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The Effect of Gender, Subjective Social Status and Big Five Personality
Traits on Achievement and Attendance in a Lecture-Based
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Abstract

Background: Whilst intelligence has long been known to influence academic success, many other factors also have an effect. Identifying and understanding which factors influence academic performance and engagement is vital for improving higher education teaching.

Purpose: The purpose of this study was to investigate the relationship between two sets of variables. Set 1 consisted of grades and attendance and set 2 consisted of gender, subjective social status and the Big Five personality factors.

Methods: For this reason, 47 undergraduate psychology students (89.4% female) were recruited at the University of Bradford. Participants filled out an online questionnaire consisting of the Big Five Inventory, the MacArthur Scale of Subjective Social Status and a question regarding gender. Grade and attendance data for one university module were obtained from the university data archive. A canonical correlation analysis was carried out on SPSS.

Results: Neither of the canonical functions were found to be significant. The results indicated that there were no significant relationships between set 1 (grades and attendance) and set 2 (gender, subjective social status and personality factors).

Conclusion: These results did not confirm the hypotheses and contradict previous research. However, it is likely that the small sample size and imbalance of gender in the sample influenced, if not caused these findings. The implications of this study and considerations for future research are discussed.

List of Abbreviations

Abbreviation	Description
CCA	Canonical Correlation Analysis
CCLEO	Collaborative and Crowdsourced prospective Longitudinal cohort study of Engagement and Outcomes
OSF	Open Science Framework
RPS	Research Participation System
SES	Socioeconomic Status
SSS	Subjective Social Status

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The Effect of Gender, Subjective Socioeconomic Status and Big Five Personality Traits on Achievement and Attendance in a Lecture-Based Undergraduate Psychology Module

1. Introduction

In 2018, the UK spent around £90 billion (4.3% of national income) on education (Belfield et al. 2018). The considerable investment in education by the UK government and the substantial amount of research in this field demonstrate the high value placed on academic performance in our society. Whilst intelligence has long been known to be a strong predictor of grades (see Roth et al. 2015 for meta-analytical evidence), non-intellectual factors, such as demographics or individual differences, also play a big role. Student populations are increasingly diverse, with many international students and students from all financial backgrounds attending higher education. Universities are faced with the challenge of providing all students with the opportunity to develop the skills and knowledge they need. Understanding the underlying factors that influence academic achievement and engagement and being able to statistically predict academic performance based on these factors, is of substantial importance and enable us to identify ways to improve higher education teaching.

One of the main behavioural factors that influences academic achievement at university is lecture attendance. It has consistently been shown to be one of the strongest predictors of achievement (Credé et al. 2010; Lukkarinen et al. 2016). Moreover, attendance is an important measure for higher education institutions to assess their teaching quality, as attendance indicates students' engagement, at least on a behavioural basis. By understanding which demographic and individual factors might influence attendance, we can discover how universities can encourage students to attend more frequently, which will, consequently, increase their chances of academic success. For this reason, the effects of demographic and personality factors on both, attendance and grades, were examined.

1.1 Demographic Factors

Numerous non-intellectual factors may influence grades and attendance in higher education. Some demographic factors have been shown to affect academic achievement, such as socioeconomic status (SES hereinafter). A person's SES describes their standing in society, usually measured by their (or their parents') level of education, income or their profession (Chung 2015). Research on the influence of individuals' SES on academic performance indicates that a low SES is associated with lower grades, both at school (Duru-Bellat 2015; Chung 2015; Von Stumm 2017; Tomula and Çelik 2009) and university (Sucuoğlu 2018; Richardson et al. 2012).

This might be due to numerous factors associated with a low SES. Individuals from lower SES backgrounds might be more likely to experience various stressors than individuals with higher SES (Turner and Avison 2003). For instance, undergraduate students from lower class families are less likely to be shielded from financial adversity than their higher-class peers (Houle 2013), since their families' financial strains are strongly related to their own chances in life. Possibly for this reason, low SES students have been found to be more likely to work whilst attending university, resulting in less time for studying (Walpole 2003). In addition, students from lower SES backgrounds are more likely to be first generation students, which means they might lack a general familiarity with factors such as norms and traditions that are needed to succeed at university (Devlin 2013, Lundberg et al. 2007). These factors might negatively influence academic performance.

Lower SES is also associated with lower health (Public Health England 2017) which might cause decreased lecture attendance. In addition, research suggests that low SES students are more likely to work full or part time during term-time (Walpole 2003), which might also lead to more missed lectures.

These findings indicate how a low SES might affect students' likelihood of succeeding at university. However, a major shortfall of many studies in this area is the use of exclusively

objective measures to determine SES or social class. The research fails to recognise the importance of subjective perceptions of social standing and their influence on academic success.

Despite the dominance of objective measures in the field, subjective measures have been demonstrated to be valid and reliable measures of social standing (see Rubin et al. 2014 for discussion) and might actually be more suited than objective measures in some areas of research. Research by Ostrove and Long (2007) suggests that students' perceptions of belongingness, which are influenced by their social class, have important implications on academic and social adjustment at university. They also suggest that subjective measures of social class and SES are stronger predictors in higher education research than objective measures. Subjective measures might be more suitable for explaining the role of subjective experiences of social class, as opposed to more physical manifestations, such as financial income or level of education. Consequently, this study utilised the MacArthur Scale of Subjective Social Status (Adler et al. 2000; see Appendix 1), to examine the relationship between subjective social status (SSS hereinafter) and grades and attendance.

In addition to objective and subjective measures of social class and socioeconomic status, gender is another demographic factor which has been demonstrated to influence academic performance. Beginning in compulsory education, girls have been found to consistently outperform their male peers at school (DiPrete and Jennings 2012, Marcenaro-Guiterrez et al. 2018, Mensah and Kiernan 2010), despite achieving similar IQ scores (Duckworth and Seligman 2006). At higher education level, women have also been found to achieve higher grades than men (Conger and Long 2010, Cotton et al. 2016, Richardson et al. 2012).

Although the gender gap in academic attainment has been established by decades of previous research, its cause is still debated. Some research suggests that girls possess better social and behavioural skills upon entering school than boys, and that boys never

catch up to girls in this area, which negatively affects their academic achievement (DiPrete and Jennings 2012). Alternatively, it might be due to higher levels of disciplines which have been found in girls (Duckworth and Seligman 2006). Conger and Long (2010) found that the gender gap might partially be caused by men's tendency to choose degree courses (such as Business, Engineering or Computer Sciences) that are generally associated with lower GPAs. Findings by Cotton et al. (2016) demonstrate that the gap might persist due to the fact that women were found to spend more time studying and were less likely to skip classes than men. Furthermore, rejecting academic work might serve men's purposes of social identity construction amongst their male peers and provide an excuse for failure (Jackson 2003), since there might be negative associations with being seen as a 'geek' (Cotton et al. 2016). Whilst all of these factors might cause the gender gap in educational attainment, they are heavily debated, and further research needs to be conducted.

