

Lower secondary school's students' perfectionism relationship with academic performance and creative thinking

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Abstract: Perfectionism is described as the setting of excessively high standards or expectations regarding one's own performance which may lead to adaptive or maladaptive behaviors. Adaptive perfectionism has been shown to be positively linked to academic performance, while the opposite is the case for maladaptive perfectionism. The purpose of the present study was to investigate the relationships between perfectionism, creativity, and academic performance among Greek young adolescents. Two hundred and eighty-two students with average age of 13.7 years filled in a Greek version of the Almost Perfect Scale-Revised (APS-R) and completed the figural tasks of Torrance Test of Creative Thinking (TTCT). In addition, students' school grades in the school subjects of Modern Greek and Mathematics were used as an indication of their academic performance. The results, in general, showed non-significant correlations between the cognitive processes of creativity (originality, fluency, flexibility, and elaboration) and school grades, as well as perfectionistic behaviors and creativity. However, perfectionism seemed to be related with grades in Mathematics and Modern Greek and both types of perfectionism appeared to predict academic performance. Adaptive perfectionists displayed, in general, significantly higher academic performances and higher accuracy in the elaboration subscale of TTCT, which includes school-like activities. Overall, the results demonstrated that adaptive perfectionism has a positive relationship with academic performance of young adolescents, yet not on creativity. This is an indication that adaptive perfectionists direct their efforts mainly to goals that are valued by the school culture.

Keywords: perfectionism; creativity; academic performance; secondary school; adolescence

INTRODUCTION

Although there is a lot of interest in the topic of perfectionism, an outcome variable that has received little attention in relation to it, is creativity, even more on school students. It seems that this relationship is unclear, as the previous adult-focused studies have displayed contradictory results (Joy & Hicks, 2004; Ahmetoglu et al., 2015; Wigert et al., 2012; Kim et al., 2017; Gallucci et al., 2000). On the other hand, many studies have examined the relationship between perfectionism and academic achievement, and it seems that both types of perfectionism (adaptive and maladaptive) are associated with it (Madigan, 2019). Given that, the general aim of this study is to explore perfectionism in relation to creativity and academic performance among secondary school students.

PERFECTIONISM

“Perfectionism is a personality disposition characterized by a striving for flawlessness and setting exceedingly high standards of performance accompanied by overly critical self-evaluations and beliefs that others expect perfection” (Stoeber, 2018, p. 3). Although most of the studies on perfectionism have focused on adults or college students. Research interest in perfectionism is growing, as being an increasingly frequent characteristic among secondary school students (Curran & Hill, 2019). Traditionally, views on perfectionism were polarized. Some theorists considered perfectionism as a positive and necessary disposition for a healthy personality development, while others presented it as a sign of psychological maladjustment (Burns, 1980; Pacht, 1984). Only since the 1990s has been conceptualized as a multidimensional and multifaceted structure (Enns & Cox, 2002; Stoeber, Edbrooke-Childs & Damian, 2016). Hewitt and Flett (1991) theorized that perfectionism consists of three dimensions: self-orientation, socially-prescription, and other-orientation. Self-oriented perfectionism indicates a tendency to set high standards, and a tendency to concern for malfunction in achievement. Socially-prescribed perfectionism reflects the beliefs of one’s self has that others set excessively high standards for them, and will be dissatisfied if these standards are not met. Other-oriented perfectionism concerns the tendency to set inherently improbable anticipations for others, and to assess them sternly (Curran & Hill, 2019). Stoeber and Otto (2006) categorised perfectionists into healthy and unhealthy based on their perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings are identified as positive features of

