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Research article

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Abstract

The purpose of this study is to compare the academic procrastination patterns of gifted students (GS) and typically developing students (TDS) in light of their temperamental characteristics. It is well established that academic procrastinating behavior has a wide range of repercussions on students' lives, school life, family relationships, and job choices. In addition to identifying potential variables that might be employed in causal analysis and intervention, it is critical to address and explain the factors that impede personal growth and performance. Academic procrastination is a widespread issue, psychosocial therapies to address it will not only promote students' academic growth but also improve the effectiveness of students, families, and educational professionals. In order to accomplish the aforementioned goals, a study involving 540 GS and 540 TDS from the senior year of high was carried out. According to their desire to participate and their placement in the pertinent cluster, which was established by using the Persona 360 School program in objective psychological tests, participating students were added to the study. The Functional Procrastination Scale, the Aitken Academic Procrastination Scale, and Temperament-Enneagram 9-Factor Personality Test were used to gather the data. Using the IBM SPSS 22.0 software suite, factor analysis and discriminant analysis were used in the analyses. The results showed that GS and TDS had different inclinations in terms of academic procrastination practices. Furthermore, it was discovered that, depending on their psycho-social traits and behavioral orientations, students' temperament and personality types affected the clustering pattern of procrastinating behavior. The findings were addressed in a context that would benefit parents, school counselors, and instructors.

Keywords: Giftedness, academic procrastination, functional procrastination, dysfunctional procrastination

1. Introduction

Academic procrastination behavior is delaying or postponing assignments that must be performed or finished within a specific deadline without a logical justification (Lay, 1986). Academic procrastination postpones tasks like assignments, tests, and academic performance until the last minute (Solomon & Rothblum, 1984). Researchers associate academic procrastination tendency with low self-regulation (Shaked & Altarac, 2022), lack of implementation or preparation skills (Zhu, 2023), weaknesses in time management skills (Xu, 2022), low self-confidence and self-efficacy (Zhang et al., 2023), irrational thoughts (Li et al., 2022), and neurotic perfectionism (Chen et al., 2022). According to studies, academic procrastination primarily causes school and academic failure (Aldalham, 2022), systematic falling behind in challenging and performance-demanding courses (Tan & Prihadi, 2022),



family conflict (Uzun et al., 2022), reluctance to attend school, and school dropout (Scheunemann et al., 2022). According to research, 90% of college students have procrastinated at some point (Visser et al., 2018). On average, 28% of students put off writing term papers, and 30% put off studying for exams. In this research (Cohen & Ferrari, 2008; Mohsin & Ayub, 2014), procrastination is associated with delaying gratification and perceiving schoolwork as tedious and exhausting.

Academic procrastination, a subset of life's chores and responsibilities specifically delayed, is a more common problem than general procrastination (Aydoğan, 2008; Balkis, 2006). Academic procrastination has a complex causal structure. The key contributing characteristics include personality traits, motivation, self-concept, self-efficacy, and time management (Ferrari, 1992; Martin et al., 1996; Walsh & Ugumba-Agwunobi, 2002). Various intra-individual characteristics (personality, motivation, and self-efficacy) and extra-individual factors (time management, performance pressure) is known to moderate the impact of these elements on academic procrastination (Winarso et al., 2023). The relationship between procrastination propensity and perceived responsibility was studied by Lee and colleagues in 2006. The results showed a connection between procrastinating habits and a sense of responsibility. Another important variable that stands out in the literature is perfectionism. Ferrari (1992) found that perfectionistic personality traits increase procrastination behavior. The multidimensional perfectionism scale's subdimensions and procrastination tendency were both found to be significantly correlated by Martin et al. (1996).

According to the pertinent literature, some aspects of accomplishment orientation positively correlate with procrastinating behavior, while others correlate negatively. Procrastination behavior and learning achievement orientation were found to have a lousy correlation in a study by Secher and Osterman (2002). In a study, Aydoğan (2008) claimed that academic procrastination is predicted by self-esteem. Ferrari (1992) contrasted people with high and low procrastination inclinations and found that those with high procrastination tendencies had a poorer view of their value regarding their cognitive talents. Academic self-efficacy is another idea that predicts academic procrastination and has been the subject of substantial research. Studies examining the connection between procrastination and self-efficacy beliefs, specifically academic self-efficacy, may be found in the literature (Sirios, 2004; Psifter, 2007). It has been found that procrastinating behavior and self-efficacy views have a strong, primarily negative association. Personality traits, achievement-oriented, self-efficacy beliefs, and self-esteem are recognized as crucial elements based on the studies mentioned above and literature explaining academic procrastination. However, how these factors interact with temperamental qualities to shape academic procrastinating behavior, including students' learning ability, needs to be examined.

