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THE INFLUENCE OF SOCIO-DEMOGRAPHIC FACTORS, RESILIENCE AND STRESS REDUCING ACTIVITIES ON ACADEMIC OUTCOMES OF UNDERGRADUATE NURSING STUDENTS: A CROSS-SECTIONAL RESEARCH STUDY

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Declarations of interest

none

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SUMMARY

Background: Nursing students who stop their education before obtaining their degree (dropout) is a common problem. Scientific studies on factors influencing academic outcomes among nursing students are sparse and difficult to transfer to undergraduate nursing students.

Objectives: The objective of the present study was to explore in undergraduate nursing students the influence of socio-demographic factors, resilience and stress reducing activities on the academic outcomes: intention to leave, academic success and dropout.

Design: A cross-sectional design was used.

Participants /setting: 554 participants form 6 nursing colleges in the Antwerp region in Belgium were included.

Methods: Data were collected using SurveyMonkey®. In a second phase, these data were linked to the academic outcomes from the school administration.

Results: Lower resilience, more destructive and less positive stress reducing activities, having committed a suicide attempt in the past, studying in a densely populated area and starting as a regular student was significantly influenced with higher intentions to leave. Higher resilience significantly predicted academic success. Finally, students that dropped out showed a significantly lower resilience.

Conclusion: Resilience was the only factor that significantly predicted the three academic outcomes: intention to leave, academic success and dropout. Known predictors of academic outcomes such as young age, gender, previous education, nationality and caring for family members were not confirmed in this study. To study in depth dropout within the undergraduate nursing course, conducting a cohort study might be recommended.

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INTRODUCTION

Study delay and dropouts, students who leave their course before obtaining the degree, (Bridgeland et al., 2006) are internationally known as being an issue when it comes to nursing courses (Beauvais et al., 2014, Dante et al., 2013). Study delay and a high dropout rate have a negative impact on students, schools and the healthcare institutions (Dante et al., 2016). In addition, students who leave their course before obtaining the degree run a higher risk of encountering economic problems (Campbell, 2015, FOD sociale zekerheid, 2017) and facing a weaker position on the job market (Markussen, 2017, Oreopoulos and Salvanes, 2011), are more at risk with regard to health issues and are less satisfied with their lives in general (Oreopoulos, 2007).

BACKGROUND

Academic failure is influenced by several factors (Beauvais et al., 2014, Crombie et al., 2013, Dante et al., 2013). During their studies, students are confronted with personal and academic challenging situations (Cassidy, 2015). Due to the nature of the profession, nursing students are confronted at an early stage with situations like caring for sick people, suffering and death (Crombie et al., 2013, Stephens, 2013, Thomas and Revell, 2016). Students who rely on government aid for their studies and fail, lose their special status (IFG, 2016). This combination of challenges is associated with a higher risk of dropout (Crombie et al., 2013, Stephens, 2013, Thomas and Revell, 2016).

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A lower theoretical education level and a lower socioeconomic status are also associated with a higher risk of dropout (Dante et al., 2016, Dante et al., 2013, OECD, 2015). In addition, this higher risk of academic failure might be due to the lower entry requirements for the undergraduate nursing course compared to the graduate nursing course. Most undergraduate nursing students in Belgium have had practical pre-education and many of these students did not obtain a diploma in secondary education (Commisie Hoger Onderwijs, 2016). Furthermore, over 50% of the undergraduate nursing students from schools in densely populated cities have a low socioeconomic status according to the educational disadvantage indicators. This percentage is lower for peripheral schools, but we still note levels of 40% (AGODI, 2016, Nusche and Santiago, 2015, Thematic Working Group on 'Early School Leaving', 2013).

Resilience, the personality trait that determines to what extent stress or setbacks in life have an impact on you (Portzky, 2015), can have a significant influence on dropout (Stephens, 2013, Thomas and Revell, 2016, Waxman et al., 2003). Studies have demonstrated that an essential quality of higher resilient people lies in the way they safeguard their own stress balance by doing stress reducing activities. Resilient people tend to show an adequate amount of positive stress reducing activities, and will not show a significant amount of destructive activities, like alcohol or auto mutilation (Portzky, 2015). Studying resilience and stress reducing activities amongst undergraduate nursing students as a risk group with regard to attrition is deemed essential.

