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## **What drives consumer automobile choice? Investigating personality trait predictors of vehicle preference factors**

Peter J. O'Connor<sup>a</sup> Jordan Moss<sup>ac</sup> Jack Adams<sup>a</sup> Craig Matemberere<sup>a</sup> Maria Kaya<sup>ab</sup>

<sup>a</sup> School of Management, QUT Business School, Queensland University of Technology, Brisbane, Australia

<sup>b</sup> School of Advertising, Marketing and Public Relations, QUT Business School, Queensland University of Technology, Brisbane, Australia

<sup>c</sup> School of Medicine, University of Sydney, New South Wales, Australia

## Abstract

In this study we investigated whether the big five traits and narcissism are associated with consumer preferences for different car features. Using a representative sample of 1000 Australian consumers, we determined the factor structure of a wide range of automobile preferences before exploring their associations with a set of demographic variables, the big five traits (and their facets), and trait narcissism. We found that consumer car preferences reflect two high order dimensions of ‘style and performance’ (7 sub-factors) and ‘safety and practicality’ (4 sub-factors) and that numerous demographic variables and personality traits had small to moderate linear relationships with multiple dimensions of automobile preferences. Broadly consistent with a set of hypotheses based on life history theory, we found that consumers who are young, extraverted, and narcissistic tend to value style and performance in automobiles, whereas consumers who are older, agreeable, and conscientious tended to value safety and practicality. While no overt effects of openness were found, different openness facets were found to associated positively and negatively with style and performance.

*Keywords:* automobile preferences, big five, narcissism, life history theory, consumer behavior.

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## 1. Introduction

Why do people prefer, and ultimately choose to purchase cars with certain features? Given the wide range of automobiles available to consumers, and the even wider range of car features impacting their purchasing decisions, the answer to this question has clear implications for both marketers and consumers. However surprisingly, relatively few studies have sought to address why people choose specific cars, and why people vary in their preferences for different car features. While some studies have linked vehicle qualities relating to practicality, performance, safety and style to consumer adoption and use (Bhat, Sen, & Eluru, 2009; Geller, Winett, & Everett et al, 1982; Golob, Bunch, & Brownstone, 1997; Kitamura, Akiyama, Yamamoto, & Golob, 2001; Mannering & Winston, 1985; Manski & Sherman, 1980; Mohammadian & Miller, 2003; Potoglou, 2008) only a handful of studies have examined whether, and how, individual differences in car choice can be linked to individual differences in personality traits. Given that the big five traits have been shown provide incremental validity in predicting consumer behavior broadly (beyond demographics) (Sandy, Gosling, & Durant, 2013), in this study we examine how such traits, along with narcissism, are associated with consumer preferences for different car features.

Choo and Mokhtarian (2004) conducted one of the earliest studies on personality traits and automobile preferences. They examined traits they termed ‘adventure seeker’, ‘loner’, ‘organizer, and ‘calm’ on participant choice of car type and found that calm people showed a preference for minivans, while organisers tended to prefer mid-sized cars. They reported no effects of adventure seeker and loner. In a more comprehensive study, Šefara, Franěk, and Zubr (2015) examined whether a brief measure of the big five was associated

with a range of car characteristics. They reported some small but significant associations between the big five and preferences regarding car body types. Specifically, extraversion predicted a preference for sports cars and cars with a distinctive appearance; agreeableness negatively predicted preference for hatchbacks; neuroticism positively predicted a preference for estates and negatively predicted a preference for sedans; openness predicted a preference for sports cars and cars with hybrid engines or electric fueling systems; conscientiousness had no significant effect on body type preferences. More recently, in exploring why individuals who drove high-status cars tended to have a disregard for safe driving practices and traffic laws, Lönnqvist, Ilmarinen, & Leikas, (2020) found that disagreeable men were more likely to own luxury, high-status vehicles and break laws. Conscientious individuals were also found to be more likely to own high status vehicles, but not necessarily break laws.

While the aforementioned studies support the use of trait level predictors, they were limited either in terms of their operationalization of personality traits and/or car preferences. Notably regarding the latter, the studies tended to adopt narrow operationalization's of car features, in terms of primarily body type preference (Šefara et al., 2015), or vehicle type (Choo & Mokhtarian, 2004). Importantly, none of the studies considered a comprehensive, *broad* set of features individuals consider (or can potentially consider) when selecting a vehicle (e.g. style, performance, safety, practicality etc.). To overcome this limitation, in the current study, we initially explored the factor structure of automobile preferences, based on a comprehensive item pool of features individuals might consider when considering purchasing an automobile. We then sought to link the resultant car preference dimensions to consumer demographics, the big five traits and facets, and narcissism using a series of hierarchical regression analyses.