In this context, the research aims to examine and test nine fundamental temperament (character) traits, such as responsibility, perfectionism, competitiveness, and impulsivity. Studies that associate personality traits with academic procrastination focus on the structural characteristics of responsibility and action resources (Moon & Gillingworth, 2005). Procrastinating behavior is more prevalent in individuals who perceive themselves as having less responsibility and less proactive behavior within a weak discipline model (Lee et al., 2006). Procrastination is one of many actions to which personality traits are linked, and they can be thought of as a trans-situational concept (Burger, 2006). Personality traits are related to consistently exhibiting behavior patterns across various life domains, which can be desired, healthy, and positively oriented. However, they can also exhibit negative stability depending on temperament traits and developmental trajectories (Trofimova et al., 2022). Individuals with specific stability can exhibit tendencies such as extraversion or introversion, perfectionism, or prioritizing responsibility at all times (Palanci, 2017). Research on how personality traits

influence human behavior can include different classification models. Recent studies related to academic procrastination have been more commonly associated with the five-factor personality model (Winarso et al., 2023). Another unique approach in recent years is the Enneagram theory (Hook et al., 2021). The Enneagram is a personality model that has gained popularity and provides deep insights into personality, going beyond viewing personality solely as pathological, cross-sectional, or disease-related and instead approaching it as more dimensional, developmental, associated with healthy and higher mental/behavioral functions (Daniels et al., 2018). According to the enneagram personality theory (EPT), personality is defined as nine types based on cognitive, emotional, and behavioral characteristics. A predictable behavioral cycle is identified for each type based on basic desires, fears, and stress responses (Tapp & Engebretson, 2010). According to the theory, each individual primarily belongs to one of these nine types. Although the primary type remains constant, behavioral variations can be observed based on sub-traits or experiences. An additional dimension that defines the instinctive existence of each of these nine types is also identified. This instinctual dimension creates motivational differentiation in individuals' relationships and behaviors (Riso & Hudson, 1994). Within this context, three sub-types are defined for each of the nine primary types, resulting in 27 personality types.

The Enneagram theory, with its comprehensive sub-dimensions and dynamic approach that describes the orientation, behavioral tendencies, and structural resources related to personality, would provide more explanation and advantages in explaining the concept of academic procrastination. Unlike other personality theories, it offers descriptive options with fewer errors by considering children and adolescents' temperament-character structures as developing personality traits, particularly in school research. Most personality models primarily focus on adult behaviors, which may limit their ability to explain adolescent behaviors. The Enneagram theory's comprehensive sub-dimensions, the dynamic consideration of personality within a structure, and the age-specific coverage of the temperament theory could potentially provide more accurate data (Daniels et al., 2018; Palancı et al., 2023; Riso & Hudson, 1994).

The temperament and personality traits, as well as being exceptionally talented, are known to differentiate children and adolescents in terms of academic, emotional, and vocational preferences within the school context (Özbay & Palancı, 2011). Children with such talents and traits have varying learning paces and interests. Contrary to expectations and shared knowledge, it is known that these individuals can experience a wide range of psychosocial problems, including learning difficulties, which can affect their lives. The fact that school practices and assignments are not adjusted according to the individual differences of gifted students can influence the nature of their academic procrastination behaviors, such as getting bored quickly and potentially other cognitive issues. The concept of active procrastination becomes prominent for these children. Delaying homework or responsibilities may be related to making the topic more detailed and creating new options to be more creative. The effort to make it perfect and develop creative personal characteristics is more frequently observed in gifted students (Palancı, 2004). In this case, comparing temperament traits with achievement traits can provide insights into whether procrastination is a question or a functional preference. The emerging results can enable us to make a comprehensive and accurate causal comparison regarding the nature of procrastination and personality type. Additionally, the differentiation of this group of students' purposes, motivation, family relationships, friendships, and learning characteristics can lead to changes in motivation sources (Kandemir & Palancı, 2014; Rabin et al., 2011; Wu et al., 2016).

