FACTORIAL VALIDITY AND PSYCHOMETRIC PROPERTIES OF THE GREEK VERSION OF THE ALMOST PERFECT SCALE REVISED (APS-R)

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***Abstract*:** Factorial validity and the psychometric properties of the Greek version of *the Almost Perfect Scale-Revised* (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001) were examined. A non-clinical sample of 308 adults (university students, professors and high school teachers) filled in the APS-R translated in Greek. Confirmatory factor analysis supported a three-factor model. A two-step cluster analysis of participants' responses to *High Standards* and *Discrepancy* subscales resulted in the identification of two types of perfectionists (*adaptive* and *maladaptive*) and one group of *non-perfectionists*. Differences between adaptive, maladaptive and non-perfectionists in relation to their gender, age and group membership (students or professors) were also examined. Results provided initial support for the validity and the applicability of the APS-R-Greek version to non-clinical samples of adults.

***Keywords*:** APS-R Greek version, Non-clinical sample, Perfectionism.

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In the last 25 years, an increasing number of researchers have studied perfectionism –the disposition to strive for flawlessness (Flett & Hewitt, 2002)– and its multiple expressions and implications in both clinical (e.g., Shafran & Mansell, 2001) and non-clinical contexts (e.g., Grzegorek, Slaney, Franze, & Rice, 2004). Whereas the international literature on this topic is extensive, Greek literature is rather limited and mainly focused on clinical issues (Λαγούδης & Μποζίκας, 2009. Παπαδομαρκάκη & Πορτινού, 2012). In order to fill this gap, measures of perfectionism suitable for non-clinical contexts should be properly adapted to and empirically tested in the Greek population. To our knowledge, so far, except for one study (Mouratidis & Michou, 2011), there is no empirical evidence regarding the adaptation of a perfectionism inventory in Greek. Therefore, in the present study, the Almost Perfect Scale-Revised (APS-R; Slaney et al., 2001) was administered to a non-clinical Greek sample with the aim of testing for the factorial validity and the psychometric properties of its Greek version. In what follows, a brief review of the theoretical and research background of perfectionism will be given first, in order to elucidate this complex construct.

Features, types and measures of perfectionism

Traditionally, perfectionism has been viewed as a unidimensional construct and as a destructive and maladaptive trait, closely related to psychopathology (e.g., Beck, 1976; Burns, 1980; Horney, 1950; Pacht, 1984, see also Shafran & Mansell, 2001 and Flett & Hewitt, 2002 for a review). Findings from studies mainly with clinical populations tended to reveal strong positive relations between perfectionism and anxiety, depression, suicidal ideation, eating disorders and personality disorders (e.g., Beck, 1976; Burns, 1980; Flett & Hewitt, 2002; Hollender, 1965; Horney, 1950; Pacht, 1984; Shafran & Mansell, 2001). The association of perfectionism with various psychological disorders and serious psychiatric conditions resulted in a strongly negative perspective on the construct (Stoeber & Otto, 2006).

At a theoretical level, this prominent, negative view of perfectionism had been questioned by pioneers of the field. Adler (1956), for instance, pointed to the possible positive conceptions of perfectionism in the social context. In the same line, Hamachek (1978) suggested a distinction of two types of perfectionists: the normal and the neurotic. According to Hamachek (1978), both normal and neurotic perfectionists are characterized by setting high personal standards and a strong need for success. However, normal and neurotic perfectionists seem to follow a different behavioral and cognitive pattern. Normal perfectionists have a realistic view of their strengths and weaknesses. They set attainable goals and pursue them in a way that allows them to be pleased with their attempts and achievements. More importantly,

for normal perfectionists, "failure" –although not desired– is accepted as a potential outcome of their efforts. On the other hand, neurotic perfectionists are not prone to accepting weaknesses and flaws. They tend to set high goals that eventually are "unrealistic" and they become compulsive in pursuing them. Neurotic perfectionists can not tolerate the possibility of "failure". In fact, a potential failure results in extremely harsh self-critical evaluations and consequently to intense psychological distress. It seems that both Adler (1956) and Hamachek (1978) described a totally different conceptualization of perfectionism than the prominent (negative) one.