AIM AND QUESTIONS

Aim

As the limited number of studies on factors that influence academic outcomes such as academic success and dropout amongst graduate nursing students might be different for undergraduate nursing students, the aim of this study is to explore the influence of socio-demographic factors, resilience and stress reducing activities on academic outcomes of undergraduate nursing students.

Questions

1. Which influence do socio-demographic factors, resilience and stress reducing activities have on the undergraduate nursing students' intention to leave?
2. Which influence do socio-demographic factors, resilience and stress reducing activities have on the undergraduate nursing students' academic success?
3. Is there a difference in socio-demographic characteristics, resilience and stress reducing activities between the dropouts, students actively studying and students who have obtained the associate degree in nursing?

METHODS

Design and setting

This study was multicentre and used a cross-sectional design. The results of one semester were considered. Students who, at the start of the data collection, followed an undergraduate nursing course in one of the six schools in the province of Antwerp, Flanders, Belgium that provide this course, were included in the study. Non-degree students and exchange students were excluded. The Flemish undergraduate nursing course is three-year practice-oriented within higher vocational education on European Qualifications Framework level 5, with a modular structure and without registration fees. Students can start this course as from the year in which they turn 18, provided that they have a secondary education diploma or certificate or successfully pass the entrance exam.

Data collection

The data collection consisted of two parts: The first part from November to December 2016 consisted of a digital survey on SurveyMonkey®. The socio-demographic data, resilience scores (VK^+), the stress reducing activities scores (P^3) and the intention to leave were collected by means of this survey. The link to this survey was

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distributed via the school e-mail. Three reminders were sent by e-mail and two information sessions were organised in each of the participating schools.
The second part after the first module in February 2017 consisted of collecting school results, academic success (success-failure) and dropouts (deregistration date) from school administrations.

Sample

A mail was sent to 1,578 students, of which 589 were returned. 15 duplicates were removed. The data of 20 filled in surveys couldn't be linked to the data from the school administrations and were rejected form further analyses. The valid response rate data collection part 1 was 35.1% and varied between 15.9% and 68.0% depending on the school. During the data collection it appeared that one school couldn't provide the requested school results. This resulted in 500 valid linked data. Out of the 500 linked data, 25 surveys were not fully completed. (Figure 1)

Instruments

The VK^+ Resilience scale and the P^3 'Palliative Behaviour' scale (Portzky, 2015) were used to measure the respective resilience and stress reducing activities. The VK^+ scale consisted of 25 items with a scoring possibility from 1 to 4, resulting in a total score of minimum 25 and maximum 100. The VK^+ score was interpreted by means of the standard table in deciles of this scale. The subscores positive stress reducing activities and destructive stress reducing activities were used for the P^3 scale. The P^3 scale consisted of 18 items in terms of positive activities and 16 items in terms of destructive activities, every time with a scoring possibility from 1 to 4. This results in a scoring range between 18 and 72 for positive stress reducing activities and between 16 and 64 for destructive stress reducing activities. The stress reducing activities scores were interpreted with the aid of standard tables, based on cut-off points (percentile 25 and 75). Socio-demographic data are described in table 1.

Data analysis

The data from the surveys were exported into an Excel file. These data were linked to the academic outcomes (academic success and dropout) by means of the nine first numbers of the national number. The data were then further processed with the statistical software programme SPSS 24. A p-value of < 0.05 was considered significant. The normality of the distribution of the continuous data were verified with the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Age, resilience score and destructive stress reducing activities score were not normally distributed. The characteristics of the population were described by means of frequency tables. The median, a minimum and a maximum were used for the continuous data. Percentages and numbers were used to express the discontinuous data. Differences were established with the Mann-Whitney U test, the Chi-Square test and the Kruskal-Wallis test. A logic regression analysis was used for the academic outcomes, intention to leave and academic success. A model with a large explanatory capacity was selected for this aspect. Only the factors that showed a significant difference were included.

Ethical considerations

All included schools were informed and gave their consent. The participants in the survey were undergraduate nursing students. The school results were requested from the school administration. All students received an informed consent prior to the start of the study. All data were coded and processed confidentially. An application was submitted to the ethical committee of the Antwerp University Hospital and the Antwerp University. An approval was delivered according to reference 16/42/433.

