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Students Admitted to University based on a Cognitive Test and MMI are less Stressed than Students Admitted based on GPA

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Students Admitted to University based on a Cognitive Test and MMI are less Stressed than Students Admitted based on GPA

Many university students report being stressed which has been linked with various negative outcomes. The primary purpose of this study was to explore the selection effects of different admission procedures on students’ stress level. The sample consisted of 196 students who had been admitted to the psychology program at the University of Southern Denmark based either on their grade point average (admission procedure 1), or a combination of a cognitive test and multiple mini interviews (admission procedure 2). The students were asked to complete the Perceived Stress Scale-10 as well as an adapted version of the Big Five Inventory. The results showed that students admitted through admission procedure 2 were less stressed than students admitted through admission procedure 1. Furthermore, the effect of admission procedure on student stress level was found to be mediated by neuroticism and conscientiousness.

Keywords: Admission procedure, Stress, University students, Individual differences

Introduction

For many university students, life is inherently stressful (Chao, 2012). Every day, they are influenced by multiple stressors such as excessive workload (Moffat, McConnachie, Ross, & Morrison, 2004), pressure to earn high grades (Akgun & Ciarrochi, 2003), and financial strain (Adams, Meyers, & Beidas, 2016; Britt, Mendiola, Schink, Tibbetts, & Jonese, 2016; Stallman, 2010). Moreover, the transition from secondary education to university can itself be highly stressful (Denovan & Macaskill, 2017; Friedlander, Reid, Shupak, & Cribbie, 2007; Roberti, Harrington, & Storch, 2006). It is therefore not surprising that stress among all levels of university students is prevalent and a widely recognized issue (Barry, Woods, Warnecke, Stirling, & Martin, 2018; Tavolacci et al., 2013; Wynaden, Wichmann, & Murray, 2013)
Stress associated with academic activities has long been linked with various negative outcomes, including poor academic performance (Akgun & Ciarrochi, 2003; Bennett, 2003; Pluut, Curşeu, & Ilies, 2015; Richardson, Abraham, & Bond, 2012; Struthers, Perry, & Menec, 2000), mental health problems (Dahlin, Joneborg, & Runeson, 2005; Sawatzky et al., 2012; Youssef, 2016), and student dropout (Andersson, Johnsson, Berglund, & Ojehagen, 2009). Mental health problems (Trautmann, Rehm, & Wittchen, 2016), poor academic performance (Hanushek & Woessmann, 2010) and student drop-out (Bennett, 2003; O’Neill, Wallstedt, Eika, & Hartvigsen, 2011) are all very costly for society, and recent estimates suggest that the global cost of mental health problems alone is close to US$2.5 trillion (Trautmann et al., 2016). Thus, it is not surprising that several stress intervention programs aimed at university students have emerged (Conley, Durlak, & Kirsch, 2015; Regehr, Glancy, & Pitts, 2013). These stress intervention programs have generally adopted two different strategies. The first strategy is psychoeducational in nature and aims to reduce stress by providing students with accurate information about the potential problems or challenges they are likely to experience (Conley et al., 2015). The second strategy is focused on helping students to better cope with the stress of studying through the means of skill training, such as relaxation techniques, meditation, or cognitive restructuring (Conley et al., 2015). Several studies have investigated the effectiveness of these two strategies and findings from recent meta-analyses suggest that both are effective in reducing the negative impact of stress in university students (Conley et al., 2015; Regehr et al., 2013). A third approach to manage stress at a university level is to select students who are less vulnerable to the experience of stress. Such an approach has been utilized in a military setting for personnel selection (Bartone, Roland, Picano, & Williams, 2008; Hystad, Eid, Laberg, & Bartone, 2011), but has yet to be investigated in a university setting. The
aim of this study is therefore to explore the selection effects of two different admission procedures on the perceived stress level of university students.

**Empirical Background**

As noted, life as a university student can be highly stressful. Accordingly, university students generally report being more stressed than the average citizen. For instance, large-scale studies of community samples in Denmark and Sweden have shown mean scores between 11.50 and 13.96 on the Perceived Stress Scale-10 (PSS-10; Jensen et al., 2016; Nordin & Nordin, 2013). In comparison, among university students the mean PSS-10 scores were 15.90 in France (Tavolacci et al., 2013), 16.90 in the United States of America (Smith, Rosenberg, & Timothy Haight, 2014), 17.21 in Sweden (Öhrstedt & Lindfors, 2018), and 19.79 in Great Britain (Denovan, Dagnall, Dhingra, & Grogan, 2017).