The work and conceptions of Adler and Hamachek resulted in the formation of a more balanced view of perfectionism. However, the idea of positive features of perfectionism has been underestimated until recently. Until the middle of 1990s there was no empirical support to "normal perfectionism". In fact, until the early 1990s, given the psychopathological view of the first instruments for measuring perfectionism (e.g., Burns, 1983), empirical studies had unavoidably confirmed the destructive nature of perfectionism—leaving no space for challenging the prevailing conceptualization of perfectionism as a unidimensional and pathological trait (Stoeber & Otto, 2006).

The first empirical evidence of the positive conceptions of perfectionism emerged in the work of Frost and colleagues (Frost, Marten, Lahart, & Rosenblate, 1990) and the work of Hewitt and Flett (1991). Their studies revealed that perfectionism is a multidimensional construct (rather than unidimensional) and they developed the first multidimensional perfectionism scales to measure it. Specifically, the Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) consisted of 35 items and examined six major aspects of perfectionism while the Multidimensional Perfectionism Scale (HMPS; Hewitt & Flett, 1991) consisted of 45 items and examined three aspects of perfectionism. The development of these scales profoundly changed the early conceptualization and measures of perfectionism.

Despite their approach to perfectionism as a multidimensional construct, the studies that applied the aforementioned scales still tended to consider perfectionism as a rather negative trait (Stoeber & Otto, 2006). A few years later, factorial analyses of the two multidimensional scales revealed two core dimensions of perfectionism: perfectionistic strivings and perfectionistic concerns (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). Interestingly, it was claimed that only the latter was related to negative characteristics whereas the former was related to positive characteristics. These results offered the first empirical support of the existence of positive aspects of perfectionism. In this line of research, subsequent studies, having factor analysed the current scales of perfectionism, identified a two-factor model of perfectionism (Rice, Ashby, & Slaney, 1998; Slaney, Ashby, & Trippi, 1995). Based on the above, the

distinction between the positive or adaptive and the negative or maladaptive dimensions of perfectionism was established (Grzegorek et al., 2004).

Currently, many researchers still raise strong doubts about adaptive or positive perfectionism (Benson, 2003; Greenspon, 2000). However, in the last two decades, research interest in Hamachek's idea of the two types of perfectionism has been renewed. New multidimensional scales, which clearly echo Hamachek's distinction of normal and neurotic perfectionists, were developed and triggered an explosion of research activity in the field (Stoeber & Otto, 2006). The results of the recent research activity tend to confirm that perfectionism is a multidimensional construct that contains both adaptive (e.g., high self-esteem) and maladaptive aspects (e.g., vulnerability to stress) (Ashby & Rice, 2002; Bieling, Israeli, & Antony, 2004; Frost et al., 1993; Slaney et al., 1995; Stoeber & Otto, 2006; Suddarth & Slaney, 2001). Among the newly developed and frequently used multidimensional scales of perfectionism is the Almost Perfect Scale-Revised (APS-R; Slaney et al., 2001), which was used in the present study.

The Almost Perfect Scale-Revised

The APS-R was developed by Slaney and his colleagues (2001) in order to assess the adaptive and the maladaptive components of perfectionism. It consists of three subscales: the *High Standards* subscale measures the high personal standards one sets for oneself. The *Discrepancy* subscale assesses respondents' perceived inadequacy in meeting personal standards. The third subscale, *Order*, refers to one's preference for neatness and orderliness. Overall, the Discrepancy subscale is considered to measure the negative characteristics of perfectionism, while the High Standards and the Order subscales are considered to assess the positive characteristics of perfectionism. Based on their scores on APS-R, participants are classified as "nonperfectionists", "maladaptive perfectionists" or "adaptive perfectionists". The score on the High Standards subscale is used to distinguish perfectionists from nonperfectionists. Specifically, participants with high score on the High Standards are characterized as *perfectionists* while participants with low score as *nonperfectionists*. After this first distinction the score on the Discrepancy subscale is used to further distinguish perfectionists into adaptive and maladaptive perfectionists. Perfectionists with high Discrepancy score are characterized as *maladaptive* and those with low Discrepancy score as *adaptive*. The Order subscale is typically not used in classifying the adaptive and maladaptive perfectionists, as it is considered a rather neutral feature of perfectionism (Rice, Ashby & Gilman, 2011; Stoeber & Otto, 2006).

