Profiles of Academic Procrastination in Higher Education: A Cross-Cultural Study Using Latent Profile Analysis

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ARTICLE INFO	ABSTRACT
	Procrastination behaviour occurs when the person is obligated to do an activity, even they are not motivated to carry out the activity within the expected time frame. Literature studies define four types of procrastination: academic, decisional, life routines, and neurotic. This study focuses on academic procrastination in higher education. Academic procrastination is mainly related to delaying academic tasks such as handing in assignments and term papers or preparing for the exams at the last moment. This study compares Turkish and international students' academic and general procrastination profiles using latent profile analysis. For this purpose, latent profiles were estimated to reveal how students from different cultures are grouped according to academic and general procrastination behaviour. A total of 691 undergraduate students, 52.4% (361) Turkish and 47.6% (330) of international students registered for an academic program in higher education participated in the study. Results indicated that while Turkish students for three latent profiles defined as Tending to enjoyable Works, Neither Lessons nor Other Works and Ambition for Academic Success. On the other hand, International students only fit two latent profiles, which are defined as Academic Procrastination Tending to Enjoyable Works and Prioritizing Academic Tasks.

1. Introduction

The definition of procrastination behaviour is that although the person knows that he/she should do an activity, they are not motivated to carry out the activity within the expected time frame, unnecessarily delay starting work until they feel uncomfortable and anxious (Rothblum, et al.., 1986; Senécal, et al., 1995; Solomon & Rothblum, 1984). Procrastination refers to adjourning unpleasant tasks to do them later. However, as a result, the activities enjoyed by them are missed, and the price paid by disrupting the healthy lifestyle becomes high (O'Donoghue & Rabin, 2001). In addition, individuals who procrastinate, unnecessarily delaying the works or activities, may have internal and external problems such as anger and regret, disappointment, self-condemnation, and hopelessness due to their inability to use their capacities fully. Besides all these internal experiences, a person may face negative external consequences such as receiving a small fine for late payment (Burka & Yuen, 2008).

Classifying related to procrastination behaviour seems possible. Milgram et al. (1992) and Milgram and Tenne (2000) mentioned four types of procrastination: academic, decisional, life routines, and neurotic/compulsive postponement. *Academic procrastination* is defined as delaying academic tasks such as handing in assignments and term papers or preparing for the exams at the last moment. *Decisional procrastination* is defined as not

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being able to decide in time. *Procrastination* of life routines is defined as problems in the timing and fulfilment of daily work and tasks Lastly, *compulsive procrastination* is defined as a tendency to postpone decisions about essential issues in life.(Ying & Lv, 2012). Procrastination is particularly common in the academic field (Senécal, et al., 1995). It has become even more prevalent as technology advances (Hooda & Devi, 2017). Deliberate academic delays or procrastination, such as handing in an assignment or preparing for exams at the last minute, points to academic procrastination (Schraw, et al.., 2007; Ying & Lv, 2012). However, considering the effect of self-regulation on academic procrastination, it seems correct to explain this as a motivation problem rather than a lack of time management skills and laziness (Senécal, et al., 1995). Lack of self-regulation skills more likely leads to high levels of academic procrastination (Grunschel, et al., 2013). When it comes to self-determining motivation, people have low procrastination and high grades despite their high standards (Burnham, et al., 2014).

On the other hand, Solomon and Rothblum (1984) appointed that fear of failure is a significant predictor of academic procrastination, explaining 50% of academic procrastination. They stated that fear of failure includes anxiety for being evaluated, high-performance standards, and low self-confidence. Besides, fear of failure appears to be associated with a low expectation of success (Saddler, & Buley, 1999). Afzal and Jam (2015) found that task difficulty, fear of failure, not being assertive, risk-taking was positively related to academic procrastination, while Zarrin et al.(2020) found that goal orientation, self-evaluation, responsibility etc. were associated negatively with academic procrastination. Therefore, it should be considered a more complex concept with emotional, cognitive, and behavioural dimensions (Day, et al., 2000). When students are given an assignment, they fall into a loop because of procrastination. Even though they intend to start doing the assignment early, they convince themselves to do it later. Together with this, they sink into negative emotions and thoughts because they procrastinate. The process ends with promising themselves not to procrastinate again (Burka & Yuen). Thus, cognitive factors like reframing and protective self-talk should be addressed. Nevertheless, apart from these cognitive factors, some other determinants of academic procrastination are the quality of the assignment, teachers, whether the deadline is announced, and whether the materials are well-organized (Schraw, et al., 2007).

