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MEDIATORS OF RELATIONSHIPS BETWEEN PROCRASTINATION AND NEUROTICISM

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SUMMARY

Background:

Procrastination means delaying action, which creates serious problems both in academic, work, and clinical settings since it leads to reduced performance levels, and gives rise to psychological distress resulting in lower levels of health and well-being. Therefore, it is imperative to acquire a better knowledge of its reasons and relationships with psychological factors. Yet, the nature of those relationships remains ambiguous. One of reasons is that many factors considered as causes of procrastination work as mediators, modifying the relationships of procrastination with other factors. Hence, the present study aimed at delineating the factors, which might have a mediating effect upon the interface of procrastination with personality features.

Material/ Methods:

Undergraduate students (n=62) participated in the study. The participation was voluntary and anonymous. A self-constructed Questionnaire of Predictors of Procrastination (QPP), a Polish version of the NEO-FFI test, and a Polish adaptation of the Pure Procrastination Scale (PPS) were administered, and there was no time limit.

Results:

Positive significant correlations between neuroticism and general, decisive, and behavioral procrastination were found. There was also a significant interaction of neuroticism with the fear of failure, evaluation anxiety, low motivation and a lack of persistence as well as a lack of time management. In addition, the tendency to succumb to temptations and distractibility proved to be significantly related with procrastination, which suggests a lack of self-control.

Conclusions:

The current study confirmed observations that a neurotic personality does not determine procrastination but both those variables do interact. This study also shows that anxiety plays a significant role in starting actions and/or in accomplishing it. This is not only a fear of final evaluation, but the fear following the belief of impossibility to properly deal with a given action. Moreover, a capability of controlling emotions is closely connected with self-control enabling the planning, and organizing of an action, which is one of the main problems of procrastinators.

Key words: task deferment, personality, mediators, fear, anxiety, motivation, self-control

INTRODUCTION

A well-known saying: “What is put off won’t run away” may be interpreted in two ways. It may constitute consent to be lazy, while instead of working hard now we are putting it off till tomorrow. On the other hand, it may mean a tendency to defer a task, which we are obliged to carry out since we feel it to be adverse, dull or simply uninteresting. Such an attitude has been coined procrastination in the relevant scientific literature. A typical procrastinator is defined as a young college student, who delays beginning or finishing a task due to irrational reasons, which results in a feeling of anxiety (Ferrari, 2010; Ferrari, Johnson & McCown, 1995; Tibbett & Ferrari, 2015), a lowering of self-efficacy (Tice & Baumeister, 1997), reduced performance levels, and a lower level of well-being (Balkis & Duru, 2007; Steel & Ferrari, 2013) as well as resultant somatic disorders (Klingsieck, 2013; Sirois et al., 2003). Statistical analysis shows that the percentage of procrastinators, especially among students, has doubled over the last forty years. Accordingly, it was estimated at 10% to 40% in the 20th century (Hill et al, 1978; Rosati, 1975), and now amounts to 75-90% in students (Ferrari et al., 2007; Steel, 2007; Steel & Ferrari, 2013). Yet, a tendency to delay important actions can be also observed in the general population reaching 15 to 20 per cent and remains unchanged (Ellis & Knaus, 1977; Harriott & Ferrari, 1996; Ferrari et al., 2007; McCown et al., 1989; Procee et al., 2013; Rozental & Carlbring, 2014, Tibbett & Ferrari, 2015).

Despite a rich body of empirical research the gathered data do not converge. Some authors believe that a tendency to delay a course of action is characteristic of a student’s style of life (Park & Sperling, 2012; van Eerde, 2003) others are apt to look for relationships with personality traits. Given that procrastination was found to positively correlate with neuroticism especially in the case of deferring significant life and professional decisions, Milgram (1987) suggests that academic procrastination may also relate to neuroticism. At the same time, Tibbett and Ferrari (2015) observed that general procrastination is connected with neuroticism, indecisiveness, and introversion, while decisional procrastination highly correlates with past negative experiences. On the other hand, negative correlations were found for conscientiousness (Locke & Latham, 1990, 2004), agreeableness (Burka & Yuen, 1983; Knaus, 1979), openness (Schouwenburg & Lay, 1995; Watson, 2001) as well as extraversion (Ainslie, 1992; Blatt, & Quinlan, 1967; Schouwenburg & Lay, 1995).

