Original Article

Behavioral and Emotional Academic Procrastination Scale

Reliability, Validity, and Normative Values

Carola Grunschel[1], Lucas Wloch[1], Christopher Kafui Gadosey[1], Sophie von der Mülbe[2], Lisa Bäulke[3], Martin Daumiller[4], and Markus Dresel[2]

[1]Faculty of Psychology and Sports Science, Department of Psychology, University of Münster, Germany
[2]Faculty for Philosophy and Social Sciences, Department of Psychology, University of Augsburg, Germany
[3]Faculty of Economics and Social Sciences, Hector Research Institute of Education Sciences and Psychology, University of Tübingen, Germany
[4]Department of Psychology, Faculty of Psychology and Education, Ludwig-Maximilians-University Munich, Germany

Abstract: The Behavioral and Emotional Procrastination Scale (Bobe et al., 2022) measures the general frequency of behavioral and emotional components of academic procrastination. We used a representatively stratified sample of students based on demographic data from the Federal Statistical Office (2021) to provide extended evidence for the scale's reliability and validity of test score interpretation and generate normative values. Our quota sample consisted of 890 students. We addressed deviations from the population with weighting factors. We found evidence for the reliability of the subscales *delay* and *subjective discomfort*, the assumed factorial structure, and measurement invariance regarding gender, field of study, type of university, and study phase. Motivational costs were significantly positively related to delay, and delay and subjective discomfort were significantly associated with academic performance and study satisfaction. The normative values quantify the extent of the components of academic procrastination to support researchers and practitioners in helping students overcome them.

Keywords: academic procrastination, higher education, validity, normative values, reliability

Behavioral and Emotional Academic Procrastination Scale. Reliabilität, Validität und Normwerte

Zusammenfassung: Die Behavioral and Emotional Procrastination Scale (Bobe et al., 2022) erfasst die allgemeine Häufigkeit von verhaltensbezogenen und emotionalen Komponenten akademischer Prokrastination. In einer repräsentativ geschichteten Stichprobe von Studierenden, basierend auf demografischen Daten des Statistischen Bundesamtes (2021), wollten wir die Evidenz für die Reliabilität des Fragebogens und die Validität der Testwertinterpretation erweitern sowie Normwerte generieren. Unsere Quotenstichprobe bestand aus 890 Studierenden. Die Abweichungen von der Populationsverteilung wurden mit Gewichtungsfaktoren adressiert. Wir fanden Evidenz für die Reliabilität der Subskalen *Aufschub* und *subjektives Unbehagen*, die angenommene faktorielle Struktur des Konstrukts sowie ihre Messinvarianz hinsichtlich des Geschlechts, Studienfachs, Hochschultyps und der Studienphase. Motivationale Kosten hingen signifikant positiv mit dem Aufschieben zusammen. Aufschieben und subjektives Unbehagen waren signifikant mit akademischen Leistungen und Studienzufriedenheit assoziiert. Die Normwerte quantifizieren das Ausmaß der Komponenten von akademischer Prokrastination um Forschenden und Praktiker_innen dabei zu unterstützen, Studierenden bei der Überwindung dieser Probleme zu helfen.

Schlüsselwörter: Akademische Prokrastination, Hochschulbildung, Validität, Normwerte, Reliabilität

Academic procrastination, which is common among students (Steel, 2007), can be defined as "the voluntary, irrational postponement of an intended course of action despite the knowledge that this delay will come at a cost to or negatively impact the individual" (Simpson & Pychyl, 2009, p. 908). This definition illustrates that procrastination is a multifaceted construct entailing different components and characteristics (for summaries of definitional aspects, see, e.g., Chowdhury & Pychyl, 2018; Klingsieck, 2013; Wieland et al., 2018). Procrastination involves a discrepancy between planned intention and actual behavior, a so-called intention-action gap (Lay & Schouwenburg, 1993; Steel, 2007); this gap must be voluntary and unnecessary, as it is not caused by external factors (Steel, 2007; Wieber & Gollwitzer, 2010). Typically, procrastination is related to poor academic performance (Haghbin, 2015; Kim & Seo, 2015) and is associated with negative emotions in the form of subjective discomfort (Krause & Freund, 2014; Sirois & Pychyl, 2013), such as feelings of guilt (Pychyl et al., 2000),

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worry, and shame (Wohl et al., 2010). Thus, although procrastination reflects a way of regulating task-aversive emotions, it also evokes negative emotions (Sirois & Pychyl, 2013), distinguishing it from strategic delay, which is usually not accompanied by negative feelings (e.g., Chowdhury & Pychyl, 2018; Wieland et al., 2018).

