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Temperament Characteristics, Cognitive Flexibility and Multidimensional Perfectionism among Adolescents

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Abstract

This study aimed to examine the temperament characteristics, cognitive flexibility, and multidimensional perfectionism among adolescents. A correlational research method was used to examine the relationship among variables and a sample of 340 school students was selected from different low-cost private schools. The participants were aged between 13 and 18 years. The convenience sampling technique was used to collect the sample. Urdu versions of the Early Adolescent Temperament Questionnaire Revised (EATQ-R), Cognitive Flexibility Inventory (CFI), and Almost Perfect Scale-Revised (APS-R) were used to measure all the variables. Results through statistical analysis revealed that Adaptive perfectionism was positively correlated with cognitive flexibility, activation control, affiliation, attention, pleasure sensitivity, and perceptual sensitivity and negatively correlated with aggression. Maladaptive perfectionism was positively correlated with aggression and negatively correlated with activation control. Cognitive flexibility was positively correlated with pleasure sensitivity, perceptual sensitivity, activation control, affiliation, inhibitory control, and attention. Moreover, results through mediation analysis revealed that cognitive flexibility was playing a partial mediating role between temperament characteristics and adaptive perfectionism. Results through independent t-test analysis revealed that the gender differences were found in adaptive perfectionism, maladaptive perfectionism, shyness, surgency, and activation control. The class difference was found in maladaptive perfectionism, pleasure sensitivity, activation control, and surgency. Through the results, it is concluded that temperament characteristics and adaptive perfectionism were mediated by cognitive flexibility. The results support the enhancement of cognitive flexibility and strategies for temperament improvement for adaptive perfectionism among adolescents.

Keywords: *Temperament Characteristics, Multidimensional Perfectionism, Cognitive Flexibility, Adolescents, School Students*

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1. Introduction

Adolescence is a period marked by significant transformations: shifts in hormonal levels and physical development, alterations in social interactions, and developments in both brain structure and psychological processes. While many adolescents make a successful transition to adulthood, this phase also brings susceptibility to mental health issues. During childhood and adolescence, the brain and body undergo significant changes, and the mind evolves accordingly. Cognitive abilities evolve during this period, including the development of mentalising, understanding others' perspectives, and improving skills such as planning, behavioral inhibition, and certain types of memory (Blakemore, 2019).

Temperament refers to early-emerging individual differences in how individuals react to both external and internal stimuli, such as their levels of excitability, responsiveness, and physiological arousal. It also encompasses the processes of neural and behavioral self-regulation that modulate these reactions. Temperament influences how individuals respond and adapt to their surroundings and affects the feedback they receive from others. However, there is limited knowledge regarding how temperament specifically influences adolescents' emotional responses in academic settings. Understanding the temperamental factors that contribute to academic emotions is crucial, as these emotions are closely linked to students' cognitive abilities, motivation, and academic achievement (Lehikoinen et al., 2019). Temperamental traits may influence how adolescents respond to changes in their behavior throughout time. Additionally, it has been established that adolescent adjustment is influenced by temperament. Children who exhibit elevated levels of a temperament characterized of negative affect may be more susceptible to developing perfectionistic tendencies. This can have a profoundly detrimental impact on children's lives and cause significant distress (Hirvonen et al., 2018).

Cognitive flexibility is a fundamental aspect of executive function, encompasses the ability to adapt and modify cognitive processes and behaviors in response to dynamic situational demands. It involves seamlessly transitioning between tasks, adapting perspectives, and modifying responses to suit specific contexts. This skill enables effective problem solving, creative thinking, and the ability to navigate shifting environments (Geurts et al., 2009). Cognitive flexibility is the skill that allows individuals to smoothly transition between different rules, tasks, and actions as required by the situation. It involves the capacity to adapt and change mental strategies effectively when facing new challenges or shifting demands. This ability enables people to think creatively, solve problems, and adjust their behavior according to changing circumstance (Brockmeyer et al., 2022). Lack of cognitive flexibility can result in negative outcome. it can person towards negative behaviors such as perfectionism (cutuk, 2020)

Perfectionism is a personality trait marked by a relentless pursuit of flawlessness and setting extremely high performance standards, often accompanied by overly critical self-evaluations (Stoeber et al., 2020). Understanding of perfectionism has become more nuanced. Initially viewed solely in a negative light, it acknowledged that perfectionism could also have positive aspects proposed that perfectionism has a dual nature: it can be a positive trait driven by intrinsic motivation, but it can also manifest as an unhealthy and irrational belief. Healthy or normal perfectionists are capable of setting realistic goals based on their strength's and weaknesses. They experience satisfaction upon achieving these goals. Additionally, they demonstrate flexibility by adjusting their standards when necessary, such as in situations where absolute accuracy is not required. In contrast, neurotic perfectionists set overly ambitious goals, are perpetually dissatisfied with their efforts, maintain rigidly high standards, and struggle with flexibility. Adaptive perfectionism relates to positive dimensions, such as personal standards and organizational skills. On the other hand, maladaptive perfectionism characterized by negative aspects like doubting behavior and fear of making mistakes. Maladaptive perfectionism, specifically its negative aspects, are associated with academic burnout. In contrast, positive aspects of perfectionism linked with increased academic engagement (Fang & Liu, 2022).

The study was conducted to explore the relationship among all variables and mediating role of cognitive flexibility. This approach can help to understand psychological dynamics that shape adolescents' experiences. Adolescents are the future leaders, professionals, and contributors to society, by identifying vulnerable points where cognitive flexibility and temperament intersect, interventions can design to equip adolescents with the skills needed to avoid sliding into negative perfectionistic tendencies. Understanding the factors that influence their development can have long-term implications for creating a generation equipped with the psychological tools to navigate challenges, make positive contributions, and lead fulfilling lives.

Studies have suggested that different temperaments are related to different kinds of perfectionism. Order perfectionism significant negative predictor of physical aggression, verbal aggression, and anger on the other hand maladaptive perfectionism was positively significantly predicted hostility, anger and physical aggression and high standard was a negative predictor of hostility but unexpectedly high standard was a positive predictor of verbal aggression (Öngen, 2009).

