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The mixed-method approach to identify perceived reasons for increased procrastination among students during the first pandemic lockdown in Poland

Abstract: The beginning of the COVID-19 pandemic brought about a sudden and significant change in the conditions of various academic activities. In the present study, we wanted to investigate the influence of the first pandemic lockdown on procrastination tendencies among Polish students. To achieve this goal we employed a mixed-method, embedded longitudinal study. In the quantitative part of the research, the same group of university students completed the procrastination questionnaire twice: a year before, and two months after the introduction of the first pandemic lockdown. The qualitative part included the open-ended questions about the perceived reasons for an observed change in a tendency to postpone tasks after the pandemic outbreak. Our analyses showed a significant increase in academic procrastination after the lockdown introduction. In particular, students reported a decrease in the study interest and lower working discipline. As the causes of higher procrastination during the lockdown period, students most frequently pointed out the reduced monitoring of work progress by supervisors and lower negative consequences of delaying tasks. The second most frequent theme in provided answers included difficulty in restraining from alternative activities and problems with focusing on tasks or ignoring distractions. Embedding qualitative and quantitative data gave a consistent picture of students' situation in the first lockdown and provided potential explanation for the exacerbation of procrastinatory behaviors after the pandemic outbreak.

Keywords: *higher education, procrastination, Covid-19, mixed-method study, Pandemic lockdown*

INTRODUCTION

The COVID-19 outbreak has brought about a sudden and nearly revolutionary change in the higher education area for students and lecturers. For most of them, the novelty appeared in the new forms of learning, conditions of carrying out tasks, and modes of cooperation with peers. Consequently, the pandemic lockdown had a significant impact on students' academic behaviors and work arrangements (Sahu, 2020; Ferrel & Ryan, 2020; Chen et al., 2020). These rapid changes may also have brought about an escalation of many study problems, including academic procrastination.

Academic procrastination can be understood as a voluntary delay in study-related activities despite negative consequences (Steel, 2007). Studies report that up to 70% of students procrastinate (Ellis & Knaus, 1977; Potts, 1987; O'Brien, 2002; Schouwenburg, 2004). When students delay, they engage in other activities, e.g., browsing social media, watching TV, and talking with friends or family members (Pychyl et al., 2000; Steel & Klingsieck, 2016).

Previous research has attempted to find the causes of procrastination by approaching this problem from various perspectives. Some findings indicate that increased procrastination results from various motivational (Lee, 2005; Ketz et al., 2014) or personality-related factors, such as high neuroticism, low conscientiousness (Schouwenburg, 2004), or increased impulsivity and self-control deficits (Michałowski et al., 2017; Steel & Klingsieck,

2016). Other studies focus on the neural correlates of the increased tendency to procrastinate (Zhang et al., 2016; Wypych, Michałowski et al, 2019; Michałowski et al., 2020). The aforementioned approaches consider procrastination to be a relatively constant individual trait. On the other hand, there is a perspective in which procrastination can be understood as a state or behavior that can occure more often in a "procrastination-friendly" environment. “procrastination-friendly” environment. This approach assumes that external factors, such as long deadlines, distractors, or aversive tasks, are the facilitators of students’ procrastination (Nordby et al., 2017; Svartdal et al., 2020).

The present study had two aims: the first was to determine the impact of the pandemic lockdown on students’ procrastination. The second aim was to identify the perceived reasons for the change in the frequency of postponing tasks in this particular situation. To meet these objectives, we decided to conduct a survey using a mixed-method approach and embedded design study (Cresswell, 2009). A mixed methodology involves gathering the outcomes of quantitative and qualitative methods and taking advantage of both. An embedded design study is guided by either traditional quantitative or qualitative methodology. The results from the leading method are then supported by the outcome of the other method (Plano Clark et al., 2008; Creswell & Plano Clark, 2007).

