

Predictors of stress and academic outcomes in the first year of college.

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BACKGROUND

A number of studies have demonstrated role of personality factors in academic achievement (Day et al., 2010; Poropat, 2009). We wanted to look specifically at academic outcome in the freshman year. Based on the previous literature, we chose a series of personality measures as well as a measure of stress and working memory capacity and administered it to 150 incoming College of Idaho freshmen the day before classes started.

METHOD

Participants:

150 entering College of Idaho freshmen (65% Female)

Materials:

- Automated Operation Span (Conway et al., 2005)

Surveys

- Need for Cognition (Caccioppo & Petty, 1982)
- Short Grit Scale (Duckworth & Quinn, 2009)
- Brief Self-Control Scale (Tangney et al., 2004)
- Big 5 Inventory (John & Srivastava, 1999)
- Adult Hope Scale (Synder et al., 1991)
- Perceived Stress Scale (Cohen & Williamson, 1988)
- Optimism (Scheier et al., 1994)

Procedure:

All students were tested the day before fall semester classes started in groups of 4 to 15 students. After signing informed consent and GPA release forms, students were tested on the operation span followed by a packet of surveys. The order of the surveys was randomized across participants. The procedure took approximately 30 to 45 minutes.

REFERENCES

- Day, L., Hanson, K., Maltby, J., Proctor, C., & Wood, A. (2010). Hope uniquely predicts objective academic achievement above intelligence, personality, and previous academic achievement. *Journal of Research in Personality, 44*, 550-553.
- Duckworth, A. L., & Quinn, P.D. (2009). Development and validation of the short grit scale (Grit-S). *Journal of Personality Assessment, 91*, 166-174.
- Poropat, A.E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*, 322-338.

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RESULTS

	mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. GPA	3.2 (.52)	1	0.12	-0.14	.202*	0.10	0.13	0.04	-0.02	-0.11	0.00	.200*	-0.01	-0.07
2. O-span	35.7 (17)		1.00	-0.16	0.10	0.15	.19*	0.05	0.10	0.14	0.05	0.00	-.229*	0.10
3. Stress	17.2 (6.4)			1.00	-.399**	-.257**	-.390**	-.457**	-.388**	-.299**	0.01	-.236**	.607**	-0.13
4. Self-control	43.3 (8.2)				1.00	.294**	.299**	.641**	.397**	0.17	.213*	.659**	-.274**	0.12
5. Need for Cognition	63.6 (12.6)					1.00	.234**	.281**	.344**	0.13	0.00	.314**	-.183*	.443
6. Optimism	15.5 (5.4)						1.00	.435**	.375**	.372**	.281**	.369**	-.343**	0.09
7. Grit	3.5 (.58)							1.00	.511**	.354**	.205*	.703**	-.351**	0.08
8. Hope	50.1 (5.6)								1.00	.336**	0.12	.450**	-.450**	.411
9. Extraversion	3.3 (.83)									1.00	0.03	.230**	-.319**	0.12
10. Agreeableness	3.9 (.68)										1.00	.204*	-0.01	0.04
11. Conscientiousness	3.7 (.61)											1.00	-.189*	0.12
12. Neuroticism	3.1 (.78)												1.00	-0.08
13. Openness	3.6 (.63)													1.00

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Final Model using GPA as the dependent variable