The APS-R was the measurement of choice in our study, given that (a) it has been used in numerous studies addressing perfectionism both in English speaking

(Stoeber & Otto, 2006) and in non-anglophone samples (e.g., to Turkish population, Öngen, 2009); (b) its psychometric properties have received strong empirical support (Ganske & Ashby, 2007); (c) it has been found to efficiently identify distinct types of perfectionists and (d) it is considered a multidimensional measure which –in comparison to other measures (e.g., the Multidimensional Perfectionism Scale, Hewitt & Flett, 1991)– clearly approaches perfectionism as a trait which is not problematic per se (Stoeber & Otto, 2006).

Aims and hypotheses of the study

The present study aimed to investigate the underlying structure and the psychometric properties of the Greek version of the APS-R (Slaney et al., 2001). Specifically, we aimed at (a) testing for the factorial validity of the Greek version of APS-R (Slaney et al., 2001); (b) classifying participants into types of perfectionists, following a two-step procedure that was described in recent relevant studies and (c) testing for any significant differences in relation to gender, age and group membership (i.e., university students, professors or high school teachers).

Based on the relevant literature and the extant empirical data, three hypotheses were formulated: (a) the Greek version of the APS-R will confirm the three-factor solution of the original scale; (b) participants will be classified into three types of perfectionists: non-perfectionists, maladaptive perfectionists and adaptive perfectionists, and (c) no significant differences will be observed among non-perfectionists, adaptive perfectionists and maladaptive perfectionists in relation to their gender, age and group membership (students, professors and high school teachers).

METHOD

Participants

A total of 308 adults (124 men, 184 women) participated in the study. The sample consisted of three groups: (a) 100 academics (lectures and professors), (b) 97 undergraduate students and (c) 111 high school teachers. Participants were recruited from four Greek universities and high schools in Northern Greece. The age of the participants ranged from 19 to 63 ($M = 34.84$, $SD = 12.04$). Specifically, the age of academics ranged from 30 to 63 ($M = 44.03$, $SD = 7.36$), the age of students ranged from 19 to 34 ($M = 20.62$, $SD = 2.90$) and the age of high school teachers from 23 to 58 ($M = 39.00$, $SD = 8.69$)

Measures

Almost Perfect Scale-Revised (APS-R)
The APS-R (Slaney et al., 2001) translated in Greek was used in the present study. The APS-R consists of 23 items that make up three subscales: *High Standards* (7 items, e.g., I expect the best from myself), *Discrepancy* (12 items, e.g., Doing my best never seems to be enough), and *Order* (4 items, e.g., Neatness is important to me). Participants responded to each item using a five-point Likert scale ranging from 1 (I strongly disagree) to 5 (I strongly agree).

Slaney and his colleagues reported very good reliability indices of the APS-R subscales ranging from .85 to .92 (Slaney et al., 2001).

Procedure

To our knowledge, the APS-R (Slaney et al., 2001) has not been used with a Greek population before. Therefore, the English version of the APS-R was first translated into Greek by the researchers and back-translated into English by an English language professor. Only a few minor discrepancies between the original scale and the back-translated version were noted that were resolved by the researchers and the back-translator.

Once the APS-R was properly adapted into Greek, it was administered to the participants. Specifically, the APS-R was sent to academics via e-mail, using the online survey tool "SurveyMonkey", high school teachers filled it out in their workplace and students in one of their classes, with the permission of their class instructors. There was no credit for participation in the study.

Data analysis

A number of statistical procedures were performed. Firstly, confirmatory factor analysis (CFA) was used to test the latent structure of APS-R. Secondly, a two-step cluster analysis was used to classify participants into non-perfectionists, adaptive perfectionists and maladaptive perfectionists. Chi square analysis and univariate analysis of variance (ANOVA) were applied to test for any statistical differences in gender, group membership and age among the three aforementioned types of perfectionists.