perfectionism, while perfectionistic concerns are linked to maladaptive aspects. According to their theory, individuals with high perfectionistic strivings and low perfectionistic concerns are classified as healthy perfectionists, while people with the opposite characteristics are categorised into unhealthy perfectionists (Stoeber & Otto, 2006). Bieling, Israeli and Antony (2004) concluded that perfectionism consists of two dimensions: adaptive and maladaptive perfectionism by comparing varying models of the perfectionism construct in the literature. Adaptive perfectionism describes normal, healthy, and intense efforts to achieve certain goals. It results in satisfaction deriving by achievements related to high but realistic standards (Frost et al., 1993; Stoltz & Ashby, 2007), and it is associated with positive effects and healthy psychological adjustment (Rice & Mirzadeh, 2002; Saboonchi & Lundh, 2003). In contrast, maladaptive perfectionism has been characterized by an excessive need for control, high and often unrealistic personal performance standards, low tolerance of failure, and harsh self-criticism (Stoeber & Otto, 2006). These aspects have linked the maladaptive component to higher concerns about making mistakes, great emotional distress, and low interpersonal adjustment (Gilman & Ashby, 2003; Rice & Dellwo, 2002). Furthermore, maladaptive perfectionists have perceived higher rates of failure, experience mistakes as catastrophic and tend to undermine their success (Ashby, LoCicero & Kenny, 2003; Rice & Slaney, 2002). Finally, in comparison with adaptive perfectionists, maladaptive perfectionists seem to have lower levels of general and social self-esteem (Ashby & Rice, 2002), to be less self-restrained (Periasamy & Ashby, 2000), to have lower levels of decision making ability (Ganske & Ashby, 2007), and to express higher levels of procrastination (Slaney et al., 1996).

The distribution of perfectionism in the general population in the literature is scarcely mentioned. One study with adults by Rice, Richardson, and Tueller (2014) classified 18% of their sample as non-perfectionists, 61% as adaptive perfectionists, and the remaining 21% as maladaptive perfectionists. Studying perfectionism among school students in secondary school, where outlooks for academic success become more notable (Wentzel, 1997).

A few studies have investigated the relationship of perfectionism with creativity and academic achievement on individuals, especially adolescents. "Academic achievement is an outcome of learning, which is typically measured by classroom grades, classroom assessments, and external achievement tests" (Gajda et al., 2017, p. 2). Research has shown that academic performance is linked to students' personality (Poropat, 2009), cognitive skills (Chamorro-Premuzic & Furnham, 2003), motivation (Di Domenico & Fournier, 2015) and socio-economic factors (Sackett et al., 2009). Spinath (2012) claimed that due to its importance for individuals and society, academic achievement constitutes a main focus of

perfectionist students. Early studies considering perfectionism as a unidimensional construct have related it to high academic performance and academic success (Frost et al., 1990). However, when perfectionism was examined as a multidimensional construct, adaptive perfectionists were found to express positive attributes leading to successful academic performance, such as low academic procrastination, academic efficacy and academic achievements (Accordino, Accordino & Slaney, 2000; Bong et al., 2014; Damian, Stoeber, Negru, & Băban, 2014; Nounopoulos et al., 2006; Stoeber & Rambow, 2007; Stornelli, Flett & Hewitt, 2009). In contrast, most studies associated maladaptive perfectionism with negative outcomes such as fear of failure, anxiety in tests, low academic efficacy, and low academic achievements (Bong et al., 2014; Herman, Wang, Trotter, Reinke, & Ialongo, 2013; Nounopoulos et al., 2006; Stoeber & Rambow, 2007). However, there is some evidence that maladaptive perfectionists achieve high academic performance (Stornelli et al., 2009). It seems therefore that the links between academic performance and perfectionism are not fully understood yet.

CREATIVITY

Creativity is defined as the production of a product or an idea that is novel, surprising and compelling (Kaufman & Sternberg, 2007), and is becoming a globally popular focus in this first two decades of 21st century (Bloom & Dole, 2018). The development of creativity is described as one of the goals in modern school curricula worldwide (Wyse & Ferrari, 2015), yet, it considered of lesser importance in comparison with other traditional educational aims (Beghetto & Kaufman, 2014). The relationship between creativity and academic achievement has been an issue for more than half a century for educators and psychologists (Cline et al., 1962; Mednick, 1963). Research findings demonstrate a moderate positive relationship between creativity and academic achievement. A meta-analysis by Gajda, Karwowski and Beghetto (2017) showed that there is a modest but significant positive correlation between the two ($r = .22$), but they observed a stronger relationship when it comes to secondary school students ($r = .33$). Moreover, Ai (1999) discovered there is a positive correlation between fluency, flexibility, and elaboration, three aspects of creativity, with academic achievement in Mathematics, Natural Sciences, and Social Sciences.