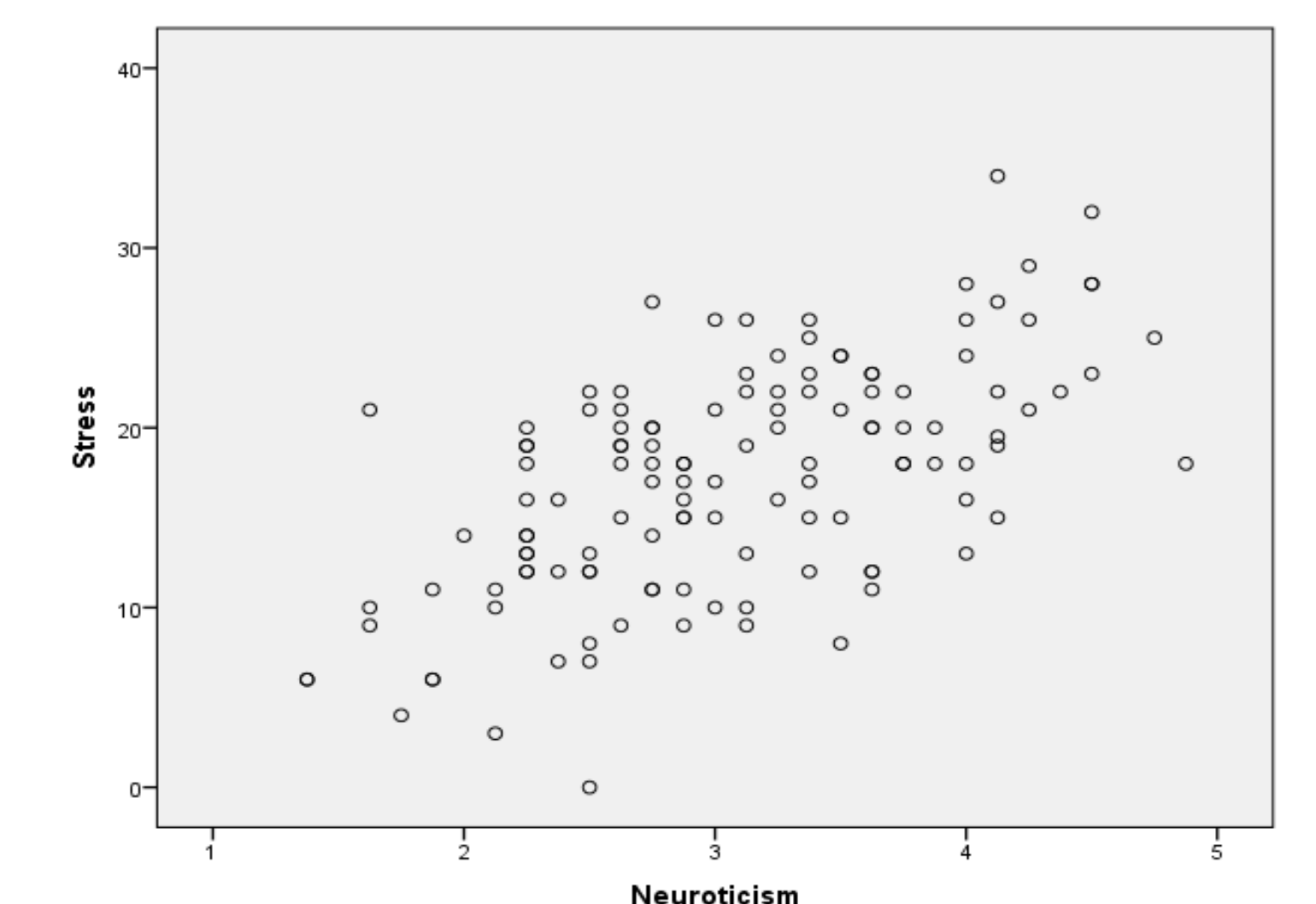
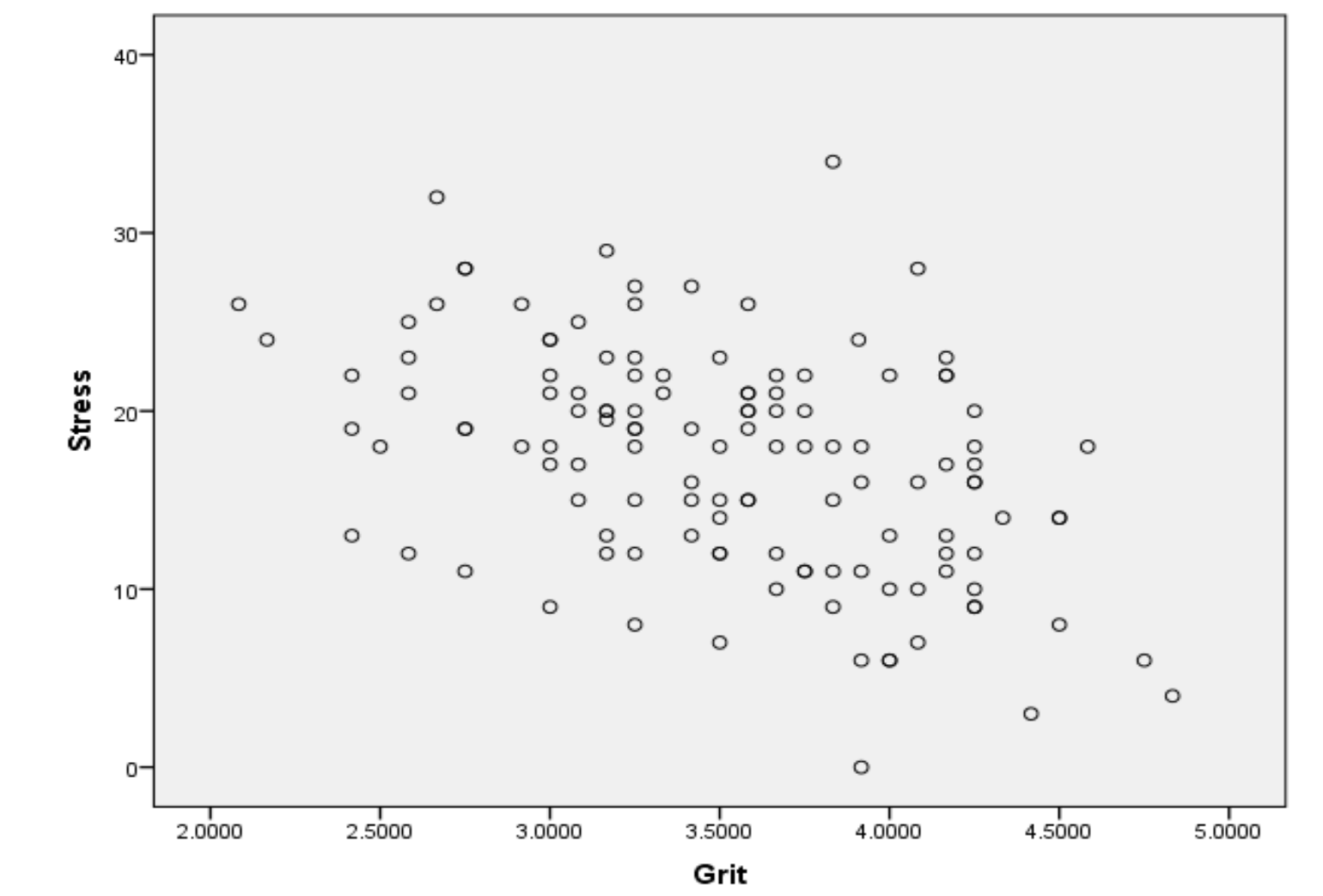
	B	Std. Error	Beta	t	Sig.
Step One Ospan	.003	.003	.111	1.228	.222
Step Two Stress	-.018	.010	-.224	-1.872	.064
Step Three Self-control	.008	.008	.127	1.003	.318
Need for Cognition	.005	.005	.117	1.145	.255
Optimism	.011	.010	.117	1.089	.279
Grit	-.254	.127	-.285	-2.005	.047
Hope	-.006	.011	-.065	-.544	.588
Step Four Extraversion	-.108	.061	-.175	-1.784	.077
Agreeableness	-.032	.071	-.042	-.450	.653
Conscientiousness	.261	.116	.308	2.249	.026
Neuroticism	.063	.077	.094	.815	.417
Openness	-.114	.085	-.139	-1.340	.183

