, 2016; Pearlman-avni & Zibenberg, 2018). A study showed that procrastination was not only experienced by students, but also by the teachers who neglected their duties (Meirav, 2018). This finding has prompted this current study to investigate the cause and effect of procrastination among employees in workplaces. Myriads of

evidence have supported that procrastination adversely impacted academic achievement (Day et al., 2000; Hicks et al., 2015; Malatincova, 2015; Orpen, 1998b; Ryung & Hee, 2015). There is a possibility that the trend will persist in workplaces in which employees' procrastination unwittingly causes poor performance.

Research in the area of employees' procrastination particularly on the role of personality traits still needs advance investigation. Recently, a study showed that conscientiousness and agreeableness, had negative influences on employees' procrastination (Pearlman-avnon & Zibenberg, 2018). Pearlman-avnon and Zibenberg (2018) also ascertained that the negative effect of procrastination at the workplace shared similar pattern with students' procrastination in higher education institutions.

Interestingly, although procrastination seems to be negative, some studies have recorded mixed results (Day et al., 2000; Hsin et al., 2005; Kim et al., 2017; Kljajic & Gaudreau, 2018). These findings might indicate that individual characteristics such as psychological states and personality traits could influence procrastination. For example, individual psychological states could facilitate or reduce the effect of procrastination. One should also note that certain personality traits might exacerbate or buffer the negative effect of procrastination on students and employees (Kim et al., 2017). Conscientiousness, for example, is one of desired traits which have been consistently found as the antecedents of academic success and goal attainment in organisations (Demerouti, 2006; Ivcevic & Brackett, 2014; Robertson et al., 2000).

A positive Psychological state plausibly hinders the effect of procrastination. Psychological Capital (PsyCap) is a positive Psychological state comprising Hope, Optimism, Resilience, and Self-Efficacy (Luthans et al., 2015). These four psychological states negatively related to procrastination (Hicks et al., 2015). PsyCap is a state of positive Psychology that has a positive impact on goal attainment, academic achievements, and other desired academic outcomes (Pradhan et al., 2016; Siu et al., 2013) as well as employees performance and organizational outcomes (Adil and Kamal, 2016; Abbas & Raja, 2015; Bradbury-Jones, 2015). On the other hand, conscientiousness might also influence the effect of PsyCap on procrastination as this personality trait is closely related to individual discipline, time management, and responsibility (Digman, 1990; Kim et al., 2017; McCrae & John, 1992; Poropat, 2009).

This current research is important because it aims to examine a theoretical model that can comprehensively explain how PsyCap, procrastination, and conscientiousness predict students' and employees' performance. Although some findings have documented the role of individual characteristics (e.g., Psychological states and personality traits) on procrastination, only few if any findings compared the effect of procrastination on students and employees. This study aims to discuss the consistency of the theoretical model on both groups (i.e. students and employees). This study will inform scientists and practitioners about the antecedents and outcomes of procrastination for students and employees.

This study will be beneficial for those who develop interventions or treatments to reduce procrastination. Time management (Day et al., 2000; Meirav, 2018; Van Eerde & Klingsieck, 2018) and positive characteristics such as PsyCap can help people to deal with difficult tasks (Karatepe & Karadas, 2015). The combination of these two factors could enrich the development of procrastination treatment and later benefits higher education institutions and workplaces. Having considered the above discussion, this study aims to investigate the effect of ² PsyCap on students' academic achievement and employees' performance through procrastination at the different levels of conscientiousness.

2. Literature review

2.1. Procrastination

Many definitions have been used to clarify what procrastination is. Klingsieck (2013) integrated some definitions of procrastination and postulated that procrastination is a form of a deliberate postponement from the activities that should have been accomplished and completed. The tasks

must be personally meaningful, even though the person might realise that the postponement could have more costs than benefits. This definition also suggests that someone who actively postpones assignments or tasks to obtain better results cannot be defined as procrastination.

Van Eerde (2003) explains that procrastination can be defined as delaying the completion of specific tasks, activities, or even policies which also breaches the deadline and the quality of the tasks. Van Eerde (2003) also claims that it is rather hard to establish a fixed definition of procrastination since it represents internal process triggered by certain factors. Thus, it leads to a presumption that not all forms of postponement can be defined as procrastination.

Grund and Fries (2018a) declare that procrastination occurs when an individual cannot implement an appropriate self-regulation. Procrastination is caused by incapability of managing workload in which can hamper individual's goal attainment. Inability to properly implement self-regulation is related to poor self-control, emotion regulation, motivation regulation, time management, and learning strategy (Grund & Fries, 2018b).

Studies on procrastination conclude that procrastination brings undesired effects on individuals, such as low well-being and work performances, in both education institutions and workplaces (Malatincova, 2015; Metin et al., 2018; Orpen, 1998a; Pearlman-avnon & Zibenberg, 2018; Van Eerde, 2003). However, the effect of procrastination on employees' and students' achievement was found to be interacted with psychological states, personality and other organizational aspects (Grund & Fries, 2018b; Hicks et al., 2015; Metin et al., 2016).