The relationship between the constructs of creativity and perfectionism has received some research attention during the last decades. For instance, research has shown that both creativity and perfectionism are strongly influenced by individual differences such as

personality and motivational dispositions (Mumford & Gustafson, 1988). Both creative people and adaptive perfectionists appear to share the ability to look at the world from different perspectives, tolerate mistakes, and delve into the unknown (Wigert et al., 2012). Yet, there are some contrasting characteristics of creative individuals and perfectionists. For instance, creative people are characterized for their tolerance of ambiguity (Sternberg & Lubart, 1991), a factor that has been found to be a major difficulty for perfectionists (Frost et al., 1990). Also, several researchers have pointed out that the rigidity of thought of perfectionists can lead them to reduced cognitive flexibility (Burns & Fedewa, 2005; Gallucci et al., 2000; Sirois et al., 2000).

The few studies that have considered perfectionism as a unidimensional construct in relation to creativity, indicated diverse results. For instance, Joy and Hicks (2004), in a study with undergraduate college students found perfectionism to be negatively correlated with the need for diversity and the openness to new experiences, two characteristics closely related to creativity. Another study by Ahmetoglu et al., (2015), using a self-report checklist to estimate creativity, found creative achievements and perfectionism to be significantly correlated.

Nevertheless, some studies that examined perfectionism as multidimensional demonstrated positive relationships between adaptive perfectionism and creativity. A study by Wigert and colleagues (2012) with university students, indicated a significant positive relationship between adaptive perfectionism and creativity, while no significant correlation was found between maladaptive perfectionism and creativity. Creativity in this study however was measured by self-perceptions instead of a more objective measure. Another study by Kim and colleagues (2017) with adults, where their creativity was assessed by their employers, demonstrated that perceived creativity was positively correlated with self-oriented perfectionism, but it was uncorrelated to socially-prescribed perfectionism. In contrast, Gallucci et al., (2000) using the Khatena-Torrance Creative Perception Inventory to measure the creative perceptions of individuals, showed that creativity was negatively correlated to perfectionistic striving, a positive feature of perfectionism. To conclude, the studies on the relationships between perfectionism and creativity are insufficient in number, with drawbacks in their methodology such as the use of self-report questionnaires for the measurement of creativity, and further, their sample usually consists of adults.

RESEARCH AIMS

Summarizing, despite the research interest shown for perfectionism, there is a lack of studies examining perfectionism in Greek student population. The current study attempts to explore the distribution among the Greek secondary school students and its relationship with academic performance and creativity. In particular, the present study aims at contribute to the existing literature by examining adaptive and maladaptive perfectionism in relation to creativity and academic performance among secondary school students. In doing so, the purpose of this study was therefore (a) to explore whether perfectionism effects on academic achievement and creativity and (b) to investigate the relationships between perfectionistic behaviours, academic achievement and creative thinking. Given that academic achievement is highly valued among society and individuals (Spinath, 2012) we hypothesize that perfectionists achieve higher school grades compared to non-perfectionists. We further expect that the adaptive aspects of perfectionism relate positively to creativity and academic achievement as supported by the majority of previous research (Accordino, Accordino & Slaney, 2000; Bong et al., 2014; Damian, Stoeber, Negru, & Băban, 2014; Nounopoulos et al., 2006; Stoeber & Rambow, 2007; Stornelli, Flett & Hewitt, 2009; Wigert et al., 2012; Kim et al., 2017).

METHOD

Participants

The sample consisted of 282 students from two public secondary schools located in an area in Athens with inhabitants of low to middle income, of which 142 (50.4%) were boys. Also, 102 (36.2%) of the participants were in the 7th, 95 (33.7%) were in the 8th, and 85 (30.1%) were in the 9th grade. Their mean age was 13.7 years. Most participants were of Greek origin (96.5%).

Design and Procedure

In accordance to Greek regulations, approval for the study was obtained by the Greek Ministry of Education, acting on a proposal by the Institute of Educational Policy which examined the ethics and the methodology of the study. In accordance to the approval terms, first, the principals and teachers of the participating schools consented after they were informed about the purpose, the duration, the anonymity and the confidentiality of the study. Afterwards, a letter including a form of consent was send to students' parents including detailed information about the purpose of data collection, and assurance for anonymity and confidentiality. In the letter it was also mentioned that children would not

run physical or psychological risks during the study, and that they could withdraw at any point during the process. In this research only students whose parents signed the consent form participated.

Data collection took about an hour and took place within their classroom under the supervision of the school teacher. All students received instructions for fulfilling the instruments and students' queries were discussed before the administration of the instruments.