Most studies state that procrastination comprises quite a number of personality traits, which provides for its complexity and creates difficulties in obtaining clear and decisive results (Watson, 2001). Díaz-Morales, Cohen, & Ferrari (2008) point out that procrastination has a positive curvilinear relationship with neuroticism measured both with the Eysenck and Eysenck (1985) three-dimensional test and with the Costa and McCrae (1992) five-factor model. It is of import to note that not each factor comprising a global facet of neuroticism was found to be correlated with procrastination. Accordingly, Watson (2001)

states that self-consciousness and depression are lined with procrastination while Johnson and Bloom (1995) point to vulnerability and impulsiveness as its predictors.

Even if we accept the suggestions cited above procrastination still remains a mood-based action related to many psychological malfunctions, of which neuroticism appears to be most pronounced. Since, as was mentioned above, the data are not consistent, a sequence of variables which might have an impact upon interactions between neuroticism and procrastination were delineated with the emphasis put on those variables that might predict procrastination. Those variables were treated as mediators. Put differently, the present study hypothesized that the components of three factors distinguished in the Questionnaire of Predictors of Procrastination (QPP) would mediate an interface between neuroticism and general procrastination. The questionnaire delineates three types of general procrastination: decisive, behavioral, and non-adaptive. Therefore, the present study aimed at delineating the factors, which may have a mediating effect upon the interface of procrastination with neuroticism.

MATERIAL AND METHODS

Participants and Procedure

Participants were undergraduate students ($n = 62$; 50 females, 12 males; age range 19-24, $M_{\text{age}} = 20.32$, $SD = .954$) from two Faculties: Education and Psychology ($n = 42$) and Economics ($n = 20$). The participation was voluntary and anonymous, with informed consent for experiment participation being obtained from all the students in accordance with the University's Institutional Review Board. There was no time limit but it took the participants about an hour.

All of the following tools had been previously validated on a Polish young adult population and displayed satisfactory psychometric properties:

1. The Questionnaire of Predictors of Procrastination (QPP) was constructed in order to find out the reasons for the delaying course of action employed by the students examined. Three factors were delineated with the use of exploratory factor analysis and principal axis method. Those factors included the following components:
 - *FACTOR 1 – extrinsic non-personal* ($\alpha = .92$): components relating to the economic situation (1) in the country – *I believe that the economic and political situation in Poland encourages young people to independently cope with upcoming difficulties* (load strength .785); (2) in Europe – *I believe that the economic and political situation in Europe encourages young people to independently cope with upcoming difficulties* (load strength .956); (3) in the world – *I believe that the world economic and political situation encourages young people to independently cope with upcoming difficulties* (load strength .934).

- *FACTOR II – extrinsic personal* ($\alpha = .81$): (4) - I delay performing a task if some temptations or distractions appear at that time (load strength .829); (5) I delay performing a task if I have something nicer to do (load strength .745); (6) I delay performing a task if fine weather makes it possible to spend time in a more pleasant way (load strength .724); (7) I delay performing a task because I prefer to spend time in good company (load strength .617).
- *FACTOR III – intrinsic personal* ($\alpha = .714$): (8) I delay accomplishing a task due to the fear of failure; (9) I delay performing a task due to an evaluation anxiety (load strength .732); (10) I delay performing a task due to low motivation and low persistence (load strength .574); (11) I delay performing a task due to a lack of time management (load strength .546).

The power of the factors was calculated with the use of a skew rotation of the axis line Oblimin with Kaiser normalization. Those factors were found to explain nearly 60% of the scores. Participants rated their tendency to procrastinate on a 5-point Likert scale (1 = Disagree Strongly; 5 = Agree Strongly), where high scores reflected a very strong tendency to put off making a decision when faced with multiple choices.