For research and counseling interventions, one must be able to assess the different components of academic procrastination reliably and validly. Bobe et al. (2022) constructed the Behavioral and Emotional Procrastination Scale (BEPS) to assess on a general level the frequency of experiencing two distinct components of academic procrastination among German samples. More specifically, using three items each, the BEPS economically assesses the behavioral component of unnecessary delay and the emotional component of subjective discomfort accompanying this delay. Bobe et al. (2022) evaluated the reliability of the BEPS and found evidence for the validity of the test scores in samples of first-year students from specific German universities.

In the current study, we aimed to replicate and extend the findings on the BEPS reliability and validity of the test scores using a representatively stratified sample with diverse demographic characteristics. Furthermore, for the first time in procrastination research, we aimed to generate normative values, which are important for applying the BEPS in research and counseling. By using normative values, students can compare and classify their own expression on the two distinct components of procrastination, and researchers and practitioners can quantify the severity of academic procrastination and tailor interventions to procrastinating students' needs.

Measuring Components of Academic Procrastination

Established self-report questionnaires (e.g., the General Procrastination Scale [GPS], Klingsieck & Fries, 2012; the Tuckman Procrastination Scale [TPS], Tuckman, 1991) primarily assess behavioral components of academic procrastination, such as delay or intention-action gaps, and characterize it, for example, as irrational or unnecessary. Some questionnaires also consider other aspects of academic procrastination, such as task aversion or anxiety and uncertainty while learning (Patzelt & Opitz, 2005). However, apart from the self-report measure for the ecological momentary assessment of procrastination in daily life (e-MAPS, Wieland et al., 2018), no instrument assesses the emotional component of subjective discomfort (e.g., Klingsieck, 2013; Krause & Freund, 2014; Wieland et al., 2018).

Generally, self-reports of academic procrastination are indispensable, as social norms on what is acceptable differ over time and between cultures (Haghbin, 2015). Because the assessment of academic procrastination depends on internal appraisals and attributions (Klingsieck, 2013), theoretical cut-off values are not available. However, comparative values of students (e.g., percentile ranks) can be helpful to better understand the components of academic procrastination.

BEPS: Self-Report Questionnaire and Psychometric Properties

The recently developed BEPS allows the operationalization of the behavioral and emotional components of procrastination with three items each (Bobe et al., 2022). The BEPS's first subscale *delay* uses an answer scale from 1 (*never*) to 5 (*always*) to assess the general frequency of experiencing behavioral components of academic procrastination, such as voluntarily and unnecessarily delaying intended study tasks (e.g., "I could start with my study-related tasks, but I do other things instead"). The second subscale, *subjective discomfort,* measures the general frequency of experiencing the emotional component of academic procrastination consisting of affective and cognitive aspects such as worries, feelings of guilt, and negative mood while unnecessarily delaying tasks (e.g., "I feel bad while I am needlessly delaying study-related tasks").

Given that each component of procrastination has a distinctive character (e.g., Chowdhury & Pychyl, 2018; Klingsieck, 2013), Bobe et al. (2022) stated that the mean values of both subscales of the BEPS should not be integrated into an overall value that reflects academic procrastination as a whole. Rather, both subscales' mean values provide information about the frequency of experiencing the respective component of procrastination.

The means of both subscales do not necessarily have to be high. Some students might often unnecessarily delay intended study-related tasks but rarely experience subjective discomfort. Other students might only rarely delay unnecessarily intended tasks but often experience subjective discomfort. Moreover, some students might report a comparable frequency of experiencing behavioral and emotional components of procrastination. These diverse constellations of the two BEPS components are statistically assumed to be weakly correlated (Bobe et al., 2022; Milgram et al., 1992). Similarly, Rist et al. (2023) also assume that not all diagnostic criteria for pathological procrastination must be met to make meaningful inferences about procrastination.