RESULTS

- We used hierarchical linear regression to determine the best predictors of incoming stress levels and end of the year GPA in our students.

- Using incoming stress as the dependent measure, the 3 strongest predictors Optimism, Grit and Neuroticism, $F(11,124) = 10.0, p < .001, r = .70, r^2 = .49$, adjusted $r^2 = .44$

- Using end of the year cumulative GPA as the dependent measure, the strongest predictors were Grit and Conscientiousness, $F(12,124) = 2.1, p = .02, r = .43, r^2 = .185$, adjusted $r^2 = .098$



Final Model using Self-reported Stress as the dependent variable

	B	Std. Error	Beta	t	Sig.
Step One Self-control	-.082	.072	-.106	-1.140	.256
Need for Cognition	-.035	.046	-.059	-.769	.443
Optimism	-.221	.094	-.184	-2.358	.020
Grit	-2.681	1.075	-.242	-2.494	.014
Hope	.008	.098	.007	.084	.933
Step Two Extraversion	-.120	.560	-.015	-.214	.831
Agreeableness	.951	.652	.099	1.460	.146
Conscientiousness	1.366	1.020	.132	1.338	.183
Neuroticism	3.445	.634	.418	5.435	.000
Openness	-.254	.821	-.024	-.309	.758
Step Three spanscore	-.015	.025	-.039	-.590	.556

DISCUSSION

- Our results are consistent with the prior literature in finding that both Grit, a trait measure of persistence and Conscientiousness were significant predictors of end of the year freshman GPA (Duckworth & Quinn, 2009; Poropat, 2009).

- Other variables that have predicted academic performance in prior studies such as Hope (Day et al., 2010) were not significant in our dataset. However, such studies have typically focused on long range outcomes such as the final graduating GPA. It may be that in our students, Hope will be important for long term persistence and performance in college.

- Optimism, Grit and Neuroticism were strong predictors of how stressed students felt upon starting their freshman year although this amount of experienced stress was only weakly related to academic performance.

- Caveats for this study include a relatively small sample size as well as freshman GPA possibly not being the most robust measure of academic performance as less may be expected from lower division coursework.