When explanations of procrastination are examined, it is seen that the common point is to put off unnecessarily, to be reckless and lazy. However, in terms of its origin, the word means delay until tomorrow (Haghbin, 2015). Therefore, it does not contain a direct negative connotation. For example, Ferrari (1992) emphasizes procrastination in terms of thrill-seeking and being avoidant. Therefore it appears that boredom is the reason for one while it is low self-esteem for the other. However, while thrill-seeking may explain academic procrastination for some students as a perspective recently, in fact, people who state that they work better under pressure can also consciously procrastinate (Simpson & Pychyl, 2009). So, when academic procrastination is done intentionally, the results may not be as harmful as expected. For example, in a study comparing Ukraine and Slovakia, Slovak students' academic procrastination scores were higher, but their consistency to complete the task was higher than Ukrainian students (Košíková, et al., 2019). Besides, some students have good grades despite having academic procrastination (Day, et al., 2000). Westgate et al. (2016) consider productive procrastination in the academic field to postpone less critical and more accessible homework. Chu and Choi (2005) mentioned active procrastination versus traditional procrastination. They stated that active procrastinators like to feel the pressure of time, do the procrastination intentionally, reach the deadline, and are satisfied with the result.

Studies are showing that there is a relationship between academic procrastination and low academic achievement (Beswick, et al.., 1988; Carden, et al., 2004; Hayat, et al.., 2020; Kim & Seo, 2016; Moores ,2013; Rothblum, et al.., 2020; Solomon, & Murakami, 1986). On the other hand, there are various research results. For example, there is a low-level positive relationship between active procrastination and academic achievement (Choi & Moran, 2009). Grade point averages of those who showed productive procrastination in the academic field were found to be higher (Westgate et al., 2016). While a lower level of academic procrastination is associated with higher strategic learning, it may not determine the grade point average (Sæle, Dahl, Sørlie, & Friborg, 2017). As can be seen, studies on the relationship between academic procrastination and achievement point to different results. Grunschel et al. (2020), on the other hand, revealed four types of procrastination, inconspicuous, successful pressure-seeking, worried/anxious, and discontent with studies, in their latent profile analysis on academic procrastination and found that the academic

performance of these different types also differed (Grunschel et al., 2020). Therefore, when it comes to academic procrastination, it is inaccurate to mention about one behavioural pattern.

It is seen that academic procrastination and general procrastination have been investigated for many years with variable-focused approaches. A person-oriented latent profile analysis will help understand academic procrastination through group-based evaluations.. As part of this study, international students who study in Turkey and Turkish students born and raised in Turkey are recruited. Apart from their cultural differences, international students face challenges such as education in a foreign language and difficulties in cultural adaptation (Onat Karabıyıt et al., 2019). This study aims to reveal Turkish and international students' general and academic procrastination profiles using a person-oriented approach to the latent profile analysis method. In line with this purpose, latent profile analysis revealed how students from different cultures are grouped based on academic procrastination and procrastination and how the relationships between these variables are holistic.

2. Methodology

2.1.Research Model

This study was designed as a survey model to determine the latent profile of students. The purpose of the survey model is to reveal the current situation using various scales and statistical methods. The latent profiles are measured by quantitative data collection methods (Creswell 2009).

2.2. Research Sample

A total of 691 undergraduate students, 35.3% (244) males and 64.7% (447) females, participated in the study. All of the students receive their courses in Turkish within institutions in Turkey. 52.4% (361) of the study participants are Turkish, and 47.6% (330) are international students. International students are from Balkan states Balkan states such as Kosovo, Greece, Bulgaria, North Macedonia, Romania, Albania, Bosnia and Herzegovina, and Montenegro. The demographic characteristics of the participants according to nationality are shown in Table 1 in detail.

Table 1. *Descriptive Statistic by Nationality*

Variable	Nationality	
	Turkish	International
Level		
Freshman year	63 (%17,5)	65 (%19,7)
Sophomore year	153 (%42,4)	150 (%45,5)
Junior year	93 (%25,8)	75 (%22,7)
Senior year	52 (%14,4)	40 (%12,1)
Gender		
Male	128 (%35,5)	116 (%35,2)
Female	233 (%64,5)	214 (%64,8)
Total	361 (%52,4)	330 (%47,6)

2.3. Data Collection Tools and Procedure

2.3.1. Demographics Form: In this form prepared by the researchers, there are items such as gender, nationality, class to describe the students' characteristics.