We asked the participants to fill out procrastination questionnaires and answer open-ended questions about the reasons for any changes in their frequency of postponing tasks (see the procedure section). The main asset of our study design is the scope for extending and deepening the understanding of the results gained from psychometric measures.

We hypothesized that students’ procrastination had increased in pandemic lockdown and aimed to explore whether there are any representative socio-environmental factors that could explain the potential change in task postponement during this situation. These findings can help us to understand the impact of the pandemic lockdown on students’ procrastination.

METHOD

Participants

In the longitudinal, quantitative study, participants were recruited twice – before and during the first pandemic lockdown (see the procedure section). Out of 192 subjects (90% were female, M_{age} = 27,5, *SD*=8,9), 46 completed both assessments, 87% were female, M_{age} = 26.98, and *SD* = 8.18.

In the qualitative study, subjects were recruited once during the first pandemic lockdown. The sample consisted of 209 participants (including 46 participants from the quantitative part of the study and 163 newly recruited subjects), 82% were females, M_{age}=27.3, and *SD*= 7.32.

Participants were recruited via the management software at universities in big Polish cities and a social media service.

Informed consent was obtained from all adult participants included in the present study.

Measures

The Study Problem Questionnaire (SPQ) (Wichrowski, 2008; Schouwenburg, 1995) measures motivation-related study problems and has been used to measure procrastination in previous studies (Michałowski et al., 2017; Przetacka et al., 2022), being significantly related to the results in other procrastination scales (Wiwatowska et al., 2022). The SPQ is a 23-item scale on which items are rated from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater procrastination (Michałowski et al., 2017; Przetacka et al., 2022, Wiwatowska et al., 2022)

The SPQ consists of three subscales: 1) *Low work discipline* reflects a perceived inability to avoid procrastination, i.e., “I’m always behind with my work” or “I continuously interrupt my work in order to smoke, have coffee, walk around, or talk to somebody.” 2) *Fear of failure* reflects the motivation of a student to avoid the risk of exposing academic incompetence, i.e., “When I start working on some task, I think that I won’t be able to manage it” or “I feel guilty when not working.” 3) *Study interest* measures the level of interest in a study area, i.e., “Certain aspects of my study are really interesting” or “My interest in my study is growing all the time.” The scale achieved satisfactory reliability (Cronbach α = .74).

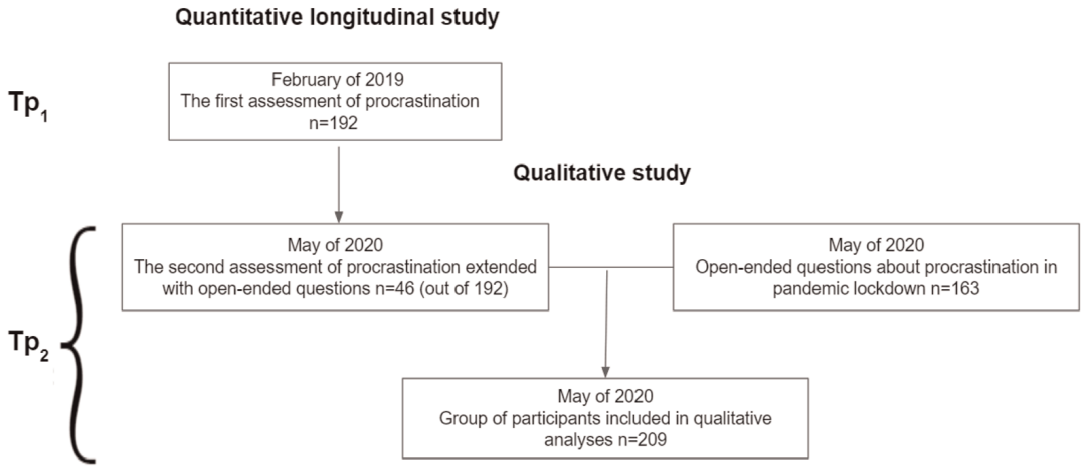
Procedure

We assessed the level of procrastination twice: in February 2019 (Tp_1) and May 2020, about two months after the beginning of online education in Poland (Tp_2) (see Fig. 1).