In recent years, several studies have highlighted advantages of admitting students to university based on multiple mini interviews (MMI) and cognitive tests rather than their grade point average (GPA; Makransky, Havmose, Vang, Andersen, & Nielsen, 2017; O’Neill, Christensen, Vonsild, & Wallstedt, 2014; O’Neill, Hartvigsen, Wallstedt, Korsholm, & Eika, 2011). Specifically, Makransky and colleagues (2017) found that psychology students admitted based on MMI and cognitive tests were less likely to drop out after one year and were also more likely to pass their exams after the first and second year of study. Similarly, O’Neill and colleagues (2011; 2014) reported significantly lower dropout rates after two years of study among medical and sports science students admitted based on MMI and cognitive tests compared to students admitted on the basis of GPA. Collectively, these findings suggest that different admission procedures lead to different student outcomes. It is unclear why this is, but a
possible explanation is that admission procedures relying on MMI and cognitive tests consistently selects students who are better equipped to cope with the stress of studying. This explanation is highly conceivable as admission procedure has been associated with academic performance and student dropout (Makransky et al., 2017; O’Neill et al., 2014; O’Neill, Hartvigsen, et al., 2011), and these in turn have been linked with stress (Akgun & Ciarrochi, 2003; Bennett, 2003; Pluut et al., 2015; Richardson et al., 2012; Struthers et al., 2000). Hence, based on the literature presented above we first posed the following research question:

- RQ-1: Are students admitted based on MMI and cognitive tests less stressed than students admitted on the basis of GPA?

Several studies have found individual differences such as age (Misra & Castillo, 2004; Misra & McKean, 2000; Zascavage, Winterman, Buot, Wies, & Lyzinski, 2012), gender (Matud, 2004; Misra & McKean, 2000; Ptacek, Smith, & Dodge, 1994; Zascavage et al., 2012) and personality (Connor-Smith & Flachsbart, 2007; Hengartner, van der Linden, Bohleber, & von Wyl, 2017; Lu, 1994; Schneider, Rench, Lyons, & Riffle, 2012; Vollrath, 2001) to be associated with stress and coping. For instance, one study found that women generally employ less effective coping strategies and suffer more from stress (Matud, 2004). Furthermore, young students have been found to be more stressed compared to older students (Misra & McKean, 2000; Zascavage et al. 2012). Lastly, a significant relationship has been reported between the Big Five personality traits and stress responses among university students following a stressful life event (Hengartner et al. 2017). Similarly, Lu (1994) found both neuroticism and extroversion to be associated with stress among university students. Given that age, gender and personality factors have been consistently associated with stress among university
students, it is possible that a selection effect of admission procedure can be explained by individual differences in age, gender, and personality. Hence, in addition to the first research question, we posed the following two research questions:

- **RQ-2**: Are there any differences in student’s age, gender and personality characteristics based on admission procedure?
- **RQ-3**: Does individual differences in age, gender and personality predict students’ stress level?

**Method**

**Setting and Admission Procedure**

In order to compare the selection effects of different admission procedures, it was necessary to conduct the present study within a study program receiving more applications than available spots. Otherwise, every applicant would be admitted regardless of admission procedure. As such, the Department of Psychology at the University of Southern Denmark (USD) was an optimal setting. To illustrate, in 2016 there were 1274 applicants for 100 spots. The Department of Psychology, along with other programs within the Faculty of Health Sciences at USD, employs two distinct admission procedures. The first (admission procedure 1) consists of admitting applicants with the highest GPA from their secondary education. The second (admission procedure 2) consists of an assessment center with several steps. Initially, all applicants are invited to a standardized test-session designed to measure cognitive ability in quantitative, critical and verbal reasoning. The applicants with the highest scores on this test (approximately 60 applicants) are then invited to participate in an MMI session. The MMI consists of six different stands, each lasting ten minutes, where applicants are assessed on their skills in cooperation, information management, ethical reasoning,
motivation, critical thinking and written communication. In the cooperation stand, applicants work in pairs to solve different tasks which requires good communication and teamwork. An example of such a task is building specific structures with spaghetti or LEGO. In the information management stand, applicants are given six minutes to read a text on the topic of psychology, followed by four minutes to describe the content of the text. The ethical reasoning stand is a structured interview where applicants are given an ethical dilemma which they have to discuss with the interviewer. The motivation stand is also a structured interview where applicants are asked several questions regarding their motivation for studying psychology at USD, as well as questions designed to assess both conscientiousness and psychological robustness. The critical thinking stand consist of a structured interview where applicants are provided with a subject which they have to discuss critically with the interviewer. Finally, in the written communication stand applicants are given ten minutes to write a brief report on a specific topic. The performance of all applicants is rated based on specific criteria for each stand using a seven-point Likert scale ranging from: (1) completely unsatisfactory; (2) with many deficiencies; (3) with some deficiencies; (4) acceptable; (5) good; (6) very good; (7) excellent. The score from each of the six stands are combined to provide a sum score representing MMI performance.

