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The Relationship between Personality and Learning in Visual Art

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ABSTRACT The purpose of the study was to determine whether a relationship exists between personality traits and the ability to learn visual art. The research conducted on a convenience sample operationalized art learning by subtracting the score of the first artwork from that of the eighth and last artwork per student, over a one year period thus creating the construct "difference score". All artworks were independently evaluated by external moderators. This difference score for art learning was statistically related to the personality traits of the participants as measured by the Basic Traits Inventory. One-tailed hypotheses were tested at a 0.05 level of significance. Control over confounding variables was obtained by building them into the design as independent variables. Results of regression analyses indicate an inverse relationship between the trait agreeableness and art learning and a positive relationship between conscientiousness and art learning. Unexpectedly the study indicated that more "learning" had taken place among females than among males. All results are discussed and informed by literature.

INTRODUCTION

More than 150 years ago, the University of Vermont (1853) became the first higher education institution to give recognition to art as an official subject and made it part of its curriculum. The teaching of art in higher education occurs primarily on a one-to-one basis. Students learn to improve their artistic skills as they are guided by the art teacher. Learning in art, therefore, partially depends on the successful interaction between student and teacher, involving different personality types. The objective of this study was to determine the relationship between particular personality traits and successful learning in art. Knowledge about the relationship would enable art teachers to adapt and change their teaching strategies and the learning environment to accommodate students with different dominant personality traits.

Pletcher (1972) indicated the need for research into the relationship between art learning and personality as far back as 1972, but no current research could be found linking personality to learning in art. There is, however, extensive research on the relationship between personality and art preference, aesthetic experience and prediction of performance in general (Child and Schwarz 1967; Favre 1981; Diseth 2003; Furnam and Chamorro-Premusic 2004).

In order to investigate the relationship between art learning and personality, the researchers first needed to operationalise the construct *art learning*. The study was designed to measure art learning by assessing the progress made in a student's artistic ability and skills and in the student's understanding of art principles (formal aspects such as line, tone, composition and proportion evident in the works of art) over a period of one year. To assess art learning, a panel of independent art experts evaluated the first and the last of eight artworks per student as completed over a one- year period. A set rubric was used and the difference score for each student was calculated. The difference score (score for last drawing – score for first drawing) thus calculated constituted the variable *art learning*. Art learning was then related to each student's dominating personality trait as determined by a personality inventory which differentiated between five types of personality traits, namely neuroticism, openness to experience, conscientiousness, extraversion and agreeableness, as described in the next section.

Personality Test

The personality test employed by the study was the South African version of the NEO Five-Factor Inventory by McCrae and Costa (2004),

which according to Zhang (2002) has for decades proven itself to have good reliability and validity. The South African version of the inventory was used because it has been found to be more accommodating of students with diverse ethnicity, language proficiency skills and previous education level. The inventory, called the Basic Traits Inventory – Shortened: Research (BTI-S) version, is self-reporting and is composed of 77 statements which assess the Big Five personality traits. The BTI-S was developed by Taylor and De Bruin (2006: 70), who stated that the questionnaire showed: "...satisfactory reliability coefficients for each of the five factors."

The Big Five personality traits are neuroticism, openness to experience, conscientiousness, extraversion and agreeableness (McCrae and John 1992; Zhang and Akande 2002; Duff et al. 2003; Waldman et al. 2004; Burton and Nelson 2005; Dollinger et al. 2008).

The five factors are presented be means of their bipolar descriptors.

Table 1 outlines the personality traits as constructed by the developers of the Basic Traits Inventory- Shortened (Taylor and De Bruin 2006).Hypothesising which traits are significantly related to art learning was complex because of the paucity of literature on the subject. Intuitive notions may associate certain personality traits with artistic ability but such notions are conjectural and not empirically founded. Because art learning as an academic discipline is the focus of this study, a discussion of each of the five personality traits and their possible relationship either to art making, creativity, aesthetic values, desire for innovation and/or academic achievement is presented.

Extraversion

According to various authors, extraverted individuals have an inclination to experience new places and will fearlessly approach challenges with confidence. They will create artworks for others rather than for personal use and will be much interested in people and events in the outer world (De Raad 1945; Handley 1973; Jarret 1988; De Young et al. 2005; Zhang 2006). Introverts prefer to be alone, are less ambitious and are reflectors who keep to themselves, create works of art for themselves and are more interested in their own psyche than the outer world (De Raad 1945; Handley 1973; Jarret 1988; Heinstrom 2000).