The study aimed to explore how temperament, rumination, cognitive flexibility, and trait anxiety contribute to predicting depressed mood among university students. Using data from 322 students at Azarbaijan Shahid Madani University, researchers assessed these factors using various inventories. The findings indicated that certain aspects of temperament specifically harm avoidance, self-direction, and persistence were significantly correlated with depression. Additionally, rumination and cognitive flexibility were identified as mediating factors in predicting depressed mood. It means that higher levels of rumination and lower cognitive flexibility enhance the impact of temperament and trait anxiety on predicting depression among students (Chalabianloo & Parvaz, 2022). A study involving 2,865 participants from the 2016 Harmonized Cognitive Assessment Protocol sub-study of the Health and Retirement Study (HRS), researchers explored how personality traits from the Five-Factor Model (FFM) relate to cognitive function in older adults. Participants completed various cognitive tasks that memory, speed-attention-executive function, visuospatial ability, fluency, and numeric reasoning. Personality traits were assessed using Five-Factor Model measure administered in 2014 or 2016. Results showed that a level of Neuroticism consistently linked to poorer performance across all cognitive tasks. Conversely, greater Conscientiousness was associated with better performance across all cognitive domains, although not uniformly across every task. Openness and Agreeableness generally linked to better cognitive performance across domains, except for

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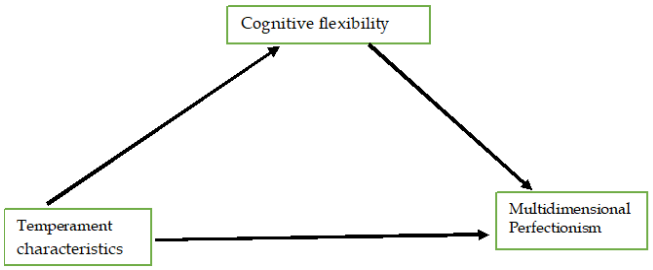
numeric reasoning. Extraversion showed associations with improved speed attention-executive function and fluency tasks. The study did not find significant moderating effects of socio demographic factors or overall cognitive function on these personality-cognition relationships (Sutin et al., 2019).

Researchers have identified a complex relationship between cognitive flexibility and perfectionism, with cognitive flexibility exhibiting different relationships with adaptive and maladaptive forms of perfectionism. Some studies have found a positive connection, while others have reported a negative association between these two constructs. However, a key finding is that positive perfectionism is positively related to cognitive flexibility, whereas maladaptive or negative perfectionism is negatively related to cognitive flexibility. Adaptive perfectionism was linked to cognitive flexibility, suggesting that individuals with higher levels of adaptive perfectionism tend to have better cognitive flexibility (Vakilian et al., 2020).

A study examined the mediating role of cognitive flexibility between five factor personality traits and life satisfaction. It was a cross sectional study. The results revealed that the personality traits of extraversion, agreeableness, conscientiousness, and neuroticism found to be important indicators of life satisfaction. Furthermore, noteworthy connections were observed between personality traits, cognitive flexibility, and life satisfaction. The findings from the mediation analysis highlighted that cognitive flexibility plays a crucial intermediary role in the connection between personality traits and life satisfaction. These outcomes shed light on a potential mechanism through which the distinct dynamics of cognitive flexibility could enhance the process of recognizing positive emotional experiences and fostering life satisfaction (Odacı & Cikrikci, 2018). The study found that when fearful temperament and cognitive shift were considered jointly, they predicted higher scores on certain perfectionism dimensions, specifically self-oriented perfectionism-critical and socially prescribed perfectionism. This effect was particularly pronounced in children with greater deficits in cognitive shifting. However, this combined influence did not have a significant impact on scores related to self-oriented perfectionism striving. These findings echo earlier research, suggesting that self-oriented perfectionism-critical and socially prescribed perfectionism may indicate negative or maladaptive forms of perfectionism, whereas self-oriented perfectionism-striving may represent a more positive or adaptive aspect. Additionally, it appears that the factors contributing to maladaptive and adaptive perfectionism have distinct and separate influences on development (Affrunti, 2016). Self-Determination Theory provides a valuable understanding of the relationships among temperament characteristics, cognitive flexibility, and multidimensional perfectionism among adolescents. According to self determination theory adolescents have three innate psychological anatomy, competence and relatedness (Nogg et al., 2021). When these needs are supported, adolescents are more likely to experience intrinsic motivation, which can foster a more adaptive and healthy approach to perfectionism(Fang & Liu, 2022). When adolescents feel autonomous, competent, and related, they are more likely to develop cognitive flexibility, which can help them navigate the challenges of perfectionism (Kashdan & Ciarrochi, 2013).Temperament characteristics, such as neuroticism and conscientiousness, can also influence adolescents' motivation and approach to perfectionism(Stoeber et al., 2018). So self determination theory help to understand the complex relationship among temperament characteristics, cognitive flexibility and multidimensional perfectionism.

The objective of this study is to find a relationship among temperament characteristics, cognitive flexibility, and multidimensional perfectionism in adolescents. We expect to find a significant relationship between these variables. We also think that cognitive flexibility plays a role of mediator between temperament characteristics and cognitive flexibility. Additionally, we expect to find differences in cognitive flexibility, perfectionism, and temperament across different grade levels and genders.

Figure 1 *Conceptual Framework*



This study was about temperament characteristics, cognitive flexibility and multidimensional among adolescents. Where temperament characteristics have functioned as a independent variable whereas multidimensional perfectionism as a dependent variable. Cognitive flexibility has functioned as a mediator between the relationship of temperament characteristics and cognitive flexibility.

2. Method

2.1 Research Design

The correlational research design was used in our study because we intended to see the relationship among temperament characteristics, cognitive flexibility and multidimensional perfectionism in adolescents.