2.2. Psychological capital

Psychological Capital or famously known as PsyCap, is a Psychological construct based on a number of positive psychological states. PsyCap emerged as a part of positive behavioural movement within organisations (Newman et al., 2014). PsyCap consisted of four positive psychological dimensions; they are *Hope*, *Optimism*, *Resilience* dan *Efficacy* (Luthans et al., 2015).

Hope, Optimism, Resilience, and Efficacy (HORE) bring positive effects for individuals and organisations. Hope refers to a psychological state where someone wishes for a better future. Optimism means that one has a strong feeling that the expected outcome will come despite the current undesired situation. Resilience could mean "bounce back" or when one insist to fight back after experiencing failure. Efficacy is defined as one's belief of capability to deal with any problems or challenges (Luthans et al., 2007, 2015; Newman et al., 2014). These four states could improve several desired variables while reducing the level of negative outcomes in organisations (Avey, 2014).

PsyCap is a unique psychological state because it is also a form of psychological or personal resources (Bakker, 2011). PsyCap has been examined in several settings, such as in organisation where PsyCap consistently brought a positive effect on employees' performance (Shukia & Singh, 2013), positive working attitude (Larson & Luthans, 2006), including *Engagement* and *Commitment* (Simons & Buitendach, 2013a). Not only at workplaces, PsyCap also improve students' academic achievement at schools and universities (Vanno et al., 2014). Nevertheless, only a few, if any studies have compared the effect of PsyCap on students and employees.

2.3. Conscientiousness, as one of the positive personality types

Personality is a pattern of emotion, interpersonal, behaviour, and motivation that tends to be stable and distinguishes a person from others (McCrae & John, 1992). There have been various concepts and definitions of personality. Nevertheless, the Big Five-Factor Model provides one of the most robust scientific arguments (Digman, 1990; McCrae & John, 1992). The Five-Factor Model or Big Five Personality Traits has five dimensions, they are *Extraversion*, *Agreeableness*, *Conscientiousness*, *Neuroticism*, and *Openness to Experience* (McCrae & John, 1992). In some studies, the Big Five scale still showed its validity and reliability in both long and short format (Donnellan et al., 2006; Gosling et al., 2003).

Kim et al. (2017) propose that personality can determine procrastination, but this claim still requires further investigation. Pearlman-avni and Zibenberg (2018) assert that some personality traits such as agreeableness and conscientiousness are negatively related to procrastination. In contrast, neuroticism is positively associated with procrastination. Considering some unique effects of each personality trait on individual, further research is necessary.

Conscientiousness is an individual characteristic comprising self-control, responsibility, hardwork, well-organised and obedience to (Roberts et al., 2005). Conscientiousness consistently shows positive association with employees' performance (Bakker et al., 2012; Rothmann & Coetzer, 2003). Furthermore, students with a high level of conscientiousness also are more likely to show higher academic achievement (Ivcevic & Brackett, 2014; Komarraju et al., 2009; Poropat, 2009).

Conscientiousness is strongly related to goal attainment, compliance to authority, hardwork, and proper time management (Roberts et al., 2005). These characteristics are highly contradicted with procrastination which tends to postpone assignments. Conscientiousness is characterised by strong self-control so that individuals who exhibit this trait will be more likely to complete their tasks on time (Rothmann & Coetzer, 2003).

2.4. The relationship between variables and hypotheses

This study proposes that PsyCap is a psychological resource that can be employed to accomplish both academic and work challenges. In the theoretical model of Job Demand Resource (JD-R), personal resources (in this case is PsyCap) are necessary in dealing with work demands in a day-to-day work routine (Bakker, 2011; Bakker & Demerouti, 2008). PsyCap can help students and employees to face demanding assignments (i.e. school works or office works). If employees or students have adequate PsyCap, their PsyCap will improve their academic or work engagement. Personal resource depletion can lead to burnout and stress (Bakker et al., 2008).

Self-Regulation theory (Baumeister & Vohs, 2007) suggested that self-capacity can modify psychological response in certain social environments. Individual can choose the best psychological responses by optimising their PsyCap. PsyCap can act as individual's personal resources, support task completion, and avoid delay. The lack of personal resources can cause poor self-executive function. Consequently, to improve performance one should optimise time management and work quality by exerting personal resources (Baumeister & Vohs, 2007).

A high level of self-regulation can influence self-management and eventually reduce procrastination. A low level of personal resources encourages one to exert less effective self-executive function or might implement poor self-regulation. As a result, procrastination emerges and leads to poor academic performance. As previously found, PsyCap might directly influence performance (Abbas & Raja, 2015; Pradhan et al., 2016), while procrastination potentially deteriorate performance (Baumeister & Vohs, 2007; Chu & Choi, 2005). Having considered the above discussion, the first hypothesis will be:

H1: the positive effect of PsyCap on academic performance will be negatively mediated by procrastination