In two of the few studies that relate personality to art judgement and the ability to create art, Furnham and Chamorro-Premuzic

Table 1: Bipolar qualities of the big five personality factors

Extraversion and Introversion (Burton and Nelson 2005; Thoms et al. 1996).	*Extroversion* Sociable, assertive, talkative, optimistic and outgoing.	*Introversion* Inert, considerate and antisocial.
Neuroticism and Emotional Stability (Zhang 2002; Trapmann et al. 2007).	*Neuroticism* Experience high levels of anxiety, depression, anger, humiliation or are in general insecure.	*Emotional Stability* Represents the way a person deals, controls, confronts, maintains calm, and copes with stress related issues.
Conscientiousness (Zhang 2006; Burton and Nelson 2005; Furnham and Avison 1997).	*High Conscientiousness* Reliable, careful, responsible, methodical, organised, achievement-oriented and persevering.	*Low Conscientiousness* Display a lack of ability to set and reach goals; lazy and careless.
Openness to Experience (De Young et al. 2005; Diseth 2003; Furnham and Walker 2001; Zhang and Akande 2002).	*High Openness to Experience* Imaginative, creative, interested in art, curious and open-minded.	*Low Openness to Experience* Prefer familiarity and more conventional behaviour and ideas.
Agreeableness (Waldman et al. 2004; De Raad 1945).	*High Agreeableness* Well-mannered, considerate, good-natured, trusting, flexible, open-minded and polite.	*Low Agreeableness* Displays high levels of egocentrism.

(2004) and Furnham and Avison (1997) argue that extraverts as opposed to introverts are internally under-aroused and constantly in search of more external stimulation. The authors stated that this observation could explain their finding that extraversion is positively related to the production of surreal paintings rather than more traditional paintings. Conversely, introverts will inhibit excitement and will not function well if the environment is over-stimulating (Furnham et al.1999).To reach their full potential extraverted individuals need to actively seek and experience external stimulation (Furnham et al. 1999). The authors conclude that extraverted individuals will learn better when they are allowed to share their ideas with others rather than be forced to work on their own.

Komarraju et al. (2009) found that sociability as an aspect of the extraverted personality has an important influence on academic achievement.

In the current research setting, art learning was promoted through social learning with structured class critique sessions. Extraverted students were therefore expected to be externally stimulated by the art class. A positive relationship between extraversion and learning in art was thus hypothesised.

Neuroticism

Neuroticism is described by the following terms: tiredness, feelings of guilt, moodiness, and aggressive behaviour. Highly neurotic students are emotionally labile and find it difficult to learn (Handley 1973). Various authors describe neurotic students' inability to concentrate and their indecision, fear, and lack of motivation when confronted with new or difficult tasks as leading to low self-efficacy (Handley 1973; Thoms et al. 1996; Zhang 2002; Waldman et al. 2004). The lack of confidence in their own ability to master the subject matter results in the adoption of the much faster surface learning approach, which ultimately causes the students to experience less stress (Chamoro-Premuzic et al. 2007). These observations agree with findings by Chamoro-Premuzic et al. (2006). Their evidence indicates that neuroticism is negatively related to general knowledge. Eysenck (1993) posits that anxious peoples' creativity may be inhibited by stress, the presence of other people and the fear of assessment or critique, and consequently anxious people will be unable to perform according to their abilities. In a more positive light, Whitesel (1984) states that artists who experience high levels of anxiety and aggression will find it therapeutic when these emotions motivate the creation of artworks. However, the researchers hypothesized a negative relationship between neuroticism and art learning.

Conscientiousness

Conscientiousness is the best studied personality trait and has been found to be positively related to academic achievement (Handley 1973; Zhang 2003; Burton and Nelson 2005; Trapmann et al. 2007), all types of academic motivation (Hart et al. 2007; Bipp et al. 2008; Komarraju et al. 2009), self-regulated learning (Bidjerano and Dai 2007) and job performance in general (Trapmann et al. 2007). McCrae and John (1992) state that conscientious individuals will manage and control their behaviour by applying their conscience and diligence.