In light of current research, examining the impact of the differences in learning and personality traits between gifted students (GS) and typically developing students (TDS) on



procrastination behaviors has been considered necessary due to the explanatory steps it can provide. Temperament and personality traits impact intelligence, learning ability, and self-perception within the scope of school practices. It is assumed that temperament traits will not lead to different behaviors in the same situations based on intelligence and ability traits, including problem-solving skills. It is believed that a student with high problem-solving ability and a lower ability will manifest personal traits considered sources of procrastination, such as responsibility, time management, self-expression, and self-regulation, using different mechanisms. Therefore, understanding the interaction effect between the students' intelligence and problem-solving skills and their personality traits and how it creates a divergence (classification) difference forms the main hypothesis of this research. Gifted and typically developing students may exhibit different procrastination behaviors depending on their temperament and ability levels.

Three different theories have been put out to investigate this goal:

1. In terms of functional procrastination, talented and typically developing students behave differently.
2. Students with giftedness and those who are ordinarily developing exhibit different patterns of academic procrastination.
3. The academic procrastination tendencies of gifted and typically developing individuals cluster in distinct ways based on temperament types.

2. Method

2.1. Research Design

The purpose of the study was to use a causal-comparative research design within the framework of descriptive research to understand the functional and undesirable academic procrastination habits of secondary school students. According to Fraenkel and Norman (2006), the causal-comparative study design involves examining correlations between variables in an existing state without the research's intervention while considering cause-and-effect interactions.

2.2. Participants

Students in their final year of high school (Grade 11 in Azerbaijan and Grade 12 in Turkey) made up the research group. Students who attended schools that used Persona 360 software for school counseling and psychological counseling services made up the participants. It was established through earlier contracts with pertinent parties that information from pupils in both public and private schools may be used anonymously. The research sample was chosen from children who had been classified as gifted by Guidance and Research Center (GRC) and Science and Art Centers (SAC) as well as from schools where information was gathered from students with a general intelligence test score of 130 or higher. Care was made to make sure that no pupils who were typically developing had a score of less than 100 on any kind of IQ test. The research data consists of 1,080 students attending 26 different secondary schools or educational courses. Among the students, 540 belong to the group of gifted children. The average age of students in this group is 17.06, with a standard deviation of 1.02. Out of the gifted students, 304 are male (56.29%), and 236 are female (43.71%). The classification was made with 540 students assigned to each MET category, calculated as 9×60 . Similarly, there are 540 students in the normal development group of the final year of high school. The average age of these students is 18.09, with a standard deviation of 1.45. Among the students with normal development, 270 are female (50.0%), and 270 are male (50.0%).

2.3. Research Ethics

The ethics committee approval was obtained from the Azerbaijan Technical Ethics Committee for the study with the protocol number 01/20 on 25.01.2021.

2.4. Data Collection Tools

2.4.1. Enneagram 9-factor personality scale (EFPS-9)

It is a 10-point likert-type scale developed by Palancı (2018). Preferences in this scale range from 0 to 100, representing a percentage, with the option to rate between these values. In the first stage, a pool of 134 items was prepared by the researcher. Based on the feedback from 6 experts who are knowledgeable about temperament-ennegram and actively involved in the field of psychology and psychiatry, the scale items in the item pool were reduced or revised, resulting in a 111-item form that was administered to the participants. Data analyses were conducted using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). In the first stage, six items were eliminated due to excessively low or high calculation values that disrupted the assumption of latent relationships and item-total correlations. The remaining 105 items were subjected to EFA and CFA analyses. Ultimately, a 90-item final scale form that ensured the highest level of validity, reliability, and usability was revealed. Data for the validation study were obtained from a total of 4,774 participants. To take the test, the minimum age level required is 15. The average age of the participants was calculated as 25.12 (SD: 11.02). The youngest participant was 15 years old, and the oldest participant was 42 years old. The distribution of participants by gender was 3,110 females and 1,664 males. For EFPS-9, the factor loading values ranged from 0.47 to 0.71, indicating that the scale items were grouped under nine factors and explained 68.6% of the total variance. The confirmatory factor analysis (CFA) conducted for EFPS-9 yielded the following fit index values: $\chi^2 = 116.09$ ($p = .000$), $\chi^2/df = 5.82$, RMSEA = .09, GFI = 0.82, AGFI = 0.88, CFI = 0.89, NNFI = 0.93. The results of the confirmatory factor analysis demonstrate that the theoretically proposed structure of the nine types of temperament-ennegram for the measured construct is statistically supported. Reliability analysis was conducted using Cronbach's alpha coefficient, and the obtained values ranged from .82 to .90.