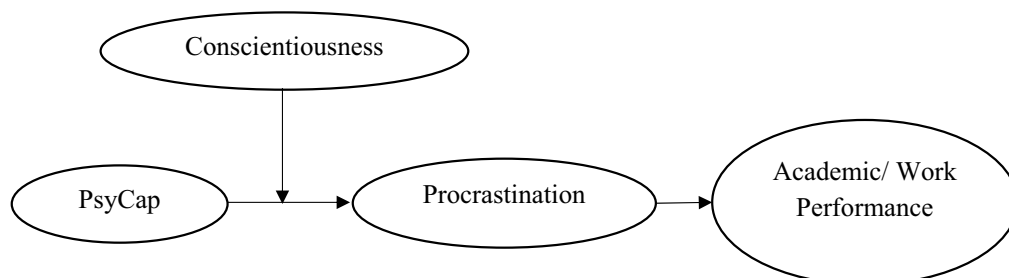
Some studies have postulated that conscientiousness is a personality trait that significantly contributes to successful academic accomplishment (Ivcevic & Brackett, 2014) and work performance (Rothmann & Coetzer, 2003). Conscientiousness is reflected through self-control, orderliness, responsibility, and attention to assignments (Roberts et al., 2005). These characteristics direct individuals to be more punctual and commit less procrastination (Pearlman-avni & Zibenberg, 2018).

Conscientiousness might modify the effect of PsyCap on procrastination and academic performance. This study predicts that a low level of conscientiousness can accentuate PsyCap. The effect of PsyCap on procrastination will be more salient and subsequently increases performance when one has a low level of conscientiousness. A person with a high level of conscientiousness tends to manage tasks orderly, timely and regularly which later prevents procrastination. People with high conscientiousness tend to procrastinate if they believe that they can implement effective time management. However, people with a low level of conscientiousness would not have a such effective management and they would be encouraged to fully exert their PsyCap in dealing with work demand and consequently buffer their procrastination. Thus, conscientiousness possibly moderate the effect of PsyCap on procrastination. This leads us to the ⁶ next hypothesis, that is:

H2: The effect of PsyCap on academic performance through procrastination is moderated by conscientiousness, in which the effect of PsyCap on academic performance will be stronger when conscientiousness is low.

The current study attempts to examine the consistency of the theoretical model in two different contexts; academic and work setting. The study proposes that the theory tends to be consistent, both in the education and the work setting. By considering some previous findings about procrastination (Meirav, 2018; Pearlman-avni & Zibenberg, 2018), the antecedents (Senécal et al., 1995; Van Eerde, 2003; Van Eerde & Klingsieck, 2018) and its effects on both academic and work performance (Kim et al., 2017; Metin et al., 2018; Ryung & Hee, 2015; Sæle et al., 2017), The following Figure 1 shows this study's theoretical model:

Figure 1. The theoretical model of the effect of PsyCap on Academic/Work Performance via procrastination moderated by conscientiousness.



Following the Self-Regulation theory, people need PsyCap to maximise their executive function (regulation). This study predicts that PsyCap can leverage students' academic achievement and employees' performance by reducing the procrastination impact on their performances. Therefore, the third and fourth hypotheses will be:

H3: ⁴ The effect of PsyCap on work performance will be negatively mediated by procrastination

Meanwhile, Conscientiousness will also moderate the effect of PsyCap on Procrastination in which employees with a low level of conscientiousness will be more likely to exert their PsyCap and eventually reduces procrastination and work performance. The ⁴ st hypothesis will be:

H4: The effect of PsyCap on work performance through procrastination will be moderated by conscientiousness, in which the effect of PsyCap on work performance will be stronger when conscientiousness is low.

3. Method

3.1. Participants and procedure

There were two groups of participants. The first group comprised university students and the second group consisted of employees from both the private and public sectors. The first group of participants were students from four major universities in Makassar, Indonesia, with ages ranged from 17 to 24 years old. The students from each university were recruited using cluster random sampling, and their gender and age were recorded. Nearly half of the participants (45%) received an online questionnaire instead of a printed questionnaire booklet. In total, the data collection recorded 1,670 responses with a proportion of 1,230 (73.7%) female and 440 (26.3%) male.

In addition to the students, the researchers also recruited employees from five major organisations in Makassar, Indonesia. The employees were selected using a simple random sampling based on a list of potential participants from the organisations. Participants' age, tenure, and gender were recorded. After the random selection, the questionnaires were sent to 500 employees, 410 returned the questionnaires. However, 10 questionnaires were incomplete leaving only 400 (80%) usable dataset consisting of 230 females (57.5%) and 170 males (42.5%).

The data collection procedure employed a three-wave data collection technique in which participants completed a set of the questionnaire in three phases. This technique was used to waive potential common method bias (MacKenzie & Podsakoff, 2012). Once a participant agreed to participate, she/he would receive a questionnaire booklet or online notification containing the survey link. The booklet or the link was sent every two weeks until the third phase. In the first phase, participants received a questionnaire containing demographic variables, PsyCap, and Conscientiousness. In the second phase, they completed Procrastination scale and at the final phase they were asked to report their Grade Point Average (for students) or completing performance scale (for employees). Participants who failed to complete all phases would not be included in the final analysis.