Since gender might cause differences in grades that cannot be explained by other factors, it was included as a variable in this study. In addition, little is known about the effect gender has on lecture attendance, although some research suggests that men are more likely to skip classes (Cotton et al. 2016). For those reasons, gender was included in the study, although it was not the main focus of this research.

1.2 Personality Factors

On an individual level, personality has been shown to influence university grades and attendance. Most research in this area utilises the 'Big Five' personality model (John and Srivastava 1999), which is the most established and most commonly used personality taxonomy in personality research. It consists of conscientiousness, extraversion, neuroticism, agreeableness and openness to experience.

Conscientiousness is a measure of an individual's tendency for self-discipline, competence, ambition and sense of responsibility, among other characteristics. A highly

conscientious person is goal-directed and engages in impulse control in order to reach that goal (John and Srivastava 1999). Extraversion describes a person's energetic attitude towards their environment and includes traits such as positive emotionality, sociability, warmth and adventure-seeking (John and Srivastava 1999, Watson and Clark 1997). Neuroticism, in contrast, is characterised by negative emotionality, including anxiety, frustration, and moodiness. Individuals who are highly neurotic tend to be irritable, self-conscious and to have poor impulse control (John and Srivastava 1999, McCrae and Costa 1987). Agreeableness is characterised by communal and prosocial behaviour and feelings towards others and consists of traits such as trust, sympathy, compliance and altruism (John and Srivastava 1999, McCrae and John 1992). Openness to experience describes the tendency for an individual to completely immerse themselves in a task or area of interest (McCrae 1996) and includes traits such as curiosity, excitability, imagination and a wide breadth of interests (John and Srivastava 1999).

Conscientiousness has consistently been shown to positively predict academic achievement (Geramian et al. 2012, Hazrati-Viara et al. 2012, Hakimi et al. 2011, Richardson et al. 2012, Vedel 2014) and has also been found to be the strongest predictor of the five personality traits to predict academic achievement (Hakimi et al. 2011, Richardson et al. 2012, Vedel 2014). Individuals who are highly conscientious tend to have a strong sense of responsibility and ambition and are more likely to persist when faced with challenging tasks (Richardson et al. 2012). Highly conscientious persons are also likely to delay gratification, plan tasks and abide by norms (John and Srivastava 1999) which might explain those findings. Whilst previous research is consistent on the influence of conscientiousness on academic performance, findings on the effect of the other four traits are mixed and generally indicate that they are weakly to moderately related to academic performance.

Whilst, in some studies, extraversion has previously been found to negatively predict academic performance in some studies (Credé et al. 2010, Furnham et al. 2005), other findings indicate that extraversion might not actually have a significant effect on achievement

(Geramian et al. 2012, Vedel 2014). In a meta-analysis conducted by Poropat (2009), extraversion was weakly negatively associated with academic achievement. This might be because assessments in higher education tend to be formal and analytic and usually require individual preparation. Since extroverts tend to be social and outgoing (John and Srivastava 1999), they might achieve higher grades in group assessments (Poropat 2009). It may also be the case that the other personality factors mediate individuals' extraversion and determine whether extraversion has a positive or negative effect on grades for each individual, which could explain non-significant findings of previous research (Geramian et al. 2012).

Neuroticism has been found to negatively affect grades (Chamorro-Premuzic and Furnham 2003), most likely since it has been shown to be associated with test anxiety (Steel et al. 2001), which might compromise academic performance. However, findings by Kappe and van der Flier (2010) indicate that neuroticism positively predicts grades for lower-stress assessments. However, a recent meta-analysis found that neuroticism did not significantly predict grades (Vedel 2014), which indicates that findings are inconsistent.

Agreeableness has been found to be weakly positively associated with academic performance (Hakimi et al. 2011, Richardson et al. 2012, Vedel 2014). However, some studies demonstrated that agreeableness is not significantly related to academic achievement (Geramian et al. 2012, Nofle and Robins 2007). Therefore, it is likely that other personality traits are more strongly related to academic performance than agreeableness.

Previous research indicates that openness to experience is associated with intelligence (Harris 2004), which suggests that openness should be related to academic achievement. In fact, it has been positively associated with grades at university (Geramian et al. 2012, Hazrati-Viara et al. 2012, Marcela 2015, Poropat 2009, Vedel 2014). Highly open students are likely to be more willing to consider new ideas which could aid them in managing new learning (John and Srivastava 1999, Richardson et al. 2012). However, highly open individuals tend to have trouble with discipline and following rules (John and Srivastava 1999), therefore, assessments requiring them to work to a tight deadline might provide a

disadvantage (Furnham and Chamorro-Premuzic 2005). Additionally, openness to experience has also been demonstrated to be associated with lower grades for assessments requiring teamwork (Kappe and van der Flier 2010).

Whilst the relationship between personality and academic performance has been studied extensively, the influence of personality factors on attendance has not been the focus of many studies. However, previous research suggests that conscientiousness predicts academic attendance (Credé et al. 2010), likely due to the high levels of discipline and dependability, as well as the tendency to abide rules associated with highly conscientious individuals (John and Srivastava 1999). Research by Credé et al. (2010) also suggests that extraversion is weakly negatively associated with attendance. In addition, Chamorro-Premuzic and Furnham (2002) found that individuals high in neuroticism were more likely to miss examinations as a result of illness and noted that those individuals might have poorer attendance in general. Students with high levels of agreeableness and openness have been found to be likely to consistently attend lectures (Lounsbury et al. 2003). This might be due to the compliant nature of highly agreeable individuals and the fact that highly open individuals are likely to be curious and, therefore, more willing to learn something new (John and Srivastava 1999).

However, a recent meta-analysis revealed that the relationships between personality traits and academic attendance only had small to moderate effect sizes and the findings suggest that personality traits are not strongly related to attendance. Rather, personality traits and attendance are likely to be more strongly associated with academic achievement than with one another (Credé et al. 2010). Nevertheless, this study examined the relationship between personality and lecture attendance. Future studies might use the data collected to compare the relationship between personality and attendance for different teaching styles. For example, team-based learning consists of regular teamwork (Michaelson and Sweet 2008), which might be more appealing to extroverts than traditional lectures and could, in

turn, increase attendance. In addition, people of all personality types attend universities, therefore, the teaching should be engaging for all. For this reason, the connection between personality factors and attendance was relevant for this study.