2.4.2. Academic Functional Procrastination

Kandemir & Palancı (2014) functional procrastination represents an acceptable frequent behavior which increases success at work, makes persons more advantageous and acts as a success strategy towards a pre-designed goal that generally results in success at work. It is seen that procrastination behavior, mostly seen among students, is not sufficiently researched because of the fact that there aren't any scales, functional features of which are improved. Within this context, the objective of the research is to develop a scale that can assess the functional procrastination behavior of the students. For this reason, total 365 students of different demographic features and in different grades are taken into account. Exploratory Factor Analysis (EFA) was applied to the scale for the structure validity of the scale, and single factor structure became apparent. Then, Confirmatory Factor Analysis (CFA) was applied to the relevant structure. This CFA analysis was performed with new data taken from 295 students. After the Confirmatory Factor Analysis (CFA) was performed, concordance values of Academic Functional Procrastination Scale was found as follows: $\chi^2/df = 55.08/27$ (2.04); RMSEA, .05; CFI, .96; GFI, .95; NFI, .94; IFI, .97; and RFI, .90. In the factor analysis performed as regards to the structure validity of the scale, it was seen that factor loading that had the necessary feature to measure one dimension changed between .57 and .73. It was seen that obtained single factor structure explained 43.70% of the variance of academic functional procrastination.



2.4.3. Aitken Procrastination Inventory

The Academic Procrastination Scale (APS), created by Aitken (1982) to assess students' propensity to put off completing academic work, was translated into Turkish by Balkıs (2007). The scale is unidimensional and has 16 items that are rated on a 5-point likert scale. A sample of 293 students from various departments was selected for the adaption study by Balkıs (2007) in order to ensure validity. Four weeks later, a test-retest reliability evaluation was given to 100 of them. Correlations range from .33 to .73 were found when assessing the item-total correlations to evaluate whether each item measures the degree of academic procrastination. With a Cronbach's alpha (α) coefficient of .89, the scale's internal consistency dependability was judged to be satisfactory. The analysis conducted for test-retest reliability revealed a significant Pearson correlation coefficient of $r = .87, p < .001$. In order to test the construct validity of the scale, a factor analysis was performed, which revealed a one-factor structure for the scale. The single factor accounted for 38% of the variance, with an eigenvalue of 6.14.

2.5. Data Collection

The researchers used the Persona 360 School Counseling and Guidance Services software to administer the data collection tools to participants in groups. Participants received information about the study's objectives before the administration. With an achievement score of 130 or higher on the matriculation students from any high school who had previously participated in Science and Art Centers (SAC) programs were included in the group. Additionally, if the school counseling professionals did not express a contrasting opinion, students with a general intelligence test score of 130 or higher were included in the study. Along with objective test results, this assessment of the children's learning, behavior, and developmental potential was included as supporting data. Such a big sample for higher education admissions was attempted in an effort to assure student recruitment for admissions with as little error as feasible. About 40 minutes passed during the administration.

2.6. Data Analysis

The IBM SPSS 22.00 software suite was used to evaluate the data. The Kolmogorov-Smirnov test was utilized to determine whether the data distribution was normal. The skewness-kurtosis values obtained are within the permissible range of 1.5. The data were subjected to the normality test at a significance level of $p > 0.05$ to determine if they adhered to a normal distribution. It was decided to utilize parametric statistical methods for data analysis in the study since the normal distribution assumption was met and because of the characteristics of the data and the sample size. Item-total correlations ($r = .37$ to $r = .62$), sample adequacy (.890), and factorability were examined before factor analysis. Prior to doing discriminant analysis, assumptions of linearity and multicollinearity were investigated. It was found that there were no violations, allowing the studies to move on. The approved minimum confidence interval was set at a significance level of 0.05.