In the first measurement (Tp_1), students filled out the SPQ and some other questionnaires that are not mentioned in this paper.

In the second measurement (Tp_2), participants were asked to report their age and sex and whether they noticed any change in the frequency of delaying tasks in the current situation (task postponement has increased, has not changed, or has decreased). After this part, subjects filled out the Polish version of the SPQ (Schouwenburg, 1995; Polish adaptation: Wichrowski, 2008) and some other questionnaires, the results of which are not reported in this paper. After that, participants filled out an open-text question about the perceived causes of change in the frequency of task postponement, i.e.: “Please indicate / list / enumerate three things that make you more/less likely to put things off in the current situation”.

The answers to the open-text question were automatically divided into those indicating that the reasons for procrastination decreased or increased. These two groups of answers were further divided into subcategories based on their content and the previously identified factors that facilitate or reduce procrastination, including environmental (see Svartdal et al., 2020 for a review) and individual factors (see Klingsieck, 2013 for a review). Distinguished categories were as follows: anxiety and stress (Jackson et al., 2000; Tice, 2001; Pychyl & Flett, 2012; Steel, 2007), depressiveness (Flett et al., 1995; Solomon & Rothblum, 1984; Steel, 2007), motivation (Dewitte & Lens, 2000; Dewitte & Schouwenburg, 2002), energy to act and



Qualitative data analysis

tiredness (Tice et al., 2001; Baumeister & Tierney, 2011), external control (Grunschel et al., 2013; Klingsieck et al., 2013; Patrzek et al., 2012), distractors and alternative activities (Reinke & Hoffman, 2016; Steel, 2018), and an "other" category, which included causes that did not fit in any of the selected categories (for a detailed description of the categories, see Table 2). Next, based on a three-step training procedure (see Syed & Nelson, 2015, p. 4, for details on this topic), three raters were trained to categorize participants' answers according to the definitions and examples of the eight mentioned categories and the categorization rules. The inter-rater agreement for all categories was moderate (Fleiss' kappa = .47). The final category chosen for each answer was the one indicated by at least two raters. The answers that were categorized differently by all three raters were excluded from further analyses.

RESULTS

Quantitative study

To compare the procrastination scores between Tp_1 (February 2019) and Tp_2 (May 2020), we conducted a paired sample t-test.

The results showed a statistically significant increase in procrastination $t(45) = -4.26$, $p < .001$. A significant increase was observed in the following subscales: *study interest* $t(45) = -2.13$, $p < .001$ and *low work discipline* $t(45) = -2.00$, $p < .01$. *Fear of failure* did not change significantly $t(45) = -.74$, $p > .05$ (Table 1).

Qualitative data

Taking into account that more students reported the increase (79) vs. decrease (42) in the tendency to postpone tasks and that the mean score in the SPQ scale increased after the pandemic outbreak, we decided to focus on the causes of the increased procrastination frequency, and the causes for the decrease in procrastination are not presented here. Importantly, increase in procrastination was positively associated with the frequency of choosing the response: "task postponement has increased". In the examined group where the SPQ increased, 46% of individuals indicated they postponed more, 17% noted they postponed less, and 37% did not notice any change.

Students who declared an increase in task postponement generated 219 causes of this change, while eighteen of the answer boxes were empty. A total of 192 causes were classified into the same category by at least two raters, while 27 causes were categorized inconsistently and were excluded from the analysis. Most of the answers were short and had two to three words.

Raters categorized answers into one of eight categories (see Table 2 for descriptions and examples generated by the participants).