1.3 Hypotheses

In light of the previously discussed findings, three hypotheses were developed:

Hypothesis 1: Personality will significantly affect grades and attendance.

Conscientiousness, openness to experience and agreeableness will be related positively to grades, whereas extraversion and neuroticism will be negatively related to grades.

Conscientiousness, agreeableness and openness will also be positively related to attendance, whereas neuroticism and extraversion will be negatively related to attendance.

Hypothesis 2: SSS will be significantly related to grades and attendance. High SSS will positively predict grades and attendance.

Hypothesis 3: Gender will significantly predict grades, with female participants achieving higher grades. Due to the lack in research, gender is not hypothesised to have a significant effect on attendance.

2. Methodology

2.1 Design

This study used an observational, quasi-experimental design. The relationship between two sets of variables was examined. Set 1 consisted of attendance and grades for a first-year module ('Understanding Social Development'); Set 2 consisted of SSS, personality factors and gender.

The research was nested within the Collaborative and Crowdsourced prospective

Longitudinal cohort study of Engagement and Outcomes (CCLEO), which is a collaborative study developed by students over time. The aim of CCLEO is to deliver high-quality research into heutagogy, engagement and learning outcomes; or, more specifically, to research the effectiveness of a team-based learning approach compared to more traditional lecture-based teaching. The second major aim of CCLEO is to provide final-year students with the opportunity to experience creating a long-term study as a researcher, as part of their final year dissertation.

The study was designed with the goal of open and collaborative research in mind and, therefore, it was made available via the Open Science Framework (OSF hereinafter). The initial and amended research proposals, data sets, SPSS output and this report were made available on the OSF (osf.io/84fwm).

2.2 Participants

The population of interest for this study were undergraduate students in the UK. The selected sample of 51 participants (7 male and 44 female) were Psychology and Psychology with Counselling students in their second year at the University of Bradford. They were sampled using opportunity sampling and were invited to take part in the study via the Research Participation System (RPS), where they could access information about the planned study and to decide whether to take part. Participants were only eligible to take part if they were in their second year of study and had completed the module 'Understanding Social Development' at the University of Bradford in the previous academic year (2017/18).

Initially, 72 participants completed the study. However, 7 participants did not agree to their grade and attendance being accessed or removed their consent to take part after completing the study. In addition, 14 participants had to be excluded from the analysis, as they did not meet the required inclusion and exclusion criteria. As a result, the sample size was reduced to 51 participants.

2.3 Materials

The research was carried out using an online questionnaire. Participants were able to take part on any devices with access to the internet. The survey was created outside of the RPS on the survey platform SmartSurvey. It consisted of a question asking participants to identify their gender (see Appendix 2), the Big Five Inventory (John and Srivastava 1999; see Appendix 3) and MacArthur's Scale of Subjective Social Status (Adler et al. 2000; see Appendix 1). The Big Five Inventory consists of 44 items and includes five subscales that respond to the five personality factors. The participants responded using a 5-point Likert scale. MacArthur's Scale of SSS involves an image of a ladder and participants were asked to rank themselves on the sprung (1-10) that they feel corresponds to their social standing.

2.4 Procedure

Participants accessed information regarding the study and signed up to it via the Research Participation System. Informed consent was obtained (see consent form in Appendix 4) prior to participation. Participants were still able to take part in the study if they did not consent to their grade and attendance data being used. In addition, participants were made aware that the study was nested within a collaborative study (CCLEO) and that the collected data and research report would be made publicly available via the OSF. They were given the option to opt out of this and still take part (see Appendix 5 for CCLEO consent form).

After consenting to taking part in the study, participants filled out and submitted the questionnaire online. The questionnaire consisted of 46 questions in total and participants were free to take as much time as needed. For every question, participants were given the choice not to answer by selecting 'prefer not to say'.

For those participants that consented to the use of their grades and attendance data for the research, the data was accessed by a research assistant who encoded it before

sharing it with the main researcher, to ensure anonymity. After taking part in the research, participants were compensated with 10 points via the RPS.

2.5 Analysis

A canonical correlation analysis (CCA hereinafter) was carried out to analyse the relationship between the two sets of variables. They consisted of grades and attendance (Set 1) and gender, SSS and personality factors (Set 2). SPSS 25 was used for the analysis and it was carried out via syntax (see Appendix 6 for the SPSS syntax), to enable other researchers to comprehend and reproduce the analysis. CCA is untypically advanced for an undergraduate dissertation, however, I felt it was the most appropriate method for investigating the research hypotheses. Most research in psychology investigates variable that are likely to have multiple causes and effects. CCA offers the unique possibility to honour the complexity of human behaviour and experience by examining complex relations in one analysis, rather than separately examining variables that might underly one phenomenon (Sherry and Henson 2005).

CCA can be conducted in different ways (e.g. in SPSS or R), and the results can be interpreted utilising different statistical values included in the output. This study followed the example provided by Sherry and Henson (2005), since it offers a comprehensive primer for researchers new to CCA in personality research.

Since the sample size is very small compared to the recommended sample size for canonical correlation analyses of at least 20 cases for every variable (Stevens 1986); outliers could greatly affect the magnitude of the correlational coefficients and canonical correlations calculated. Therefore, the data was examined in SPSS and the most extreme outliers (n=4) were excluded from the analysis, reducing the sample size to 47.

3. Results

After controlling for outliers, 47 participants' data (89.4% female) were included in the analysis. However, due to missing data where participants chose 'prefer not to answer' as a reply, only 41 participants' data could be included in the analysis. Table 1 displays the mean, standard deviation and confidence intervals for the variables.

The means of extraversion ($m = 25.70$) and neuroticism ($m = 26.13$) seem much lower than those of agreeableness ($m = 35.62$) and openness ($m = 36.40$). However, it is important to keep in mind the design of the questionnaire. Agreeableness and conscientiousness are measured by 9 questions, whereas only 8 questions are used to estimate extraversion and neuroticism. In contrast, 10 questions respond to openness.