The applicants with the best MMI performance are offered admission. The applicants' GPA does not factor into the assessment and does not influence the decision to offer admission. However, before being invited to participate in admission procedure 2, applicants are automatically assessed via admission procedure 1. Therefore, if an applicant holds a high enough GPA to get admitted via admission procedure 1, the applicant will automatically be offered admission via this admission procedure. Students admitted via admission procedure 2 will therefore in all cases have a lower GPA.
GPA from their secondary education than students admitted via admission procedure 1. Approximately 75% of students admitted to the psychology program at USD are admitted via admission procedure 1, leaving 25% to be admitted on the basis of admission procedure 2.

Participants and Procedure
Psychology students admitted to USD from 2011-2016 were asked to voluntarily complete the questionnaires described in the instrument section below. Approximately 500 students were contacted via email and a total of 196 students responded. Out of these 147 (75%) students were female while 49 (25%) were male, aged between 18 and 54 years, with a mean age of 25 years. A total of 137 (70%) were admitted via admission procedure 1 while 59 (30%) were admitted on the basis of admission procedure 2.

Instruments
Stress was assessed using the 10 item version of the Perceived Stress Scale (PSS-10) (Cohen, Kamarck, & Mermelstein, 1983). The PSS-10 is one of the most widely used measures of stress and consists of items measuring the degree to which situations in one’s life are appraised as stressful. Total scores range from 0 to 40 with higher composite scores indicative of greater perceived stress.

An adapted version of the Big Five Inventory (BFI; John & Srivastava, 1999) was used to measure personality. The original BFI is a 44-item inventory measuring the Big Five personality traits, i.e. openness, conscientiousness, extroversion, agreeableness, and neuroticism. However, in this study an adapted version of only 20 items, with four items measuring each of the Big Five Personality factors was used. Both the PSS-10 (Cohen et al., 1983; Roberti et al., 2006) and BFI (Rammstedt & John,
have been shown to be valid instruments with adequate internal and test-retest reliability.

All instruments used in this study were translated into Danish with a three-step translate/back-translate procedure: 1) the translation into Danish was done by a bilingual person with subject matter knowledge, 2) the translation was revised by a subject-matter expert with psychometric expertise, and 3) the back-translation was done by another subject-matter expert, also with psychometric expertise. Items were scored using a five-point Likert scale.

Results

Before investigating the research questions, we checked the reliability of all scales used and calculated the students mean PSS-10 score (mean=15.09, SD=5.50). All of the scales with the exception of agreeableness had acceptable levels of reliability (see Table 1). Table 1. also shows the mean score, by admission procedure, as well as the p-value for the t-tests between the two admission procedures.

An independent samples t-test was performed in order to investigate whether students admitted based on MMI and cognitive tests were less stressed than students admitted on the basis of GPA (i.e. RQ-1). The t-test showed that students admitted based on admission procedure 2 were significantly less stressed (mean =13.76; SD = 5.24) than students admitted on the basis of admission procedure 1 (GPA; mean = 15.66; SD = 5.53), \( t(194) = 2.24, p < .05 \).