In first-semester student samples, Bobe et al. (2022) found acceptable internal consistencies of the subscales (ω-delay = .89; ω-subjective discomfort = .91). Furthermore, a model with two weakly correlated factors fitted the data very well. For this model, the authors determined scalar measurement invariance longitudinally and regarding different student characteristics, namely, gender and study duration. They also examined the relationship between the BEPS and other constructs. Interestingly, delay correlated highly with established procrastination scales (e.g., GPS, TPS) that mainly assess behavioral components of procrastination. However, subjective discomfort showed relatively low correlations with these instruments. Finally, although both subscales correlated significantly positively with neuroticism and significantly negatively with academic self-efficacy, the correlations for subjective discomfort with these constructs were higher than for the delay subscale. Bobe et al. (2022) interpreted these findings as empirical evidence that argued for the validity of the test scores.

We need to investigate further relationships with other variables to obtain more information on the validity of the test scores. In past studies, experiencing motivational costs (Eccles & Wigfield, 2020) was associated with academic procrastination among school students (Jiang et al., 2018) or university students (Gadosey et al., 2022). Furthermore, effort, emotional, and opportunity costs correlated positively with procrastination among school students (Jiang et al., 2020). Regarding the consequences of procrastination, the behavioral component of procrastination – as typically assessed by established measurement tools – has been related to academic performance (Kim & Seo, 2015) and components of study satisfaction (Gadosey et al, 2022; Scheunemann et al., 2022). To our knowledge, no findings have yet pointed to the relationship between subjective discomfort and motivational costs, academic performance, or study satisfaction.

The Present Study

Bobe et al. (2022) generated satisfying evidence for the psychometric properties of the BEPS but suggested that their results should be replicated and extended via more heterogeneous samples. The present study describes the BEPS's psychometric properties, assesses its reliability, and examines the validity of test scores using a representatively stratified quota sample of German students. In addition, for the first time in procrastination research, this study provides normative values for the two subscales.
Our objectives and assumptions were as follows:

First, to comprehensively illustrate the basic properties of the BEPS in our sample, we compiled descriptive values of both subscales. We also wanted to replicate internal consistencies (Bobe et al., 2022).

Second, we aimed to extend evidence of validity. We examined the factor structure of the BEPS. Based on Bobe et al. (2022), we assumed that a model with the two subscales representing separate yet weakly correlated latent factors would fit the data well (Hypothesis 1). Additionally, we examined the measurement invariance for this model concerning the following demographic characteristics. In line with Bobe et al. (2022), we expected scalar invariance for gender (Hypothesis 2). We further explored measurement invariance for the variables fields of study, type of university, and study phase (Research Question 1).

Moreover, we enhanced the spectrum of validity assessments by investigating the relationships of the BEPS subscales with other academically pertinent constructs. Based on Bobe et al. (2022), we expected significant correlations between the German Tuckman Procrastination Scale (TPS-d, Stöber & Jormann, 2001) and both subscales (Hypothesis 3a). The respective correlation with the delay subscale should be higher than with the subjective discomfort subscale (Hypothesis 3b).

Additionally, we incorporated both BEPS subscales in an integrative structural equation model. They were statistically predicted by motivational costs and predicted study satisfaction and academic performance, as assessed through grade point average (GPA). Based on existing research (e.g., Jiang et al., 2020), we assumed significant positive associations between delay and the different motivational costs (Hypothesis 4a). Furthermore, we expected negative relations of delay with academic performance (Kim & Seo, 2015; Hypothesis 4b) and study satisfaction (e.g., Gadosey et al., 2022; Hypothesis 4c). In the case of subjective discomfort, however, previous research has provided no clear findings on the associations between subjective discomfort and these variables. We therefore exploratively examined the relationships between subjective discomfort and motivational costs (Research Question 2a), performance (Research Question 2b), and study satisfaction (Research Question 2c).

Finally, we aimed to generate normative values for both BEPS subscales to facilitate the practical application of the BEPS in research and practice.

Methods

Participants

Our data stem from a larger research project that mainly assessed students' need for training programs fostering

academic success in higher education. We targeted a quota sample of 1,300 students according to the demographic distribution in the population (German Federal Statistical Office, 2021) and formed representative clusters based on gradual segmentations of the characteristics of gender, fields of study, type of university, and current semester. In total, 48 clusters represented the full range of possible combinations of these characteristics. For each cluster, we first determined the corresponding number of individuals in the population and then derived the ideal number of participants for our targeted sample size. The sampling was nonprobabilistic, and we incentivized the study with a €5 voucher. Overall, 890 students from diverse institutions completed the survey, resulting in a representatively stratified quota sample that was smaller than intended. On average, these participants were 23.69 years old (SD = 4.46) and were in their fourth semester (M = 4.32; SD = 2.65). Electronic Supplementary Material (ESM 1) shows a summary of the sample characteristics.