2. Personality traits were evaluated with a Polish version of the NEO-FFI test adopted by Zawadzki, Strelau, Szczepaniak and Śliwińska (1998).
3. Procrastination was measured with a Polish adaptation of the Pure Procrastination Scale (PPS) originally constructed by Steel (2010), with amendments introduced by Stępień and Topolewska (2014). A higher score gained on a 12-item scale indicates a higher tendency to procrastinate. It enables delineation of three factors of general procrastination: decisive, behavioral, and non-adaptive. The reliability measured with the alfa Cronbach method revealed the following reliability coefficients: general procrastination $\alpha = .89$, decisive factor $\alpha = .87$, behavioral $\alpha = .82$, non-adaptive factor $\alpha = .83$.

RESULTS

The data presented in Table 1 show the interactions between neuroticism and procrastination in general, behavioral, decision making, and non-adaptive dimensions. Those interactions proved to be significant with general ($r = .318$, $p < .01$), decision making ($r = .480$, $p < .001$), and behavioral ($r = .257$, $p < .05$) aspects.

Positive significant correlations of neuroticism with general ($\beta_{\text{GEN}} = .318$), decisive ($\beta_{\text{DEC}} = .480$), and behavioral procrastination ($\beta_{\text{BEH}} = .257$) were found, and an analysis of variance showed good adjustment of the models [$F_{\text{GEN}}(1.60) = 6.745$, $p = .012$; $F_{\text{DEC}}(1.60) = 18.010$, $p = .000$; $F_{\text{BEH}}(1.60) = 4.227$, $p = .044$]. Deferment proved to be a significant indicator of neuroticism interaction with predictors of procrastination. Moreover, the deferment was closely connected with intrinsic personal components delineated in factor III, such as a fear of failure ($\beta_{\text{FF}} = .526$), evaluation anxiety ($\beta_{\text{EA}} = .491$), low motivation and persistence ($\beta_{\text{LMP}} = .333$) as well as a lack of time management ($\beta_{\text{LTM}} = .275$). An adjustment of the models

was good [$F_{FF} (1, 60) = 22,917, p = .000$; $F_{EA} (1, 60) = 19.062, p = .000$; $F_{LMP} (1, 60) = 7.476, p = .008$. $F_{LTM} (1, 60) = 4.895, p = .031$]. There were no significant interactions of neuroticism with the other two factors: I – extrinsic non-personal, and II – extrinsic personal. Regression analysis taking into account the predictive impact of neuroticism and the internal causes of procrastination revealed that neuroticism did not predict any tendency to procrastinate, while the components 10 – LMP (I delay the accomplishment of a task due to low motivation and low persistence – $\beta_{NEU/PRO_GEN/LMP} = .578, p < .001$; $\beta_{NEU/PRO_BEH/LMP} = .658, p < .05$) and 11 – LTM (I delay task accomplishments due to a lack of time management – $\beta_{NEU/PRO_GEN/LTM} = .563, p < .001$; $\beta_{NEU/PRO_BEH/LTM} = .540, p < .001$) turned out to be significant predictors of procrastination.

At the same time, the scores of the relationships between neuroticism and the variables representing individual factors indicated significant interactions of neuroticism with all the variables representing factor III (Tab. 2, vertical columns 8, 9, 10, and 11) as well as with the variable TD (vertical column 4). It points to the fact that procrastination relates mainly to internal factors. It is noteworthy that a tendency to succumb to temptations as well as distractibility are considered to be typical symptoms of frontal lobe dysfunction resulting from a lack of self-control (Kaczmarek, 1987, 1993). Moreover, there are studies reporting the lack of self-control as a predictor of procrastination (Baumeister et al., 1994; Carver & Scheier, 1990; Park & Sperling, 2012; Steel, 2007). The lack of self-control means also an inability to inhibit an undesired action in accordance with the arriving environmental conditions as well as the disability to continue the action if some distractors appear. Since the frontal lobes reach their final maturation at the age of 20, the early intoxication caused by alcohol consumption and drugs results in dysfunction of that area with serious social consequences (Volkov & Fowley, 2000). And we all know that this is fairly common among students of all ages.