### 1.1. Life history theory and personality traits

In linking personality traits to car preferences, we draw from life history theory (LHT), which is a midlevel evolutionary theory that describes how organisms, in the face of trade-offs, allocate their time and energy into life tasks to maximize their fitness (Figueredo, Vasquez, Brumbach, & Schneider, 2004; Bowlby & Gibson, 2020). LHT divides life tasks into two opposing categories of *somatic efforts* (i.e. devoted toward the growth and maintenance of self) and *reproductive efforts* (i.e., devoted toward mating and/or parenting; Ellis, 2004). Optimal trade-off strategies vary throughout a lifetime and depend on the environmental pressures (e.g. food availability, predation) present at any given moment (Creighton, 2005; Cowl & Covich, 1990; Kaplan, Hill, Lancaster, & Hurtado, 2000). Although initially focusing on between-species comparisons, LHT has been elaborated to describe within-species variation, including humans.

As a species, humans were initially thought to primarily evince a slow life strategy: humans have long gestational, maturational periods and life spans, few offspring, high parental investment (Charnov & Berrigan, 1993; Promislow & Harvey, 1990). However, research indicates life history strategies vary in humans also. Slow life history strategies have been associated with stable environments during childhood (Griskevicius et al, 2013), secure attachment patterns (Olderbak & Figueredo, 2009), long-term strategizing and increased socioeconomic status (Griskevicius, Delton, Robertson, & Tybur, 2011). In contrast, harsh and/or unpredictable environments encountered as a child contribute to the adoption of a fast life history strategy (Brumbach, Figueredo, & Ellis, 2009; Ellis, 2004; Griskevicius et al, 2013; Laran & Salerno, 2013; Templer, 2008). Individuals who adopt a fast life history strategy tend to experience an earlier onset of menarche, higher promiscuity, more offspring, impulsivity, and social deviance, including criminality and aggression (Brumbach et al., 2009; Figueredo et al., 2004). In essence, LHT is a model describing how certain personality traits cluster in a non-random fashion to respond to environmental pressures (Rushton, 1995).

Colloquially - and of relevance to the current study - it accounts for why some people live the fast life of “fast money, fast cars, fast sex” whereas others opt for the slow life of hard work, safety, and responsibility.

Early research into the link between the big five traits and life history strategies linked high openness, conscientiousness, extraversion, and agreeableness to a slow life history strategy and neuroticism to a fast life history strategy (Figueredo et al., 2004). However, more recent research has shown that extraversion and openness appear to have components of both a fast life and a slow life strategy. Some researchers have argued that warmth and gregariousness are related to slow life history theory, while sensation seeking, and dominance striving are both related to a fast life. They have also argued that that the intellectual components of openness relate to a slow life strategy, while the imagination components relate to a fast life strategy (Del Giudice, 2012, 2014). However, Manson (2017) showed that after controlling for the effects of other big five dimensions, extraversion did not predict life history strategy. They also showed that openness to experience was either unrelated to life history strategy or indicative of faster life history strategy; however, on a facet level extraversion was linked to both a fast life history strategy and slow life history strategy; meaning results supported Del Giudice (2012, 2014) contention that openness and extraversion have components that related to both slow life history strategy and fast life history strategy.

In addition to the big five, we focus on trait narcissism as a predictor of car preference factors. Like the big five, trait narcissism has been studied in the context of LHT, but somewhat surprisingly, has not been explicitly linked to linked to a fast life strategy (see Jonason et al., 2017; Jonason, Koenig, & Tost., 2010). Nevertheless, narcissism has been related to consumer behavior on a wide variety of products (Martin, Jin, O'Connor, & Hughes, 2019) and shown to have incremental validity beyond the broad personality traits in

predicting consumer behavior (Pilch & Górnik-Durose, 2016). The relevance of narcissism in predicting car preferences also aligns with prevailing assumptions regarding features different people prefer in cars (i.e. that narcissists are drawn to loud and flashy automobiles).