RESULTS

Study population (Table 2)

The average age of the respondents was 27.0 years. Most of the respondents were women (87.4%). 85.2% had only Belgian nationality, 7.3% had dual citizenship and 7.5% had another nationality. A third had no secondary education certificate and entered the course via the entrance exam. 31% of the respondents said to experience

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financial difficulties, 45.8% was responsible for the care of family members, 33.1% had already prematurely leaved a course in the past and 9.2% had attempted to commit suicide in the past.

The resilience score varied between 33 and 99 with an average of 78. This average falls into decile 4 of the standard table for the general Flemish population and is slightly lower than the average resilience score of the general Flemish population (79.9). The positive stress reducing activities score varied between 27 and 59 with an average of 42.2. As per the standard table, this average can be interpreted as high (> 40). The destructive stress reducing activities score varied between 18 and 55 with an average of 26.6. As per the standard table, this average can be interpreted as high (> 26).

Intention to leave

63.7% of the respondents had never considered leaving the course in the past month. 28.5% had considered this several times, 7% weekly and 0.7% (4 respondents) daily (table 2). For further analysis, intention to leave was divided in two groups: respondents who had considered leaving the course in the past month (n = 196) and respondents who had not considered leaving (n = 344). Respondents who had considered leaving the course were significantly younger, had a significantly lower resilience score, a significantly lower positive stress reducing activities score, a significantly higher destructive stress reducing activities score and had significantly more often attempted to commit suicide in the past. Respondents from schools in densely populated cities and regular students said significantly more often that they had considered leaving the course and students with increased unemployment benefits significantly less often (table 3).

Table 4 illustrates how the risk of intention to leave was influenced. Every time the resilience increases with one unit, the risk of intention to leave is reduced by 8.1% ($p<0.001$). For positive stress reducing activities the risk is reduced by 6.1% ($p<0.001$) and for destructive stress reducing activities the risk is increased by 8.4% ($p<0.001$). Regular students have 61.6% ($p=0.009$) more chance of intention to leave and students with increased unemployment benefits show 35.3% ($p=0.031$) less chance. Students who had attempted to commit suicide in the past had 2.4 time more chance of intention to leave compared to students who didn't attempt to commit suicide in the past. The model with resilience, positive and destructive stress reducing activities was significant ($p<0.001$) and declared the variance in intention to leave at 18.8%.

Academic success

Respondents (ending their module on 31 January) who passed on 31 January 2017, were compared with respondents who didn't pass. 65.7% of the respondents passed the module, 19.1% did not pass the module and 15.2% of the respondents had not completed the module yet and had therefore no results by the end of January 2017 (table 1). The last group of students, students who had left the course before the exams and students whose data were not available in the school administration, were considered as missing data for the further analysis.

Resilience proved to be the only factor to affect academic success significantly. Every time resilience increased by one unit, the success rate increases with 3.5% ($p<0.003$) (table 5).

Dropout (registration status)

13 respondents (2.6%) deregistered during the first semester and before they had completed the course (dropout), 36 respondents (7.2%) obtained the degree on 31 January 2017 and the other respondents (90.2%) were still actively studying. Of the 13 dropouts, 7 students had indicated that they had considered leaving the course in the past month, 4 dropouts had not considered this, and 2 dropouts didn't fill in the question about their intention to leave. There was a significant ($p=0.005$) difference in resilience score between the three groups. The dropouts had a significantly ($p=0.004$) lower resilience score compared to the students who obtained the degree and a significantly ($p=0.044$) lower resilience score than the students who were still actively studying (figure 2).