Next, statistical analyses were performed to determine whether students admitted via admission procedure 1 and 2 differed on gender, age, and personality characteristics (i.e. RQ-2). First, a chi-square test was performed, which indicated that
the groups did not differ significantly in the proportion of men and women, $X^2 (2, N = 196) = 2.34, p > .05$. Second, a t-test was performed which revealed that the groups did differ on mean age, $t(194) = -4.31, p < .001$, indicating that the students admitted via admission procedure 1 (mean = 23.63, SD = 4.98) were significantly younger than those admitted on basis of admission procedure 2 (mean = 27.59, SD = 7.66). Furthermore, the results also indicated that students admitted via admission procedure 1 were significantly higher on conscientiousness $t(194) = 3.11, p < .05$, and neuroticism, $t(194) = 2.45, p < .05$, while lower on openness $t(194) = -2.59, p < .05$. The difference between the two groups did not reach significance for extroversion, $t(194) = -1.13, p > .05$, or agreeableness, $t(194) = .07, p > .05$.

In order to investigate whether individual differences in age, gender and personality predict student students’ perceived stress level (i.e. RQ-3), several regressions were performed. First, a bivariate regression was performed for each of the independent variables on students’ perceived stress level. The results indicated that admission procedure, $F(1,194) = 5.00, p < .05; R^2 = .03$, openness, $F(1,194) = 4.70, p < .05; R^2 = .02$, conscientiousness, $F(1,194) = 15.27, p < .001; R^2 = .07$, extroversion, $F(1,194) = 35.42, p < .001; R^2 = .15$, and neuroticism, $F(1,194) = 181.56, p < .001; R^2 = .48$) were significant predictors of students’ perceived stress level. Conversely, agreeableness, $F(1,194) = .88, p>.05; R^2 = .01$, age, $F(1,194) = 3.42 p > .05; R^2 = .02$ and gender, $F(1,194) = 1.39, p > .05; R^2 = .01$ were not found to predict students’ perceived stress level. Next, a multivariate regression analysis was performed using all significant predictors of students’ perceived stress level from the bivariate regression analyses. The result showed that only neuroticism and conscientiousness remained significant predictors of students’ perceived stress level. The standardized beta
coefficients and associated standard errors from both the bivariate and multivariate regression analyses are presented in Table 2.

[Insert table 2 near here]

Finally, a mediation analysis was conducted to investigate if the effect of admission procedure on students’ perceived stress level was mediated by neuroticism, conscientiousness, or both. Following the recommendations outlined in Baron and Kenny (1986), full mediation was established if the effect of admission procedure on students’ stress level was no longer significant after the effect of neuroticism and conscientiousness was controlled for. First two separate regression analyses with admission procedure as a predictor of neuroticisms and conscientiousness were performed. Admission procedure was found to explain 3.00% of the variance in neuroticism, F(1,194) = 6.00, p < .05, and 5.00% in conscientiousness, F(1,194) = 9.70, p < .05. Second, a regression model (model 1) with admission procedure and conscientiousness as predictors explained 12.30% of the variance in perceived stress, F(2,193) = 13.48, p < .001. In this model both admission procedure (β = -2.73, SE = .83 p < .05) and conscientiousness (β = -.65, SE = .14, p < .001) were significant predictors of perceived stress. Third, a regression model (model 2) with admission procedure and neuroticism as predictors explained 48.50% of the variance in perceived stress, F(2,193) = 90.86, p < .001. In this model, only neuroticism (β = 1.17, SE = .09, p < .001) was a significant predictor of perceived stress. Admission procedure (β = -.47, SE = .63, p > .05) was therefore no longer a significant predictor of perceived stress when the effect of neuroticism was controlled for. Lastly, a regression model (model 3) with admission procedure, conscientiousness and neuroticism as predictors explained 51.10% of the variance in perceived stress, F(3, 192) = 67.00. In this model, both neuroticism ( β = 1.10, SE = .09, p < .001) and conscientiousness (β = -.35, SE = .11, p < .05) were
significant predictors of perceived stress while admission procedure was not ($\beta = -1.00, SE = .63, p > .05$). For an overview of the three regression models see Table 3.

For an overview of the three regression models see Table 3.