The numbers of causes classified into the categories *external control* and *distractors and alternative activities* were almost the same: 50 and 48 accordingly. The category *energy to act* occurred 38 times, while *other* was assigned three times. The categories *external factors* and *motivation* were indicated 21 and 19 times, respec-

Table 1. Results of the paired samples t-tests

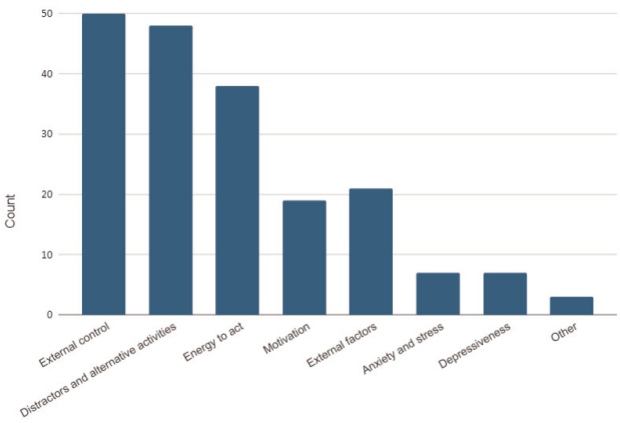
	Time point one Mean (SD)	Time point two Mean (SD)	t	d
STUDY PROBLEM QUESTIONNAIRE	58.20 (14.08)	63.06 (13.58)	-3.23*	.35
Subscale SPQ: Fear of failure	27.89 (7.51)	28.63 (7.15)	-.85	.10
Subscale SPQ: Low work discipline	19.02 (7.02)	21.02 (6.66)	-2.76*	.29
Subscale SPQ: Study interest	11.28 (4.46)	13.41 (4.10)	-4.45**	.50

*Significance level: $p < .001$**; $p < .05$*

Table 2. Names, descriptions, and examples of the categories

No.	Title of category	Description
1	External control	Reduced monitoring of work progress by supervisor and fewer negative consequences for not completing a task on time, e.g., *"During classes, there are no tests that make me learn more regularly;" "There are fewer negative consequences for sending tasks after the deadline;" "Lecturers are more indulgent about delays in task submission."*
2	Distractors and alternative activities	The difficulty of restraining from alternative activities, a problem with focusing on tasks or ignoring distractions, e.g., *"I browse various media;" "I have other duties;" "I spend time with my boyfriend."*
3	Energy to act	Participants' tiredness or lack of energy to act, e.g., *"I am tired;" "I don't sleep enough;" "Laziness."*
4	Motivation	Indicates lower motivation for current duties, e.g., *"I have no motivation;" "I don't have enough strength to start acting."*
5	Depressiveness	Worsening of depressive symptoms, such as depressed mood, pessimism, low self-esteem or self-efficacy, e.g., *"I'm sad;" "My self-esteem is low;" "Sometimes I feel gloomy."*
6.	Anxiety and stress	State of worry, anxiety and stress, e.g., *"I am stressed;" "I feel anxiety."*
7.	External factors	External factors that can hinder or preclude work. Situations that are out of participants' control, e.g., *"I have no time;" "There are children in the house permanently;" " I'm overwhelmed by duties."*
8.	Other	Answers that did not fit into any other category, e.g., "*The current situation is unpredictable;" "It's hard to plan anything;" "It's impossible to get most of the matters done in face-to-face contact."*

tively. Categories related to depressive mood and stress occurred seven times each (Fig. 2).



DISCUSSION

In the embedded design study we measured the change in the severity of academic procrastination during the online education period in the first pandemic lockdown.We used the quantitative measures to evaluate the change in the general tendency to procrastinate after the pandemic outbreak. In the qualitative part of the study, we asked students about the perceived causes of the observed increase or decrease in the frequency of postponing tasks. We observed a decrease in *study interest* and *work discipline* and no change in *fear of failure*.