2.3.2. Academic Procrastination Scale (APS): The scale developed by Çakıcı (2003) consists of 19 items, 12 of which are positive and 7 of which are negative. Confirmatory factor analysis was conducted to determine the APS construct validity. The two sub-dimensions of the scale are procrastination and regular study habits. CFA provides detailed statistics on how much the obtained (observed) data matches with the (proposed) model that describes the relationships between latent variables. Unlike traditional tests, analysis is evaluated over multiple fit indices that evaluate model-data fit instead of a single significance value. Accordingly, CFA is used to evaluate the construct validity (Jöreskog, 1974). APS consists of statements about postponing the tasks that students are responsible for in the academic field. APS was scored in a 5-point Likert type, and the internal consistency coefficient was calculated as .92. It consists of two sub-dimensions: procrastination and postponement of studying. CFA analyses were made and reported to test the validity of the APS scale used in

the research for the international group. Confirmatory factor analysis results of the APS scale are shown in Table 2. When the fit indexes were examined, it was seen that the academic procrastination scale fit well with the predicted two-factor model as a result of the confirmatory factor analysis. As a result of the model's analysis, the CFA path diagram for the scale is shown in Figure 1.

Table 2. *APS CFA Results*

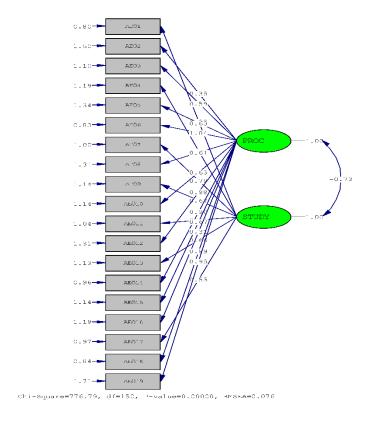| Variable	DFA				
	x^2	df	CFI	GFI	RMSEA
APS	776,79	150	0.93	0.90	0.076

Figure 1. *Two Factor Model Path Diagram of APS*

2.4. Data Analysis

Latent profile analysis was performed for procrastination behaviour in the study. Latent profile analysis maximizes intergroup variance while minimizing intragroup variance (Collins & Lanza, 2010). In this way, profiles of people with similar response patterns can be created, and individuals can be grouped. With the help of the variables used, the focused group's profile can be created, and the subgroups' diagnostic characteristics can be determined (Berlin, et al., 2014). In latent profile analysis, the number and nature of the profiles are not known in advance. These profiles are extracted from the data (Olivera-Aguilar, et al., 2016). Model selection in latent profile analysis is the stage of deciding on latent profiles. It was suggested to compare the fit indices when determining latent profiles (Nylund, et al., 2007). In addition to the fit indices, the model's interpretability and the selection of models with fewer parameters can be empirically evaluated, and model selection can be made. Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Sample-Size adjusted BIC (sBIC), Bootstrap Likelihood Ratio Test (BLRT), and entropy indices were used for model fit values. It is stated that comparing fit indices in selecting model fit and the lowest value gives the best fit (Muthén & Muthén, 2010). In this respect, both fit indices and empirical evaluations were taken into consideration while choosing the model. Studies indicate that the values with the lowest BIC index and

entropy value fit the model better (Akogul & Erisoglu, 2017; Muthén & Muthén, 2010) were taken into consideration. R program was used for data analysis.

2.5. Ethical

The study was approved by the Social and Humanities Research Science Ethics Committee of the Trakya University (ref #.: 2021/02/41).

3. Findings

Determining Number of Profiles: **In** Table 3, AIC, BIC, sBIC, BLRT, BLRT_p, and Entropy values show different LPA patterns. An analysis of Table 3 suggests three profiles for Turkish students and two profiles for Balkan students according to incidence emerge.

Table 3. *Model Fit of Latent Profiles*

Model	AIC	BIC	sBIC	BLRT	BLRT_p	Entropy
Turkish						
1-Class	25113.4	25203.1	25139.6	-	-	1.000
2-Class	24569.4	24847.3	24650.4	89.9	0.010	0.846
3-Class	24617.3	24801.1*	24670.9	538.1	0.010	0.775
4-Class	24497.1	24869.1	24605.5	114.3	0.010	0.864
International						
1-Class	25535.8	25625.4	25561.9	-	-	1.000
2-Class	25019.2	25202.9*	25072.7	558.6	0.010	0.722
3-Class	24953.2	25231.1	25034.2	108.1	0.010	0.759
4-Class	25813.6	26185.6	25922.1	19.2	0.723	0.673

Note. AIC=Akaike Information Criterion; BIC = Bayesian Information Criterion; SABIC = sample size-adjusted BIC; BLRT = Bootstrap likelihood ratio test. The LPAs did not converge when class number >4, so other estimates are not included here.