Measures

Perfectionism in the present study was examined with the ***Almost Perfect Scale-Revised (APS-R)*** (Slaney et al., 1996), because of its extensive studies regarding its psychometric characteristics (see Rice et al., 2014) as well as because it has been used for studying perfectionism among secondary school students (LoCicero & Ashby, 2000). It is a twenty-three item self-report instrument which consists of three subscales: (a) "standards", is a 7-item subscale, which measures high expectations being set with a high need for excellence, and it is assessing the positive characteristics of perfectionism, (b) "discrepancy" -a twelve-item subscale- which measures respondents' perceptions of themselves as falling to meet their personal standards for performance, assessing the negative aspects of perfectionism, and (c) "order" -a 4-item subscale- which measures a preference for neatness and order, and has been described as a neutral feature of perfectionism (Rice et al., 2011), on a 5-point Likert scale. The APS-R has been translated in Greek by Diamantopoulou & Platsidou (2014) for a study with adults. However, for the purpose of this study, some linguistic adaptations were made in order to be understood by secondary school students. Cronbach's alpha for the seven "standards", 12 "discrepancy", and the four "order" items were .68, .76, and .85 respectively.

Creative thinking was measured with the ***Torrance Test of Creative Thinking (TTCT)*** which is appropriate for all ages, from kindergarten to adult, and it consists of three activities; picture construction, picture completion, and repeated figures of lines (Torrance, 1974). Activity I, picture construction, requires participants to construct a picture using a sticky note of lemon or earth like shape provided on the page as stimulus. Activity II, picture completion, offers individuals pictures of 10 incomplete figures, and they are asked to use them as a starting point to complete a drawing. Finally, Activity III, the repeated figures of lines, includes thirty pairs of parallel lines, which participants use as stimuli for their drawings. The TTCT activities assess four cognitive processes of creativity: originality,

fluency, flexibility, and elaboration. Originality reflects the person's ability to produce uncommon responses, fluency demonstrates the ability to produce a number of figural images, flexibility refers to the variety of categories of relevant responses, and elaboration indicates the ability to develop and elaborate on ideas (Kim, 2006). It has been translated into more than 35 languages (Millar, 2002), and it has already been used in Greek population (Gari et al., 2000).

Students also answered a questionnaire where they reported their age, grade, gender and ethnic origin. For their school performance measure, their grades in Modern Greek and Mathematics of the previous semester were reported by the principal of each school.

Scoring

Based on their score in APS-R, participants can be classified as adaptive perfectionists, maladaptive perfectionists and non-perfectionists (Slaney et al., 1996) according to their scores in the "standards" and "order" and "discrepancy" subscales. Individuals who receive over 18 (out of 36) in "standards" and over 10 (out of 20) in "order" are characterized as perfectionists. Subsequently, perfectionists are distinguished into adaptive or maladaptive according to their score in the "discrepancy" scale; those who score over 30 (out of 60) are characterized as maladaptive, while those whose score less than 30 are characterized as adaptive perfectionists. More recent studies have demonstrated that high scores in "standards" is an indication of adaptive perfectionism, while high scores in "discrepancy" is an indication of maladaptive perfectionism (Rice et al., 2014). In the present study, participants' characterization as non-perfectionists, adaptive and maladaptive perfectionists followed the directions of the authors of the scale as described above, while the "standards" and "discrepancy" subscales were used as variables demonstrating participants' levels of adaptive and maladaptive perfectionism.

The TTCT has a direction manual and scoring guides, which were strictly followed. In general, students will score points for any creativity process that appears in the drawings.

RESULTS

Before analyzing data to answer the research questions, the descriptive results (means, standard deviations, standard errors, minimum, maximum and median) for APS-R, TTCT, and students' grades are presented in Table 1.

Table 1. Descriptive statistics for all variables.