Measures

To examine the validity of the BEPS test scores, we used the 10-item version of the German Tuckman Procrastination Scale adapted to the academic context (e.g., "I unnecessarily postpone the completion of work during my studies, even when it is important"; Stöber & Joormann, 2001; Tuckman, 1991, ω = .95). Responses range from 1 (*not correct at all*) to 5 (*fully correct*).

Moreover, we used the items on motivational costs by Schnettler et al. (2020). The subscales effort cost (e.g., "Studying my major is exhausting to me"; ω = .88), emotional cost (e.g., "My major is a real burden to me"; ω = .89), and opportunity cost (e.g., "I have to give up a lot to do well in my major"; ω = .85) have three items each. The answer scale ranges from 1 (*not correct at all*) to 6 (*fully correct*).

We measured study satisfaction on three subscales (Westermann et al., 1996), with answers ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). These subscales are satisfaction with study content (e.g., "I really enjoy what I am studying"; ω = .88), satisfaction with study conditions (e.g., "I wish the study conditions at the university were better"; ω = .81), and satisfaction with coping in studies (e.g., "I find it difficult to reconcile my studies with other commitments"; ω = .85).

To measure academic performance, we asked participants for their most recent grade-point average. Participants answered on a scale from 1 (*GPA between 1.0 and 1.3*) to 9 (*GPA between 3.8 and 4.0*), with corresponding gradations.[1]

Data Preparation

We prepared our data and conducted our analyses using SPSS Version 28.0.1.0 and R Version 4.1.1. In population-based sampling approaches like ours, clusters usually deviate from exact target numbers, and it is recommended to compensate for the incompleteness with weighting factors (e.g., Asparouhov, 2005). We broke down the population percentages of each cluster to the available sample size of n = 890. During sampling, however, the closing limit per cluster was set to the representative number of participants at N = 1,300. This downward adjustment of the ideal number means that some clusters were still too weakly populated, while others were too strongly populated. To account for this problem, we assigned each cluster a suitable weighting factor. As illustrated in ESM 2, we gave underfilled clusters a weighting factor >1 to give them a correspondingly higher weighting. Conversely, we set the weighing factor for overcrowded clusters to <1 to weight it accordingly lower.

Results

Descriptive Statistics and Data Distribution

The delay subscale displayed a mean of M = 3.43 and a standard deviation of SD = 1.05. The subjective discomfort subscale displayed a mean of M = 3.71 and a standard deviation of SD = 1.00. The histograms of all items revealed single-peaked, slightly skewed distributions (ESM 3). The histograms of the subscale sum scores (ESM 4 and 5) were slightly skewed accordingly. Skewness and kurtosis for both subscales were below 1/–1, meaning they sufficiently adhered to restrictive recommendations for normal distribution (Bulmer et al., 1979).

Figure 1 shows a scatterplot based on students' values on the delay and subjective discomfort subscales. The scatterplot is quite diffuse, although it does reflect a small positive linear trend. The lowest delay value is accompanied by either low or high subjective discomfort values but not by moderate values. The correlationship between the BEPS subscales was low (r = .24).

[1] German grade format (1.0 = very good to 4.0 = satisfactory, lowest grade to pass an exam).