In Table 4, the distribution ratios of the latent profiles decided according to the model fit indices to variables (class size) and the probability of assigning them to classes are given. It is seen that the rates of assignment to classes are between 0.85 and 0.92 for all values. This finding shows that the relevant classes' individuals have a high level of belonging to the classes.

Table 4. *Class Sizes and Class Assignment Probabilities for The Profile Decision*

Model	Class size (%)	Class assignment probability
Turkish		
Advanced	22.2	.898
Moderate	11.9	.855
Low	65.9	.881
International		
Advanced	38.5	.916
Resilient	61.5	.927

As seen in Figure 2, three profiles emerge for Turkish students. High-profile students postpone regular study while their general procrastination is low. The rate of getting into this profile is 22.2%. On the other hand, procrastination is low for low profile students, but overall, procrastination is high. The rate of getting into this profile is 11.9%. In the third profile, procrastination of studying and general procrastination seem to be parallel. The rate of getting into this profile is 65.9%.
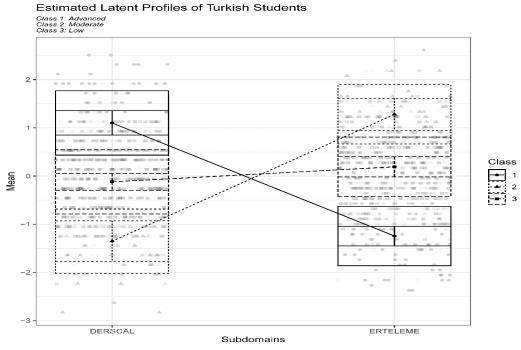
Figure 2. *Estimated Latent Profiles of Turkish Students*

As observed in Figure 3, two profiles emerge for international students. High-profile students' procrastination of studying is high while their general procrastination is low. The probability of getting into this profile is 38.5%. Procrastination of studying is low for low profile students, while overall procrastination is high. The probability of getting into this profile is 61.5%.
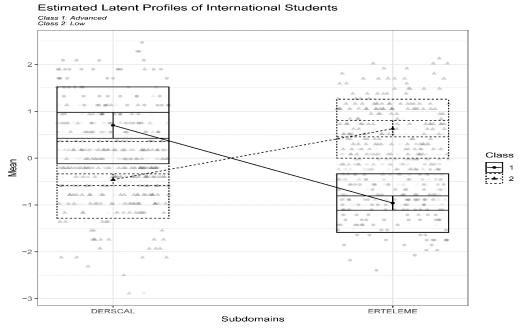

Figure 3. *Estimated Latent Profiles of International Students*

Defining Profiles for Turkish Students: As a result of the analysis, three profiles emerged for Turkish students.

Profile 1-Tending to enjoyable Works: Profile 1 characterizes those who have high procrastination of studying and low procrastination of works. When the scale items are examined, other works turn to more enjoyable activities instead of studying. These people prioritize extracurricular activities and socialization in university life more than lessons. When Turkish students' profiles are examined, it is understood from the graph that the inverse ratio between procrastination of studying and general procrastination is relatively high.

Profile 2-Neither Lessons nor Other Works: Profile 2 shows the students' profile who have no connection between their procrastination of studying and other works. These students may be unrelated to university life. It is thought that students who do not feel belonging to the school or department within the university can be included in this profile.

Profile 3-Ambition for Academic Success: Those included in Profile 3 are defined as low procrastination of studying and high procrastination of other works. Those included in Profile 3 are defined as procrastination of studying is low, and procrastination of other work is high. Profile 3 holders seem to have prioritized academic achievement. For them, it may be essential to achieve their career goals by increasing their academic achievement. They postpone the works they can enjoy. These students seem to prefer to study instead of benefiting from university life's social and other opportunities. When Turkish students' profiles are examined, it is understood from the graph that the inverse ratio between procrastination of studying and procrastination of other works is relatively high.

Defining Profiles for International Students As a result of the analysis, two profiles emerged for international students.

Profile 1-Academic Procrastination Tending to Enjoyable Works: International students whose procrastination is high while procrastination of other works is low and is included in Profile 1. Instead of preparing projects, doing homework, studying for exams, they prioritize extracurricular activities and socialization more than lessons. When international students' profiles are examined, it is observed from the graph that the inverse ratio between academic procrastination and other procrastination is relatively high.