The significance of the mediational effect for all three models were tested using bootstrap estimation with 5000 samples (Preacher & Hayes, 2004). The indirect effect (IE) of the first model was found to be significant ($IE = .83, SE = .30, 95\% CI [.29, 1.44]$), indicating that conscientiousness partially mediates the relationship between admission procedure and perceived stress level. In the second model the indirect effect of neuroticism ($IE = -1.43, SE = .61, 95\% CI [-2.64, -.25]$) was also found to be significant, suggesting that neuroticism fully mediates the relationship between admission procedure and perceived stress. Finally, the indirect effect of the third model was found to be significant for both neuroticism ($IE = -1.35, SE = .59, 95\% CI [-2.56, -.25]$), and conscientiousness ($IE = .45, SE = .19, 95\% CI [.12, .85]$), indicating that the effect of admission procedure on perceived stress are fully mediated by neuroticism and conscientiousness. All statistical analyses were conducted using SPSS version 25 with PROCESS version 3.2 installed (Preacher & Hayes, 2004).

**Discussion**

The purpose of this study was to explore the selection effects of two different admission procedures on the perceived stress level of university students. The first research question investigated whether there were any differences in students’ perceived stress level based on admission procedure. The results showed that students admitted via admission procedure 1 (i.e. GPA) reported significantly higher levels of stress compared to students who were admitted via admission procedure 2 (i.e. cognitive test and MMI). These findings suggest that admitting student via MMI and cognitive tests rather than GPA selects students who are better able to cope with the stress of studying. To further
examine this, the second and third research question explored potential differences in age, gender and personality characteristics between the two admission procedure, and whether these variables would predict the perceived stress level. The results revealed that students admitted via admission procedure 1 differed significantly from students admitted via admission procedure 2 by being significantly younger, more neurotic and conscientious, and less open to experiences. However, no significant differences were observed between the two groups with regard to gender, extroversion, or agreeableness. The finding that students admitted via admission procedure 2 are less neurotic and conscientious and more open to experience is somewhat in line with previous research linking the Big five personality traits with MMI performance (Griffin & Wilson, 2012; Jerant et al., 2012; Oliver, Hecker, Hausdorf, & Conlon, 2014). For instance, Griffin and Wilson (2012) found conscientiousness and extroversion to be related to MMI performance. Similarly, both Oliver et al. (2014) and Jerant et al. (2012) reported a positive relationship between extroversion and MMI performance. The fact that a significant difference between the two groups was observed for both neuroticism and openness to experience, but not for extroversion, might be due to important differences in MMI procedures. Hence, when enough data is available future studies should aim to investigate whether MMI characteristics affects the relationship between MMI and personality by synthesizing the literature and performing moderator analyses (e.g. meta-regressions; Viechtbauer, 2010).

Results from the bivariate regression analyses revealed a significant relationship between students’ perceived stress level and the following five independent variables: admission procedure, openness, extroversion, conscientiousness and neuroticism. However, age, gender, and agreeableness were not found to predict stress. This result is somewhat surprising given that both age (Misra & Castillo, 2004; Misra & McKean,
2000; Zascavage et al., 2012), and gender (Matud, 2004; Misra & McKean, 2000; Ptacek et al., 1994; Zascavage et al., 2012) have been found to be related to stress. In contrast to the results from the bivariate regression analyses the multivariate regression analysis indicated that only neuroticism and conscientiousness predicted students’ perceived stress level with neuroticism being the strongest predictor. Specifically, neuroticism was associated with higher levels of stress while conscientiousness was linked with lower levels of stress. These findings are consistent with previous research on stress and personality. For instance, neuroticism has been associated with problematic coping strategies, such as wishful thinking, withdrawal and emotion focused coping (Connor-Smith & Flachsbart, 2007). Accordingly, several studies have found neuroticism to be related to higher levels of perceived stress (Hengartner et al., 2017; Lu, 1994; Schneider et al., 2012). Conversely, conscientiousness has been associated with more positive coping strategies, such as problem solving (Schneider et al., 2012) and with lower levels of perceived stress (Luo & Roberts, 2015). Finally, the mediation analysis showed that the effect of admission procedure on students’ perceived stress levels were mediated by neuroticism and conscientiousness (i.e. model 3). Moreover, the mediation analysis showed that the effect of admission procedure on perceived stress was fully mediated by neuroticism (i.e. model 2), while only partially mediated by conscientiousness (i.e. model 1). These results, along with the result from the multivariate regression, suggests that the observed effect of admission procedure on students’ perceived stress is primarily driven by the lower neuroticism scores found among students admitted via admission procedure 2.