Table 1

Mean, standard deviation and confidence intervals for the variables

<i>Variables</i>	<i>Mean</i>	<i>SD</i>	<i>95% CI</i>	
			<i>LB</i>	<i>UB</i>
<i>n=47</i>				
Grade	57.72	12.87	54.28	62.45
Attendance	69.92	26.37	63.78	80.59
SSS	5.61	1.22	5.09	5.84
Extraversion	25.70	5.66	23.91	27.36
Neuroticism	26.13	7.32	24.19	28.93
Conscientiousness	32.69	6.06	30.51	34.46
Agreeableness	35.62	4.50	34.49	37.17
Openness	36.40	4.75	34.80	37.88

Note. SSS = Subjective Socioeconomic Status (Adler et al. 2000), SD = Standard Deviation, CI = Confidence Interval, LB = Lower Bound, UB = Upper Bound. Mean attendance is reported in %.

A canonical correlation analysis was carried out, using variable set 1 (grade and attendance) as outcome variables and set 2 (personality factors, gender and SSS) as predictors. Since set 1 has two variables and set 2 has seven variables, two canonical functions were created with squared canonical correlations (R_c^2) of .361 (function 1) and .105 (function 2). Wilks's Lambda was not found to be significant, indicating that the full model across both functions

was not statistically significant ($\lambda = 0.572$, $p = 0.147$). Since Wilks's Lambda represents the variance that is not explained by the model, $1 - \lambda$ yields the effect size of the full model in an r^2 metric. An effect size of $r^2 = .428$ was found, indicating that the full model explained around 42.8% of the variance shared between the two sets of variables, which might be considered a substantial amount.

Dimension reduction analysis, which tests the functions for significance in a hierarchal arrangement, also confirmed that the two canonical functions were not statistically significant ($F^{1 \text{ to } 2} (14, 64) = 1.47$, $p = 0.147$; $F^{2 \text{ to } 2} (6, 33) = 0.64$, $p = 0.696$). Therefore, the null hypothesis could not be rejected; indicating that personality factors, gender and SSS are not related to grades and attendance.

Function 1 was found to explain roughly 36.1% of variance in the data, whereas Function 2 only explained around 10.5%. Although neither of the two canonical functions reached statistical significance, the possibility remains that the effects found were not down to chance. However, since the model did not reach statistical significance the support for this is weak.

To illustrate the relations between the variables, the standardised canonical coefficients, structure coefficients, squared structure coefficients and the communality coefficients for each variable across the two functions are displayed in Table 2.

Looking at Table 2, it could be noted that although neither of the functions were significant, grade, attendance (set 1), SSS and conscientiousness (set 2) produced moderate to strong positive correlations with Function 1. This indicates that high grades and attendance were positively associated with a high SSS and high levels of conscientiousness in this sample. Based on this, a statistically significant theme may have emerged if a larger sample had been used.

Table 2

Standardised Canonical Coefficients, Structure Coefficients, Squared Structure Coefficients and Communalities for the Canonical Functions

Variable	Function 1			Function 2			h^2 (%)
	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	
Grade	.75	<u>.87</u>	76.22	-.70	<u>-.49</u>	23.78	<u>99.99</u>
Attendance	.50	<u>.68</u>	46.72	.89	<u>.73</u>	53.28	<u>100.00</u>
SSS	.73	<u>.55</u>	30.31	-.15	-.42	17.69	<u>47.99</u>
Gender	-.46	-.04	0.19	.56	<u>.86</u>	73.09	<u>73.28</u>
Extraversion	-.47	-.31	9.52	.31	-.17	3.00	12.53
Neuroticism	.43	.06	0.32	.61	<u>.49</u>	24.07	24.39
Conscientiousness	.85	<u>.46</u>	21.28	.23	.41	16.43	37.71
Agreeableness	.13	.31	9.69	.23	<u>.51</u>	26.22	35.91
Openness	-.16	.16	2.39	-.09	.01	0.01	2.40

Note. For emphasis, structure coefficients greater than $|\lambda|$ are underlined. Communalities greater than 45% are also underlined. Coef = standardised canonical coefficient; r_s = structure coefficient (also known as canonical correlations), r_s^2 = squared structure coefficient; h^2 = communalities.

4. Discussion

4.1 Discussion of Findings

The aim of this study was to investigate the effect of the Big Five personality factors, SSS and gender on grades and attendance at university. The canonical correlational analysis did not yield any statistically significant results, indicating that personality factors, gender and SSS do not influence university grades and attendance.

Hypothesis 1

Perhaps the most surprising finding was that the analysis did not reveal a statistically significant relationship between personality traits and grades; thus, indicating that personality might not have a significant impact on academic performance. This is especially unexpected regarding conscientiousness, since it is linked to ambition and goal-directed behaviour (John and Srivastava 1999) and has previously been established by several meta-analyses as a very strong predictor of academic achievement at higher education (see Poropat 2009,

Richardson et al. 2012). Regarding the other personality factors, the findings of this study also did not confirm the hypothesis that was developed based on the reviewed literature. However, previous research has generally only found weak relationships between these personality factors and grades (see Poropat 2009) and some studies have not found statistically significant relationships at all (Geramian et al. 2012, Vedel 2014). Thus, the results partly confirmed previous research.

These findings may be explained by a variety of factors. The Big Five personality traits are often expected to be highly stable, influenced primarily by genetic pre-disposition, and change in these traits is generally thought to be due to intrinsic development, rather than caused life experience or environmental factors (McCrae and Costa 2013). However, a meta-analysis by Roberts et al. (2006) revealed that personality can and does change throughout life. They noted that during the typical university age (18-22 years of age), there are significant changes in personality; especially regarding extraversion, openness to experience and neuroticism. Life experiences have been suggested to explain these changes in personality (Lüdtke et al. 2011). Since the transition to university is generally associated with many changes (such as moving out of the family home or relocating to a different city), these experiences might help to explain the variance in personality Roberts et al. (2006) found.

Given the possibility that personality traits might be subject to change over time, it is important to consider the implications of these findings when interpreting the results of the present study. The module 'Understanding Social Development' was completed at least 6 months prior to the data collection for this study; therefore, it is possible that participants' personality traits changed within that time. This might explain why none of the personality traits were found to significantly affect grades. Even slight changes over time may have had an impact on the findings, as the relationship between the personality factors (excluding conscientiousness) and academic performance has generally been found to be fairly weak in previous research (see Poropat 2009 or Richardson et al. 2012 for meta-analysis).

Furthermore, researchers are only beginning to discover and understand which mediating factors underly the relationship between conscientiousness and academic performance and how they act on these variables (Conrad and Patry 2012). Thus, it is difficult to determine how mediating factors might have affected the results of this study and whether they are the reason the analysis did not yield statistically significant results. Nofle and Robins (2007) state that many factors (for example values, study and test-taking skills, financial resources etc.) are likely to partially determine academic performance. This highlights the complex relation between personality and other predictors of academic performance and illustrates the need for further research into factors that mediate this relationship.