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DISCUSSION

In the present study, resilience appeared to be the only factor with a significant influence on the three academic outcomes: intention to leave, academic success and dropout. Clycq et al. (2014) developed a model on early school leaving in secondary education in Europe. They claimed that resilience occurs on an individual level as a mediating factor between the education system and early school leaving and between the socioeconomic context and early school leaving. The possibility of this model also being applicable to the undergraduate nursing course still has to be examined. Research amongst undergraduate and graduate nursing students in the United States revealed a correlation between resilience and the mean grade point average $r=0.243$ $p<0.01$ (Beauvais et al., 2014). The average resilience score from our study falls in decile 4 of the standard table for the general Flemish population (Portzky, 2015). This low resilience score reflects the resilience scores of students from other studies (Allan et al., 2014, Beauvais et al., 2014, Goldstein et al., 2013) and can partly be explained by a positive relationship between resilience and age (Portzky et al., 2010, Thomas and Revell, 2016). Moreover, personality traits have an impact on the career choice (Markiewicz and Kaczmarek, 2013, Taber et al., 2011). According to the study by Stellfeld et al. (2015), nursing and midwifery students compared to non-profit graduate students show more vulnerable profile characteristics with more neuroticism, which is negatively correlated with resilience (Oshio et al., 2018) and less altruism and conscientiousness (Stellfeld et al., 2015), which are positively correlated with resilience (Oshio et al., 2018). Considering the lack of nurses (OECD, 2016) and the influence of resilience on academic outcomes amongst nursing students, it can be important to take this factor into account as from the start of the course. Furthermore, people with high resilience are better at dealing with emotional exhaustion and depersonalisation (Portzky, 2015). This results in better quality of care (Van Bogaert et al., 2017). Learning problem solving skills, a positive attributional style, reflection, social support and spirituality are factors that can strengthen resilience (Helmreich et al., 2017). After examination of the interventions to increase resilience in nursing students, the question can also be asked whether people with very low resilience shouldn't be protected against an extra setback (Portzky, 2015). The resilience score could possibly play a role when formulating an advice about whether the person needs to be coached regarding personal resilience. The percentile 25 of the resilience score in this study (73) can possibly be used as a cut-off value.

Intention to leave was not only influenced by resilience but also significantly affected by both the amount of positive and destructive stress reducing activities, suicide attempt in the past, studying in a densely populated city, starting as a regular student or as a student with increased unemployment benefits. The percentage of students that attempted to commit suicide in the past (9.2%) was twice as high as the percentage (4.2%) of respondents that indicated in the Belgian health survey that they had ever tried to commit suicide (Van der Heyden and Charafeddine, 2013). It is not known yet how this percentage compares to other student populations, but it does add to the frailty taxation of these students. Students with increased unemployment benefits have gone through a selection procedure and receive financial support. They have 35.3% ($p=0.031$) less chance of considering leaving the course. Financial support can be an important facilitator to complete the nursing course (Cathro, 2011, Robertson et al., 2010). In Belgium there is often a link between the students' performance, attrition and their socioeconomic background (European Commission, 2016). According to the educational disadvantage indicators, many undergraduate nursing students have a lower socioeconomic status (Commisie Hoger Onderwijs, 2016). Continued attention for problems that are associated with the socioeconomic status is an undeniable challenge (European Commission, 2016). Despite the specific population, the percentage in this study that had considered leaving the course (36.2%) correlates with studies conducted in other nursing courses across Europe (35.5%) (Dante et al., 2016).

Financial problems, Belgian nationality and studying in a densely populated city had no significant influence on academic success. Research shows that a positive school climate with encouraging relationships between the

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teacher and the student contributes to the strengthening of interpersonal factors such as resilience and therefore also increases the academic success. This positive influence is mainly observed in students with problems in urban schools (Henderson, 2013) and in students with a low socioeconomic status (Hopson and Lee, 2011).

Dropout students showed a significantly lower resilience compared to other students. 13 students that participated in this study, leaved the course during the data collection phase and before obtaining their degree. As such, the number of dropouts presented in this study is lower than the actual dropout rate. Three schools provided complete registration and deregistration details. These details reveal that a large part of the dropouts was not reached with this study. At the start of the first semester, 743 students were registered in these three schools. 104 students deregistered during the semester of which 41 before the data collection and 63 in the months November, December and January. To get a more accurate picture of the dropouts within the undergraduate nursing course, a cohort study should be carried out whereby a commencing cohort is followed over 4 years. Besides socio-demographic and interpersonal influencing factors, this study can also look at the impact of the assessment of the course and academic failure on dropout.