2.2 Data Source and Sample

The students with the age range of (13 to 18) were included in this study. Total 340 students were selected for this study of age 13 to 18 with (M_{age}=14.25 and SD=1.19) and gender with 66.8% girls. In term of grades, 126 students were selected on middle level and 214 students were selected on elementary level. Adolescents aged 13 to 18 were selected from different private schools of Faisalabad for the research. The inclusion and exclusion criteria was that the adolescents of below age 13 and above age 18 were not selected from schools and also students from government schools and high cost private schools were not included in this study. The students with learning difficulties, physical and mental retardation excluded from the study.

2.3 Research Instruments

2.3.1 Early Adolescent's Temperament Questionnaire (EATQ; Capaldi & Rothbart, 1992) Urdu version of 65 items EATQ-R questionnaire was used and this scale has been previously used with adolescents aged 12 to 18 (Hoffmann et al., 2017). It includes 12 subscales, which measure different constructs of temperament. These subscales are Activation control (The ability to act even in the face of a strong inclination to avoid it. Attention (it is the ability to focus and shift attention as needed). Fear (Unpleasant feelings associated with anticipating distress). Frustration (it is about negative feelings arising from the interruption of ongoing tasks or goals). High-Intensity

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Pleasure/Surgency: Enjoyment derived from activities involving high intensity or novelty. Inhibitory Control (it is the ability to plan and suppress inappropriate responses). Pleasure Sensitivity (it is the amount of pleasure experienced from activities or stimuli involving low intensity, rate, complexity, novelty, and paradox). Perceptual Sensitivity (it is awareness or detection of slight, low-intensity stimulation in the environment). Shyness (it is behavioral inhibition towards novelty and challenge, particularly in social situations). Aggression (Actions characterized by hostility and aggression, encompassing physical violence directed at people or objects, verbal aggression both direct and indirect, and reactive hostility). Depressive Mood (it is unpleasant feelings and a lowered mood, accompanied by a diminished interest and enjoyment in activities). It is scored on a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree) and item numbers 2, 7, 10, 18, 19, 26, 28, 34, 38, 49, 53, and 61 have reverse scoring. The reliability of the scale is 0.64 to 0.81. In this research, the reliability of the translated version of this scale is within the same range.

2.3.2 Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) Urdu version of twenty items cognitive Flexibility Inventory used to assess cognitive flexibility, which has two sub-scales; CFI control assesses the tendency to believe one can control challenging situations. CFI alternative assesses the ability to generate alternative explanations and solutions to difficult circumstances. Items 2, 4, 7, 9, 11, and 17 have reverse scoring on a 7-point Likert scale, with 1 being the most strongly disagreed with and 7 being the most strongly agreed with. We used the Urdu version of the Cognitive Flexibility Inventory. Higher overall scores imply greater cognitive flexibility. The total score ranges between 20 and 140. The overall reliability of this scale is 0.81, the reliability of the alternative subscale is 0.75, and the reliability of control subscale is 0.77 respectively. This scale has been previously used with adolescence of age 12 to 18 (Yousefi et al., 2022). In this research, the reliability of both sub-scales is 0.80 and 0.70 respectively.

2.3.3 Almost Perfect Scale Revised (ASP-R; Slaney, 2001) Almost perfect scale revised includes 23 items. The Urdu version of Almost Perfect Scale-Revised was used in this research, which included two subscales adaptive perfectionism and maladaptive perfectionism. The adaptive perfectionism subscale includes the items, that tell about the setting of high personal standards, and the maladaptive perfectionism subscale includes the items, which describe the individual perspective on perceiving a gap between personal standards and actual performance. The reliability of Urdu version of adaptive and maladaptive perfectionism sub-scales is 0.79 and 0.80 respectively. In this research, the reliability of both sub-scales is 0.81 and 0.75 respectively. The scale is scored on seven Likert response scales from 1 (totally disagree) to 7 (totally agree). Almost perfect scale revised has been used for adolescents aged 13 to 18 (Bokhari & Shahed, 2019).

2.4 Procedure

The data was collected from different low-cost private schools in Faisalabad, Pakistan. Firstly, permission was taken from the Departmental Board of Studies and Institutional Review Board. To collect the data from different schools first the authority letters were signed by the dean/chairman/chairperson of the department. After obtaining permission from the authorities of the schools, the participants approached, and parental consent of the students was taken through consent forms. It was informed that the information they will provide would be solely for research purposes. Their confidentiality and privacy will be safeguarded, and their data will be treated with utmost respect and care. Following the consent process, participants were asked to complete a personal information form. This form gathered essential demographic data. Once the data collection process was finalized, the gathered information was analyzed. Statistical techniques and analytical methods were employed to derive meaningful insights from the data.

3. Result

Descriptive statistics applied to analyze the data using SPSS (22). Moreover, t-test, Pearson Product moment correlation, mediation through process Version 4.2 (Hayes, 2022) was used to investigate the relationship between variables

Table 1

Demographic Characteristics of Participants (N=340)

Variables	Groups	*F (%)*	*M (SD)*
Age			14.25(1.19)
Number of siblings	No siblings	10(2.9)	
	1-2 siblings	95 (27.9)	
	3 or more siblings	233 (68.5)	
	Missing	2 (.6)	
	Total	340 (100)	
Close Friends	No friends	20 (5.9)	
	1-2 friends	83 (24.4)	
	3-4 friends	110(32.4)	
	More than 4 friends	127(37.4)	
	Total	340(100)	
Grades in percentage			78 (11.96)
Gender	Girls	227(66.8)	
	Boys	113(33.2)	
	Total	340	
Birth order	First born	103(30.3)	
	Second born	73(21.5)	
	Middle child	54(15.9)	
	Youngest	94(27.7)	
	Only child	9(2.6)	
	Missing	7(2.1)	
	Total	340	
Class	Middle	126(37.1)	
	Elementary	214(62.9)	
	Total	340	

The table presented the demographic characteristics of the study participants, including their ages, number of siblings, friendships, academic performance, gender distribution, birth order positions, and class distribution. The participants' ages ranged from 13 to 18 years (M= 14.25, SD = 1.199). 68.5% participants have 3 or more siblings, while 37.4% participants reported that they have more than four close friends. Participants' academic performance was measured in terms of grades, with an average percentage of 78% (SD = 11.96). The sample