3. Findings

Tables 1 and 2 exhibit the results of the exploratory factor analysis (EFA) performed on high school seniors and the re-registered students for discriminant analysis. The scale created for the GS and TDS research teams is a 10-point Likert scale with percentage preferences that range from "not representing me at all" to "completely representing me." The principal component analysis approach was utilized for the solution analysis, and the varimax rotation method for the rotation procedure in the factor analysis. Table 1 data from GS students were subjected to factor analysis, and the results show that the KMO value was determined to be 0.914, which is acceptable and higher than the 0.7 cutoffs. With a result of 2687.669 and a significance level of $p < 0.000$, Barlett's Test of Sphericity shows that the data can be factored

and represented in several dimensions. The EFPS-9 test's nine variables' combined explained variance for GS is 66.44%. The Type 1 personality type in talented kids is the element that most significantly contributes to the overall explained variation. The contribution is ranked as Type 3, Type 7, Type 2, Type 4, Type 8, Type 5, Type 6, and Type 9 from highest to lowest.

Table 2 displays the EFA results from pupils that are typically developing. The KMO value is 0.896, which is higher than the predicted threshold of 0.7 based on the data. With a significance level of $p < 0.000$ and the acquired value of 2113.378 for Barlett's Test of Sphericity, it is possible to carry out the EFA for the EFPS-9 for TDS. The factor analysis rotation process employed the varimax rotation approach, while the solution analysis used the principal component analysis method. Nine factors were, as a consequence, obtained. Nine factors explain 65.75% of the variance overall. Type 1 is the element that most significantly contributes to the overall explained variance for children with normally developing brains. Type 1 is the element that most significantly contributes to the overall explained variance for children with normally developing brains. For kids that are regularly developing, Type 3, Type 2, Type 5, Type 7, Type 4, Type 8, Type 6, and Type 9 are the factors that are most frequently explained.

Table 1. *Factor Analysis of Temperament-Enneagram Conducted for GS*

Factor	Factor load	Sample item	Revelment variance
1. Perfectionist	10.32	Being late somewhere for me...	0.65
		Before starting a business, the roadmap ...	0.56
2. Helper	7.17	To show my love...	0.74
		My pride is quick...	0.68
3.Success-oriented/competitive	8.17	I always have a plan B ...	0.71
		Controlling my emotions is for me...	0.46
4. Genuine/Individualistic	7.09	To question the meaning of life...	0.59
		Envy for me...	0.61
5. Investigator/Observer	6.94	Oriented to space and exploration ...	0.48
		Loneliness and thinking ...	0.39
6.Responsible/Questionary	6.56	No matter how tired I am...	0.41
		For me, trusting people ...	0.47
7. Curious/Extrovert	8.1	People waiting in line or talking slowly...	0.74
		Showing my energy and joy...	0.69
8.Force-oriented/Combative	7.02	Even during my childhood, the intervention was made for me...	0.68
		Deciding instead of talking at length ...	0.64
9. Peaceful/Compatible	5.09	Always to agree....	0.72
		Waiting without knowing why...	0.70
Total	66.44		

Table 2. *Factor Analysis of Temperament-Enneagram Conducted for TDS*

Factor	Factor load	Sample item	Revelment variance
1. Perfectionist	9.18	Being late somewhere for me...	0.56
		Before starting a business, the roadmap ...	0.51
2. Helper	8.12	To show my love...	0.64
		My pride is quick...	0.57
3.Success-oriented/competitive	8.78	I always have a plan B ...	0.71
		Controlling my emotions is for me...	0.61
4. Genuine/Individualistic	7.12	To question the meaning of life...	0.58
		Envy for me...	0.57
5. Investigator/Observer	8.11	Oriented to space and exploration ...	0.44
		Loneliness and thinking ...	0.40
6.Responsible/Questionary	5.42	No matter how tired I am...	0.47
		For me, trusting people ...	0.52
7. Curious/Extrovert	7.91	People waiting in line or talking slowly...	0.61
		Showing my energy and joy...	0.62
8.Force-oriented/Combative	6.02	Even during my childhood, the intervention was made for me...	0.55
		Deciding instead of talking at length ...	0.59
9. Peaceful/Compatible	5.09	Always to agree....	0.60
		Waiting without knowing why...	0.59
Total	65.75		

An independent t-test was used to analyze the data obtained from two different samples in order to compare functional procrastination behaviors between gifted and typically developing students, in order to test Hypothesis 1. The findings are presented in Table 3.