RESULTS

Factorial validity and reliability of the APS-R Greek version

The EQS 6.1 software (Bentler, 2005) was used to verify the latent structure of the APS-R Greek version. Following Hypothesis 1, a three-factor model was tested according to the original APS-R structure. As shown in Table 1, the CFA confirmed

Table 1. The structure of the APS-R Greek version (standardized solution) in the test sample

	Factors				
	Disc repancy (F1)	High Stan- dards (F2)	Order (F3)	E	R^2
3. I often feel frustrated because I can't meet my goals	.431			.902	.279
6. My best just never seems to be good enough for me	.630			.776	.397
9. I rarely live up to my standards	.620			.784	.385
11. Doing my best is never good enough for me	.703			.711	.494
13. I am never satisfied with my accomplishments	.740			.672	.548
15. Often worry about not measuring up to my own expectations	.657			.754	.432
16. My performance rarely measures up to my standards	.722			.692	.521
17. I am not satisfied even when I know I have done my best	.689			.725	.474
19. I am seldom able to meet my own high standards of performance	.697			.717	.486
20. I am hardly ever satisfied with my performance	.778			.629	.605
21. I hardly ever feel that what I have done is good enough	.681			.732	.464
23. I often feel disappointment after completing because I know I could have done better	.529			.848	.280
1. I have high standards of performance at work/school		.529		.849	.279
5. If you don't expect much out of yourself, you will never succeed		.570		.822	.325
8. I have high expectations for myself		.701		.713	.492
12. I set very high standards for myself		.386		.922	.149
14. I expect the best from myself		.552		.834	.305
18. I try to do my best at everything I do		.533		.846	.284
22. I have a strong need to strive for excellence		.563		.857	.265
2. I am a orderly person			.606	.795	.367
4. Neatness is important to me			.803	.596	.645
7. I thing thinks should be put away in their place			.818	.575	.669
10. I like to always be organized and disciplined			.800	.600	.640
Factor correlations					
F2 (High Standards) – F3 (Order)		.493			

the three-factor structure of the APS-R Greek version for this sample, namely, Discrepancy, High standards and Order, with the last two factors being correlated. The final model, which included modifications suggested by the Langrange Multiplier test, had very satisfactory fit indices: Satorra-Bentler Scaled χ^2 (208) = 393.20, $p <$ .000, χ^2/df = 1.89, robust CFI = .92, SRMR = .06, and robust RMSEA = .05 ($CI_{90\%}$ .04 to .06) (Schreiber, Nora, Stage, Barlow, & King, 2006). All item loadings on the three factors were statistically significant and consistent to the three-factor solution of the original scale.

In the next step, the internal consistency of the three subscales of the APS-R Greek version was tested. As Cronbach's α values indicate, all subscales demonstrated satisfactory internal consistency reliability: Discrepancy, α = .90, High Standards, α = .78, and Order, α = .84. Significant correlations were found only between High Standards and Order, r = .41, $p <$ .01, since both of them assess the positive characteristics of perfectionism, while correlations between High Standards and Discrepancy, r = .09, and Discrepancy and Order, r = .02, were nonsignificant, since Discrepancy assesses the negative characteristics of perfectionism. Overall, the aforementioned relations are in agreement with data reported for the original scale (see Slaney et al., 2001).

Types of perfectionists identified by the APS-R Greek version

To classify participants into nonperfectionists, adaptive perfectionists and maladaptive perfectionists, we applied a cluster analysis based on their scores on the Discrepancy and High Standards subscales. Following the procedure suggested by Gilman and Ashby (2003), the Order subscale was not included in the analyses as it is considered neutral, rather than a core, feature of perfectionism (see Rice et al., 2011; Stoeber & Otto, 2006).

Specifically, following the methodology used in earlier studies (e.g., Rice & Slaney, 2002; Wang, Slaney & Rice, 2007), we applied a two-step procedure, involving both hierarchical and non-hierarchical analysis. In the first step, the APS-R subscale scores were standardized and a hierarchical cluster analysis was applied, using the Ward's linkage method and the squared Euclidian distance measure. The resultant agglomeration schedule provided support for a three-cluster solution, as Hypothesis 2 predicted. In the second step, cluster centroids derived from the hierarchical cluster analysis were used as the starting points in a non-hierarchical K-means cluster analysis. This procedure yielded 140 participants in the first cluster, 92 in the second cluster and 76 in the third cluster.