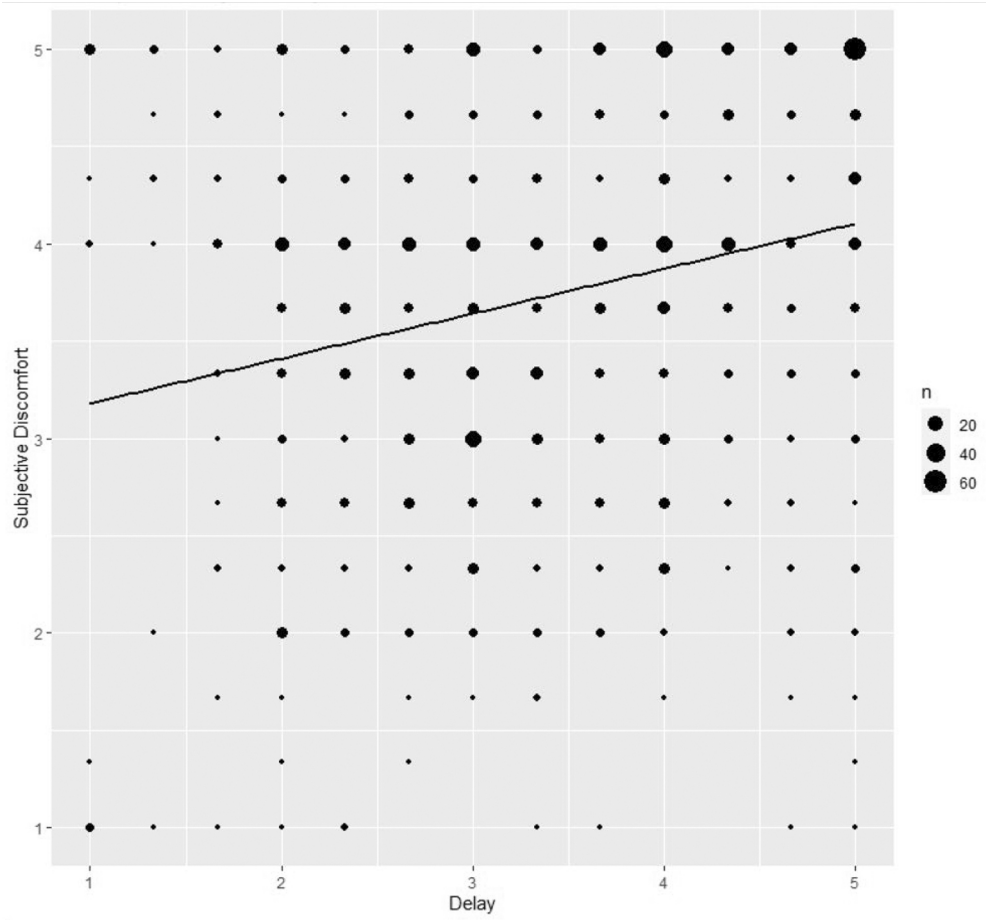

Figure 1. Scatterplot of the subscales delay and subjective discomfort.

Internal Consistency and Factor Structure

Both the delay subscale (ω = .92) and subjective discomfort subscale (ω = .89) displayed very good internal consistencies (Dunn & Baguley, 2014). To test the factor structure of the BEPS with two weakly correlated latent factors with loadings of their three respective items (H1), we used confirmatory factor analysis (CFA) with full information maximum likelihood parameter estimation. According to the recommendations of Hu and Bentler (1999; CFI > 0.95, RMSEA/SRMR values <.08), the fit indices ($\chi^2(8) = 16.273$, $p < .05$, CFI = .997, RMSEA = .035, SRMR = .019) supported the assumed model with two weakly correlated latent factors of delay and subjective discomfort (ESM 6).

Measurement Invariance

To examine the measurement invariance of the factor structure for demographic characteristics (H2, RQ1), we used progressively restrictive multigroup CFAs (Van de Schoot et al., 2012). As Chen (2007) recommended, we used differences in the fit indices (maximal change of –.01 in CFI, maximal changes in RMSEA of .015 and in SRMR of .030 for metric invariance and .015 for scalar invariance) to determine the type of measurement invariance for each group.

Table 1 shows small changes in CFI, RMSEA, and SRMR across all examined invariance models. The model with two correlated factors demonstrated scalar invariance for gender, supporting H2. Regarding RQ1, we found scalar invariance for type of university, field of study, and study phase (the latter based on comparing group 1 [semesters 1–6] with group 2 [7+ semester]).

Relationships to Other Constructs

In line with H3b, the correlation of the TPS-d with delay (r = .81; 95% CI [.79, .84]) was higher than with subjective discomfort (r = .30; 95% CI [.24, .36]) and in both cases significant (H3a). ESM 7 displays further correlations between the BEPS subscales with TPS-d, motivational

Table 1. Measurement invariances for gender, fields of study, type of university, and study phase

	Gender			Fields of study			Type of university			Study phase		
	CFI	*RMSEA*	*SRMR*	*CFI*	*RMSEA*	*SRMR*	*CFI*	*RMSEA*	*SRMR*	*CFI*	*RMSEA*	*SRMR*
Configural	.999	.027	.016	1.00	.004	.019	.994	.057	.020	.997	.040	.017
Metric	.998	.029	.023	1.00	.005	.026	.993	.053	.024	.997	.036	.021
Scalar	.996	.035	.025	1.00	.003	.027	.992	.051	.026	.998	.029	.021

Note. CFI = comparative fit index; *RMSEA* = root-mean-square error of approximation; *SRMR* = standardized root-mean-square residual.