Applying LHT to consumer behavior, it follows that features individuals seek out in products will relate to their life history strategy. We suggest that those with slow life strategies will seek out products (e.g., automobiles) that are compatible with a ‘slow life’, i.e. those conducive with long term strategizing, stability and safety. On the contrary, we suggest those with a fast life strategy will seek out products (e.g. automobiles) enabling a ‘fast life’, i.e. those conducive with providing sexual attention (see Connor, Spark, & Kaya, 2020), competitiveness, aggression and reduced empathy. We think that these effects will be particularly pronounced with automobile preferences, because automobile purchases are generally long term, costly, and play a major role in individuals’ lifestyle and life strategy. Given that life history strategy theoretically contributes to variation in big-five personality traits and narcissism, we hypothesize that traits – and their facets - associated with slow life strategies (i.e. high openness, high agreeableness, high conscientiousness) will be associated with car preferences relating to reliability and safety (H1), whereas traits associated with fast life strategies (i.e. high extraversion, low agreeableness) will be associated with speed and performance (H2). Despite not being linked to fast life history strategies in previous studies, we hypothesize that narcissism will be associated with car preferences related to speed and performance (H3).

## 2. Method

### 2.1. Participants and procedure

Our final sample included 1000 Australian consumers (52% women, 48% men) recruited using PureProfile. The mean age of participants was 46.39 (range 18-87). The majority of



participants had at least a high school education (99%) with approximately half (50.4%) having some form of tertiary education. More than half of the participants reported having more than one child (53.4%). Most participants owned an automobile and the median sum participants paid for their most recent automobile purchase was between 25,000 and 30,000 Australian Dollars. Most participants (90.8%) indicated that the type of car they drive is at least slightly important to them (based on options ranging from ‘not at all’ to extremely important). Participants completed an online Qualtrics questionnaire which they generally finished within 10-15 minutes. We used a strict set of criteria to identify poor quality responders/speeders and removed all data from 107 respondents who failed these checks.

## 2.2. Measures

### 2.2.1. The big five traits

The Big Five Inventory 2 (BFI-2) (Soto & John, 2017) was used to measure the big five traits and respective facets as follows; openness (intellectual curiosity, aesthetic sensitivity, creative imagination), agreeableness (compassion, respectfulness, trust), extraversion (sociability, assertiveness, energy level), conscientiousness (organization, productiveness, responsibility), and neuroticism (anxiety, depression, emotional volatility). Participants responded to 60 items (e.g. “I am someone who... is outgoing, sociable”) on a 5 point Likert scale ranging from “disagree strongly” to “agree strongly”. Cronbach’s alpha for the big five scales ranged from .77 to .89.

### 2.2.2. Narcissism

Narcissism was measured using the four items from the dirty dozen (Jonason & Webster, 2010). Participants responded to items (e.g. “I tend to want others to admire me”)

on a 5 point Likert scale ranging from “strongly disagree” to “strongly agree”. Cronbach’s alpha for narcissism was .87.

### 2.2.3. Car Preferences Questionnaire

To assess a broad range of automobile preferences in consumers, we compiled a list of 49 discrete preferences consumers might consider when purchasing an automobile. To ensure our list was comprehensive, we conducted multiple interviews with groups of consumers prior to compiling the list, asking them to share what features they look for, and value, in automobiles. Nominated features included things such as: low purchase price, high retained value, good acceleration, large size, leather seats, modern technology, uses unleaded fuel, has a sporty appearance, is popular amongst consumers, has a powerful engine, is safe, is regarded as high status etc. Synonyms and/or phrases referring to the same features were then removed. The features were then converted into a questionnaire where participants were asked to rate how much they value each of the 49 discrete features from 1 (“this feature/characteristic is not important to me”) to 7 (“this feature/characteristic is very important for me and a major factor I look for when purchasing a motor vehicle”).

## 3. Results

### 3.1. Exploratory Factor Analysis

Prior to exploring hypothesized relationships between personality traits and car preference factors, we conducted an exploratory factor analysis (EFA) (principal axis factoring, oblique rotation) to explore the factor structure of the 49 discrete car preferences. We decided to retain 11 interpretable factors which collectively explained 66% of variance in the original 49 items. While 9 factors had eigenvalues above 1, the further two factors were

only marginally below this cut-off (.96, .90) and were retained because they represented meaningful factors. Most items loaded on one primary factor at .5 or above.

We then conducted a second EFA (principal axis factoring, oblique rotation) on the 11 extracted factors to explore a possible higher order factor structure. This second EFA revealed two clear higher-order factors (both eigenvalues  $> 2$ , third eigenvalue  $< 1$ ) that collectively accounted for 64% of the variance in the lower-level factors. Higher-order factors were positively correlated ( $r = .30$ ). All 11 factors loaded above .4 on respective higher-order factors (see Table 1). The resultant higher-order factor structure is summarized in Table 1. Based on the two EFA's composite variables were calculated to represent participant scores on lower and higher order car preference dimensions.