3.2. Measures

The measure for PsyCap was Psychological Capital Questionnaire (PCQ) which was constructed based on the previous PCQ version (Luthans et al., 2007). The academic procrastination of students was measured using the Procrastination Scale (Tuckman, 1991) while the procrastination at the workplace was measured using the Procrastination at Workplace Scale (PAWS) developed by Metin et al. (2016). The students' academic performance was recorded based on students' self-report of their Grade Point Average (GPA) for the last semester and the cumulative GPA. The employee's work performance was measured by the Individual Work Performance (IWP) scale (Koopmans et al., 2014). Lastly, the Conscientiousness dimension of the Big Five Inventory version 10 was used to measure Conscientiousness. This inventory had been developed and modified by Rammstedt and John (2007). All of these measures were adopted to the Indonesian language by following a scale adaptation guideline (Gudmundsson, 2009), starting from translate-back translate to reliability and validity test. The following explains more details about the Psychometric properties of each measure which have been established in this study.

3.2.1. Psychological capital questionnaire

Psychological Capital Questionnaire (PCQ) is a measure of PsyCap (Luthans et al., 2007). The questionnaire used a Likert-type scale with the choice of responses ranging from 1 (strongly disagree) to 6 (strongly agree). The validity test with Confirmatory Factor Analysis (CFA) showed that the model was fit, with $RMSEA = 0.08$ $CMIN/DF = 2.16$ suggesting that the construct had four facets (i.e. hope, efficacy, resilience, and optimism) and the reliability was acceptable with coefficient Cronbach alpha of 0.86. An item example is "I have clear goals."

3.2.2. Procrastination scale

Procrastination scale was intended to measure procrastination of students, and it was developed by Tuckman (1991). The scale also used a 4-point Likert-type scale with options ranged from 1 (highly disagree) to 6 (highly agree). The CFA validity test was conducted to prove that this measurement model was fit (RMSEA = 0.08 and CMIN/DF = 2.07). The reliability test also showed a Cronbach alpha of .82, suggesting a reliable scale. An example of the items was “I feel like those assignments exhaust me.”

3.2.3. Procrastination at the workplace scale

Procrastination at the Workplace Scale was used to measure procrastination at the workplace, developed by Metin et al. (2016). The scale used an 11-point Likert scale with response choices ranged from 1 (strongly disagree) until 6 (strongly agree). The scale was found reliable with Cronbach alpha = .88. Through the Exploratory Factor Analysis technique, the results showed that this scale had four factors. “I delay before starting on work I have to do” is an example of the items.

3.2.4. Individual work performance

The employees’ work performance was measured using the Individual Work Performance (IWP) scale (Koopmans et al., 2014). The scale was a 4-point Likert scale with options ranged from 1 (strongly disagree) to 6 (strongly agree). The Exploratory Factor Analysis suggested that the construct consisted of six factors. The reliability coefficient was .61, meaning the scale was reliable for a research purpose.

3.2.5. Big five inventory (Conscientiousness dimension)

The sub-scale of conscientiousness from the *Big Five Inventory* was used to measure conscientiousness. The scale has been developed and modified by Rammstedt and John (2007). This inventory also used a 4-point Likert type scale with responses ranging from 1 (strongly disagree) to 6 (strongly agree). The construct validity of the inventory showed that the model was fit with conscientiousness as a single facet (RMSEA = 0.08 CMIN/DF = 2.11) and the reliability coefficient was .87. An example of the items is “I consider myself as a person who always finishes any assignments until complete.”

3.2.6. Demographic data

Both students’ and employees’ demographic data were identified using self-report questionnaire. The demographic questions include age, gender, semester (i.e. 1 to 14), and study area (i.e. natural science vs. non-natural science) for student participants, and age, gender, marital status, education (i.e. last degree) and tenure for employee participants.

4. Results and discussion

4.1. Results

The data from students and employees were analysed simultaneously with the same analysis method. Both data analyses went through the same steps; descriptive, bivariate correlations, and moderated-mediation regression by Hayes (2013).

4.1.1. Results from students’ responses

The following table shows descriptive statistics and bivariate correlations for the student sample:

The bivariate correlations showed that some variables had significant relationships at different levels (see Table 1). For example, procrastination and PsyCap had a negative relationship ($r = -.32, p < .01$). Similarly, conscientiousness and PsyCap showed a strong relationship with a positive direction ($r = .31, p < .01$). Then, conscientiousness and procrastination were also positively related ($r = .20, p < .05$). The students’ GPA semester also had a significant relationship with the students’ PsyCap ($r = .15, p < .05$). This indicated that the level of academic achievement could be related to the level of PsyCap.

Table 1. Descriptive statistics and bivariate correlations for student sample

Variables	7	SD	1	2	3	4	5	6	7
1. Ages	20.21	2.37							
2. Semester	5.03	2.24	.46**						
3. Study Areas	1.26	.43	-.04	-.03					
4. GPA (Semester)	3.53	.73	.07	.05	-.05				
4. GPA (Cumulative)	3.56	.377	-.02	-.13	-.00	.51**			
5. PsyCap	110.54	11.80	.18	.07	-.01	.15*	.13		
6. Procrastination	114.74	15.57	-.13	-.03	.11	-.10	-.13	-.32**	
7. Conscientiousness	30.30	2.64	.01	.00	.02	.13	.03	.31**	.20*

Note: $N = 1,670$ $M =$ mean $SD =$ standard deviation, ** $p < .01$ and * $p < .05$; PsyCap = Psychological Capital, GPA = Grade Point Average

The results suggested that students with high PsyCap tended to have low procrastination, while those with low PsyCap would have high procrastination. Conscientiousness had a positive relationship with both PsyCap and procrastination. High conscientiousness could lead to higher PsyCap as well as higher procrastination. PsyCap might have served as a significant predictor for conscientiousness, academic achievement, and procrastination. In brief, PsyCap could have an important role in controlling other variables related to learning behaviours.