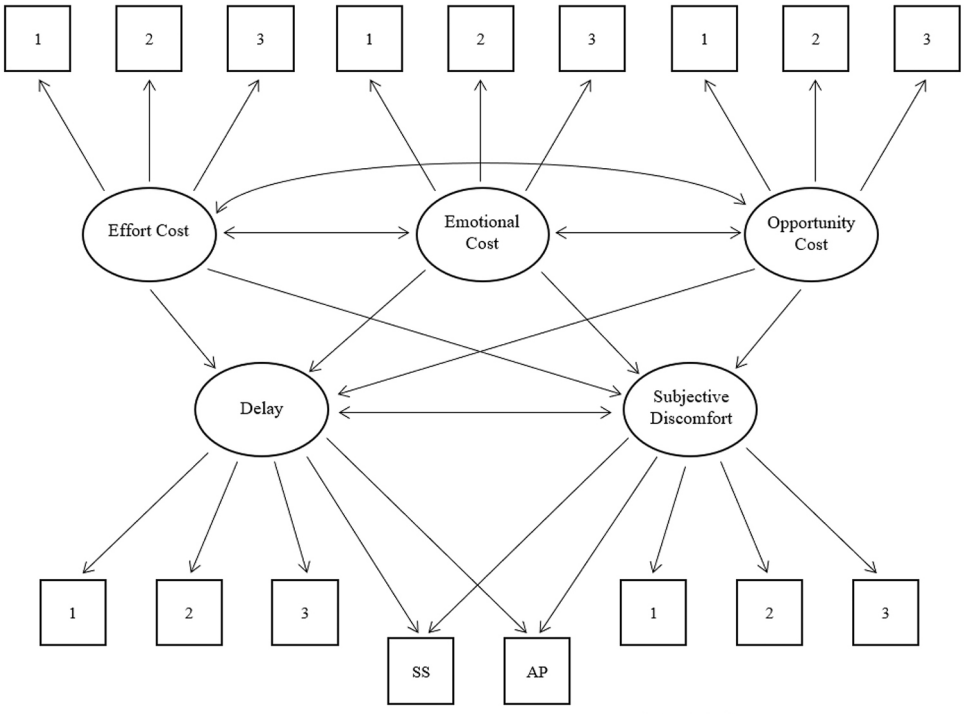

Figure 2. Integrative SEM. SS = study satisfaction, AP = academic performance. The numbers (1, 2, 3) represent the corresponding item of each (sub)scale.

costs, sociodemographic variables, semester, and type of university.

In our structural equation model (see Figure 2), we modeled delay, subjective discomfort, and costs as latent variables. In contrast, we included academic performance and the sum score of study satisfaction as manifest variables. The model had acceptable fit indices ($\chi 2(136) = 697.867$; $p < .001$; RMSEA = .079; *CFI* = .933; SRMR = .095). In line with H4a, emotional cost (β = .28, $p < .05$) and effort cost (β = .27, $p < .05$) were significantly positively related to delay. Contrary to H4a, opportunity cost (β = −.24, $p < .05$) was significantly negatively related to delay. Supporting H4b and H4c, the delay subscale further associated negatively with performance (β = −.46, $p < .05$) and study satisfaction (β = −.23, $p < .05$).

There were no significant associations between motivational costs and subjective discomfort (RQ2a). Subjective discomfort showed a significant positive relationship to academic performance (β = .19, $p < .05$; RQ2b) and a significant negative association with study satisfaction (β = −.21, $p < .05$; RQ2c).

Normative Values

First, we transformed raw test scores into standardized *z*-scores and subsequently computed *T*-scores. Second, we determined the interval estimates of percentile rank scores (Woerner et al. 2017) by calculating the proportional frequency of each scale value relative to equal, lower, and higher values.