Table 3. *Comparison of functional procrastination behaviors in GS and TDS*

Group	N	\bar{X}	SD	t	p
GS	540	3.69	0.46	2.99	0.01
TDS	540	3.45	0.57		

According to the results of the analysis, functional procrastination is significantly more utilized by gifted students ($t=2.99$, $p<0.001$).

The data from two separate samples, typical developing students and gifted students, were analyzed using an independent t-test to compare academic procrastination behaviors in order to test Hypothesis 2. The findings are presented in Table 4.

Table 4. *Comparison of academic procrastination behavior between GS and TDS*

Group	N	\bar{X}	SD	t	p
GS	540	2.67	0.69	0.82	0.54
TDS	540	2.61	0.66		

In the comparison of academic procrastination behavior between gifted and typical developing students, no significant difference was found at the level of ($t=0.82$, $p<0.05$).

Table 5. *Wilks' Lambda ve X² Values*

Function	Eigenvalue	% Variance	Canonical correlation	Wilks' Lambda	X ²	Df	p
1	0.06	100	0.49	0.968	12.4	1	0.001
2	0.04	100	0.41	0.903	2.2	1	0.03
Factors	Standardized Canonical Discriminant Function coefficients					Structure matrix	
GS	1					1	
TDS	2					2	
GS	N					\bar{x} SD	
FP	399					3.76 0.76	
AP	141					2.1 0.96	
TDS							
FP	176					2.19 1.02	
AP	364					3.44 0.67	

Accuracy Rate: % 64.7

As seen in Table 5, a discriminant function has been generated for GS. In discriminant analysis, an implicit discriminant function is created by the linear combination of one or more predictor variables with arithmetic means. The number of possible functions for this analysis is 2. In order to use the results of the discriminant function in an explanatory manner, eigenvalues, canonical correlation coefficients, and Wilks' Lambda (λ) values are taken into consideration (Çokluk, Şekercioğlu, & Büyüköztürk, 2016; Tabachnick & Fidell, 2015). When examining Table 5, the eigenvalue for the first function is low at 0.06, and the second function value is 0.04. Although the eigenvalue for the Canonical Discriminant (separation) Function Test is not an absolute recommended value, an observed value above 0.40 is considered "acceptable" in common calculations (Tabachnick & Fidell, 2015).

As seen in Table 5, Wilks' Lambda (λ) Test and Chi-Square Test values were examined to determine the significance of the first function for functional procrastination and academic procrastination generated for GS. The analysis resulted in a Wilks' Lambda (λ) Test value of 0.968 and $X^2 = 12.4$, $p<0.001$ for the first function. The Wilks' Lambda Test calculation for the generated function yielded a significant Chi-Square (X^2) calculation. The discriminatory power of the calculated discriminant function is significantly high. The results indicate that the groups can be differentiated with a discriminant function.

As seen in Table 5, Wilks' Lambda (λ) Test and Chi-Square Test values were examined to determine the significance of the first function for functional procrastination and academic procrastination generated for typical developing students. The analysis resulted in a Wilks' Lambda (λ) Test value of 0.903 and $X^2 = 2.2$, $p<0.05$ for the second function. The Wilks' Lambda Test calculation for the generated function yielded a significant Chi-Square (X^2) calculation. The discriminatory power of the calculated discriminant function is at an acceptable level. The results indicate that the groups can also be differentiated with a second-level discriminant function.