Furthermore, the analysis of moderated-mediation regression was conducted using PROCESS by Hayes (2013) to detect direct or indirect impact of PsyCap on the students' academic performance.

Table 2 displayed the results of the moderated-mediation regressions for the student participants. In the step 1 PsyCap, conscientiousness, and the interaction of PsyCap and conscientiousness all significantly predicted procrastination. Only PsyCap that had a negative effect on procrastination ($-.32, p < .001$). The moderation effect of PsyCap and conscientiousness on procrastination also revealed that low conscientiousness strengthened the negative effect of PsyCap on procrastination whereas high conscientiousness weakened the effect. In step 2, procrastination and PsyCap did not significantly predict students' GPA. These results did not fully support H2 and H1 as procrastination did not have a significant effect on students' cumulative GPA. Thus, the moderated-mediation model for the student sample was not fully supported.

The interaction effect of PsyCap and conscientiousness on procrastination was illustrated in Figure 2. The graphic showed that if the students' conscientiousness was low, then the negative effect of PsyCap on procrastination was also stronger ($R^2 = .23$). In contrast, if the conscientiousness was high, then the effect of PsyCap on procrastination was weaker ($R^2 = .04$). The results provided some evidence that despite the non-significant impact of PsyCap on cumulative GPA, PsyCap still negatively predicted students' procrastination.

4.1.2. Results from employees' responses

The following Table 3 presented descriptive analysis and bivariate correlations for the employee participants:

The results showed that some variables had a different degree of relationships with p -values ranged from $p < .01$ to $p < .05$. Performance and PsyCap were positively correlated ($r = .48, p < .01$), while procrastination at workplace and Performance were negatively correlated ($r = -.53, p < .01$). Furthermore, PsyCap was negatively related to the employees' procrastination ($r = -.33, p < .05$). The correlations above demonstrated that PsyCap and procrastination had a significant relationship with the employees' performance. However, PsyCap and procrastination were in the opposite

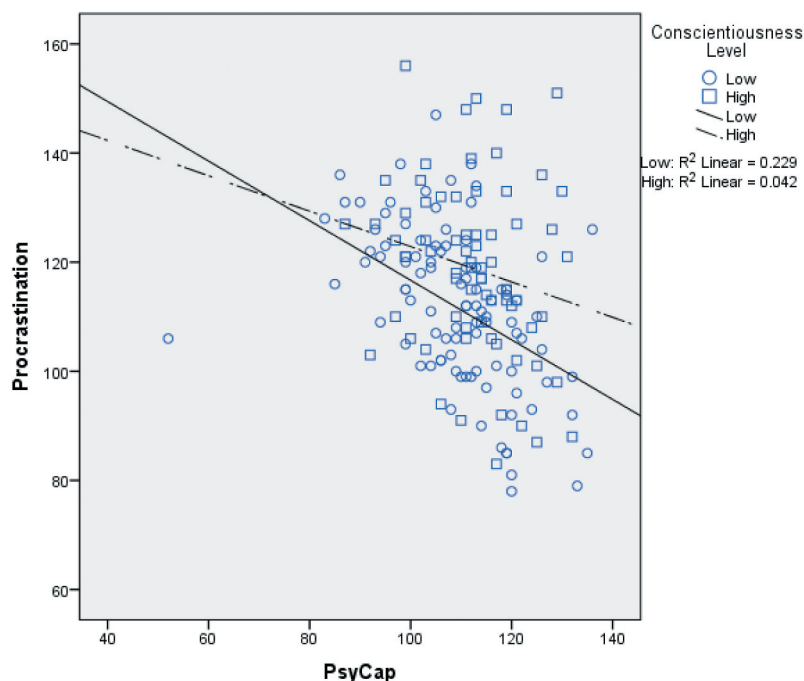
Table 2. Moderated-mediation regression with PROCESS® by Hayes for student sample

Variables	Estimates	t	95% CI		R	R ²	F
			LL	UL			
<i>Dependent Variable: Procrastination</i>							
Step 1							
PsyCap	-.32***	-4.36	-.46	-.15	.32	.10***	19.03
Cons	.34***	4.61	.16	.49			
PsyCap*Cons	.10***	1.36	.05	0.16			
<i>Dependent Variable: Cumulative GPA</i>							
Step 2							
Proc	-.13	-1.74	-.27	.12	.13	.01	3.03
PsyCap	.13	1.69	-.08	.33			

Note: N = 1,670, ***p < .001, **p < .01 and *p < .05

Cons = Conscientiousness, PsyCap = Psychological Capital, Proc = Procrastination, CI = Confidence Interval, UL = Upper Level, LL = Lower Level

Figure 2. The moderating effect of conscientiousness on PsyCap—procrastination relationship.



manner in their relationships with performance. Thus, a further analysis was performed to test the hypotheses of the impact of PsyCap, Conscientiousness, and Procrastination on Performance. The following Table 4 showed the moderated-mediation regression results for the employees.