Variables	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>Min</i>	<i>Max</i>	<i>Md</i>
Standards	25.88	4.51	0.27	11	35	26

Discrepancy	31.49	8.37	0.18	12	55	31
Total APS-R	72.88	9.84	0.59	41	108	73
Originality	36.33	18.68	1.11	0	91	33
Fluency	20.61	8.94	0.53	0	40	19.5
Flexibility	15.92	6.31	0.38	0	32	16
Elaboration	3.94	1.83	0.11	0	8	4
Total TTCT	78.83	33.41	1.99	1	167	75
Modern Greek	16.02	2.33	0.14	3	20	16
Mathematics	15.95	2.84	0.17	3	20	16

As shown in the Table 1, the mean score in the “standards” subscale which measures adaptive perfectionism appeared to be higher compared to the scale’s theoretically neutral mean of 18 as indicated by the test developers. This finding demonstrated that students of the present sample perceived themselves as having a high need for excellence. Also, their mean score in the “discrepancy” subscale was slightly higher than the scale’s neutral mean of 30, which means that on average they perceived themselves as falling to meet their personal standards. In general, students of the present sample appeared to describe themselves as highly perfectionistic. The mean scores on cognitive processes of creativity do not allow inferences about students’ creative ability compared to others as TTCT has not been standardized in Greece.

In order to enable comparisons between perfectionists and non-perfectionists in regard to their creativity academic achievement, students were divided into three groups according to their APS-R scores: adaptive perfectionists, maladaptive perfectionists and non-perfectionists. Adaptive perfectionists consisted 41.8% of the sample (N = 118), maladaptive perfectionists were 53.9% (N = 152), while the rest 4.3% were categorized as non-perfectionists (N = 12). The descriptives of the three groups are displayed in Table 2

Table 2. Descriptives of examined variables by perfectionistic groups

Variable	Adaptive Perfectionism (<i>N</i> = 118) <i>M</i> (<i>SD</i>)	Maladaptive Perfectionism (<i>N</i> = 152) <i>M</i> (<i>SD</i>)	Non- Perfectionism (<i>N</i> = 12) <i>M</i> (<i>SD</i>)
Originality	34.86 (18.49)	36.80 (20.55)	44.75 (18.49)
Fluency	20.14 (7.70)	20.60 (9.74)	25.50 (9.04)
Flexibility	16.00 (5.65)	15.61 (6.83)	19.00 (5.10)
Elaboration	4.27 (1.83) ^a	3.68 (1.76) ^a	3.83 (2.29)
Total TTCT	77.42 (28.89)	78.66 (36.55)	94.75 (31.55)
Modern Greek	16.69 (1.82) ^{ab}	15.57 (2.57) ^a	14.91 (2.07) ^b
Mathematics	16.80 (2.12) ^a	15.35 (3.14) ^a	14.80 (2.97)

Note: Different letters to the exhibitors indicate statistically significant differences between groups

In order to examine the effect of the different types of perfectionism on creativity, a series of one-way ANOVAs were carried out, with the three perfectionistic types (adaptive perfectionism, maladaptive perfectionism, non-perfectionism) as an independent variable and the four cognitive processes of creativity (originality, fluency flexibility and elaboration) as the dependent variables. The analysis of variance indicated that there was a significant main effect of perfectionistic type on “elaboration” only ($F(2, 279) = 1.63, p < .05$, partial $\eta^2 = .02$), while no significant main effects of perfectionistic type were found for the remaining three cognitive processes of creativity. In order to investigate the source of the main effect a post hoc comparison using the Bonferroni correction was carried out, which showed that adaptive perfectionists scored significantly higher than maladaptive perfectionists on “elaboration”. The mean scores of non-perfectionists did not significantly differ from adaptive and maladaptive perfectionists on “elaboration” (see Table 2).

The main effect of perfectionistic types on academic achievement in Modern Greek and Mathematics was examined using the same analyses. Results showed a significant main effect of perfectionistic types on Modern Greek, ($F(2, 274) = 9.34, p < .01$, partial $\eta^2 = .06$) and Mathematics ($F(2, 269) = 9.98, p < .01$, partial $\eta^2 = .07$). Bonferroni post hoc analyses showed that adaptive perfectionists received significantly higher grades than maladaptive perfectionists and non-perfectionists in Modern Greek, while in Mathematics, adaptive perfectionists achieved significantly higher than maladaptive perfectionists (see Table 2).

Table 3. Pearson’s Correlations among variables.