The following predictors of academic outcomes from other studies were not confirmed in this study: younger age, male gender, less theoretical pre-education, looking after family members and nationality. Differences in student characteristics between undergraduate (associate degree) nursing students in this study and graduate (bachelor's degree) nursing students from other studies may result in certain predictors not being confirmed. The high percentage of women and the percentage of students experiencing financial difficulties, is in line with other European nursing courses. However, there are also differences. The average age, the percentage of students with another nationality and students that look after family members is in this study considerably higher than for other European nursing courses (Dante et al., 2016). It is possible that counsellors refer students with these profiles to an undergraduate nursing course rather than to a graduate nursing course, partly determined by the difference in entry requirements.

Limitations

This study has certain limitations. Generalisation of the findings has to be cautiously considered. Firstly, the study was conducted in one province only. Secondly, the digital survey consisted of 74 questions and can be considered labour-intensive. Moreover, the resilience scale and the scale for stress reducing activities contained very personal questions. Furthermore, more than half of the respondents studied at a school where the researchers were lecturing. Biased responses are therefore possible, despite the coded data processing. And finally, at the time the data collection started two months of the school year had already passed. For this reason, a large part of the dropouts and less motivated students were not reached.

CONCLUSION

Resilience was the only factor that showed a significant influence on intention to leave and academic success and showed a significant difference between the dropouts students and the other students. Intention to leave was not only influenced by resilience but also significantly affected by both the amount of positive and destructive stress reducing activities, suicide attempt in the past, studying in a densely populated city, starting as a regular student or as a student with increased unemployment benefits. Academic success was only significantly influenced by resilience. Despite the small number of dropout students in this study, the resilience among these dropout students was significantly lower than among the other students. To get a more accurate picture of the dropouts within the undergraduate nursing course, a cohort study should be carried out. The following predictors of academic outcomes from other studies were not confirmed in this study: younger age, male gender, less theoretical pre-education, looking after family members and nationality.

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Table 1
Defining socio-demographic data

Characteristic	Measurement level *(Definition)*
Age	Years *(Age at enrolment)*
Gender	Male / Female
Nationality	Belgian / dual citizenship / another nationality
Native speaking	Yes / No *(Is Dutch your native language?)*
Densely populated city	Yes / No *(Are you studying in a densely populated city?)*
Pre-education	None *(successfully pass the entrance exam)*
	Certificate of a course of secondary adult education
	Secondary education certificate *(6th year of vocational secondary education)*
	Secondary education diploma *(7th year of vocational or 6th year of general secondary education)*
	Higher education diploma
Intake way	Regular student *(subsequent to secondary education without income)*
	Student with increased unemployment benefits
	Student with regular unemployment benefits
	Project 600 *(non-profit workers who are exempt from work during the teaching periods while maintaining salary)*
	Working student *(students who work during the course with an employee status)*
Family commitments	Yes / No *(Do you take care of family members during the course?)*
Financial difficulties	Yes / No *(Do you experience financial difficulties?)*
Dropout in the past	Yes / No *(Had you already prematurely leaved a course in the past?)*
Suicide attempt in the past	Yes / No *(Had you attempted to commit suicide in the past?)*

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Table 2
Characteristics of participants

Characteristic	n	
VK+	554	
Mean (SD)		78.0 (9.8)
Median (min-max)		78 (33-99)
P^3 positive	540	
Mean (SD)		42.2 (5.1)
Median (min-max)		42 (27-59)
P^3 Destructive	540	
Mean (SD)		26.6 (4.2)
Median (min-max)		26 (18-55)
Age	554	
Mean (SD)		27.0 (8.5)
Median (min-max)		23 (17-56)
Gender % (n)	554	
Male		12.6 (70)
Female		87.4 (484)
Nationality % (n)	535	
Belgian		85.2 (456)
Dual citizenship		7.3 (39)
Another nationality		7.5 (40)
Native speaking % (n)	535	
Yes		85.0 (455)
No		15.0 (80)
Densely populated city % (n)	554	
Yes		55.1 (305)
No		44.9 (249)
Pre-education % (n)	535	
Entrance exam		11.6 (62)
Certificate adult education		1.1 (6)
Secondary education certificate		16.8 (90)
Secondary education diploma		64.1 (343)
Higher education diploma		6.4 (34)
Intake way % (n)	535	
Regular student		54.5 (292)
Increased unemployment benefits		30.3 (162)
Regular unemployment benefits		3.0 (16)
Project 600		7.3 (39)
Working student		4.9 (26)
Family commitments % (n)	535	
Yes		45.8 (245)
No		54.2 (290)
Financial difficulties % (n)	533	
Yes		31 (165)
No		69 (368)
Dropout in the past % (n)	531	
Yes		33.1 (176)
No		66.9 (355)
Suicide attempt in the past% (n)	554	
Yes		9.2 (51)
No		90.8 (503)
Intention to leave % (n)	540	
Never		63.7 (344)
Several times		28.5 (154)
Weekly		7.0 (38)
Daily		0.7 (4)
Academic success % (n)	493	
Passed		65.7 (324)
Failed		19.1 (94)
No results		15.2 (75)
Registration status % (n)	500	
Actively studying		90.2 (451)
Dropout		2.6 (13)
Degree		7.2 (36)