Conscientious individuals perform well academically because of good class attendance, a hardworking attitude and good organisational skills (Dollinger et al. 2008). Duff et al. (2003) agree, and ascribe conscientious individuals' ability to perform academically to their use of a strategic learning approach. Even though conscientiousness is negatively related to creativity and sensation-seeking (Furnaham and Chamorro-Premuzik 2004) it can be expected that conscientious art learners will be able to improve their art creating-ability because of their goal-directed learning approach (Furnham and Avison 1997; Furnham and Walker 2001). The lack of creativity links conscientiousness to representational art rather than abstract art (Furnham and Walker 2001). The hypothesis was formulated that conscientiousness would be positively related to art learning.

Openness to Experience

The empirical and theoretical contributions of Furnham and Avison (1997) Rawlings et al. (2000), Furnham and Walker (2001) and Thoms et al. (1996) indicate that sensitivity to creativity and interest in seeking new ideas and sensory stimulation constitute the strongest factor of openness to experience. Furnham and Chamorro-Premuzic (2004) provide compelling evidence which indicates that openness is significantly

related to interest in art, art activities and art knowledge which are collectively described as "art experience" (Furnham and Chamorro-Premuzic 2004). Although art experi-ence might incorporate art learning, no measurement of the construct occurs in the research.

Researching personality and the appreciation of art, Child and Schwartz (1967) identify and describe a personality trait similar to openness which they refer to as "sensitivity to aesthetic values". They define the trait by describing a type of person with a questioning mind and with a need to constantly search for challenging, multifaceted and complex experiences. Rawlings et al. (2000) agree with this description by indicating that "aesthetics" or "aesthetic judgements" are the most important facet of openness as a personality trait. The researchers use the term "sensation seeking," and similar to Child and Schwartz define it as a "...tendency to seek novel and intense sensory stimulation..." (Rawlings et al. 2000: 554). More than fifty years ago Munsterberg and Mussen (1953) compared the personality characteristics of non-artists to artists and found that artists, significantly more than non-artists, preferred to spend their spare time in both active and passive creative activities such as art, attending performances, visiting new places and going to galleries. Considering the analogies and findings mentioned above and the close relationship between art, artists, creativity and openness, it seemed reasonable to expect that this personality factor would be positively related to learning and achievement in art.

Agreeableness

Agreeableness as a personality trait is associated with being humanitarian (McCrae and John 1992) or as being good with interpersonal relationships (De Raad 1945), and agreeable persons should be understood as individuals who are trustworthy, compliant, compassionate and sympathetic towards others. De Raad (1945) remarks that this trait has not been investigated much even though terms such as love, hate, kind-heartedness, and helpfulness form part of the dimensions of agreeableness. Thoms et al. (1996) argue that the positive relation between agreeableness and self-efficacy lies in the individual's ability to work well with others in order to solve problems and in consideration of another person's ideas (Zhang 2002).

Trapmann et al. (2007) came to the conclusion that, in spite of the low correlation between agreeableness and academic achievement at college level, the result should not be generalised. The studies done on a student sample of an introductory history of philosophy course (Diseth 2003) and on social science undergraduate students (Duff et al. 2003) indicate a negative correlation between agreeableness and academic achievement. In contradiction to this, Chamorro-Premuzik et al. (2007) found a positive correlation between high agreeableness and the strategic or achieving learning approach, while low agreeableness indicated the adoption of a surface learning approach. Burton and Nelson's (2005) similar findings indicate a significant negative relationship between agreeableness and the surface learning approach of distance education students. Zhang (2003) disagrees with the statements above and validate her findings by arguing that the negative relationship between the achieving learning approach and agreeableness is evident in the personality descriptors: unselfishness, compassion and helpfulness. The researcher contends that it is difficult to imagine why individuals with these types of characteristics would need to compete with others. These contradicting findings and the lack of relevant and sufficient evidence on the relationship between agreeableness and learning in art clearly complicates the task of stating an accurate hypothesis.

In accordance with the findings above which suggest a negative relationship between agreeableness and achievement, a negative relationship between learning in art and agreeableness as a personality trait was predi-cted. The relationship was expected to be negative, partly, because the drawing syllabus used in this study did not allow for much practical group work and rather aimed to develop the individual's art creating ability in preparation for life after school. This meant that a student's low agreeableness would be enforced by the art learning situation. Furnham et al. (2008) supports this view with the finding that low agreeableness is also linked to creativity as is openness and extraversion, but to a lesser extent.