Additionally, many studies investigating the relationship between personality and academic performance utilise more general, overall measures such as GPA (see Richardson et al. 2012), which reflects the participants' overall academic performance across various subjects. However, the present study only utilised the grade from one module, rather than a grade reflecting the entire semester or academic year. It is, therefore, possible that conscientiousness was not linked to academic performance for this particular module, possibly due to the topics taught or type of assessment used.

Regarding the relationship between personality and attendance, conscientiousness has previously been demonstrated to most strongly predict it (Credé et al. 2010). The other traits have been hypothesised to have small effects on attendance (Chamorro-Premuzic and Furnham 2002, Credé et al. 2010, Lounsbury et al. 2003). However, no statistically significant relationship was found between any of the personality factors and attendance. Whilst these findings contradict the hypotheses of this research, it is likely that the size of the sample used was not big enough to identify any significant relationships. Especially minor effects might have been affected by this. Since research suggests that the relationship between personality and attendance is negligible (Richardson et al. 2012), this might be the reason no significant association was found.

Hypothesis 2

The results of this study did not fully confirm Hypothesis 2, which predicted that there would be a significant relationship between gender and grades. Previously, research has established that women tend to have higher grades than men at university level (Conger and Long 2010, Cotton et al. 2016, Richardson et al. 2012). The present study did not confirm these findings. The effect of gender on academic attendance has not been studied extensively; though, findings by Cotton et al. (2016) suggest that men are more likely to skip classes and might have lower attendance rates for this reason. The results of this study did not confirm these findings; however, it did confirm the hypothesis that gender would not have a significant effect on attendance.

Regarding these findings, it is important to consider that the sample used in this study consisted of mostly (89.4%) female participants. This might have skewed the results and it is doubtful whether the results found are representative of the general population.

In addition, it should be noted that social sciences degrees (including Psychology) tend to be a female-dominated (Higher Education Statistics Agency 2018). This not only explains the small number of male participants of this study, it also provides an explanation as to why gender was not found to impact grades or attendance. Previous research has found that boys at school level tend to view academic effort and performance as something they avoid being associated with, since there might be negative consequences for being perceived as a 'geek' (Jackson 2003). Therefore, they actively reject academic work in order to construct a positive social identity among their male peers (Cotton et al. 2016). Since the number of male students in psychology courses might be smaller, it could be speculated that the norms relating to academic effort and performance at university might be different to the norms that the male participants were subjected to at school. This could explain why this study did not find a significant relationship between gender and grades or attendance.

Hypothesis 3

The findings of this study did not confirm Hypothesis 3, which was based on previous research conducted on the effect of socioeconomic status on grades and attendance. Whilst previous research indicates that low SES negatively affects grades (Sucuoğlu 2018; Richardson et al. 2012) and I hypothesised that SES might affect attendance, the present study could not confirm this for SSS.

However, there are fundamental differences between SES, which is usually measured by an individual's level of education, income or profession (Chung 2015), and SSS, which measures where the individual feels they stand in society (Adler et al. 2000). Therefore, it is possible that the subjective perception of one's social standing does not produce the same influences over academic success as the actual socioeconomic situation might. Nevertheless, subjective measures of social class or SES have been found to be valid and reliable measures (see Rubin et al. 2014 for discussion). Therefore, it is possible that the non-significant findings are not due to a misuse of the MacArthur Scale of Subjective Social Status, but rather down to other factors.

For example, Ostrove and Long (2007) found that the sense of belonging students felt at higher education institutions played a role in their academic performance and might explain the achievement gap that has been established by previous research (Sucuoğlu 2018; Richardson et al. 2012). Given these findings, low SSS students would be expected to achieve lower grades. However, it is possible that students in this study's felt as part of a community at university, which could have eliminated the performance gap in the sample.

Whilst the findings of the present study could not confirm the hypotheses and mostly contradicted previous research, this might be due to methodological issues (see section 4.3). Nonetheless, although the results of this study were not found to be statistically significant, the patterns in the data seem to confirm some of the previous research. For example, the

correlations suggest that grades and attendance are highly correlated with SSS and conscientiousness (see Table 2). Therefore, it is possible that conscientiousness and SSS did influence these variables and that these effects simply were not found to be statistically significant for other reasons.

4.2 Implications

Although the results were non-significant and, therefore, contradict a large number of previous studies, the importance this study's findings should not be overestimated. The results are likely due to methodological issues, such as the small sample size used. Nevertheless, the impact and importance of the results should also not be underestimated. Several points are worth considering.

First, this study illustrates the difficulty of investigating a variable such as academic performance, which is characteristically determined by multiple factors. Numerous factors have previously been found to strongly predict academic performance, including intelligence (Roth et al. 2015) amongst others, which were not the focus of this study. This highlights the need for a more holistic approach to determining the factors that influence academic success, which encompasses all the levels (e.g. individual, community, societal) that previous research has suggested are major influences. This study attempted this on a small scale by examining demographic and personality factors; however, further research is desperately needed. Only by knowing exactly which factors influence academic performance, what their effect is and how these factors relate to each other can we begin to make reliable predictions.

Second, this study demonstrated the use of CCA in the educational field of psychology. CCA is not commonly used, however, it has several benefits over other analyses. It honours the complex reality of human thought and behaviour and allows for

sophisticated and insightful analysis. In addition, it does not oversimplify complex constructs often used in psychological research, such as personality (Sherry and Henson 2005).

Whilst the findings of this study might not add greatly to the literature, the research conducted illustrates several theoretical and research related implications and aimed to shape ideas and methods for future research in this area.

4.3 Strengths and Limitations of this Study

This paper and a variety of important documents relating to the research were published on the OSF (osf.io/84fwm), which allows other researchers to use the collected data for future studies and to better comprehend every step of this research. Making studies publicly accessible promotes accountability and transparency in research, which, ultimately, will drive the development and improvement of research. This is a key strength of this study.

In addition, this study was nested in a collaborative research project (CCLEO), which aims to create high-quality research into heutagogy, engagement and learning outcomes by enabling undergraduate researchers to partake in a collaborative and longitudinal research project. Although this study did not yield statistically significant results, the data collected may be used by other researchers as part of the CCLEO and might provide insights into the effects of different teaching styles. Therefore, this study provides an important contribution to the project.