Table 4 showed the results of the moderated-mediation regression model for the employee participants. In step 1, the results showed that PsyCap negatively predicted procrastination (-0.32 , $p < .05$). There was no interaction found between PsyCap and conscientiousness in predicting procrastination ($.02$, $p > .05$). Further, in step 2, procrastination at workplace and PsyCap had significant impacts on the employees' performance with estimate = -0.53 ($p < .05$) and $.48$ ($p < .05$), respectively. As predicted, only procrastination had a negative effect on performance.

The results supported H3 as the effect of PsyCap on performance was partially mediated by employees' procrastination. PsyCap could either directly influence performance or through employees' procrastination. In this respect, procrastination at workplace might hinder the positive effect of PsyCap on performance. Hypothesis H4 was fully rejected as no interaction between PsyCap and conscientiousness found in the model. Presumably, procrastination potentially acts as a variable that weakens the effect of PsyCap on employees' performance, regardless of the degree of employees' conscientiousness.

4.2 ¹⁴ Discussion

The first aim of this study was to examine the influence of PsyCap on GPA via procrastination at the different levels of conscientiousness among students in universities. This theoretical model was also tested using data from employees. This study also intended to compare the theoretical model across two samples; university students and employees. As suggested by some findings, procrastination could have adverse impacts on both students and employees. However, this claim needs further investigation.

Some results had been in line with previous findings even though this study's theoretical model was not fully supported. For students, this study found that PsyCap and conscientiousness predicted students' procrastination, while low conscientiousness emphasized the negative effect of

Table 3. Descriptive statistics and Bivariate Correlations for employee sample

Variables	M	SD	1	2	3	4	5	6	7
1. Age	26.55	7.34							
2. Marital Status	1.25	.43	.61**						
3. Education	4.58	1.05	.26	.17					
4. Tenure	4.18	.576	.78**	.45**	.01				
5. Performance	68.00	5.80	.25	-.04	.04	.12			
6. PsyCap	109.88	8.54	.21	.06	.06	.06	.48**		
7. Proc_W	46.88	13.38	-.25	-.15	-.01	-.19	-.53**	-.33*	
8. Conscientiousness	30.98	3.79	-.17	-.07	-.39*	.02	.01	.12	.24

Note: N = 400 M = mean SD = standard deviation, **p < .01 and *p < .05; PsyCap = Psychological Capital, Proc_W = Procrastination at Workplace.

PsyCap on procrastination. In this case, students with low PsyCap would be more likely to procrastinate, and this would be more salient for those who had low conscientiousness.

The results supported the claim that PsyCap had a negative impact on the students' procrastination. Students with high PsyCap tended to have a low procrastination. However, this study did not observe any potential direct effect of procrastination on students' GPA. Students with high PsyCap and have low conscientiousness would be less likely to commit procrastination. Thus, in terms of reducing procrastination, the interaction between high PsyCap and low conscientiousness offers some advantages for the students.

Up to this point, this study concludes that PsyCap plays a vital role in reducing the level of procrastination. It is also important to note that the interaction between PsyCap and personality traits, such as conscientiousness, can accentuate (or weaken) the PsyCap-Procrastination relationship. The effect of PsyCap on procrastination is conditional, meaning the impact is more beneficial for students who exhibit low conscientiousness. Although conscientiousness potentially increases procrastination, this personality trait was found to be positively related to desired academic behaviours and school success (Ivcevic & Brackett, 2014)

The findings in this study were in-line with other previous investigations. For instance, a study argued that PsyCap could negatively impact procrastination (Hicks et al., 2015). In contrast, this study was not in-line with Vanno et al. (2014), who found a significant impact of PsyCap on students' learning achievement. This study suggested that PsyCap and procrastination were not significant predictors for cumulative GPA. PsyCap and procrastination could still influence some students' attitudes and behaviours. This might also indicate that GPA is a unique measure of academic achievement or could have been confounded with other variables.

Conscientiousness could be described as a positive characteristic of self-control, responsibility, management, and obedience (Roberts et al., 2005). Conscientiousness was one of the personality traits that consistently produced a positive impact on one's achievement (Bakker et al., 2012; Rothmann & Coetzer, 2003), including academic achievement (Ivcevic & Brackett, 2014). Previous studies showed that students who had high conscientiousness tended to have high academic achievement compared to students who were dominated by other personality traits (Ivcevic & Brackett, 2014; Komarraju et al., 2009; Poropat, 2009).