METHOD

Nested within a post-positivistic paradigm, the research was conducted using a quantitative, non-experimental multivariate design. The relationship between art learning and the independent variables (extraversion, neuroticism, conscientiousness, openness to experience and agreeableness) was statistically analysed by means of multiple linear regression. It is worth noting that to allow for the possibility of a student having an exceptional art creating ability, the beginning score (Total score 1) was put into the formula as an independent variable. Control of the confounding variables (age, gender, previous exposure to art, ethnic group, highest school grade, and repetition of the course) was built into the design by measuring and analyzing their relationship to art learning as independent variable (Kerlinger 1986; Maas 1998; McMillan and Schumacher 2006).

Table 2 summarizes the variables to facilitate interpretation of the design.

Table 2: Dependent, independent and confounding variables

Dependent variable	*Independent variables*	*Confounding variables*
	Total score 1	Age
Art difference score: (Total score 1- Total score 2)	Extroversion (Extro)	Gender
	Neuroticism (Neuro)	Ethnicity (Ethnic)
	Conscientiousness (Consc)	Grade obtained (Grade)
	Openness to experience (Open)	Previous exposure to art (Art)
	Agreeableness (Agree)	Repeating the course (Repeat)

The Test Group

A convenience sample of 43 entry–level students from a South African Further Education and Training College was used. Of the 43 students who participated in this study, 30 students were male (76.7%) and 13 female (23.3%). Most students (22) were Sesotho speaking (51.2%), followed by 11 Tswana speaking students (25.6%), 4 Xhosa and 4 English-speaking students (9.3% each) and l2 Zulu speaking students (4.6%). Language was an indication of ethnicity and suggested student diversity.

We note that, at the time of this study and as part of the minimum requirements, students could enrol at the Further Education and Training College with a minimum school grade 10 passed or otherwise be at least 16 years of age and older. This explains how students with highest school grades 6 or 9 could enrol for the Art course. Of the 13 students who had had previous experience in art, 6 were repeating the entry-level course.

Data Collection

Written informed consent was obtained from participants as well from the College council, Campus manager and the Head of the Art department after which personality inventories were completed. Evaluation of the first and last art work of each student was done by five independent art experts and the marks were recorded. Administration of the the Basic Traits Inventory- Shortened (Taylor and De Bruin 2006) was completed at the end of the year. Biographic information (age, gender, ethnicity, grade obtained, previous exposure to art and repeating the course or not) was simultaneously obtained from a biographic questionnaire.

Data Analysis

Data were analyzed by the Department of Computer Services of the University of the Free State using the SAS software.

The primary objective of the statistical analysis was to assess the association between the difference score (mark for student's last drawing – mark for student's first drawing) as dependent variable, and five binary personality factors of the student as independent variables plus the beginning score (Score1), while adjusting for the following potential confounders: age, gender, previous exposure to art, ethnic group, highest school grade, and repetition of the course.

This was done by stepwise multiple regression whereby, one at a time, that independent variable which was least significantly associated with the outcome was removed from the model, providing that the P-value was at least 0.1.

Table 3 indicates that the variables conscientiousness, agreeableness and gender are most closely associated with the dependent

Table 3: Multiple linear regression and stepwise selection of predictors of difference score

Model	*Independent variables in the model*	*Variable removed from the model*	*F-statistic (for variable to be removed)*	*Degrees of freedom*	*P-value*
1	Extro, neuro, consc, open, agree, age, total score 1, gender, art, ethnic, grade, repeat	Art	0.01	1,24	0.9252
2	Extro, neuro, consc, open, agree, age, total score 1, gender, ethnic, grade, repeat	Total score 1	0.05	1,25	0.8303
3	Extro, neuro, consc, open, agree, age, gender, ethnic, grade, repeat	Age	0.89	1,26	0.3537
4	Extro, neuro, consc, open, agree, gender, ethnic, grade, repeat	Repeat	1.06	1,27	0.3114
5	Extro, neuro, consc, open, agree, gender, ethnic, grade	Grade	1.44	4,28	0.2477
6	Extro, neuro, consc, open, agree, gender, ethnic	Ethnic	1.72	4,32	0.1706
7	Extro, neuro, consc, open, agree, gender	Open	0.15	1,36	0.7052
8	Extro, neuro, consc, agree, gender	Neuro	1.21	1,37	0.2777
9	Extro, consc, agree, gender	Extro	2.05	1,38	0.1605
10	Consc, agree, gender	Non-Final Model			

variable difference score. A further multiple linear regression of difference score against the abovementioned three variables was conducted.