Furthermore, this study offers encouragement for a new way to investigate social standing, since SSS was used as a measure. Previous research has primarily focused on the influence of SES on academic success; however, this study specifically examined the influence of individuals' subjective identification with social standing. This opens the doors for further research into which specific factors associated with low socioeconomic background influence academic success and how. In the future, using a combination of

objective and subjective measures might provide a more nuanced and detailed insight into peoples' experiences of social standing.

Limitations of this study can be attributed to methodological issues, which might have influenced on the findings. First, opportunity sampling was used, which resulted in a very high percentage of female participants compared to male participants. Not only does this impact the generalisability of this study, but it might have also skewed the data, since gender was used as a variable in the analysis. Additionally, only undergraduate Psychology students were recruited. Previous research suggests that the degree course has a significant effect on the relationship between personality and academic performance (Fonteyne et al. 2017), which is important to keep in mind. Thus, the results might not be generalisable to students of other degree courses.

In addition, participants were able to sign up to the study despite not meeting the required eligibility criteria. Due to this, a relatively large number of participants had to be excluded from the analysis. In future studies, proof of eligibility should be collected before participation in the research to avoid this problem. Because of this issue, only a small sample size of 47 participants was recruited. Considering the large number of variables, more participants should have been recruited. Also, the analysis used (CCA) requires a large sample size (Stevens 1986), which is likely to explain why the results were not found to be statistically significant.

Moreover, CCA might be more useful for variable sets with variables that are very strongly related. Although this was the case for set 1 (grades and attendance) it was only partly the case for set 2 (personality traits, gender and SSS). Using conceptually strongly related variables might yield more valuable results and enable a more sophisticated interpretation of the findings (Sherry and Henson 2005).

Lastly, it should be noted that this study did not consider other variables that have previously been shown to influence academic performance or attendance, such as

intelligence, motivational factors and learning strategies (Richardson et al. 2012, Roth et al. 2015). These factors are likely to explain a significant amount of variance and, therefore, further research is needed exploring them.

4.4 Considerations for Future Research

Although this study did not find a significant relationship between gender, personality and SSS and grades and attendance, these variables are worth further investigation.

Future studies might use the data collected in the course of this study to compare the outcomes to other teaching styles, for example team-based learning. It is possible, that other ways of teaching might mediate the relationship between factors such as personality and SSS and academic variables such as grades and attendance.

Furthermore, a variety of other factors might influence academic achievement and engagement. Further research could employ a more holistic approach to determining the influences on academic variables and take into account the different intrinsic and environmental influences students experience. Research regarding positive behaviours, in particular, might be useful, as these can be encouraged regardless of students' background or individual differences.

Additionally, future research should focus on a variety of methods. Being able to quantitatively predict performance is undoubtedly useful. However, if students' qualitative experiences are not taken into account, research will only reveal parts of the big picture. For this reason, I recommend a mixed-methods approach.

4.5 Conclusion

In summary, this study did not find a significant relationship between gender, SSS, personality and grades and attendance. This contradicts previous research and suggests

that the results are likely caused by some methodological issues. Nevertheless, this study has noteworthy implications, as it demonstrates the difficulty of investigating a multiply caused variable such as academic success and encourages a more holistic approach to determine the factors that influence academic performance and engagement. Further studies are needed to investigate these factors. Future research should also be conducted to investigate the role teaching style might play in determining academic success and engagement.

References

- Adler, N. E., Epel, E. S., Castellazzo, G. and Ickovics, J. R. (2000) Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health psychology* 19(6), 586-592.
- Belfield, C., Farquharson, C. and Sibbata, L. (2018) *2018 annual report on education spending in England*. London: The institute for fiscal studies.
- Chamorro-Premuzic, T. and Furnham, A. (2002) Neuroticism and "special treatment" in university examinations. *Social behavior and personality: An international journal* 30, 807-812.
- Chamorro-Premuzic, T. and Furnham, A. (2003) Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of research in personality* 37, 319-338.
- Chung, K. K. H. (2015) Socioeconomic status and academic achievement. *International encyclopedia of the social & behavioral sciences (second edition)* 22, 924-930.
- Conger, D. and Long, M. C. (2010) Why are men falling behind? Gender gaps in college performance and persistence. *The annals of the American academy of political and social science* 627, 184-214.
- Conrad, N. and Patry, M. W. (2012) Conscientiousness and academic performance: A mediational analysis. *International journal for the scholarship of teaching and learning* 6(1), 1-14.
- Cotton, D. R. E., Joyner, M., George, R. and Cotton, P. A. (2016) Understanding the gender and ethnicity attainment gap in UK higher education. *Innovations in education and teaching international* 53(5), 475-486.
- Credé, M., Roch, S. and Kieszczynka, U. (2010) Class attendance in college: A meta-analytic review of the relationship of class attendance with grades and student characteristics. *Review of educational research* 80(2), 272-295.
- Devlin, M. (2013) Bridging socio-cultural incongruity: conceptualising the success of students from low socio-economic status backgrounds in Australian higher education. *Studies in higher education* 38(6), 939-949.
- DiPrete, T. A. and Jennings, J. L. (2012) Social and behavioral skills and the gender gap in early educational achievement. *Social science research* 41(1), 1-15.
- Duckworth, A. L. and Seligman, M. E. P. (2006) Self-discipline gives girls the edge: Gender in self-discipline, grades, and achievement test scores. *Journal of educational psychology* 98(1), 198-208.