Although theories and scientific findings have supported the benefits of possessing high conscientiousness, this study suggested contrasting evidence. Conscientiousness could have promoted students' procrastination and the negative effect of PsyCap on procrastination was stronger for students with low

Table 4. Moderated-mediation regression with PROCESS by Hayes for Employees

Variables	Estimates	t	95% CI		R	R ²	F
			LL	UL			
<i>Dependent Variable: Procrastination</i>							
Step 1					.32	.10*	4.54
PsyCap	-.32*	-2.13	-.46	-.16			
Cons	2.18	.86	-2.12	4.11			
PsyCap*Cons	.02	.15	-.11	.13			
<i>Dependent Variable: Work Performance</i>							
Step 2					.53	.28***	14.83
Proc_W	-.41***	-3.85	-.62	-.23			
PsyCap	.35**	3.45	.17	.57			

Note: N = 1,670, ***p < .001, **p < .01 and *p < .05,

Cons = Conscientiousness, PsyCap = Psychological Capital, Proc_W = Procrastination at Workplace, CI = Confidence Interval, UL = Upper Level, LL = Lower Level

conscientiousness. The students could intentionally delay completing their assignments or projects. They believed that they had control over the circumstance, pressure, and manage to complete the assignment on time. However, if the students had lower self-control, discipline and management, the students' PsyCap would take place and reduce procrastination. PsyCap potentially prevents students from postponing task completion only if they have low conscientiousness. This finding is in-line with the active procrastination idea (Chu & Choi, 2005), students with high conscientiousness might engage in more active procrastination by managing and potentially delaying their task completion time.

In general, the results from the student sample have brought us some insight as PsyCap had a significant influence on reducing procrastination. Nonetheless, the direct effect of PsyCap on academic performance could not be established in this study. The empirical data showed that PsyCap could affect students' academic achievement only via mediating variables. Unfortunately, procrastination was not one of those mediating variables. Throughout this research, it was revealed that PsyCap could become a strategy to assist students in universities by reducing procrastination. For those students who had lower conscientiousness, their PsyCap may provide extra support for their time management and later their academic achievement.

In addition to the student sample, this study also conducted a test for the theoretical model using data from employee sample. The only difference was the measurement tool for the academic achievement was replaced by a work performance measure. Similarly, the measure of employees' procrastination specifically targeted procrastination at the workplace. This analysis is intended to further understand the differences between the two samples; university students and employees.

The results indicated that PsyCap negatively influenced employees' procrastination. Thus, a high degree of PsyCap encourages employees to commit less procrastination. On the contrary, if PsyCap did not develop well, there was a high probability that employees commit frequent procrastination which later causes poor work performance. The similar finding was also observed among the students in which PsyCap affected their procrastination. In brief, for both students and employees, PsyCap was found to bring a direct negative influence on procrastination. Considering this particular finding, it is recommended that students and employees should improve their PsyCap.

Furthermore, the direct impact of procrastination on performance was also recorded. As predicted, the employees' procrastination attenuate performance significantly. Meaning, the higher the degree of procrastination, the more likely performance will be lower. Employees who often procrastinate potentially show lower performance compared to employees who less procrastinate their task completions. This finding is dissimilar to the student sample where procrastination did not significantly predict cumulative GPA.

With respects to the employees, there was a mediating effect of procrastination that connected PsyCap and Performance. PsyCap could either directly or indirectly influence performance via procrastination. PsyCap can improve performance by influencing the employees' procrastination. If the employees are able to develop a high level of PsyCap continuously, their procrastination will be lower and subsequently lead to higher employees' performance. This study confirmed previous findings about PsyCap. Some scholars (Avey et al., 2011; Luthans et al., 2015; Simons & Buitendach, 2013b; Siu et al., 2013) agreed that the four positive psychological states (i.e. *Hope*, *Optimism*, *Resiliency*, and *Efficacy*) in PsyCap supported several positive individual aspects (e.g., performance) and negatively influenced some undesired individual outcomes (e.g., procrastination).

Unlike the student sample, employees showed no significant moderating effect of conscientiousness on PsyCap-procrastination relationship. For students, conscientiousness trait could provide students with some security when completing academic tasks. Their self-discipline and self-control ensure that even if they delay the completion, it would not harm their grade. However, for most employees, the degree of conscientiousness provides a feeble influence on their task completions.

In other words, self-discipline, self-control, management and responsibility cannot accentuate the effect of PsyCap on procrastination.

The findings regarding employees' PsyCap suggested that psychological resources had a pivotal role in workplaces particularly on reducing Procrastination and improving work Performance. The results are in-line with some findings, such as Psychological Capital in the organisational spheres consistently carried a positive impact on performance (Shukia & Singh, 2013), positive working attitudes (Larson & Luthans, 2006), including engagement and commitment (Simons & Buitendach, 2013a). Furthermore, the effect of PsyCap on procrastination has also been documented by Hicks et al. (2015) where the study found the negative effect of PsyCap on procrastination. This study provides evidence for the importance of PsyCap in enhancing positive attitudes in organisations as well as reducing adverse employee outcomes.

This study also contended that the effect of psychological resources is subject to other factors. In this study, procrastination and conscientiousness provided the moderation and mediation effect of Psychological resources on performance. As proposed by the JDR model (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004), an individual needs resources to deal with daily demands. In a condition where the resources are sufficient, he/she would be able to engage and perform as expected while a lack of psychological resources may lead to burnout and counterproductive work behaviours (Avey et al., 2011; Beal III et al., 2013; Hyo & Hye, 2015; Liu et al., 2013; Paek et al., 2015) such as procrastination. This study confirms the previous findings as PsyCap consistently had a negative direct impact on procrastination across the two samples. In investigating psychological resources, practitioners and scholars should also anticipate the role of other variables such as personality traits (e.g., conscientiousness) and counterproductive behaviours (e.g., Procrastination).