Table 4: Multiple linear regression of difference score against predictor variables selected in final model of stepwise regression

Factor	*Mean square*	*F-statistic*	*df*	*P-value*	*Regression coefficient estimate*	*SE*
Consc	462.0	5.87	1	0.0202*	5.73	2.37
Agree	1321.2	16.8	1	0.0002*	-7.26	1.77
Gender	518.9	6.59	1	0.0142*	8.55	3.33

Table 4 summarizes the results of the final model, a multiple linear regression analysis, of the difference score for art learning against the three variables, namely conscientiousness, agreeableness and gender. All three variables are significantly related to art learning as indicated by the p-values.

RESULTS

The multiple linear regression with stepwise selection of predictors (Table 3) indicated conscientiousness, agreeableness and gender, the last variables remaining in the model, as possible predictors of the dependent variable difference score. The final model in the stepwise regression (Table 4) indicates that conscientiousness, agreeableness and gender are highly related to art learning as defined by the difference score

The regression coefficient estimate of the relationship between art learning and conscientiousness is positive implying that the more conscientiousness a person is, the more likely he is to benefit from learning in art. Con-versely, the regression coefficient estimate of agreeableness is negative indicating an inverse relationship between agreeableness and art learning. This means that the lower a person scores on the measurement of the trait agreeableness the more he/she is likely to benefit from art learning.

It is important to note that the confounding variable "gender" is associated with art learning. An analyses of the mean scores of males and females reveal females (14.10) had a higher difference score than the males (9.24). It is also essential to note that none of the other confounders (age, ethnicity, grade obtained, previous exposure to art and repeating the course) were related to learning in art.

DISCUSSION

Conscientiousness

This study indicates that conscientiousness is significantly related to learning in art in a multivariate model adjusting for gender and agreeableness. The literature conjectures that conscientiousness is negatively associated with creativeness due to the qualities of prudence and carefulness. It appears, however, as if the qualities associated with the personality trait of conscientiousness, such as goal directedness and being methodical and disciplined, advance art learning as was stated in the hypothesis.

Agreeableness

As hypothesized, the analysis of data indicates agreeableness is inversely related to art learning. This signifies that people who score low on agreeableness achieve more learning in art or make better advancements in their art creating ability. Such people are said to be egocentric, insensitive and self-centred. It may be argued that in this particular sample individuals focused on their art learning to the detriment of personal relationships and interaction in the group.

A different interpretation may be had by examining the trait of agreeableness more closely. Apart from the characteristics stated above, Heffner (2002: 1) states that persons who test low on agreeableness are "…argumentative, sceptical and strong-willed". Similarly Gardiner and Jackson (2010) as well as Graziano et al. (1997) indicate that individuals who test low on agreeableness are competitive. It may be this facet of agreeableness (strong-willed and competitive) that is a determining factor in the result obtained. One could presume that strong-willed and competitive persons would persevere in the effort to acquire art skills and learn art techniques. It was also indicated that persons high in conscientiousness are achievement–oriented and have perseverance. This might mean that conscientiousness and agreeableness both have the facet perseverance in their factor structure. It is evident that a follow-up study with a larger, randomly selected sample is needed before generalizations of this kind can be made, especially if the validity of factor analysis of traits as they appear in the scale is assumed.

Gender

As stated above, an analysis of the descriptive data of the study indicates that unexpectedly females have a higher difference score pertaining to learning in art than males. The possibility that females were more consci-entious than males is ruled out by comparing their mean score for the trait conscientiousness, which was 0.64 for females and 0.60 for males. An explanation for this result is therefore not attempted. This was an unanticipated result and could not be substantiated by current research findings.

CONCLUSION

The results of this research reveals that the personality traits of high conscientiousness and low agreeableness are related to art learning. The research also indicates that females gain more from art learning classes than males. Clearly more research, preferably using random samples, on this topic is needed. Alternatively convenience sampling with larger groups should be considered.

The question arises as to whether art teachers should change their teaching strategy to accommodate different personalities and whether such changes would help students to learn, discover and understand art better. More research is needed in this regard. Of note, half a century ago researchers were interested in the personality characteristics of first-year college art students and stated that it is necessary for an art teacher to explore all possible means of guiding artistically talented persons.

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