Tab. 1. Interactions of neuroticism with procrastination

N = 62	Pearson-R (p)			
	GENERAL PROCRASTINATION	DECISIVE PROCRASTINATION	BEHAVIORAL PROCRASTINATION	NON-ADAPTIVE PROCRASTINATION
Neuroticism	.318 (.006)**	.480 (.000)***	.257 (.022)*	.069 (.296)

Note:*** p<.001; **p<.01; *p<.05

Only interactions with non-adaptive procrastination proved to be insignificant

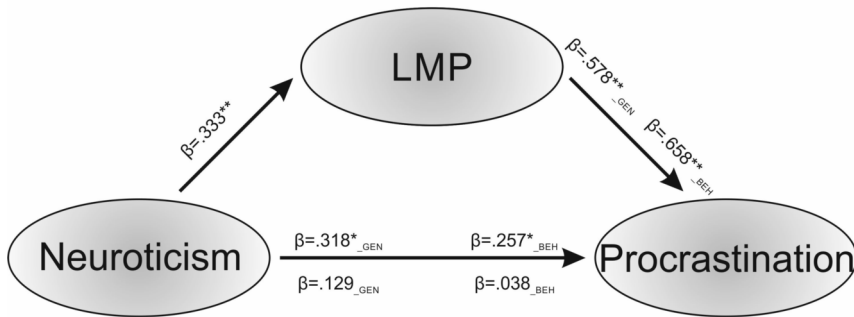
Tab. 2. Regression coefficient of neuroticism and predictors of procrastination

Pre-dictors	Pearson-R (p)										
	1. CES	2. EES	3. WES	4. TD	5. FW	6. PL	7. GT	8. FF	9. EA	10. LMP	11. LTM
Neu-roticism	.143 (.134)	.110 (.197)	.170 (.093)	.215 (.047)*	.007 (.479)	.064 (.311)	.067 (.303)	.526 (.000)***	.491 (.000)***	.333 (.004)**	.275 (.015)*

Note: ***p<.001; **p<.01; *p<.05

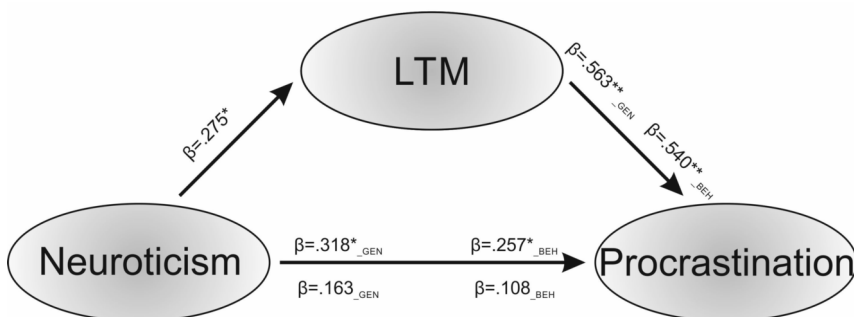
CES (Country Economic Situation); EES (European Economic Situation); WES (World Economic Situation); TD (Temptations or Distractions); FW (Fine Weather); PL (Pleasures); GC (Good Company); FF (Fear of Failure); EA (Evaluation Anxiety); LMP (Low Motivation and Low Persistence); LTM (Lack of Time Management).

The role of inhibition in procrastination was studied by Rebetz, et al. (2016 p. 439) who concluded that "... procrastination appears to result from a complex and perhaps adaptive balance between affect regulation (e.g., the down-regulation of negative emotion) and impulse control (e.g., resisting the intrusion of irrelevant thoughts into memory)." At the same time, Haycock, McCharty and Skay (1998) state that academic procrastination leads to difficulties with completing assignments and a failure to finish dissertations in doctoral students. They also point out that it is a behavior "developing from a human preference for tendency to concentrate pleasurable activities and short-time rewards" (p. 317). To put it differently, this means an ability to delay gratifications, which again is an important facet of inhibition. There are studies showing that such an ability is closely connected with social intelligence, which is believed to be a significant predictor of life success (Goleman, 2006).