To identify the three clusters, we examined the mean differences between clusters using participants' non-standardized scores on High Standards and Discrepancy

subscales. Participants in Clusters 1 and 2 had scored much higher on High Standards in comparison to participants in Cluster 3. Thus, Clusters 1 and 2 were composed of perfectionists, whereas Cluster 3 was composed of nonperfectionists. In order to distinguish the adaptive and maladaptive perfectionists, we examined the Discrepancy mean scores. Participants in Cluster 1 had low Discrepancy scores while participants in Cluster 2 had high Discrepancy scores. Consequently, and in accordance with the theory, participants in Cluster 1 were labeled as adaptive perfectionists, in Cluster 2 as maladaptive perfectionists and in Cluster 3 as nonperfectionists.

Then, univariate ANOVA was applied to High Standards and Discrepancy subscales mean scores using participants' cluster membership as the independent variable. The anticipated differences between the Discrepancy and the High Standards subscales scores emerged among nonperfectionists, maladaptive perfectionists and adaptive perfectionists. Specifically, adaptive and maladaptive perfectionist scored significantly higher on the High Standards subscale in comparison to nonperfectionists; maladaptive perfectionists scored significantly higher on the Discrepancy subscale in comparison to adaptive perfectionists and nonperfectionists (Table 2). In conclusion, results of the above analyses showed that the APS-R Greek version can adequately distinguish the three types of perfectionists as it was predicted by Hypothesis 2.

Table 2. Means and standard deviations by cluster group

APS-R subscales	Adaptive Perfectionists ($n = 140$)		Maladaptive Perfectionists ($n = 92$)		Non-Perfectionists ($n = 76$)		$F(2, 305)$	$p <$
	M	*SD*	*M*	*SD*	*M*	*SD*		
High Standards							182.75	.05
	29.66[a]	2.53	28.05[b]	3.40	21.85[c]	2.91		
Discrepancy							280.16	.05
	24.59[a]	5.23	40.46[b]	4.80	25.73[a]	5.81		

Note: Values with different superscripts indicate significant within-row differences between the clusters using Tukey post hoc comparisons, significant at $p < .05$.

Individual differences

After identifying the two types of perfectionists and the nonperfectionists, we examined whether there were statistically significant individual differences effects in relation to

gender, group membership (students or academics) and age. Chi square analysis showed no significant effect of gender, χ^2 (2, $N = 306$) = 5.53, $p = .06$, or group membership, χ^2 (4, $N = 308$) = 8.09, $p = .09$, among adaptive perfectionists, maladaptive perfectionists and non-perfectionists. Similarly, univariate ANOVA using participants' cluster membership as the independent variable revealed no significant differences among the three types of perfectionists in relation to participants' age, $F(2, 305) = 1.026$, $p = .36$.

DISCUSSION

In this study, the APS-R (Slaney et al., 2001) was adapted into Greek and tested for its factorial validity and psychometric properties. Several interesting findings were obtained. First, the factor structure of the Greek version of the APS-R was examined. A three-factor solution consistent to the model proposed by Slaney et al. (2001) was verified by CFA, revealing a sufficient factorial validity of the Greek version of the APS-R. Furthermore, the internal consistency of the total scale as well as the Cronbach's alphas of the three subscales indicated satisfactory reliability of the Greek version of the APS-R.

Our next aim was to classify the participants into types of perfectionists, based on their scores on the High Standards and the Discrepancy subscales. To pursue this aim, we performed a two-step procedure, involving both hierarchical and non-hierarchical cluster analyses. As Hypothesis 2 predicted, three types of perfectionists (non-perfectionists, adaptive perfectionists and maladaptive perfectionists) were found in our sample. The observed differences among the three types of perfectionists were in line with the theory underlying the design of the APS-R (Slaney et al., 2001).

The three types of perfectionists were also found in many relevant studies using APS-R (e.g., Chan, 2010; Grzegorek et al., 2004; Rice & Slaney, 2002). However, other recent studies (see Rice et al., 2011; Sironic & Reeve, 2012; Wang et al., 2007) identified a fourth group, which represents individuals with low-High Standards scores and high-Discrepancy scores. Given this somehow paradoxical combination of scores, there is an ongoing debate whether individuals who meet this profile are to be considered perfectionists (Sironic & Reeve, 2012; Wang et al., 2007) or not (Rice et al., 2011) and, thus, whether three or four types of perfectionists should be differentiated. Future research involving larger samples and control variables, such as self-esteem, level of procrastination, stress, life satisfaction, depression could show whether a four-cluster solution can better describe the type of perfectionist allocation of the Greek population. The findings of our study suggest that the Greek version of the APS-R can be used for classifying non-clinical participants into three types of

perfectionists and, thus, contribute to the research literature regarding the measurement of perfectionism in Greek samples.