To sum up, the findings from this study suggest that admitting students based on MMI and cognitive tests rather than via GPA selects individuals who are less vulnerable to stress because this procedure selects students lower on neuroticism. Paradoxically, it
also seems to select students lower on conscientiousness which was associated with lower levels of stress. However, given that neuroticism was found to be a much stronger predictor of perceived stress than conscientiousness, the relationship between conscientiousness and stress might to be of minor importance in a university admission context. **This is also highlighted in the mediation analysis where conscientiousness did not fully mediate the relationship between admission procedure and perceived stress.**

The findings presented here can be interpreted in the light of the widely recognized person-environment fit model of stress (Ahmad, 2010; Edwards & Cooper, 1990). According to this model, stress results from a lack of correspondence between individual differences (e.g. abilities, values, personality) and environmental factors (e.g. demands, support). Consequently, it seems that the study environment at the Department of Psychology at USD does not favor individuals high in neuroticism. Conversely, it seems somewhat better suited for students high in conscientiousness. This makes sense as conscientiousness has been associated with academic success in several meta-analyses (e.g. Poropat, 2009; Richardson et al., 2012; Vedel, 2014)

In accordance with previous research investigating the overall prevalence of stress, the findings presented here suggest that Danish university students are indeed more stressed than the general population (Jensen et al., 2016; Nordin & Nordin, 2013). On the other hand, Danish university students seems to be less stressed than university students in Sweden, United States of America, France, and Great Britain (Denovan et al., 2017; Öhrstedt & Lindfors, 2018; Smith et al., 2014; Tavolacci et al., 2013). A possible explanation for this is that Danish students experience less financial strain since they are entitled to public support (approximately US$ 952 per month) and do not have to pay any tuition fees. Another possible explanation is that psychology students,
as opposed to many other students, learn about stress, its causes, symptoms and
treatment, which in turn might help them better cope with the stress of studying (see
Conley et al., 2015).

**Practical Implications**

Given the fact that stress has been linked with a wide range of negative outcomes (e.g.
Akgun & Ciarrochi, 2003; Andersson et al., 2009; Bennett, 2003; Dahlin et al., 2005;
Pluut et al., 2015; Richardson et al., 2012; Sawatzky et al., 2012; Struthers et al., 2000;
Youssef, 2016), the results from this study may have important implications for
universities and higher educational institutions. First and foremost, the findings of this
study, suggest that universities and higher educational institutions might be able to
improve academic performance, lower student dropout, and mitigate mental health
problems by focusing on how students are selected. Secondly, in line with previous
research (e.g. Makransky et al., 2017; O’Neill et al., 2014; O’Neill, Hartvigsen, et al.,
2011), the findings of this study indicate that admitting students based on MMI and
cognitive tests (i.e. admission procedure 2), is superior to admitting students solely on
the basis of GPA (i.e. admission procedure 1). Hence, many universities and higher
educational institutions could have much to gain from adopting admission procedures
similar to that of admission procedure 2.

**Limitations and Future Directions**

While the variables included in the current study – specifically neuroticism and
conscientiousness – explained as much as 50% of the variance in student students’
perceived stress level, there is still room for improvement. Future research should
therefore aim to investigate which other variables, besides neuroticism and
conscientiousness, predict students’ stress level. One promising variable is
psychological hardiness which has been associated with both resilience and high performance in a wide range of stressful environments (Bartone, 1999; Kobasa, 1979; Sheard, 2009). People high in psychological hardiness tend to be internally motivated, believe in their own ability to control or influence the course of events, and perceive obstacles and challenges as exciting opportunities for learning and personal growth (Hystad et al., 2011). Psychological hardiness should therefore increase individuals’ readiness to learn as well as their ability to cope with stressful events, making it highly relevant for selecting students less vulnerable to stress associated with academic activities.