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Table 2
Inter-correlation among Temperament Characteristics, Cognitive Flexibility and Multidimensional Perfectionism among Adolescents(N=340)

variables	*AP*	*MP*	*ACC*	*AFF*	*AGG*	*ATTE*	*DEPR*	*FEA*	*FRUS*	*INHHI*	*PLEA*	*PERC*	*SHYN*	*SURG*	*A-CFI*	*C-CFI*	*CFI*	*M*	*SD*
AP																		52.58	8.70
MP	*-.25***																	40.11	9.50
ACC	*.21***	*-.17*																14.65	3.72
AFF	*.18***	*-.02*	*.04*															19.09	3.69
AGG	-.16**	*.20***	*-.11**	*08*														16.00	4.69
ATTE	*.17"**	*. 05*	*.03*	*. 14***	*-.04*													18.56	4.01
DEPR	*-.08*	*.09*	*- .17***	*.07*	*.19***	*-.17**												20.58	4.42
FEAR	*.08*	*-.05*	*-.04*	*.14**	*.06*	*-.08*	*.20***											20.60	5.24
FRUS	*.04*	*.04*	*-.00*	*.16***	*.11**	*-.01*	*.27***	*.30***										24.16	5.11
INHI	*.04*	*-.06*	*.03*	*.08*	*-.02*	*.05*	*.09*	*.10*	*.10**									18.44	3.60
PLEA	*.23***	*.05*	*.01*	*.23***	*.02*	*.. 27***	*.03*	*.03*	*.08*	*-.07*								17.82	3.89
PERC	*.19***	*02*	*.14***	*.14***	*.01*	*.18***	*.07*	*.13**	*.03*	*.24***	*.11**							14.56	3.32
SHYN	*.06*	*.00*	*.08*	*.02*	*.02*	*.01*	*.09*	*.20***	*.14***	*.11**	*.00*	*.11**						12.71	4.01
SURG	*.01*	*-.03*	*.07*	*.03*	*.06*	*-.00*	*.06*	*.02*	*.05*	*.02*	*.02*	*-.01*	*-.11**					20.22	4.42
A-CFI	*.49***	*-.09*	*.22***	*.25***	*-.09*	*.18*	*-.01*	*.02*	*.09*	*.18***	*.19***	*.18***	*.02*	*.02*				63.78	10.85
C-CFI	*.35***	*.01*	*.03*	*.08*	*.08*	*.05*	*.05*	*.10*	*.07*	*.18*	*.23***	*.03*	*-.10*	*10*	*.36***			35.49	6.13
CFI	.52**	-.06	.18**	.22**	-.03	.15""	.01	.06	.10	.26**	.24**	.15**	-.02	-.06	.91**	.70**		7.13	49.63

Note. A-APSR(Almost Perfect Scale Revised), M-ASR(Maladaptive Perfect Scale-R), ACC(Activation Control), AFF(affiliation), AGG(Aggression), ATT(attention), DEP(Depress Mood), FEAR(Fear), FRUS(Frustration), INHI(inhibitory Control), PERCE(Perceptual Sensitivity), PLEA(pleasure sensitivity), SHY(Shyness),

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consisted of 227 girls (66.8%) and 113 boys (33.2%). Participants' birth orders were with the largest group being the "first" born (30.3%). Students divided into two categories middle and elementary class with percentage of 37.1 and 67.9.

Table 2 shows the Mean, Standard deviation and inter-correlation among adaptive perfectionism and maladaptive perfectionism, Early adolescent temperament questionnaire revised subscales (activation control, affiliation, attention, fear, frustration, surgency, inhibitory control, pleasure sensitivity, perceptual sensitivity and shyness, aggression depressive mood) and cognitive flexibility inventory subscales(cognitive flexibility inventory alternative and cognitive flexibility inventory control). Results shows that Adaptive perfectionism is correlated with cognitive flexibility, activation control, affiliation, attention, pleasure sensitivity, and perceptual sensitivity and negatively correlated with aggression. Maladaptive perfectionism is positively correlated with aggression and negatively correlated with activation control. Moreover, cognitive flexibility is positively correlated with pleasure sensitivity, perceptual sensitivity, activation control, affiliation, inhibitory control, and attention.

Figure 2. ***Mediating Role of Cognitive Flexibility between Attention and Adaptive Perfectionism***

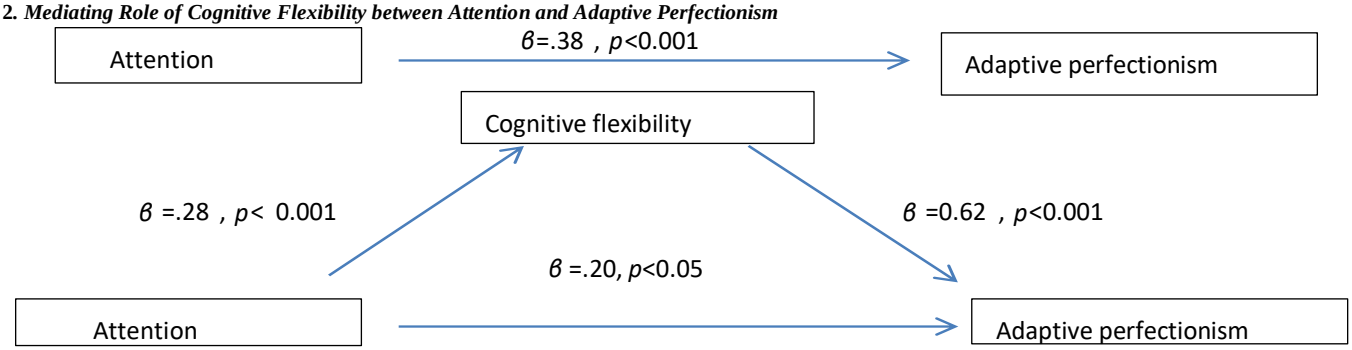

Figure 2 Mediating Role of Cognitive Flexibility between Pleasure Sensitivity and Adaptive Perfectionism

