



Is Conscientiousness a Proxy for Depression? A study of Big Five Conscientiousness Predictive Power above Depression

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Abstracts

The literature reveals a relationship between Conscientiousness and Depression. Research illuminating this relationship is lacking. The current study examined the predictive power of Big Five and narrow measures of Conscientiousness over depression in 110 undergraduates using College Grade Point Average (GPA) as the outcome measure. Results showed that Big Five Conscientiousness had little predictive power above Depression and narrow measures of Conscientiousness. This finding suggests that the constructs of Conscientiousness and Depression are not as independent as previously thought. The findings suggest that Conscientiousness might not be related to performance due to work ethic but because individuals high on Conscientiousness are not depressed. Thus, the relationship between Conscientiousness and performance may be better explained because of a lack of depression rather than a strong work ethic.

Keywords: Conscientiousness, Depression, Grit, Perseverance, GPA

Introduction

Academics and practitioners have called for research that further examines the relationship between Big Five personality measures [1] and job performance, with the goal of explaining the relationship. The ultimate goal of this research would be to improve the prediction of personality measures, since research to date have reported relatively weak correlations between personality and objective and subjective measures of job performance [2, 3]. Researchers have suggested that research with more narrow traits would be beneficial [4]. The current research explores the relationship of Conscientiousness and performance along with three measures that might be characterized as narrow measures of Conscientiousness: Grit [5], Perseverance [6], and Self-control [7]. The literature in Industrial/Organizational Psychology tends to assume that Big Five personality traits are stable and unchanging, which might be described as a received doctrine [8]. However, evidence from the literature from other areas of psychology suggests that Conscientiousness may be changeable and mutable. For example, [9] suggest that Conscientiousness may be effected by acute depression. This paper explores the relationship between Conscientiousness and performance along with the related constructs of Grit, Perseverance, Self-control, and covariate of depression symptoms.

Previous research has shown personality trait scores are biased and can be made unreliable when the individual is affected by acute depression [10] whereas others have suggested that any changes in trait scores during depression accurately reflect resulting personality changes. It has even been suggested that we are mistaken to describe

personality traits as being fixed and immutable, since they have biological bases that can be changed by disease or therapeutic intervention [1].

Although personality is thought to be stable, research has found that neuroticism and extraversion change during a depressive episode, but that conscientiousness remains stable [11]. In fact, research has found Neuroticism to increase and Extraversion to decrease during depressive episodes, either temporarily (the state effect; [11, 12], or even permanently in some (i.e. the scar effect; [13]), but not all [14, 12] studies. While most studies have focused on how depression may be associated with changes in Neuroticism [12] and sometimes change in Extraversion [15], less is known about changes in Conscientiousness, Agreeableness, or Openness, although some studies have found them to be stable during a depressive episode [16, 17]. Some research on the relationship between depression and changes in Conscientiousness have been conducted. For example, some research suggests that conscientiousness scores go down during a depressive episode and go back up when depression symptoms lessen [18].

When trying to understand the murky relationship between personality and job performance, it is important to identify variables that might affect both the predictor and outcome variable. After reviewing the research on how depression may effect personality, it appears that research on how Conscientiousness is effected by depression is sorely lacking. More research needs to be conducted on this relationship because Conscientiousness is often considered a stable trait that has a strong relationship with job performance. Further investigation into how Conscientiousness is effected by depression may shed some light on whether Conscientiousness is truly a fixed trait. Moreover, if depression does indeed effect and individual's conscientiousness, are these legitimate changes that result in worse job performance, or does depression simply bias our measures and make them less criterion-valid?

Theoretical Underpinnings of the Depression-Conscientiousness Relationship

The relationship between depression and Conscientiousness is a complex one that raises many questions. Are more conscientious people less likely to become depressed? Do conscientious people cope with depression better? Is it possible that people who are low in Conscientiousness experience more intense and prolonged depressive symptoms, thus scoring higher on depression measures? Some research suggests that people who have had an acute depressive episode were less conscientiousness than people who did not have an acute depressive episode, and continued to be less conscientious over time [19, 20, 21].