Table 6. *Structure Matrix for GS*

	Function 1	Function 2
Perfectionist	0.678 (*)	0.574
Success-oriented/Competitive	0.518 (*)	0.296
Investigator/Observer	0.403 (*)	0.279
Curious/Extrovert	0.323 (*)	0.192
Force-oriented/ Combative	0.297 (*)	-0.257
Genuine/Individualistic	0.288 (*)	-0.242
Helper	0.083	0.216 (*)
Peaceful/Compatible	0.017	0.178 (*)
Responsible/Questionary	0.011	0.154 (*)

Table 7. *Structure Matrix for TDS*

	Function 1	Function 2
Responsible/Questionary	0.572 (*)	0.297
Force-oriented/ Combative	0.412 (*)	-0.504
Success-oriented/competitive	0.301 (*)	0.248
Investigator/Observer	0.167 (*)	-0.008
Perfectionist	0.068	0.296 (*)
Genuine/Individualistic	0.074	0.216 (*)
Helper	0.071	0.178 (*)
Curious/Extrovert	0.054	0.154 (*)
Peaceful/Compatible	0.049	0.148 (*)

The differentiation scores of EFPS-9 Temperament-Personality types obtained from factor analysis for GS and TDS are presented in Tables 6 and 7 along with the structure matrices in order of significance for functional procrastination and academic procrastination. The prioritization of personality factors in terms of their significance in both functions of the discriminant analysis for EFPS-9, listed from highest to lowest based on discriminant function scores, is presented.

Upon examining the structure matrices, it can be observed that for both GS and TDS, the Wilk's Lambda value is statistically significant for the first and second functions derived from the discriminant analysis. According to these results, FP differentiates significantly at a high level for GS in relation to Types 1, 3, 5, 7, 8, and 4. TDS, the Wilk's Lambda value is statistically significant for the second function. Taking this into consideration, AP shows a significant differentiation for Types 6, 8, 3, and 5 among TDS.

4. Discussion, Conclusion and Recommendations

Hypothesis 1: The study's initial hypothesis has been verified. GS display higher degrees of functional procrastination behavior than TDS. The literature does not go into great depth on the subject of functional procrastination. Yet more conceptual approaches are being used to address it (Brownlow & Reasinger, 2000; Chen & Zeng, 2022; Cherrier et al., 2023). There is no evidence that being gifted increases procrastination as a motivational or self-regulatory coping strategy, functional procrastination, or both. Studies on gifted children mostly concentrate on how procrastination is exacerbated by neurotic perfectionism and a propensity for detail-oriented behaviors (Guthrie & Gurskyj, 2022; Khavasi, Saeidmanesh, & Azizi,

2022). It has been discovered that the academic procrastination behaviors of gifted students are linked to a number of variables, such as learning difficulties (Khazaleh, Alshraah, & Abzakh, 2023), play commitment and attention deficits (Desmet & Pereira, 2022), psychosocial characteristics, family, and self-regulation issues (Yildirim & Dong, 2022). Academic procrastination is discussed in terms of a wide range of causal factors for students who are typically developing, such as learning disabilities, low motivation, self-regulation problems, family conflicts, school dropout tendencies, weak achievement orientation, and other academic personal competencies (Hill et al., 2022). However, the typical result of this study indicates that bright kids are more likely to engage in functional procrastination. The subject can be further investigated and deepened by taking into account additional intra- and interpersonal aspects.

Hypothesis 2: The results of this study do not support the idea that GS and TDS demonstrate different patterns of academic procrastination. It can be argued that group membership is not the main factor in self-regulation problems and academic responsibility delayed between GS and TDS, despite the possibility of causative differences in these areas. On the other hand, Hypothesis 1 has been successful in establishing a specific causality with respect to the anticipated divergence. The majority of studies to date suggest that there is no discernible difference between GS and TDS in terms of academic procrastination behaviors (Korkmaz, Ilhan & Bardakci, 2018; Collier, Jacobsen, & Stahl, 1987; Laffoon, Jenkins-Friedman & Tollefson, 1989). Even though this is the case in previous studies, one can question why a hypothesis that runs counter to this was developed for this study. According to the researchers, this is likely due to the possibility that Covid-19-related changes in the environment may have affected how GS and TDS coped. A temporal difference in their self-regulation abilities may also have been brought about by the increased availability of academic support services for pupils, increased parental involvement in education, and expanded psychological counseling services in schools. This difference thought to show in a temporal or educational-personal development setting, was thought to be absent, according to the theory. Through the use of fresh variables and new research techniques in the causal analysis, the study has nevertheless demonstrated a shift based on individual variations within this scope. In Hypotheses 1 and 3, this source of difference which could not be explained in the literature, is discussed as a fresh discovery.