The decrease in *work discipline* indicates that students perceived themselves as being more susceptible to temptations (Dewitte & Schouwenburg, 2002; McCown et al., 2012) and impulsive (Gustavson et al., 2014) as well as having stronger difficulties with time management (Lay & Schouwenburg, 1993; Steel, 2002; Dewitte & Schouwenburg, 2002).

The potential causes for the reported decrease in work discipline can also be reflected by the students' answers that fell into categories: *lower external control, distractors and alternative activities,* and *low energy to act*. The first two factors are related to the core problem of procrastination, poor self-regulation (Tice, 2001; Steel, 2007; Hagger & Baumaeister, 2010), while low energy to act is considered an amplifier of vulnerability to distractors, temptations, and task aversiveness (Svartedal et al., 2020; Tierney, 2011). *Lower external control* was the factor that students most often perceived as the reason for task postponement in the COVID-19 pandemic. As one of the answers pointed out: *There are fewer consequences. The worsening of my learning level doesn't make me feel guilty because I don't visit University, which reminds me about my duties*, or *I don't feel pressure*, or *I don't have classes that force me to study regularly*. *Lower external control* also included statements pointing to the excess of free time, the lack of an imposed daily schedule, and difficulties with planning. Svartedal et al. (2020) suggested that the large degree of freedom during online studies facilitates procrastination, which consists of too little regulation in studies (Grunshel et al., 2013) or low external structure (Klingsieck et al., 2013). The results of our research are consistent with this conclusion.

Another aspect that was indicated as the second most frequent reason for increased procrastinatory behavior was the difficulty in resisting distractions and the temptation to engage in alternative activities. The pandemic situation forced a change in learning conditions and made the

computer the primary learning device, even though it was the source of multiple potential distractors. Places that support avoidance of temptations, such as universities and libraries, were closed, which forced students to work at home and hindered the completion of study-related tasks. Subjects often reported that the reason for the increase in task postponement came from the home environment: *There are always some duties at home, or pets to be taken care of, I have other duties,* or *It is easy to be distracted.* Moreover, social networks and over-the-top content platforms like Netflix or HBO GO were easily accessible at home. The change in work conditions during COVID-19 was shown to handicap completing important study-related tasks and resisting distractors (Svartdal et al., 2020). Also in a large online study at Southeast University in China, subjects reported the necessity to improve self-discipline and concentration during online learning(Sun Tang & Zuo, 2020).

The decrease in *study interest* reported by the participants in the present study can be explained in multiple ways. First, instead of focusing on academic duties, students may have engaged in the aforementioned alternative activities, such as watching TV series or tracking the development of the pandemic situation. Second, spending many hours in front of a computer without contact with other students might have impacted their study interest negatively (Abuhassna et al., 2020; Tanis, 2020). Third, online education requires the special training of lecturers to apply new tools and develop new skills to carry out teaching (Johnston et al., 2005; Mayer, 2014; Vrasidas, 2015; Ali, 2020). Thus, online classes might have been poorly prepared, which might also have reduced study interest. Previous research is not consistent with the claim about online study satisfaction. Some findings show that online studying is less satisfying than face-to-face learning (Tratnik et al., 2019; Young & Duncan, 2014; Summers et al., 2005). On the other hand, some researchers contradict this statement and show higher satisfaction with online studying (Soffer & Nachmais, 2018; He et al., 2021). The broader investigation has shown that many factors impact student satisfaction, such as the learner-teacher interaction (Abdous & Yen, 2010; Croxton, 2014), interaction with peers (Beaudoin et al., 2009), an interactive learning environment (Kuo et al., 2014), being more comfortable with distance learning (Simpson, 2012), perceived online support (Lee, 2010), and feeling more confident about the ability to communicate and learn online (Palmer & Holt, 2009). In the context of the COVID-19 lockdown, the usability of learning platforms is crucial for satisfaction (Chen et al., 2020). The issue of student satisfaction might not occur at the universities that conducted e-learning courses before the pandemic outbreak and have experience in this field. In the aforementioned studies, educators were prepared to run the classes in an online form of study, and the students were willing to participate in them. Learning in the pandemic context was significantly different. In that reality, students might have been disappointed with the quality of online education, which led to decreased study interest.