	1.	2.	3.	4.	5.	6.	7.	8.
1. Standards								

2. Order	.23***							
3. Discrepancy	-.13*	.03						
4. Originality	.06	.05	.08					
5. Fluency	.06	.05	.07	.91***				
6. Flexibility	.08	.05	.03	.86***	.90***			
7. Elaboration	.05	-.03	-.16**	.28***	.15*	.20**		
8. Modern Greek	.29***	.00	-.29***	.04	-.02	.05	.23***	
9. Mathematics	.24***	-.05	-.25***	.02	-.01	.04	.11	.57***

* $p < .05$; ** $p < .01$; *** $p < .001$

The correlations among the variables examined are presented in Table 3. Firstly, the low correlations among perfectionistic behaviours indicated they examined independent constructs. However, the high correlations among originality fluency and flexibility yielded interdependence among them. “Elaboration” appeared to be correlated with them at a lower level indicating less relevance. Students’ grades in both subjects were positively and significantly correlated. “Standards” appeared to be positively correlated between with “Modern Greek” and “Mathematics”, while students’ grades in both subjects presented a negative correlation with “discrepancy”. Finally, a low but significant positive correlation between “elaboration” with Modern Greek was found.

To investigate whether adaptive and maladaptive perfectionism predict school grades, two linear regressions were conducted with academic achievement (Modern Greek, Mathematics) as the dependent variables, and perfectionistic behaviours (standards, discrepancy) as the independent variables. Results of the first multiple linear regression analysis revealed a collective significant effect between perfectionistic behaviour, and mathematics grades ($F(2, 269) = 15.88, p < .001, R^2 = .11$). The individual predictors were examined further and indicated that adaptive perfectionism was a positive predictor of grades in Mathematics ($t = 6.67, p < .001$) while maladaptive perfectionism ($t = -3.80, p = .000$) was a significant negative predictor in the model, indicating that maladaptive perfectionism results in lower grades. The second regression analysis also showed a significant relation between perfectionistic behaviour and Modern Greek grade ($F(2, 274) = 24.10, p < .001, R^2 = .15$). Again, adaptive perfectionism positively predicted grades in Modern Greek ($t = 4.66, p = .000$) while maladaptive perfectionism ($t = -4.60, p = .000$) appeared to be a significant negative predictor in the model.

DISCUSSION

The objective of this study was to explore the relationships among Greek secondary school children’s perfectionism, creativity, and academic performance. The results

indicated that the greater percentage of participant perceived themselves as perfectionists mainly as maladaptive. Adaptive perfectionists tended to perform higher than maladaptive in academic achievement and in the creative cognitive process of “elaboration”. Also, they showed that adaptive perfectionism predicted positively academic achievement in both examined subjects, while maladaptive perfectionism predicted it negatively.

In general, there is a scarcity of evidence in the literature regarding the distribution of perfectionism in the general population. Still, the percentage of self-perceived perfectionism of students of the present sample appeared to be much higher compared to a previous study (Rice, Richardson, & Tueller, 2014). This finding may indicate that perfectionism is a highly valued disposition among students, probably guided by Greek schools and families, and this highly perfectionistic responds may be a result of socially desirable responding, a tendency for people to present a favorable image of themselves in self-report questionnaires (van de Mortel, 2008). Also, the fact that a large percentage of them appeared to express maladaptive perfectionism may reflect that schools and families set very high goals for students to achieve, and frustration is frequently experienced by Greek students (Benincasa, 1998)

Overall, the findings of the study suggested that adaptive perfectionists’ characteristics such as high personal standards, support academic achievement, while maladaptive perfectionists, who experience a discrepancy between their expectations and what they actually do accomplish, seem to receive lower grades. The relationship between the “standards” and “discrepancy” sub-scales was low, supporting the independence of these two factors, in line with previous studies (Gilman, Ashby, Sverko, Florell, & Varjas, 2005; Ganske, Gnilka, & Rice, 2015; Gnilka, Rice, Ashby, & Moate, 2016). Moreover, adaptive perfectionism appeared to positively predict student’s grades in both Modern Greek and Mathematics while the opposite was the case for maladaptive perfectionism. It seems that striving for high performance, setting high standards, and not getting stressed when the results are not in a way that suits one’s aspirations, may lead to successful outcomes, while lack of tolerance of failure and harsh self-criticism seems to impede successful academic outcomes at school. These findings support previous studies, which have shown a positive relationship between adaptive perfectionism and academic performance (Accordino, Accordino & Slaney, 2000; Bong et al., 2014; Damian, Stoeber, Negru, & Băban, 2014; Nounopoulos et al., 2006; Stoeber & Rambow, 2007; Stornelli, Flett & Hewitt, 2009), as well as a negative relationship between maladaptive perfectionism and academic performance (Bong et al., 2014; Herman et al., 2013; Nounopoulos et al., 2006; Stoeber & Rambow, 2007).