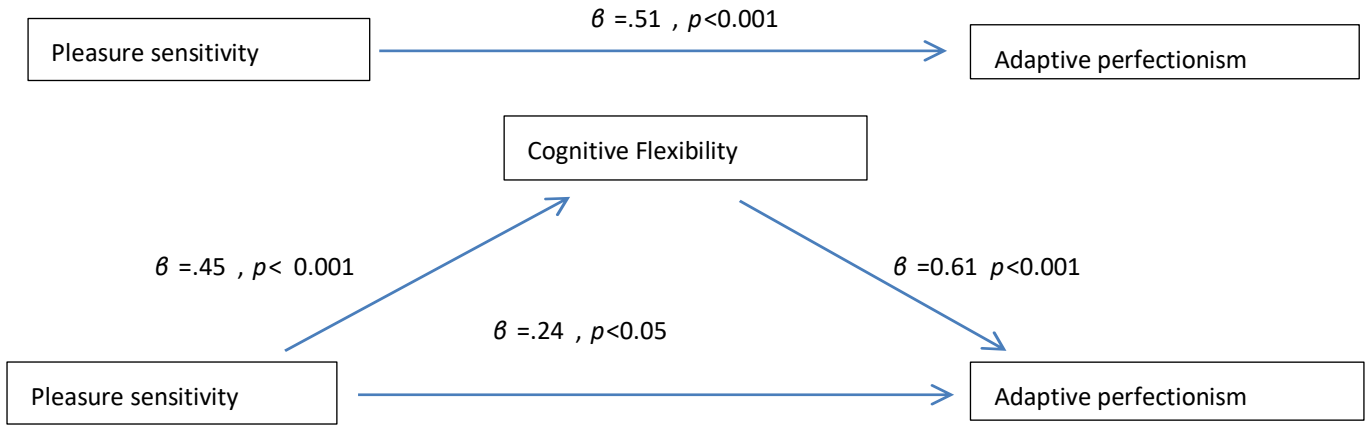

Figure 1 revealed that attention significantly predicted the cognitive flexibility, β =.28, p<0.001, cognitive flexibility significantly predicted the adaptive perfectionism β =0.62 p<0.001 and β controlling for the mediator attention significantly predicted the adaptive perfectionism β =.20, p<0.05. Total effect of attention on adaptive perfectionism is β =.38, p<0.001 It was found that cognitive flexibility partially mediated the relationship between attention and adaptive perfectionism. Mediation analysis indicated that pleasure sensitivity significantly predicted the cognitive flexibility, β =.45, p<0.001, cognitive flexibility significantly predicted the adaptive perfectionism β =0.61 p<0.001 and controlling for the mediator the pleasure sensitivity significantly predicted the adaptive perfectionism β =.24, p<0.05 and total effect of pleasure sensitivity on adaptive perfectionism is β =.51, p<0.001. It was found that cognitive flexibility partially mediated the relationship between pleasure sensitivity and adaptive perfectionism. Figure 3 Mediation analysis indicated that perceptual sensitivity significantly predicted the cognitive flexibility, β =.33, p<0.001, cognitive flexibility significantly predicted the adaptive perfectionism β =0.62 p<0.001 and controlling for the mediator the perceptual sensitivity significantly predicted the adaptive perfectionism β =.30, p<0.05 and total effect of perceptual sensitivity on adaptive perfectionism is β =.51, p<0.001. It was found that cognitive flexibility partially mediated the relationship between perceptual sensitivity and adaptive perfectionism.

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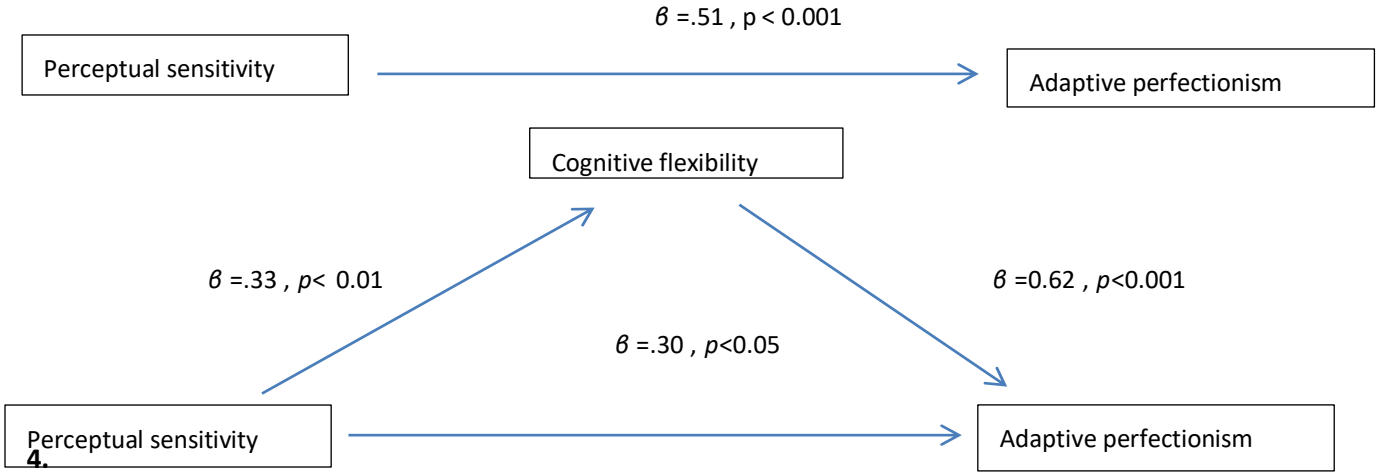
Figure 3 ***Mediating Role of Cognitive Flexibility between Perceptual Sensitivity and Adaptive Perfectionism***



4.