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Table 3
Differences in characteristics for the groups of intention to leave

		Intention to leave		
	n	Yes	No	p value
VK+	540			a
Median (min.-max)		74 (33-95)	81 (51-99)	<0.001
P³ positive	540			a
Median (min.-max)		41 (27-55)	43 (27-59)	0.001
P³ destructive	540			a
Median (min.-max)		27 (19-55)	26 (18-40)	0.002
Age	540			a
Median (min.-max)		22 (18-56)	24 (17-54)	0.019
Gender % (n)	540			
Male		33.8 (23)	*66.2 (45)*	0.650
Female		36.7 (173)	*63.3 (299)*	b
Nationality % (n)	535			
Belgian		37.3 (170)	62.7 (286)	0.518
Dual citizenship		28.2 (11)	71.8 (28)	b
Another nationality		35.0 (14)	65.0 (26)	
Native speaking % (n)	535			
Yes		37.4 (170)	*62.6 (285)*	0.295
No		31.3 (25)	*68.8 (55)*	b
Densely populated city % (n)	540			
Yes		41.1 (122)	*58.9 (175)*	0.011
No		30.5 (74)	*69.5 (169)*	b
Secondary education diploma % (n)	535			
Yes		36.1 (136)	*63.9 (241)*	0.781
No		37.3 (59)	*62.7 (99)*	b
Regular student % (n)	535			
Yes		41.4 (121)	*58.6 (171)*	0.009
No		30.5 (74)	*69.5 (169)*	b
Increased unemployment benefits % (n)	535			
Yes		29.6 (48)	*70.4 (114)*	0.031
No		39.4 (147)	*60.6 (226)*	b
Family commitments % (n)	535			
Yes		38.4 (94)	*61.6 (151)*	0.397
No		34.8 (101)	*65.2 (189)*	b
Financial difficulties % (n)	533			
Yes		42.4 (70)	*57.6 (95)*	0.053
No		33.7 (124)	*66.3 (244)*	b
Dropout in het past % (n)	531			
Yes		33.5 (59)	*66.5 (117)*	0.341
No		37.7 (134)	*62.3 (221)*	b
Suicide attempt in the past % (n)	540			
Yes		56.0 (28)	*44.0 (22)*	0.002
No		34.4 (168)	*65.7 (322)*	b

VK+= resilience score
P³ positive = positive stress reducing activities score
P³ destructive = destructive stress reducing activities score
a = *Mann-Whitney U test*
b = *Chi-Square test*

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Table 4
Influence of student characteristics on intention to leave[a]: logistic regression analysis