Regarding the practical implications, another limitation is that the employment of any admission procedure to select students based on criteria known to be associated with less stress is only feasible within study programs with more applicants than available spots. Hence, focusing exclusively on selecting students less vulnerable to stress might not be possible for all university programs. Furthermore, students who are not offered admission in one university program might just be admitted to another thereby displacing rather than solving the problem of student stress. Future studies should therefore strive to investigate the implementation of different admission procedures in combination with intervention programs aimed at helping students to better cope with the stress of studying. With a combined approach, universities and other higher educational institutions would be able to identify admitted students vulnerable to stress and provide them with effective tools to cope with it. As such, the widespread problem of student stress could be alleviated with potentially great benefits to follow.
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https://doi.org/10.1080/07294360.2011.653957
Table 1. Mean score, mean score by admission procedure, p-value, and the reliability of the constructs used in study.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean total (SD)</th>
<th>Admission procedure 1 (SD)</th>
<th>Admission procedure 2 (SD)</th>
<th>p-value</th>
<th>Cronbach’s alpha</th>
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<tbody>
<tr>
<td>Stress</td>
<td>15.09 (5.50)</td>
<td>15.66 (5.53)</td>
<td>13.76 (5.24)</td>
<td>.027</td>
<td>0.84</td>
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<tr>
<td>Agreeableness</td>
<td>14.73 (2.28)</td>
<td>14.74 (2.24)</td>
<td>14.71 (2.38)</td>
<td>.943</td>
<td>0.51</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>15.67 (2.70)</td>
<td>16.06 (2.68)</td>
<td>14.78 (2.53)</td>
<td>.002</td>
<td>0.77</td>
</tr>
<tr>
<td>Extroversion</td>
<td>13.92 (3.15)</td>
<td>13.75 (3.05)</td>
<td>14.31 (3.39)</td>
<td>.261</td>
<td>0.78</td>
</tr>
<tr>
<td>Openness</td>
<td>14.98 (2.45)</td>
<td>14.69 (2.59)</td>
<td>15.66 (1.94)</td>
<td>.010</td>
<td>0.68</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>11.28 (3.24)</td>
<td>11.64 (3.17)</td>
<td>10.42 (3.25)</td>
<td>.015</td>
<td>0.76</td>
</tr>
</tbody>
</table>
Table 2. Bivariate and multivariate regression analysis on student students’ perceived stress level.

<table>
<thead>
<tr>
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<th>Bivariate</th>
<th>Multivariate</th>
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<tbody>
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<td>Age</td>
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<td>-.085</td>
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<tr>
<td></td>
<td>(.063)</td>
<td>(.638)</td>
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<tr>
<td>Gender</td>
<td>-.084</td>
<td>.042</td>
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<tr>
<td></td>
<td>(.906)</td>
<td>(124)</td>
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<tr>
<td>Admission Procedure</td>
<td>-.158*</td>
<td>-.156*</td>
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<tr>
<td></td>
<td>(.847)</td>
<td>(.111)</td>
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<tr>
<td>Openness</td>
<td>-.153*</td>
<td>.042</td>
</tr>
<tr>
<td></td>
<td>(.159)</td>
<td>(124)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.270***</td>
<td>-.156**</td>
</tr>
<tr>
<td></td>
<td>(.141)</td>
<td>(.111)</td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.393***</td>
<td>-.078</td>
</tr>
<tr>
<td></td>
<td>(.115)</td>
<td>(.104)</td>
</tr>
<tr>
<td>Agreeableness</td>
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<td></td>
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<tr>
<td></td>
<td>(.173)</td>
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</tr>
<tr>
<td>Neuroticism</td>
<td>.695***</td>
<td>.628***</td>
</tr>
<tr>
<td></td>
<td>(.088)</td>
<td>(.099)</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>9.853</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td>.503</td>
</tr>
</tbody>
</table>

*Note. Standard errors are presented in parentheses below the standardized beta coefficients.*

* indicates p < .05, ** indicates p<.01, and *** indicates p < .001
<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Procedure</td>
<td>-2.728**</td>
<td>-2.728***</td>
<td>-.995</td>
</tr>
<tr>
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<td>(.826)</td>
<td>(.627)</td>
<td>(.634)</td>
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<tr>
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<td>-.652***</td>
<td>-.349**</td>
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<tr>
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<td>(.141)</td>
<td>(.141)</td>
<td>(.108)</td>
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<tr>
<td>Neuroticism</td>
<td></td>
<td>1.169***</td>
<td>1.104***</td>
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<td>(.089)</td>
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<tr>
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<td>2.52</td>
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<tr>
<td>R²</td>
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<td>.485</td>
<td>.511</td>
</tr>
</tbody>
</table>

Note. Standard errors are presented below the unstandardized beta coefficients. * indicates p < .05, ** indicates p<.01, and *** indicates p < .001.