Hypothesis 3: The finding that academic procrastination tendencies in GS and TDS cluster differently based on temperament types has been verified. Based on temperament characteristics, academic procrastination behavior clusters for GS and TDS are different. Regarding causal association, this discovery has assisted in the proposal of an "intermediary variable" that can help in explaining a hazy area that has either been proven or unconfirmed in various investigations. Functional procrastination and academic procrastination preferences result in different tendencies and outcomes for GS and TDS, as indicated by temperament. The study has obtained its intended conclusions about clustering and causal inference. While an in-depth study is lacking, at least one important factor that can explain the discrepancy in the comparison between gifted and non-gifted children has been found. The results that were supported by Hypothesis 1 and disproved by Hypothesis 2 can be further explored and used as the foundation for subsequent studies. According to Type 1 (Perfectionist), Type 3 (Competitive-Achiever), Type 5 (Investigative-Observant), Type 7 (Impulsive-Extraverted), Type 8 (Struggle-Power Oriented), and Type 4 (Individual-Unique), functional procrastination is clustered in GS in a meaningful order. There is no study that thoroughly discusses the relationship between GS and temperament or the relationship between GS and temperament with reference to academic/functional procrastination. However, based on the literature on temperament, it is not very likely to expect Types 7 and 4 to participate in functional



procrastination. Type 7 kids, who have the most difficulty controlling their conduct, are skilled in this area since they are gifted. Similarly, Type 4 kids' low energy levels and internal tension impose stress on their coping mechanisms. However, a novel finding has been made that sheds light on the achievement orientation of talented students who belong to the artist-artistic Type. This finding also helps to understand and delve deeper into the intra-variability and within-temperament individual differences of students who belong to the same temperament group. The matrix structure for TDS revealed functional procrastination in students that fit Type 6 (Responsible-Questioning), Type 3 (Struggling-Power Oriented), Type 3 (Competitive-Achiever), and Type 5 (Investigative-Observant) personality types. In relation to the individual differences that account for the causality of academic procrastination, this discovery introduces a novel individual difference finding. The results on GS and functional procrastination suggest that perfectionism really aids in the generation of fresh, original ideas, contrary to what the existing research, which views perfectionism as a barrier to academic procrastination, claims. Similar to this, TDS temperament, particularly temperament types like responsible, striving, achievement-oriented, and investigative, plays a part in academic procrastination. As a result, even kids who lack talent yet have certain temperamental traits have functional procrastination attitudes. This discovery offers an important illustration for psychological research, arguing that rather than establishing absolute causation, an understanding of how circumstances, personality traits, and talents interact can show a cause-and-effect link or even the interchangeability of these factors.

5. Recommendations

- In order to distinguish functional procrastination from typical academic procrastination, functional procrastination should be discussed more within the context of positive psychological ideas.
- Between GS and TDS, functional procrastination differs. GS demonstrates a stronger propensity for functional procrastination.
- Between GS and TDS, general academic procrastination doesn't seem to vary much. This discovery is consistent with earlier findings reported in the literature. But when individual variances are taken into account within the context of temperament, this generalization vanishes. Through comparable association research, this discovery which explains more particular behavioral patterns for subsets can be refined further.
- Psychologists and teachers can organize interventions and support activities tailored to students based on their temperament type to transform procrastination attitudes into functional ones, leading to more effective and personalized choices.
- Delaying gratification (Type 7) could be an important variable to develop in students. Qualitative or mixed-method studies in this direction can be expanded.
- Procrastination attitudes in TDS can be addressed with more concrete and specific concepts for different personality types. By focusing on how responsibility, power, achievement, and research orientation are utilized by other personality types, especially through peer learning and group guidance, a fast-paced interaction and behavior change program can be prepared.
- It is possible to examine which traits might make effective models and how personal motivation and orientation sources based on temperament types can direct other disadvantaged personality types. It is possible to provide new justifications for motivational sources, orientation, and achievement orientation, especially for group guiding. The idea of temperament seems to have promise for offering richer and more thorough information in this area.

- Teachers and psychologists may find alternative solutions that are simple to implement by providing separate options based on temperament orientation, taking ability level and independent of ability, for concepts like self-regulation, self-management, academic motivation, and goal setting.

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