Table 2 presents *T*-scores and percentile ranks for the total sample. *T*-scores are based on a mean of μ = 50, have a standard deviation of 10, and can therefore be used to

Table 2. T-values and percentile rank

Subscale Sum Score	Delay		Subjective discomfort	
	T	%	*T*	%
3	26.77	1.00	23.00	0.84
4	29.95	2.60	26.30	1.80
5	33.13	4.50	29.62	2.51
6	36.31	9.84	32.94	5.67
7	39.50	17.39	36.26	11.12
8	42.68	25.07	39.58	17.09
9	45.86	35.71	42.90	25.10
10	49.04	46.86	46.21	34.70
11	52.23	56.06	49.53	43.58
12	55.40	67.24	52.85	57.38
13	58.60	77.38	56.17	70.37
14	61.77	83.71	59.49	76.70
15	64.95	93.35	62.81	89.88

Note. % = percentile rank, subscale sum scores can go from a minimum of 3 (score of 1 on each item) to a maximum of 15 (score of 5 on each item).

easily examine individual test scores concerning the population's score distribution. The percentile rank positions an individual value within the normal distribution. For example, a sum score of 7 for delay corresponds to a *T*-score of 39.50, meaning that the person scored one standard deviation below the sample's average. The corresponding percentile rank of 17.39 means that over 80 % of students score higher than this person.

The normative values indicate that most students scored slightly above the theoretical sum score average of 9 on both subscales. Few people had extreme values (e. g., 3 or 15), signifying exponentially higher deviations from the average compared to more frequent moderate values (e. g., 9 or 10).

Discussion

We wanted to gather further evidence on the psychometric properties of the BEPS and generate normative values by drawing on a representatively stratified quota sample of students. Replicating the findings of Bobe et al. (2022), we found evidence for the reliability of the BEPS subscales and the factor structure of the BEPS with two correlated latent factors as well as measurement invariance of this model for gender. Furthermore, the analyses yielded scalar measurement invariance for type of university, field of study, and study phase. In line with Bobe et al. (2022), the delay subscale correlated significantly highly with the TPS-d, and the correlationship between the subjective discomfort subscale and the TPS-d was significant but moderate. As assumed, effort and emotional costs were significantly positively related to delay (Jiang et al., 2020). Unexpectedly, opportunity costs were significantly negatively related to delay. But perhaps the students' experience of having to give up more pleasant alternative actions in favor of learning might lead directly to procrastination (Pestana et al., 2020). In line with our expectations, the delay subscale was significantly negatively associated with academic performance (Kim & Seo, 2015) and study satisfaction (e. g., Gadosey et al., 2022). There were no significant associations between the cost components and the subjective discomfort subscale. There was a significant positive association between subjective discomfort and academic performance, which could mean that subjective discomfort might have stimulated learning (Woolley & Fishbach, 2022). This, in turn, might have resulted in good performance in our sample. Perhaps because of its affective nature, subjective discomfort correlated significantly negatively with impaired study satisfaction. The findings of the present study strongly support the validity of the test scores of the BEPS subscales as indicative of relevant components of procrastination. Therefore, we recommend its use in research and practice.

Theoretical and Practical Implications

A real added value of the delay subscale is its brevity. Established self-report questionnaires (e. g., TPS-d; GPS-K) typically assess the behavioral component of academic procrastination with more than three items.

Concerning the practical application of the subjective discomfort subscale, note that the subscale presupposes that unnecessary delay occurs. If a person answers with "1 (*never*)," this can mean that the person does not experience any subjective discomfort when delaying study-related tasks. However, the answer "1 (*never*)" can also mean that there was no unnecessary delay in the first place, so the individual could not experience subjective discomfort simultaneously. As the person does not experience subjective discomfort in both cases, this discrepancy does not affect how to interpret the subscale.

Frequently having negative experiences of procrastination might lead to psychological strain, which future studies could explore using the subjective discomfort subscale. Past research (Grunschel & Schopenhauer, 2015) showed that high procrastination in terms of unnecessary delay and high psychological strain were associated with high motivation to change procrastination. Future research could investigate whether students who have high scores on both subscales are the ones who seek help from student counseling services.

Generally, one could investigate the relationships or combinations of both subscales more intensively, as different combinations/relationships might emerge that could advance research on types of procrastination (e.g., Grunschel et al., 2013; Schouwenburg, 2004). According to our scatterplot illustrating the relationship between the BEPS subscales (Figure 1), there may be a type of student who unnecessarily postpones tasks but rarely experiences subjective discomfort; or a type of student who often experiences subjective discomfort while rarely procrastinating (Milgram et al., 1992).