Profile 2-Prioritizing Academic Tasks: International students whose procrastination is low while procrastination of other works is high and is included in Profile 2. Those in this profile seem to care about academic success. They postpone the things that they can enjoy. These students would rather study than benefit from university life's social and other opportunities. When international students' profiles are examined, it is understood from the graph that the inverse ratio between procrastination of studying and procrastination of other work is not as high as Turkish students.

4. Conclusion and Discussion

This study aims to reveal international and Turkish students' profiles regarding their tendency to procrastinate on their assignments. In the study, three profiles for Turkish participants and two profiles for foreign participants were created. When the graph is analyzed, there are three Turkish students' profiles; those whose academic procrastination is high and overall procrastination is low, those whose overall procrastination is high and academic procrastination are low, and those whose overall procrastination and procrastination of studying are not related. When it comes to international students, there are two profiles ; those with high procrastination of studying and low overall procrastination, and those with high overall procrastination is high and low procrastination of studying.

Research findings showed that those who procrastinate studying would not tend to postpone their other work. For example, Milgram, et al., (1998) found a high positive correlation between students' life routines and academic procrastination. Those who tend to procrastinate academically also postpone other daily tasks (Ferrari & Scher, 2000). On the other hand, Klingsieck (2013) concluded that procrastination behaviour is domain-specific.

For both international and Turkish students, this study's findings point out a standard profile with high procrastination of studying while having low procrastination of enjoyable work. This situation may occur since they are in the same age period, and peer relationships come to the fore during this period. However, there are also different profiles. It is thought that this may be due to culture. The literature shows that time orientation is related to academic procrastination and general procrastination behaviour. Jackson, et al. (2003) found that procrastination is positively associated with negative appraisal of the past and fatalism and negatively associated with a future orientation. They found that especially fatalism was the most predictive. Besides, different procrastination profiles emerged across countries in the study.

On the other hand, Specter and Ferrari (2000) saw that decision procrastination was positively associated with past orientation and negatively associated with a future orientation. Ashkanasy, et al. (2004) found that in

terms of the future orientation of western countries, Germanic-speaking countries in Western Europe and Northern Europe (e.g., Netherlands, Austria) are more future-oriented than those living in the Mediterranean region or speaking Romani languages (e.g., Greece, Italy) (Ashkanasy, et al., 2004). In a study that Turkey is included, it is concluded that the Turkish participants have a combination of future and negative past orientations. Turkish sample's moderate fatalism scores are lower than those in Serbia while their future orientation scores are higher than those in Serbia, their present orientation is high, and their negative past orientations are high (Sircova, et al., 2015).

It is thought that they may exhibit avoidance behaviour due to the problems they may experience with the language coming from the Balkans for education. One major challenge for Balkan students is related to education in a foreign language (Onat Kocabıyık et al., 2019; Özçetin, 2013). Not being proficient in the language might cause low self-efficacy (Ferrari, et al., 1992; Klassen & Kuzucu, 2009; Ying & Lv, 2012), low self-esteem (Klassen & Kuzucu, 2009; Naveed & Ishtiaq, 2015), and low Turkish language score (Klassen & Kuzucu, 2009). Also, international students who receive education at Trakya University experience problems such as being far from the family, low cultural accommodation, problems about housing, being discriminated against, loneliness, and low socialization (Onat Kocabıyık, 2019). In addition to all these, social and family problems, overconfidence, negative behaviours of the teacher, lack of coordination with classmates, and communication gaps can also increase procrastination (Hussaina & Sultan, 2010).

4.1 Limitations and Recommendations

This study was carried out on academic and general procrastination of international students, especially from the Balkan countries and who studied in Turkey and Turkish students. The generalisability of these research outcomes has some limitations. The most important limitation is that country-based profile analyses can be made for students by accompanying a large sample size for each country. Unfortunately, the study did not compare the students for different education levels like high school and graduate school. Empirical support for various independent categories, e.g., gender, socio-economic status, is not provided due to the lack of information.

Considerably more work will need to be done to determine the latent profiles of students with regards to socio-economic status, course quality, instructor characteristics, social life, adaptation problems other than the country, and gender. The study's findings provide the following insights for future research: Further investigation and experimentation into academic procrastination is strongly recommended. International and local student centres especially psychological counselling, need to validate the latent profile of students on academic procrastination. Various group counselling activities are recommended for students struggling with academic procrastination to overcome the considerable concerns on procrastination.

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