- Duru-Bellat, M. (2015) Social inequality and schooling. *International encyclopedia of the social & behavioral sciences (second edition)* 22, 325-330.
- Fonteyne, L., Duyck, W. and De Fruit, F. (2017) Program-specific prediction of academic achievement on the basis of cognitive and non-cognitive factors. *Learning and individual differences* 56, 34-48.
- Furnham, A. and Chamorro-Premuzic, T. (2005) Individual differences and beliefs concerning preference for university assessment methods. *Journal of applied social psychology* 35(9), 1968-1994.
- Furnham, A., Zhang, J., and Chamorro-Premuzic, T. (2005) The relationship between psychometric and self-estimated intelligence, creativity, personality and academic achievement. *Imagination, cognition and personality* 25(2), 119-145.
- Geramian, S. M., Mashayekhi, S. and Ninggal, M. T. B. H. (2012) The relationship between personality traits of international students and academic achievement. *Procedia - social and behavioral sciences* 46(2012), 4374-4379.
- Hakimi, S., Hejazi, E., Lavasani, M. G. (2011) The relationships between personality traits and students' academic achievement. *Procedia – social and behavioral sciences* 29(2011), 836-845.
- Harris, J. A. (2004) Measured intelligence, achievement, openness to experience, and creativity. *Personality and individual differences* 36(4), 913-929.
- Hazrati-Viaria, A., Rada, A. T. and Torabib, S. S. (2012) The effect of personality traits on academic performance: The mediating role of academic motivation. *Procedia - social and behavioral sciences* 32(2012), 367-371.
- Higher Education Statistics Agency (2018) Higher education student statistics: UK, 2016/17 - student numbers and characteristics. <https://www.hesa.ac.uk/news/11-01-2018/sfr247-higher-education-student-statistics/numbers> Accessed 26 April 2019.
- Houle, J. N. (2013) Disparities in debt: Parents' socioeconomic resources and young adult student loan debt. *Sociology of education* 87(1), 53-69.
- Jackson, C. (2003) Motives for 'laddishness' at school: Fear of failure and fear of the 'feminine'. *British educational research journal* 29, 583-598.
- John, O. P. and Srivastava, S. (1999) The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In Pervin, L. A. and John, O. P. (editors) *Handbook of personality: Theory and research*. Volume 2. New York: Guilford Press. 102-138.
- Kappe, R. and van der Flier, H. (2010) Using multiple and specific criteria to assess the predictive validity of the Big Five personality factors on academic performance. *Journal of research in personality* 44(1), 142-145.

Lounsbury, J. W., Sundstrom, E., Loveland, J. M. and Gibson, L. W. (2003) Intelligence, “Big Five” personality traits, and work drive as predictors of course grade. *Personality and individual differences* 35, 1231-1239.

Lüdtke, O., Roberts, B. W., Trautwein, U. and Nagy, G. (2011) A random walk down university avenue: life paths, life events, and personality trait change at the transition to university life. *Journal of personality and social psychology* 101(3), 620-637.

Lukkarinen, A., Koivukangas, P. and Seppälä, T. (2016) Relationship between class attendance and student performance. *Procedia - Social and behavioral sciences* (228), 341-347.

Lundberg, C. A., Schreiner, L. A., Hovaguimian, K. and Miller, S. S. (2007) First-generation status and student race/ethnicity as distinct predictors of student involvement and learning. *NASPA journal* 44(1), 57-83.

Marcela, V. (2015) Learning strategy, personality traits and academic achievement of university students. *Procedia – Social and behavioral sciences* 174, 3473-3478.

Marcenaro–Gutierrez, O., Lopez–Agudo, L. A. and Ropero-García, M. A. (2018) Gender differences in adolescents’ academic achievement. *YOUNG* 26(3), 250–270.

McCrae, R. R. (1996) Social consequences of experiential openness. *Psychological bulletin* 120, 323-337.

McCrae, R. R. and Costa, Jr., P. T. (1987) Validation of the five-factor model of personality across instruments and observers. *Journal of personality and social psychology* 52(1), 81-90.

McCrae, R. R. and Costa, P. T., Jr. (2013) Introduction to the empirical and theoretical status of the five-factor model of personality traits. In Widiger, T. A. and Costa, Jr., P. T. (editors) *Personality disorders and the five-factor model of personality*. Washington, US: American Psychological Association. 15-27.

McCrae, R. R. and John, O. P. (1992) An introduction to the five-factor model and its implications. *Journal of personality* 60(2), 175-215.

Mensah, F. K. and Kiernan, K. E. (2010) Gender differences in educational attainment: influences of the family environment. *British educational research journal* 36(2), 239-260.

Michaelsen, L. K. and Sweet, M. (2008) The essential elements of team-based learning. *New directions for teaching and learning* 2008(116), 7-27.

Noftle, E. E. and Robins, R. W. (2007) Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal of personality and social psychology* 93(1), 116-130.

Ostrove, J. M. and Long, S. M. (2007) Social class and belonging: Implications for college adjustment. *Review of higher education* 30, 363-389.

Poropat, A. E. (2009) A meta-analysis of the five-factor model of personality and academic performance. *Psychological bulletin* 135(2), 322-338.

Public Health England (2017) Health Profile for England: 2017. Chapter 5: inequality in health. <https://www.gov.uk/government/publications/health-profile-for-england/chapter-5-inequality-in-health> Accessed 15 April 2019.

Richardson, M., Abraham, C. and Bond, R. (2012) Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological bulletin* 138(2), 353-387.

Roberts, B. W., Walton, K. E. and Viechtbauer, W. (2006) Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological bulletin* 132, 1-25.

Roth, B., Becker, N., Romeyke, S., Schäfer, S., Krieger, F. and Spinath, F. M. (2015) Intelligence and school grades: A meta-analysis. *Intelligence* 53, 118-137.

Rubin, M., Denson, N., Kilpatrick, S., Matthews, K. E., Stehlik, T. and Zyngier, D. (2014) "I am working-class": Subjective self-definition as a missing measure of social class and socioeconomic status in higher education. *Educational researcher* 43(4), 196-200.

Sherry, A. and Henson, R. K. (2005) Conducting and interpreting canonical correlation analysis in personality research: A user-friendly primer. *Journal of personality assessment* 84(1), 37-48.

Steel, P., Brothen, T. and Wambach, C. (2001) Procrastination and personality, performance, and mood. *Personality and individual differences* 30, 95-106.

Stevens, J. (1986) *Applied multivariate statistics for the social sciences*. Hillsdale, US: Lawrence Erlbaum Associates, Inc.

Sucuoğlu, E. (2018) Economic status, self-efficacy and academic achievement: the case study of undergraduate students. *Quality & quantity* 52(1) 1-11.

Tomula, E. and Çelik, K. (2009) The relationship between the students' academic achievement and their socioeconomic level: cross regional comparison. *Procedia social and behavioral sciences* 1(2009), 1199-1204.

Turner, R. J. and Avison, W. R. (2003) Status variations in stress exposure: Implications for the interpretation of research on race, socioeconomic status, and gender. *Journal of health and social behavior* 44(4), 488-505.

Vedel, A. (2014) The Big Five and tertiary academic performance: A systematic review and meta-analysis. *Personality and individual differences* 71, 66-76.

Von Stumm, S. (2017) Socioeconomic status amplifies the achievement gap throughout compulsory education independent of intelligence. *Intelligence* 60, 57-62.

Walpole, M (2003) Socioeconomic status and college: How SES affects college experiences and outcomes. *The review of higher education* 27(1), 45-73.

Watson, D. and Clark, L. A. (1997) Extraversion and its positive emotional core. In Briggs, S. R., Jones, W. H. and Hogan, R. (editors) *Handbook of personality psychology*. New York: Academic Press. 767-793.