Legend: * $p < .05$ ** $p < .01$

Figure 1. Mediating role of low motivation and low persistence in the relationship between neuroticism and procrastination



Legend: * $p < .05$ ** $p < .01$

Figure 2. Mediating role of low time management in the relationship between neuroticism and procrastination

DISCUSSION

As described above, most studies point to a relationship between procrastination and neuroticism. However, a lack of consistency can be noted for some authors report weak correlations of those factors (Carver & Scheier, 1990; Sarason, Sarason & Pierce, 1990), while others stress a strong relationship (Ackerman & Gross, 2005). One of the reasons may be the concentration among individual researchers upon the diverse dimensions of neuroticism, such as the tendency to feel anxiety (Haycock, McCharty & Skay, 1998; Owens & Newbegin, 1997), hostile aggressiveness, and depression (Baumeister, Heatherton & Tice, 1994; Burka & Yuen, 1983, Nicholson & Scharff, 2007) as well as impulsivity, vulnerability, and a high level of self-criticism (Steel, 2007).

We can even come across reports that point to positive aspects of procrastination. Thus, Schraw, Wadkins and Olafson (2007) report that many students procrastinate in order to maintain a balance between their academic and social activities. They may also find working in a group more stimulating and consequently coordinate their study plans with classmates. Van Eerde (2003) suggests that the time pressure created by delaying simple, low-risk tasks, may result in improving their performance. Similarly, Skowronski and Mirowska (2013) state that in some cases a task may be deferred for rational reasons, involved with efficient time management. At the same time, however, they argue that in most cases creating pressure is a source of negative emotions (see also: Pačalska, MacQueen & Brown, 2012).

Our findings correspond with the data reported by Vansteenkiste and associates (2009). Yet, in our opinion procrastination is rooted in neurotic beliefs of an inability to accomplish tasks, and that such beliefs derive from low motivation, a negative evaluation of persistence as well as conviction as to the inability to manage time and work performance.

The results of the present study confirmed the observations that a neurotic personality does not determine procrastination but both those variables do indeed interact. For it is difficult to state if the above components of neuroticism provoke procrastination or a susceptibility to procrastinate evokes neurotic feelings (Baumeister, Heatherton & Tice, 1994; Steel, 2007). Beside confirmation of the above interactions the current study revealed the role of two significant mediators: a belief in low motivation and persistence as well as a conviction concerning a lack of time management. Those beliefs seem to have a very strong impact on the interface between neuroticism and the ability of procrastinators to make decisions. Another significant finding was delineation of the role of self-control in a tendency to procrastinate.

This points to the necessity to further investigate the relations of procrastination with personality features. It should not be limited, however, to merely looking for the distinction between the optimistic and pessimistic procrastinators proposed by Diaz-Morales and Ferrari (2015), and its relationship with conscientiousness. It is also not sufficient to examine the internal factors of procrastination, but we have

to take into account the nature of those relationships. As with the factors described in the present paper they might have a mediating and hence an indirect character.

CONCLUSIONS

1. This study shows that anxiety plays a significant role in starting actions and/or accomplishing it. The assumption that anxiety underlies procrastination behavioral patterns, deteriorating activity motivation, explains the variety of problems encountered by chronic procrastinators. This is not only a fear of final evaluation, which in fact is quite common in all situations of uncertainty, but the fear following a belief in the impossibility to properly deal with a given action. And that is closely connected with the behavioral aspects of procrastination. As noted earlier, the capability to control emotions (anxiety among them) is also combined with an ability to accomplish tasks in spite of approaching obstacles. Self-control means also the capability to plan and organize action, which is one of the main problems of procrastinators.
2. The interface between neuroticism, impaired self-control and procrastination has also significant clinical implications. It explains many of the behaviors observed in patients, and a tendency to put off a visit to a doctor in particular, especially if there exists the probability of having cancer (see Sirois et al., 2003). It also explains a tendency to delay and to accomplish or even to discontinue rehabilitation by patients with emotional deficits and executive dysfunctions. Yet, recent studies have shown that it is possible to overcome such problems (Suárez Bagnasco, 2016), accordingly, neurofeedback combined with recent neuroimaging techniques has proved to be highly promising (Pórola et al., 2016).
3. As mentioned above, there is a necessity to further investigate the mediating effects of those features in order to learn more about the real nature of procrastination and its causes. This study revealed that the interface of neuroticism with procrastination is mediated by factors classified as interpersonal. It gives good reasons for conducting studies that would treat personality traits as mediators of the relationship between procrastination and intrinsic personal factors.

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