Another highlight should be addressed for the differences between university students and employees at workplaces. Procrastination gave different impacts on these two samples. For the students, delaying assignments and turned them in the last minutes had no significant effect on their cumulative GPA. As they observe that this behaviour does not impact their GPA, they attempt to commit procrastination in the long run. However, this should be generalised with cautious as this study examined students from Indonesia, a non-English-Speaking country with more collective cultures. The results could be different for students who study in English-Speaking countries. In contrast, procrastination had a tremendous impact on employees' performance. It seems evident that delaying works and postpones tasks significantly affect performance. Procrastination had a different effect on students and employees, procrastination would be more likely to harm employees' performance than students' GPA.

Conscientiousness also had a different effect on students and employees. It moderated the effect of PsyCap on procrastination but failed to moderate the PsyCap-procrastination relationship at the workplaces. Surprisingly, for students, being more conscientious favours their procrastination as people with conscientiousness are better at organising tasks, managing priorities, and anticipating challenges. People who could master task organisation and time management potentially feel more secure in delaying task completion. Their PsyCap would give them more security and possibly reduces their anxiety when delaying tasks, that is, as Conscientiousness decreases PsyCap would be more salient and negatively impact procrastination.

Unlike students, PsyCap will affect work performance regardless of the level of employees' conscientiousness. Most jobs are structured using a job description, and each employee has been required to perform some behaviours related to the job. As the behaviours become their routine, all employees have the ability to manage and organise tasks. PsyCap is important for employees to cope with job demand and later influence performance. However, as they are all performing in very structured tasks, the level of conscientiousness would not give a different effect.

Realising the positive impact of PsyCap, the proliferation of PsyCap studies and PsyCap interventions has evolved into a website-based intervention (Luthans et al., 2008). PsyCap had also been implemented in various groups, starting from top management to homeless people (Rew et al., 2014). The results were mostly positive which later led to a robust scientific argument that the four positive states of PsyCap potentially enrich people personal resources.

PsyCap was found to be vital in this study and this claim has been supported by previous works. Considering some benefits, PsyCap should be developed for students and employees. Therefore, further studies can be focused on the development of PsyCap intervention to increase the four positive psychological states (i.e. hope, optimism, resilience, and efficacy).

A systematic attempt should be addressed, starting from collecting related literature reviews until testing the intervention model of PsyCap. Further research is necessary to develop an appropriate PsyCap model and to examine the effect of the intervention on desired outcomes (e.g., GPA, well-being, and performance), both in educational institutions and workplaces. Those studies could incorporate experimental designs and examine before and after exposure between groups.

In terms of the mediating effect of procrastination, there might be other undesired effects of procrastination that can influence students' academic achievement, both directly or indirectly. PsyCap is a positive construct and it can hinder the frequency of procrastination. However, procrastination at the workplaces brings a significant impact on employees' performance. Although procrastination produces undesired impacts on performance, PsyCap is expected to reduce procrastination at workplaces.

Albeit procrastination among students had no impacts on students' cumulative GPA, there is still a chance where procrastination also brings the same impact on work performance. Students who commit procrastination during their study might not significantly impact their GPA, but it will eventually deteriorate their performance as they enter workplaces. In other words, the existence of procrastination in an academic setting may not significantly affect GPA. However, if this counterproductive behaviour consistently develops the effect would be fatal for their work-life balance.

4.3. Limitations and future research directions

This research has successfully examined a theoretical model based on data collected from university students and employees. Participants' daily routines and workloads sometimes make them difficult to participate in a study, even though the study potentially improve individual and organisational outcomes. Thus, future research projects are expected to systematically modify study design and apply participatory action research method which will allow full involvement of companies and universities. Therefore, it allows students, workers and stakeholders to actively engage in designing the study.

Secondly, this research has suggested the influence of PsyCap on procrastination and work performance. However, PsyCap intervention has been established by some scholars but this study has not examined how PsyCap intervention predict Procrastination and work performance. Also, the effect of PsyCap intervention on students and employees should be compared. Thus, further research projects can examine the impact of PsyCap intervention on desired individual and organisational outcomes in higher education or workplaces.

Lastly, this study had considerably a small employee sample compared to the student sample, given the fact that the research protocol only included participants who were willing to participate voluntarily without additional rewards or encouragement from their companies. Therefore, future studies should increase the sample size by recruiting more employees and inviting more companies and organisations to collaborate.

5. Conclusions

This study showed that there was a negative influence of PsyCap on students' and employees' procrastination. However, for students, PsyCap and procrastination did not have significant impact on their cumulative GPA. Unlike the students, PsyCap and procrastination could affect employees' performance. Procrastination had an adverse impact on work performance while PsyCap positively predicted performance. The moderating effect of conscientiousness should also be considered as high conscientious students would commit more frequent Procrastination. High level of conscientiousness could reduce the negative effect of PsyCap on students' Procrastination. For the employees, conscientiousness had no significant effect. Although PsyCap and procrastination did not predict university students' GPA, nurturing these two variables would bring significant impact on their future career.

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