The relationship between depression and conscientiousness also appears to be effected by situational strength. For example, although extraverts are typically described as being gregarious and talkative, if there is little opportunity for a conversation with an extraverted individual, these behaviors are likely not to be expressed or even noticed. Similarly, it would not be surprising for someone who has a low level of agreeableness to be unpleasant and argumentative when they are falsely accused of a crime. Research to date makes a compelling argument that situational strength effects the relationship in how personality traits are expressed. This raises the question of whether the state of an individual's mental health constrains or reinforces the expression of our personality traits [19, 20, 21].

Hypotheses

Given the evidence presented above, we arrived at the following hypotheses: Hypothesis 1: Depression scores will have a moderate negative correlation with Conscientiousness scores and scores on the narrow measures of Conscientiousness (Grit, Perseverance, and Self-control).

Hypothesis 2: Depression scores will have a moderate negative correlation with Grade Point Average (GPA).

Method

In our sample, 110 undergraduates from a medium-sized Midwestern university completed self-report measures of Conscientiousness (10 items taken from IPIP, Goldberg et al., 2006; $\alpha = .87$),

Perseverance (8 items taken from IPIP, Goldberg et al., 2006; $\alpha = .81$), Grit [4], and two different depression scales [22], in addition to a battery of other measures. Participants indicated their level of agreement with statements on a 5-point scale. College GPA (CGPA), high school GPA (HSGPA), standardized test scores, and family income were obtained from university records. Correlation and regression analyses were conducted to determine the relationships among variables and the extent to which depression accounted for variance in Conscientiousness and its subfacets. Participants signed an online consent form before completing the questionnaires and project was approved by the University's Institutional Review Board.

Results

Correlations

There was a significant negative correlation between depression and Conscientiousness ($r = -.235, p < .01$). There were also significant negative correlations between depression and the other narrow measures of Conscientiousness (Grit, $r = -.275, p < .01$, Perseverance, $r = -.231, p < .01$, $r = -.384, p < .01$). These analyses support Hypothesis 1, and corroborate the existing literature that there is a relationship between depression and Conscientiousness. The full correlation matrix is presented in Table 1. The correlations between the measures of Conscientiousness were robust, as expected. The strong correlation between Grit and Perseverance was note worthy in that it may be interpreted as revealing that Grit and Perseverance are in fact measuring the same construct ($r = -.681, p < .01$).

	CGPA	ACT	HSGPA	Depression	Consc.	Perseverance.	Grit	Self-control
CGPA								
ACT	.164							
HSGPA	.384**	.150						
Depression	-.072	-.110	-.235*	(.910)				
Consc.	.103	.153	.280**	-.235*	(.720)			
Perseverance	.147	.231*	.195*	-.231*	.538**	(.831)		
Grit	.167	.018	.179	-.275**	.529**	.681**	(.750)	
Self-control	.117	.024	.182	-.384**	.483**	.507**	.633	(.888)

Note. CGPA = College grade point average; ACT = American College Testing score; HSGPA = High school grade point average; Consc. = Conscientiousness. The reliability for each scale (Cronbach's alpha) is shown in parentheses on the diagonal.
 *. Correlation is significant at the .05 level (2-tailed)
 **. Correlation is significant at the .01 level (2-tailed)

Table 1. BivariateCorrelations among all variables, with reliabilities displayed on the diagonal.

Hypothesis 2 predicted a relationship between depression and GPA. Although there was a significant negative correlation between depression and high school GPA ($r = -.245, p < .01$) the correlation between depression and college GPA was not significant ($r = -.075, p > .05$).