Table 3
Independent Sample t-test for Gender Differences on Temperament Characteristics and Multidimentional Perfectionism among Adolescents (N=340)

	Boys (*n*=113)		Girls(*n*=227)		*t*	*P*	95% CI		Cohe n's d
Variables	*M*	*SD*	*M*	*SD*			*LL*	*UL*	
AP	50.16	9.12	53.78	8.25	3.67	0.00	1.68	5.55	0.41
MP	43.37	8.62	38.49	9.52	-4.58	0.00	-6.96	-2.78	0.53
Shy	12.09	3.62	13.02	3.66	2.19	0.02	.097	1.75	0.25
Surg	20.98	4.04	19.85	4.95	-2.09	0.03	-2.18	-.069	1.52
Acti	14.04	3.95	14.95	3.58	2.12	0.03	.067	1.74	0.24

Note: AP (Adaptive perfectionism), MA(Maladaptive perfectionism), Shy(Shyness),surg(surgency),active(activation control

Table 4
Independent Sample t-test for Class Differences on Temperament Characteristics and Multidimensional Perfectionism among Adolescents (N=340)

	Middle (n=126)		*Elementary(n=214)*		*t*	*P*	*95% CI*		*Cohe*
Variables	*M*	*SD*	*M*	*SD*			*LL*	*UL*	*n's d*
Plea	18.62	2.99	17.35	4.26	2.93	0.00	.41	2.11	0.34
Surg	21.32	4.49	19.58	4.70	3.35	0.00	.71	2.76	0.37
Act	14.05	3.86	15.11	3.61	-2.26	0.02	-1.76	-.125	0.28

Note: MP(maladaptive perfectionism), plea(pleasure sensitivity), surg(surgency), active(activation control

Results revealed the gender difference on perfectionism. Findings indicated mean difference on adaptive perfectionism with *t* (340) =3.67 *p*< 0.01 and maladaptive perfectionism with *t* (340)= -4.58, p< 0.001 and girls exhibited higher mean scores on adaptive perfectionism (*M*=53.78, *SD*=8.25). Results also revealed that boys exhibited higher mean scores on maladaptive perfectionism (*M*=43.37, *SD*=8.62) as compare to girls. Mean difference on shyness with t=-2.09, p<0.05 the girls exhibited higher mean scores (*M*=13.09, *SD*=3.66). Mean difference on surgency with *t*=2.198, *p*<0.05 the boy exhibited higher mean scores is (*M*=20.98, *SD*=4.04). Mean difference on activation control with *t*=2.12, *p*<0.05 the girls exhibited higher mean scores (*M*=14.9, *SD*= 3.58) which means that the girls exhibited higher activation control.

Results revealed the difference in term of class. Mean difference on pleasure sensitivity with *t*=2.93, *p*<0.01 the middle students exhibited higher mean scores is (*M*=18.62, *SD*=2.99). Mean difference on surgency with *t*=3.35, p<0.01 the middle students exhibited higher mean scores (*M*=21.32, *SD*=4.49). Mean difference high on activation

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control with t=-2.26, $p<0.05$ the elementary students exhibited higher activation control.

4. Discussion

The study was conducted to see the temperament characteristics, multidimensional perfectionism and cognitive flexibility among adolescents. The results support the hypothesis as the relationship among variables and mediating role of cognitive flexibility find out through statistical analysis.

A study demonstrated substantial differences between the variables of perception of control, perception of multiple options, perception of reasons, cognitive flexibility and perfectionism in the three groups. Perfectionism was positively connected with the variables of perception of control, perception of multiple solutions, perceptions of justifications, and cognitive flexibility, according to the findings of Pearson correlation coefficient (Entezari et al., 2018). Perfectionism can emphasize the importance of fulfilling our desires and experiencing pleasure, a perfectionist might believe that achieving satisfaction is a key part of being perfect. In simpler terms, pleasure comes from our faculties (like our abilities) working perfectly, and it is a personal feeling that accompanies the goodness of what we are doing (Hayes, 2021). A research investigation carried out to explore the connections between meditation, cognitive flexibility, and mindfulness. The study revealed that individuals who practice meditation tend to exhibit strong attention skills and cognitive flexibility. Attention and cognitive flexibility are positively correlated (Moore & Malinowski, 2009).

Differences or gaps between one's expectations and reality were associated with higher levels of feelings such as anger, physical aggression, and hostility. On the contrary, when individuals felt that their lives were organized and orderly, it was linked to lower levels of anger, physical aggression, and verbal aggression (Öngen, 2009). A study indicated that higher levels of temperamental effortful control, as reported by parents, linked to reduced activation in the dorsolateral prefrontal cortex in preschool-aged children. Moreover, these children demonstrated improved performance on cognitive flexibility task (Quiñones-Camacho, 2019). Cognitive flexibility has a meaningful impact on happiness. According to statistical finding, this quality is vital as it enables individuals to replace detrimental thoughts with more adaptive ones. Those with high cognitive flexibility possess the capacity to consider and apply various coping mechanisms to resolve issues and reduce emotional distress (Demirtas, 2020). A role of perfectionism as a predictor and role of cognitive flexibility as a mediator was examined for people with alexithymia. It showed that cognitive flexibility and adaptive perfectionism are negatively associated with alexithymia, adaptive perfectionism had indirect effect rather than direct, and study shows the positive relationship between cognitive flexibility and perfectionism (Vakilian et al., 2020).

There is an increasing incidence of aggression among adolescents, which has become a significant public health issue. Research has identified correlations between perfectionism and feelings of anger, aggression, and hostility). The findings from structural equation modeling indicate that perfectionism oriented towards others and perfectionism driven by social expectations is predictors of increased feelings of anger, aggression, and hostility (Abdollahi et al., 2023). Self-oriented perfectionism was found to positively predict positive emotions, engagement, meaning, and accomplishment. Other-oriented perfectionism positively predicted meaning and accomplishment. In terms of overall wellbeing, socially prescribed perfectionism had a negative impact, while self-oriented and other-oriented perfectionism positively contributed to wellbeing. These results suggest that self-oriented perfectionism is a constructive form that supports flourishing, whereas socially prescribed perfectionism is detrimental. Interestingly, other-oriented perfectionism identified as a positive contributor to wellbeing, challenging the notion that this type of perfectionism is exclusively negative (Birch et al., 2019). Self-efficacy not typically considered a temperament characteristic. Instead, it is a psychological concept that refers to an individual's belief in their ability to achieve specific goals or tasks. It closely related to self-confidence and one's perception of their own competence in various situations (Kurtovic, 2019). The people who are high on cognitive reappraisal and can regulate their emotions, which is an aspect of activation control have a strong inclination towards perfectionism focused on themselves which is also called pure self-oriented perfectionism because they know how to regulate their emotions as compared to people with other-oriented perfectionism (Hill & Davis, 2014).