Characteristic	n	Mean Yes	Mean No	Univariate B	Univariate R^2	Univariate p value	Univariate OR [CI 95%]	Multivariate[b] n = 540 B	Multivariate[b] n = 540 p value	Multivariate[b] n = 540 OR [CI 95%]
VK^+	540	73.4	80.7	-0.085	0.169	<0.001	0.919 [0.899-0.939]	-0.074	<0.001	0.928 [0.907-0.950]
P^3 positive	540	41.1	42.8	-0.063	0.032	<0.001	0.939 [0.906-0.973]	-0.049	0.014	0.952 [0.915-0.990]
P^3 destructive	540	27.5	26.0	0.081	0.035	<0.001	1.084 [1.038-1.132]	0.057	0.029	1.058 [1.006-1.113]
Age	540	26,1	27,5	-0.020	0.008	0.072	0.981 [0.960-1.002]	/	/	/
		%[c]		B	R^2	p value	OR [CI 95%]	B	*p*	OR [CI 95%]
Suicide attempt in the past	540									
Yes		56.0		0.892	0.018	0.003	2.439 [1.354-4.395]	/	/	/
No		34.4					ref			
Regular student	535									
Yes		41.4		0.480	0.018	0.009	1.616 [1.129-2.314]	/	/	/
No		30.5					ref			
Densely populated city	540									
Yes		41.1		0.465	0.017	0.011	1.592 [1.113-2.277]	/	/	/
No		30.5					ref			
Increased unemployment benefits	535									
Yes		29.6		-0.453	0.012	0.031	0.647 [0.436-0.962]	/	/	/
No		39.4					ref			

CI = confidence interval; ref=reference; R^2 = Nagelkerke; OR = odds ratio; / = these variables were not included in the model. VK+ = resilience score; P^3 positive = positive stress reducing activities score; P^3 destructive = destructive stress reducing activities score

[a] *= students that considered leaving the course in the past month*

[b] *= R^2 (Nagelkerke) model = 0.188; p value of the model <0.001; enter method*

[c] *= proportion of students per characteristic that considered leaving the course in the past month*

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Table 5
Influence of resilience on academic success: logistic regression analysis

		Mean[a]		Univariate			
Characteristic	n	Yes[a]	No[a]	B	R^2	P value	OR [CI 95%]
VK^+	418	78.7	75.2	0.035	0.032	0.003	1.035 [1.012-1.059]

CI = confidence interval; R^2 = Nagelkerke; OR = odds ratio, VK^+= resilience score
[a] = mean resilience score of the successful (Yes) and failed (No) students

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Figure 1 Sampling
Figure 2 Resilience score per registration status