We did not make specific hypotheses concerning the unique variance in College GPA attributable to the measures of Conscientiousness and Depression because the literature did not lend itself to specific hypotheses. However, we did complete regression analyses, which are presented in Tables 2 and 3. The results of the first regression analysis reveals that Conscientiousness did not account for statistically significant variance in college GPA above High School GPA, ACT scores, Depression, Grit, Perseverance, and Self-control. The fact that Conscientiousness did not account for unique variance above all the other variables should not be taken as evidence that Conscientiousness could not be useful to predict college GPA, as the number of variables entered before Conscientiousness makes it a very conservative (some might suggest unfair) test. The second regression analysis excluded HS GPA and ACT scores in the model. Conscientiousness did not account for statistically significant variance in college GPA above Depression, Grit, Perseverance, and

Self-control. These two analyses together suggest that broad Conscientiousness measure may not account for unique variance above Depression and the narrow measures of Conscientiousness.

Regression Analyses

The regression analysis suggested that adding depression and conscientiousness did not improve the model. However, when we regressed the subfacets of Conscientiousness and Depression onto Conscientiousness, the results showed that depression had incremental validity over conscientiousness subfacets.

Discussion

This study contributes to the literature by suggesting that researchers studying the relationship of Conscientiousness and performance should consider the relationship between depression and Conscientiousness. The results of the study reveal that measures of Conscientiousness may not be measuring the construct they are thought to, and that the relationship with performance may be explained as lack of depression. Although many psychologists have typically considered Conscientiousness to be immutable or an unchanging measure of work ethic, other literature suggests that Conscientiousness is not immutable, rather a fluid construct that can be changed by a variety of factors. There are admittedly limitations to this

Model Summary								
Model	R	R ²	Adjusted R ²	Std. Error of Estimate	t	Sig.	R ² change	Sig. F Change
1. HSGPA	.494 ^a	.244	.235	.494a	1.789	.078	.244	.000
2. ACT	.505 ^b	.255	.236	.505b	1.346	.182	.011	.298
3. Depression	.507 ^c	.257	.227	.507c	.797	.428	.002	.671
4. Grit, Perseverance, Self-control	.532 ^d	.283	.223	.532d	-.399	.691	.026	.466
5. Conscientious	.532 ^e	.283	.212	.532e	-.263	.793	.000	.949

Table 2. Results of regression analyses, showing the variance accounted for by predictors of GPA.

Model Summary								
Model	R	R ²	Adjusted R ²	Std. Error of Estimate	t	Sig.	R ² change	Sig. F Change
1. Depression	.072	.005	-.005	.630	15.719	.000	.005	.477
2. Grit, Perseverance, Self control	.174	.030	-.011	.632	3.844	.000	.025	.486
3. Conscientious	.174	.030	-.021	.635	2.551	.012	.000	.992

Table 3. Results of regression analyses, showing the variance accounted for by depression and personality variables in predicting GPA.

study, but the findings corroborate an existing literature base that reveals a relationship between depression and Conscientiousness that researchers might not be aware of.

Although depression had moderate negative correlations with multiple personality predictors of college GPA (i.e. conscientiousness, grit, and perseverance) in this study, this did not translate into a notable correlation between depression and college GPA. This suggests that depression changes the way people respond to self-report conscientiousness measures but does not change performance (i.e., biases our measures). Depression may correlate with having a lower opinion of oneself that is not reflected by actual performance. There are a host of practical implications that can be gleaned from these findings which warrant further research.

Limitations

This research does not suggest that Conscientiousness is changing within individuals. Only a longitudinal study could shed light on that relationship. Another limitation to this study is that it was correlational in nature, and resultantly can't tell us whether depression has a direct effect on Conscientiousness or the other way around. Another limitation of this study is that the participants in this study were college students and not necessarily representative of people as a whole. Moreover, this research was limited in that the depression, Conscientiousness, and the subfacets of Conscientiousness were based on self-report questionnaires. Future research needs to be conducted on the relationships between these variables using different population samples as well as different measures of depression and conscientiousness and performance.

Conflict of Interest: The authors declare no conflicts of interest.

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