Limitations

Due to shortage of time, correlational research was conducted but in the future longitudinal study can be conducted. Comparative studies in the future can also help to find out moderators. Adolescents from different school types might have diverse experiences that could affect the relationships being studied. These limitations warrant careful consideration when interpreting and applying the study's results to a broader context. Relying on self-report measures can introduce response bias, as participants might answer in ways they perceive as socially desirable or in line with expectations. They might respond in ways that they believe are expected, particularly when discussing sensitive topics like perfectionism and cognitive abilities.

Conclusion

Results revealed that adaptive and maladaptive perfectionism was differently correlated with different temperament characteristics. Adaptive perfectionism positively correlated with affiliation, pleasure sensitivity, perceptual sensitivity, attention, and activation control. Maladaptive perfectionism positively correlated with aggression and negatively correlated with activation control. Cognitive flexibility positively correlated with inhibitory control, affiliation, pleasure sensitivity, perceptual sensitivity, and attention and activation control. Cognitive flexibility played a partial mediating role between (pleasure sensitivity, perceptual sensitivity, attention), and adaptive perfectionism, and the mediating role between temperament characteristics and maladaptive perfectionism could not identified. Gender and class differences were also identified through statistical analysis.

Implications

The study looked at how the variables are connected. This study helps to understand the different temperament characteristics linked with multidimensional perfectionism. The results could be helpful for teachers, parents, and people who help with mental health. For teachers, it might show ways to help students handle challenges better. Parents could learn how to support their kids' growth and achievement without putting too much pressure on them. People who help with mental health could learn better ways to work with teens who struggle with perfectionism. Adolescence is a pivotal period marked by transitions, challenges, and opportunities for growth. By comprehending the role of cognitive flexibility in mediating the

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connection between temperament traits and perfectionism, educators can design targeted interventions to nurture cognitive skills that promote adaptive responses to challenges. Educators could implement strategies that foster cognitive flexibility, encouraging students to approach difficulties with resilience and adaptability, thereby mitigating the risk of negative perfectionism and its detrimental effects on self-esteem and motivation.

Ethical Consideration:

The authors declare that the submission of the article follows the policies of AJSS as mention in the Guide for Authors.

Informed consent

Parental consent from the parents of the participants taken, because participants were minor, which is a fundamental ethical practice. It ensured that appropriate permission obtained from the authorities of the schools before initiating data collection. Participants were also informed that their information will be used solely for research purposes, and their confidentiality and privacy would be safeguarded. Participants assured that their involvement was voluntary, and they had the freedom to withdraw from the study at any point without facing any consequences.

Declaration of Interest Statement:

The authors assert that they do not have any competing financial interests or personal relationships that could have potentially influenced the research findings presented in this paper

References

Affrunti, N. W., Gramszlo, C., & Woodruff-Borden, J. (2016). Executive function moderates the association between fearful temperament and dimensions of perfectionism. Personality and Individual Differences,89,117-122. https://doi.org/10.1016/j.paid.2015.10.012

Abdollahi, A., Gardanova, Z. R., Ramaiah, P., Zainal, A. G., Abdelbasset, W. K., Asmundson, G. J., ... & Iswanto, A. H. (2023). Moderating role of self-compassion in the relationships between the three forms of perfectionism with anger, aggression, and hostility. Psychological reports,126(5),2383-2402. /10.1177/00332941221087911

Brockmeyer, T., Febry, H., Leiteritz-Rausch, A., Wünsch-Leiteritz, W., Leiteritz, A., & Friederich, H. C. (2022). Cognitive flexibility, central coherence, and quality of life in anorexia nervosa. Journal of eating disorders, 10(1), 22. https://doi.org/10.1186/s40337-022 00547-4

Bokhari, F. A., & Shahed, S. (2019). Psychometric Properties of the Urdu Version of Almost Perfect Scale-R. Pakistan Journal of Social and Clinical Psychology, 17(2), 27-32.

Birch, H., Mcgann, D., & Riby, L. (2019). Perfectionism and PERMA: The benefits of other-oriented perfectionism. International Journal of Wellbeing, 9(1), 20-42. doi:10.5502/ijw.v9i1.749

Blakemore, S. J. (2019). Adolescence and mental health. The lancet, 393(10185), 2030-2031. https://doi.org/10.1016/S0140 6736(19)31013

Çutuk, Z. A. (2020). Relationship between multidimensional perfectionism and cognitive flexibility in university students. Journal of Human Sciences,17(4),1263–1274. https://doi.org/10.14687/jhs.v17i4.6090

Capaldi, D. M., & Rothbart, M. K. (1992). Development and validation of an Early Adolescent Temperament Measure. The Journal of Early Adolescence, 12(2), 153–173. https://doi.org/10.1177/0272431692012002002

Chalabianloo, G. R., & Parvaz, R. (2022). The Role of Temperament, Rumination, Cognitive Flexibility and Trait Anxiety in Predicting Depressive Mood. Psychological Studies, 18(1). https://doi.org/10.22051/PSY.2022.33726.2347

Demirtaş, A. S. (2020). Optimism and happiness in undergraduate students: Cognitive flexibility and adjustment to university life as mediators. Anales de Psicología/Annals of Psychology, 36(2), 320-329. https://doi.org/10.6018/analesps.381181

Dennis, J. P., & Vander Wal, J. S. (2010). The Cognitive Flexibility Inventory: Instrument development and estimates of reliability and validity. Cognitive Therapy and Research, 34(3), 241–253. https://doi.org/10.1007/s10608-009-9276-4

Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: a meta-analysis. Psychological bulletin, 132(1), 33. https://doi.org/10.1037/0033-2909.132.1.33

Esfahani, F. S., & Besharat, M. A. (2010). Perfectionism and anger. Procedia-Social and Behavioral Sciences, 5, 803-807. https://doi.org/10.1016/j.sbspro.2010.07.188

Entezari, M., Shamsipour Dehkordi, P., & Sahaf, R. (2018). Effect of physical activity on cognitive flexibility and perfectionism in the elderly. Iranian Journal of Ageing, 12(4), 402-413.https://doi.org/10.21859/SIJA.12.4.402

Fang, T., & Liu, F. (2022). A review on perfectionism. Open Journal of Social Sciences, 10(1), 355-364.https://doi.org/10.4236/jss.2022.101027

Hill, A. P., & Davis, P. A. (2014). Perfectionism and emotion regulation in coaches: A test of the 2× 2 model of dispositional perfectionism. Motivation and Emotion, 38, 715-726.https://doi.org/10.1007/s11031-014-9404-7

Hayes, M. (2021). Finding pleasure and satisfaction in perfectionism. Utilitas, 33(3), 270286.3.https://doi.org/10.1017/S095382082000045X

Hirvonen, R., Väänänen, J., Aunola, K., Ahonen, T., & Kiuru, N. (2018). Adolescents' and mothers' temperament types and their roles in early adolescents' socioemotional functioning. International Journal of Behavioral Development, 42(5), 453–463. https://doi.org/10.1177/0165025417729223

Hoffmann, M., Pérez, J. C., García, C., Rojas, G., & Martínez, V. (2017). Chilean adaptation and validation of the Early Adolescent Temperament QuestionnaireRevised version. Frontiers in Psychology, 8, 2131.https://doi.org/10.3389/fpsyg.2017.02131

Kurtovic, A., Vrdoljak, G., & Idzanovic, A. (2019). Predicting procrastination: The role of academic achievement, self-efficacy and perfectionism. International Journal of Educational Psychology: Ijep, 8(1), 1-26.http://dx.doi.org/10.17583/ijep.2019.2993

Kashdan, T. B., & Ciarrochi, J. (Eds.). (2013). Mindfulness, acceptance, and positive psychology: The seven foundations of well-being. New Harbinger Publications.https://doi.org/ 10.1037/14093-000

Lehikoinen, A., Ranta-Nilkku, E., Mikkonen, J., Kaartinen, J., Penttonen, M., Ahonen, T., & Kiuru, N. (2019). The role of adolescents' temperament in their positive and negative emotions as well as in psychophysiological reactions during achievement situations. Learning and Individual Differences, 69, 116-128. https://doi.org/10.1016/j.lindif.2018.11.004

Muris, P., & Meesters, C. (2009). Reactive and regulative temperament in youths: Psychometric evaluation of the Early Adolescent Temperament QuestionnaireRevised. Journal of Psychopathology and Behavioral Assessment, 31, 7-19.https://doi.org/10.1007/s10862-008-9089-x

Moore, A., & Malinowski, P. (2009). Meditation, mindfulness and cognitive flexibility. Consciousness and cognition, 18(1), 176-186.https://doi.org/10.1016/j.concog.2008.12.008

Nogg, K. A., Vaughn, A. A., Levy, S. S., & Blashill, A. J. (2021). Motivation for physical activity among US adolescents: A self-determination theory perspective. Annals of Behavioral Medicine, 55(2), 133-143. https://doi.org/10.1093/abm/kxaa093

Öngen, D. E. (2009). The relationships between perfectionism and aggression among adolescents. Procedia-Social and Behavioral Sciences, 1(1), 1073-1077. https://doi.org/10.1016/j.sbspr2009.01.193

Odacı, H., & Cikrikci, Ö. (2019). Cognitive flexibility mediates the relationship between big five personality traits and life satisfaction. Applied Research in Quality of Life, 14(5), 1229-1246. https://doi.org/10.1007/s11482-018-9651-y

Journal of Psychology, Health and Social Challenges
Journal homepage: www.jphasc.com
ISSN ONLINE: 3006-8800/PRINT: 3006-8797

Quiñones-Camacho, L. E., Fishburn, F. A., Camacho, M. C., Wakschlag, L. S., & Perlman, S. B. (2019). Cognitive flexibility-related prefrontal activation in preschoolers: A biological approach to temperamental effortful control. Developmental Cognitive Neuroscience, 38, 100651. https://doi.org/10.1016/j.dcn.2019.100651

Stoeber, J., Madigan, D. J., & Gonidis, L. (2020). Perfectionism is adaptive and maladaptive, but what's the combined effect?. Personality and Individual Differences, 161, 109846. https://doi.org/10.1016/j.paid.2020.109846

Stoeber, J., Corr, P. J., Smith, M. M., & Saklofske, D. H. (2018). Perfectionism and personality. In: The psychology of perfectionism: Theory, research, applications (pp. 68-88). Routledge. https://kar.kent.ac.uk/57109/

Sutin, A. R., Stephan, Y., Luchetti, M., & Terracciano, A. (2019). Five-factor model personality traits and cognitive function in five domains in older adulthood. BMC geriatrics, 19, 1-10.https://doi.org/10.1186/s12877-019-1362-1

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The Revised Almost Perfect Scale. Measurement and Evaluation in Counseling and Development, 34(3), 130–145. https://doi.org/10.1080/07481756.2002.12069030

Vakilian, L., Tarkhan, M., & Khalatbari, J. (2020). Predicting alexithymia based on early maladaptive schemas and perfectionism mediating the role of cognitive flexibility in patients with chronic pain. Thoughts and Behavior in Clinical Psychology, 15(57), 77-84.https://doi.org/10.30486/jsrp.2020.1896772.2394

Yousefi Afrashteh, M., & Hasani, F. (2022). Mindfulness and psychological well-being in adolescents: the mediating role of self-compassion, emotional dysregulation and cognitive flexibility. Borderline personality disorder and emotion dysregulation, 9(1), 22. https://doi.org/10.1186/s40479-022-00192-y