Differences between adaptive and maladaptive perfectionists did not appear in “originality”, “fluency” and “flexibility”, but only in “elaboration” in which adaptive perfectionists performed better. These correlations do not support claims that predispositions, such as fear of failure, lack of tolerance of ambiguity, and rigidity of thought may limit traits such as risk-taking and openness to experience, which result in reduced creativity are a characteristic only of maladaptive perfectionists (Eysenck, 1993). Additionally, “fluency”, “flexibility”, and “originality” did not appear to correlate with student’s grades in Modern Greek or Mathematics, opposing previous findings, where academic performance has been reported to be positively correlated with creativity (Ai, 1999; Gajda et al., 2017). This finding is highlighting the rarity of creative activities in teaching of these subjects and thus the unfamiliarity of Greek students with creativity.

Elaboration did not appear to be highly related to the other three cognitive processes, a finding which is not surprising, as previous studies have indicated that “elaboration” relates at a lower level with the other cognitive processes measured by TTCT (Humble, Dixon & Mpofu, 2018; Krumm, Lemos & Filippeti, 2014; Safae Irad et al., 2010). Maybe this is an indication that creativity consists of three factors: “originality”, “fluency” and “flexibility”, while “elaboration” does not seem to be a factor that contributes to the cognitive process of creativity. In general, in this study, “elaboration” appeared to have a significantly positive correlation with academic achievement, and a significantly negative correlation with maladaptive perfectionism. Such findings allow the conclusion that “elaboration” involves cognitive sub-process similar to those required by traditional school demands.

In conclusion, it appears that the aspects of adaptive perfectionism are conducive for a higher academic achievement, yet not for creativity, while maladaptive perfectionists’ characteristics seem to result in lower grades. Moreover, it seems that perfectionists are motivated by goals that are valued by society and school culture, directing their efforts mainly to academic achievement. Therefore, since creativity does not appear to be one of Greek secondary school’s primary objectives, it appeared not to be at the focus of perfectionists’ goals.

Practical implications

The present study demonstrated that a considerable percentage of Greek secondary school students perceived themselves as perfectionists, yet half of them as maladaptive and therefore at risk of lower academic achievement. However, perfectionistic behaviours seem to be potentially alterable and thus interventions could take place within the school context

to help maladaptive perfectionists to develop more adaptive and effecting coping strategies (Blankstein & Dunkley, 2002). A first step towards such interventions is to train teachers in identifying students with high discrepancy. Afterwards, specialists and trained teachers may apply methods that enhance secondary school students' personal standards, like teaching how to set and accomplish personal goals that not lead to frustration, as well as providing strategies for dealing with failure.

Secondly, this study highlighted that a lot need to be done for creativity to become a valued goal of the curriculum and of the overall school culture (Beghetto & Kaufmann, 2014) especially in Greek schools. Teaching that emphasises the worth of creativity as well as teaching for and assessing creativity along with traditional school subjects, may lead perfectionists to include creativity in their set of objectives and strive to accomplish them.

Limitations and Directions for Future Research

Despite the importance of this study, some limitations should also be noticed. Firstly, the results cannot be generalized for the entire students' population, as this study was limited by number of participants. Also, it was homogeneous in terms of age, ethnicity, and socio-economic status, so the researchers are aware of the unrepresentativeness of the sample, and of the need for studies with more representative samples in the future.

Moreover, the APS-R needs to be examined more with larger samples of young adolescents to verify the suitability of items in this population in terms of item analysis, factor analysis, and replication of reliability analysis. Another limitation related to APS-R is the fact that it is a self-report measure, and such measures may be affected by social desirability, experimenter bias, and halo effects. Therefore, additional methods of identifying perfectionism, including more multifaceted designs are recommended in future research. It is important to mention that despite the fact that the current study did not find a significant correlation between perfectionism and creativity, future research should examine more this ambiguous relationship, building upon previous findings that supported this correlation. Also, follow-up research should delve into more issues that are important for a better understanding of perfectionism in secondary school children, such as exploring young perfectionistic adolescents' motivation in school, or investigating the underlying factors of differences in academic achievement among adaptive, maladaptive, and non-perfectionists.

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