In the next step, we tested for any significant differences among the three types of perfectionists in relation to individual differences variables. As Hypothesis 3 predicted, no significant differences were found among the three types of perfectionism in relation to gender, age or group membership (university students, professors and high school teachers). Based on these findings several useful comments can be made.

As mentioned above, university students, professors and high school teachers had no significant differences in relation to their scores on perfectionism. This finding implies that the two domains –work for the professors and high school teachers and studies for the students– are presumably characterized by similar demands in perfectionism. This finding seems to echo the findings of Slaney and Ashby (1996) and Stoeber and Stoeber (2009) that work and studies are the two domains most often associated to perfectionism (see also Haase, Prapavessis, & Owens, 2013). In general, there is an ongoing debate whether some domains are more susceptible to perfectionistic tendencies and, consequently, whether perfectionism represents a domain-specific construct (e.g., Dunn, Gotwals, & Dunn, 2005; Haase et al., 2013; Mitchelson & Burns, 1998; Slaney & Ashby, 1996; Stoeber & Stoeber, 2009) or a global/general personality trait (e.g., Frost et al., 1990; Hewitt & Flett, 1991).

Empirical evidence regarding the relation between age and perfectionism is scant and provides mixed results (see Landa & Bybee, 2007 and Stoeber & Stoeber, 2009). So far, there is a number of studies, including ours, suggesting that perfectionism is not affected by age. Nevertheless, the question whether perfectionism is affected by age remains unanswered and further research on this topic is recommended.

Finally, no significant differences were observed in our study between male and female participants. Studies considering perfectionism as a global personality trait tend to reveal no significant gender differences but this is not always the case (e.g., Slaney & Ashby, 1996). On the other hand, when perfectionism is considered to be a domain-specific construct, testing for the relation between gender and perfectionism provides rather mixed results (Dunn et al., 2005; Haase et al., 2013). Similarly, inconclusive findings regarding gender effect are provided when scores on specific subscales are examined (Hewitt & Flett, 1991).

Overall, our findings regarding the nonsignificant relation of perfectionism with age, gender and domains (work and studies) against which perfectionism was examined, seem to support the claim that perfectionism is a personality trait (Hewitt & Flett, 1991) rather than a situational one. However, to reach any safe conclusions, one should keep in mind that the effect of demographic variables on perfectionism

are often co-dependent on the effects of other demographic and/or contextual variables (e.g., Dunn et al., 2005) and that repeated measures are needed in order to confirm the relative stability of perfectionism.

Implications and limitations of the present study

In sum, the present study showed that the Greek version of the APS-R is appropriate for (a) assessing perfectionism as a construct consisting of negative and positive dimensions and (b) distinguishing different types of perfectionists. A scale such as the APS-R, which captures both the adaptive and maladaptive elements of perfectionism, can be a useful tool for counsellors for the assessment of non-clinical populations (e.g., students). It should be noted that, so far, such a tool was lacking in the Greek language. More importantly, in the present study it was confirmed that perceived inconsistency between personal standards and performance can significantly differentiate the adaptive and maladaptive perfectionists. Consequently, counsellors can use the APS-R, and specifically the Discrepancy subscale, in order to detect the maladaptive perfectionists. After reliably discerning maladaptive perfectionism in their clients, counsellors may proceed with their interventions; e.g., help them identify and restore the thoughts and feelings originating from their sense of not meeting their standards and performance expectations. Finally, based on the finding that the APS-R can detect adaptive perfectionism as well, counselors may choose to support their adaptive perfectionist clients to set and pursue high performance standards in a healthy fashion.

In our analysis no control variables (e.g., self-esteem, level of procrastination) were included and this is the limitation of the present study. Future studies should address this issue in order to test for the construct validity of the APS-R and confirm the psychometric properties of the Greek version of the scale. Overall, we trust that the current study, despite its limitations, contributes in the existent limited literature referred to perfectionism in Greece and facilitates the increase of relevant empirical studies in Greece.

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