The present study is the first in procrastination research to deliver normative values for a self-report questionnaire addressing components of academic procrastination. Based on our normative values, students can compare and classify their general frequency of experiencing behavioral and emotional components of procrastination by using the scores of students in our study. Additionally, researchers and practitioners can quantify the severity of experiencing behavioral and emotional components of academic procrastination when using the normative values in diagnostic procedures. It is important to remember that most students in our sample scored above average on both subscales, with a few students occupying the extremely low and high portions. This trend is consistent with previous studies, suggesting that procrastination is widespread among students (Steel, 2007).

In an additional diagnostic step, students could be asked about their reasons for academic procrastination (Patrzek et al., 2015). Depending on the reasons, useful measures could, for example, optimize goal-directed behavior (Wieber & Gollwitzer, 2010) or improve motivation regulation (Eckerlein et al., 2020). With students who often experience subjective discomfort when procrastinating, student counselors could mention that their feelings might be a signal (Bjørnebekk, 2008), and that it is still possible to change their behavior toward implementing their intentions. Teaching techniques for implementing intentions (Wieber & Gollwitzer, 2010) could benefit students. Furthermore, researchers and practitioners could use the diagnostic criteria for pathological procrastination that Rist et al. (2023) proposed to detect clinically relevant forms of procrastination.

Limitations

The BEPS assesses the general frequency of experiencing unnecessary delays in study tasks and the subjective discomfort that accompanies this delay. Both reports could be distorted in retrospect. For example, while students may be able to quantify the general frequency with which they unnecessarily delay academic tasks, based on the visible accumulation of undone work (Grunschel et al., 2013), estimating their frequency of retrospective emotional experiences attached to this procrastination might be more biased, for example, by the individual's personality (Barrett, 1997). It would be interesting to assess both components of academic procrastination first in real-time and retrospectively on a general level in the same study and evaluate the correlationship between the different measures.

One critical note about our sample is that it did not completely fulfill the quotas, so we had to work with weighting factors in data preparation, as is often done in other studies. Future studies on normative values should use highly attractive incentives (e.g., cash, raffle, or vouchers) to fill all clusters. Furthermore, although we specified some variables as predictors and others as criteria of the BEPS subscales, the present study is still cross-sectional. We recommend that future studies employ longitudinal designs that temporally separate the predictor and criterion variables to consolidate our findings.

Notably, studies on the BEPS have used samples of German-speaking students. Thus, the validity of the test scores for the English version of the BEPS that Bobe et al. (2022) published needs to be tested and validated.

Conclusion

Based on our findings in a representatively stratified quota sample, we encourage using the economical BEPS to reliably and validly measure behavioral and emotional

components of academic procrastination across students with different demographic characteristics. The normative values can help students, practitioners, and researchers to better assess the frequency of experiencing behavioral and emotional components of academic procrastination. This approach could help students overcome their procrastination.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1026/0049-8637/a000298

ESM 1. Demographic characteristics of the sample.
ESM 2. Overview of the sampling clusters.
ESM 3. Histograms of all BEPS items.
ESM 4. Frequency distribution of scale sum scores for delay.
ESM 5. Frequency distribution of scale sum scores for subjective discomfort.
ESM 6. BEPS CFA model with correlated latent factors.
ESM 7. Descriptive data and correlations of the BEPS subscales with TPS-d, motivational costs, sociodemographics, semester, and type of university.

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Written consent was obtained from all participants in the survey. The research project received ethical approval from the responsible Ethics Committee.

Authorship

Carola Grunschel and Lucas Wloch share first authorship. Carola Grunschel, Lucas Wloch, and Christopher Kafui Gadosey created the idea for the article and wrote it. Lucas Wloch analyzed the data. Sophie von der Mülbe, Lisa Bäulke, Martin Daumiller, and Markus Dresel recruited the participants for the study, collected the data, and commented on an earlier draft of this article.

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ORCID
Carola Grunschel
https://orcid.org/0000-0002-4756-7667
Lucas Wloch
https://orcid.org/0009-0001-9840-2360
Christopher Kafui Gadosey
https://orcid.org/0000-0002-3715-2935
Lisa Bäulke
https://orcid.org/0000-0002-7807-139X
Martin Daumiller
https://orcid.org/0000-0003-0261-6143
Markus Dresel
https://orcid.org/0000-0002-2131-3749

Lucas Wloch
Department of Psychology
University of Münster
Fliednerstr. 21
48149 Münster
Germany
lucas.wloch@uni-muenster.de