LIMITATIONS AND STRENGTHS OF OUR STUDY

We believe that the presented findings provide valuable insight into the influence of the COVID-19 pandemic lockdowns on the change in procrastination tendencies among students. Nevertheless, it is important to recognize several limitations of this study. The first limitation concerns the small and quite homogenous sample in the quantitative, longitudinal part of the research. This makes it difficult to extrapolate the results to the whole population of students. However, the observed increase in the mean score of the SPQ was supported by the results of the qualitative results, which originated from a larger and more heterogeneous sample and indicated that the frequency of task delay was reported more often than a decrease.

Second, the presented procedure of the quantitative study does not allow for inferring a direct, causal relationship between the pandemic outbreak and the procrastination increase, as it was impossible to compare this change in time to some control condition. It might be that the increase in procrastination in this particular sample is caused by some other factors, such as age or change in time. However, we find this unlikely, as numerous studies indicate that a tendency to delay tasks decreases over one's lifespan (e.g., Beswick et al., 2007; Beutel et al., 2016; see Van Eerde, 2003 for a meta-analysis).

Third, it is important to point out that in the qualitative study, we did not ask which tasks in particular were delayed during the pandemic period. Although participants frequently referenced academic tasks in their answers (e.g., "During classes, there are no tests that make me learn more regularly"), there is also a possibility that COVID-19 lockdown impacted task delay in other areas, such as work or private life. Moreover, it was not specified what kind of delay we asked about. It has been frequently noted that delay is not always equal to procrastination, for example, if it is inevitable and beyond one's control or when it serves some purpose, being an intentional activity planned in order to maximize one's productivity (see Klingsieck, 2013 for a discussion on this topic). However, the differentiated categories allowed for at least partially disentangling different types of delay, which is reflected by the participants' answers (for example, inevitable delay is captured in the category "external causes").

Fourth, it should be noted that 76% of individuals from the first measurement of the longitudinal study did not participate in the second measurement. This poses a limitation in the interpretation of obtained data, which was collected from a small sample of participants, which might not be representative of the students' population. The reasons for this dropout can be attributed to various factors, such as limited forms of reaching the participants, as it was possible only via the management software, to which some students might have lost access after finishing the University. Other reasons might include insufficient motivation to participate in the second study. Participants were encouraged to fill out question-

naires in the first measurement by receiving student activity points. Until the second measurement, some students might have already accumulated enough points and did not have sufficient internal motivation to continue participating in the study. The potential factors contributing to dropout in a web-based longitudinal studies can be found in a recent work by Gao and collaborators (2023). In their research, dropout rate ranged from 68% to 42% and was linked to younger age, COVID-19 infection, and employment.

CONCLUSION

The COVID-19 pandemic has occurred rapidly and unexpectedly while having a significant impact on academic education. In this situation, students have procrastinated more than in the previous year. The quantitative, longitudinal part of the research identified lower work discipline and less interest in studying among the students in the first pandemic lockdown. The open-ended questions enabled us to get a deeper insight into these changes. Reduced monitoring by a supervisor and the perceived lower consequences of not completing tasks on time were indicated as the main reasons for a lockdown-related increase in procrastination. The next most frequent cause was related to difficulty in restraining distractors and alternative activities. The third most reported reasons were related to low energy or tiredness. These findings give us a unique picture of students' situations in the first pandemic lockdown and could help us prepare appropriate efforts to reduce student procrastination.

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COMPLIANCE WITH ETHICAL STANDARDS

The study was approved by the Departmental Ethics Committee. All procedures in the present study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

CONFLICTS OF INTERESTS

The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data and all materials used in this study are available from the corresponding author upon request.

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