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Sampling

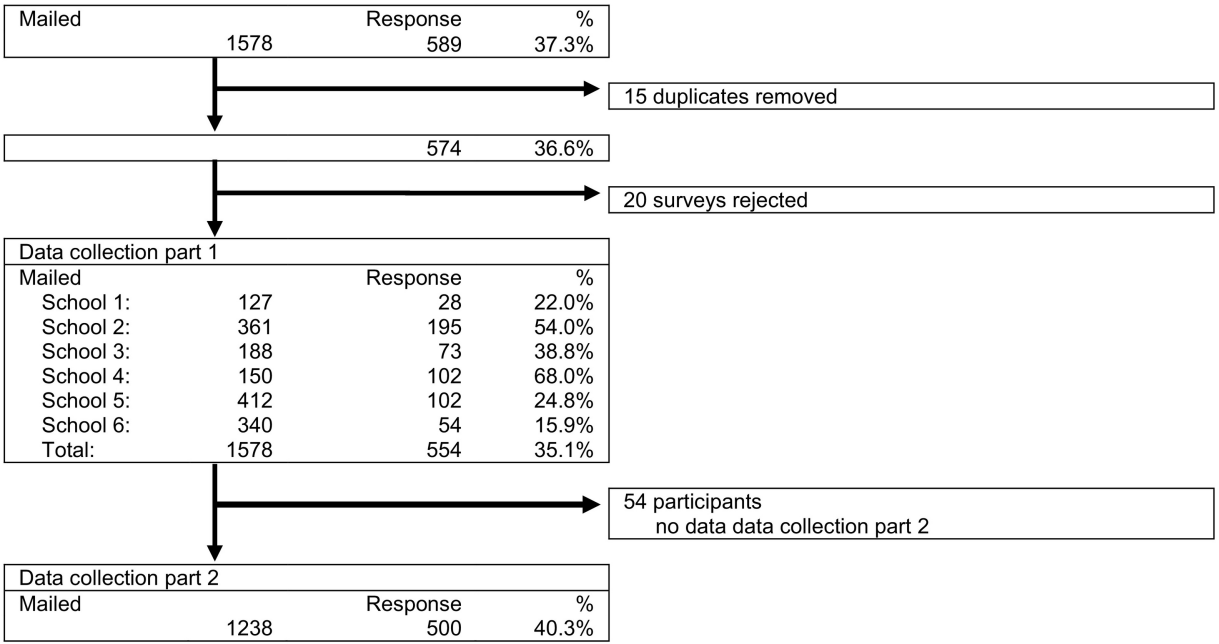
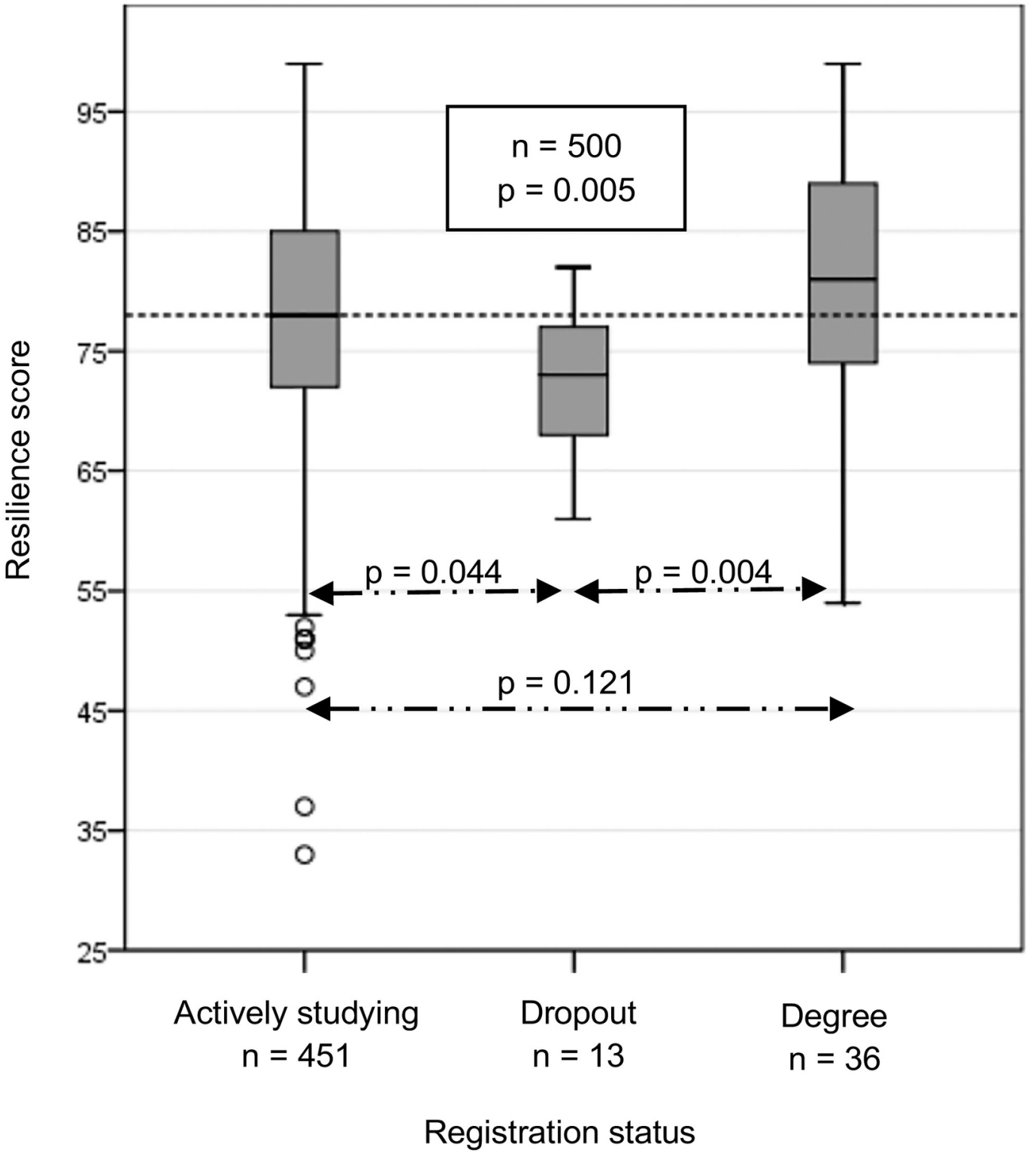


Figure 1

Resilience score per registration status



Kruskal-Wallis test

..... median total sample

Figure 2