Appendix

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Appendix 1: MacArthur Scale of Subjective Social Status - Adult Version

Think of this ladder as representing where people stand in society. At the **top** of the ladder are the people who are the best off – those who have the most money, the most education, and the most respected jobs. At the **bottom** are the people who are the worst off – those who have the least money, least education, the least respected jobs, or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

Where would you place yourself on this ladder?

Please place a large “X” on the rung where you think you stand at this time in your life relative to other people in the UK.

Source: Adler, N.E., Epel, E.S., Castellazzo, G. and Ickovics, J.R. (2000) Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health psychology*. 19 (6), 586-592.

Appendix 2: Questionnaire Question

Please choose the answer that best describes you.

- ☐ male
- ☐ female
- ☐ other
- ☐ prefer not to say

Appendix 3: The Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please indicate the extent to which you agree or disagree with each statement.

	I see Myself as Someone Who...					
1	Is talkative	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
2	Tends to find fault with others	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
3	Does a thorough job	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
4	Is depressed, blue	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
5	Is original, comes up with new ideas	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
6	Is reserved	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
7	Is helpful and unselfish with others	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
8	Can be somewhat careless	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
9	Is relaxed, handles stress well	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
10	Is curious about many different things	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
11	Is full of energy	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
12	Starts quarrels with others	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
13	Is a reliable worker	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
14	Can be tense	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
15	Is ingenious, a deep thinker	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
16	Generates a lot of enthusiasm	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly

17	Has a forgiving nature	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
18	Tends to be disorganized	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
19	Worries a lot	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
20	Has an active imagination	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
21	Tends to be quiet	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
22	Is generally trusting	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
23	Tends to be lazy	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
24	Is emotionally stable, not easily upset	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
25	Is inventive	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
26	Has an assertive personality	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
27	Can be cold and aloof	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
28	Perseveres until the task is finished	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
29	Can be moody	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
30	Values artistic, aesthetic experiences	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
31	Is sometimes shy, inhibited	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
32	Is considerate and kind to almost everyone	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
33	Does things efficiently	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
34	Remains calm in tense situations	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
35	Prefers work that is routine	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly

36	Is outgoing, sociable	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
37	Is sometimes rude to others	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
38	Makes plans and follows through with them	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
39	Gets nervous easily	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
40	Likes to reflect, play with ideas	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
41	Has few artistic interests	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
42	Likes to cooperate with others	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
43	Is easily distracted	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly
44	Is sophisticated in art, music, or literature	Disagree Strongly	Disagree a little	Neither agree or disagree	Agree a little	Agree strongly

BFI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

<http://pages.uoregon.edu/sanjay/pubs/bigfive.pdf>

Appendix 4: Information and Consent Form

ABSTRACT

This aim of this study is to research whether personality, subjective socio-economic status and demographics (disability and gender) influence academic achievement and attendance. Participation will involve completing an online questionnaire.

DETAILED DESCRIPTION

I am a Third Year Psychology student studying in the Division of Psychology at the University of Bradford. You are invited to participate in my study but before you decide whether you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and discuss it with others if you wish. Contact me via email (j.hentschel@bradford.ac.uk) if

there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. If you do decide to take part, you will be asked to fill out a questionnaire which will explore some demographic information, your subjective socio-economic status and personality traits.

Please be aware that you may only take part in this study if you have completed the module 'Understanding Social Development in the academic year 2017/18. If you have completed a similar module but not this exact one, you will not be eligible to take part. Also, if you have not passed the module in 2017/18, please do not take part in the study.

Before you decide to take part, I would also like to make you aware that a concurrent study is being conducted parallel to this one.

Completing the questionnaire is likely to take about 10-15 minutes, but please feel free to take as much time as you need. By consenting to take part in the research, you are also consenting for the researcher to access anonymised data kept by the university about your attendance and grades for the module "Understanding Social Development", which you completed in your first year. If you do not want to consent to this, please do not take part in this research.

Before you sign up for this study, please check whether there any "Eligibility Requirements" for participating in this study or if any "Preparation" is required prior to taking part.

All the information that is collected from you during this research will be kept secure and any identifying material, such as names and addresses will be removed in order to ensure your anonymity. The research forms part of my undergraduate degree studies and it is anticipated that the research will be written up into a report which will be assessed. However, your anonymity will be ensured, and all the information collected will continue to be kept secure.

If you decide to withdraw your data from the study after participation you can contact me via email (j.hentschel@bradford.ac.uk). Please note that you can do this until **1st March 2019**, after which I will have already analysed the data and the study will be written up.

If you require any further information about the research, please contact me, Johanna Hentschel (j.hentschel@bradford.ac.uk), or my supervisor Dr Peter Branney (p.branney@bradford.ac.uk). Thank you.

Appendix 5: CCLEO Consent Form

You are being invited to contribute data to the Collaborative and Crowdsourced prospective Longitudinal cohort study of Engagement and Outcomes (CCLEO for short). CCLEO was created to meet the need for high quality prospective longitudinal research on the relationships between heutagogy, engagement and learning outcomes. As a collaborative and crowdsourced project developed by University students over time, CCLEO was designed so that it could give them the opportunity to experience being a researcher creating a long-term study as part of their independent study (variously called an Honours Project, Final Year Project or Dissertation. To consent to participate, we ask that you confirm each of the following;

- I agree to have my data collected as part of this study shared in a public data repository (such as the Centre for Open Science, <https://osf.io/>). Sharing data in public repositories improves the transparency of science and is how CCLEO will enable longitudinal analyses.

- I agree that the University of Bradford can take the following steps to anonymise my data;
 - Using a CCLEO code as a substitute for your Unique Student Identification
 - Your Unique Student Identification code will not appear in the data that is shared with this student
 - Your Unique Student Identification code will not appear in the data that is shared in the public data repository
- If I consent to future studies, I acknowledge that the CCLEO code will allow my data to be tracked over time.
- I acknowledge that I could be identified. If, for example, someone knew some of the information in the data (such as my grades) there is a chance they could search the data and identify me.
- I acknowledge that I will be asked for specific information from my student record, such as the attendance and grades for a module. Even if I consent to partake in this study, I can decline to provide any of this information.

Appendix 6: Canonical Correlation Analysis SPSS Syntax

MANOVA Grade Attendance **WITH** Extraversion Agreeableness Conscientiousness
 Neuroticism Openness SSS Gender
 /**DISCRIM** all **alpha**(1)
 /**print=SIGNIF**(**MULTIV EIGEN DIMENR**).