### 3.2. Trait Predictors of automobile preferences

The correlations between the 15 BFI-2 facets and car preference factors are summarized in table 2. This table indicates that all BFI-2 facets and narcissism are significantly correlated with multiple car preference dimensions in consumers. The traits most consistently correlated with a set of car preferences include agreeableness, conscientiousness, and narcissism.

We next conducted a series of 4 hierarchical regression analyses to investigate how BFI-2 traits and facets, as well as narcissism, are uniquely associated with the two higher order car preference factors. In our first two regression analyses we examined whether BFI-2 traits and narcissism collectively and uniquely predict style and performance, and safety and reliability. In our second 2 regression analyses we replicated these analyses but at the facet level. In each analysis participant age, gender, marital status (not married vs married/de

facto), income, and number of children were entered in the first step, big five traits/facets in the second step and narcissism in the third step. Results are summarized in tables 3 and 4.

Both tables indicate that personality traits can explain significant, unique variation in the two higher order car preference dimensions. Not surprisingly, the models with BFI facets collectively explained more variance in car preference dimensions than those with the BFI traits, however the difference was only modest (17% vs 15% for safety and practicality and 15% vs 11% for style and performance). For safety and practicality, the strongest predictors were (female) gender ( $\beta = .19, p < .001$ ), (older) age, ( $\beta = .18, p < .001$ ) conscientiousness ( $\beta = .15, p < .001$ ), agreeableness ( $\beta = .10, p = .006$ ), anxiety ( $\beta = .16, p < .001$ ), and narcissism ( $\beta = .14, p < .001$ ). This was largely consistent with H1, with the exception that openness was not a predictor. For style and performance, the strongest predictors were (male) gender ( $\beta = -.10, p < .001$ ), age ( $\beta = .25, p < .001$ ), extraversion ( $\beta = .21, p < .001$ ), (low) compassion ( $\beta = -.15, p < .001$ ), and narcissism ( $\beta = .41, p < .001$ ). These findings were consistent with H2 and H3. Interestingly, trait openness was not a significant predictor of style and performance, however two of its facets were significant predictors in opposing directions: low intellectual curiosity ( $\beta = -.12, p < .001$ ) and high aesthetic sensitivity ( $\beta = .12, p < .001$ ). Overall, narcissism was the strongest and most consistent personality predictor of car preference dimensions, particularly for style and performance. We note however that it was a significant, unique *positive* predictor of safety and reliability also.

#### 4. Discussion

The purpose of the current study was to explore the factor structure of a broad set of car preferences and determine whether they could be predicted by the big five personality traits and narcissism. To do this, we initially conducted a factor analysis of 49 discrete car preferences and found they could be reduced to 11 meaningful, correlated factors. These

factors reflected two higher order car preferences we termed ‘style and performance’ (i.e. the extent to which individuals value fashionable, attention seeking, loud, high performance features in automobiles) and ‘safety and practicality’ (i.e. the extent to which individuals value safe, reliable, economic and standard features in automobiles). We then correlated all BFI facets with all 11 factors and performed 4 hierarchical regressions to determine which personality factors were uniquely associated with the two high-order car preference dimensions (controlling for a range of demographic variables). Our correlation analysis revealed that compassion and respectfulness (facets of agreeableness), responsibility (facet of conscientiousness) had the strongest consistent relationships with a range of car preference dimensions (from *both* higher order factors), and narcissism had the strongest consistent relationships with car preference factors belonging to the style and performance high-order factor. Hierarchical regression analyses extended these findings, demonstrating that personality traits collectively and individually explain additional variation (beyond demographics) in high-order car preference dimensions. Consistent with what we hypothesized, as well with limited findings from existing research (e.g. Choo & Mokhtarian, 2004; Lönnqvist, et al, 2020; Šefara et al., 2015), agreeableness and conscientiousness were associated with the safety and practicality dimensions (H1), and extraversion, low agreeableness (H2) and narcissism (H3) was associated with style and performance dimensions. While there were no overt effects of openness, we found that intellectual curiosity was a unique negative predictor of style and performance and aesthetic sensitivity was a unique positive predictor of style and performance. This is partially consistent with Del Guidice (2012; 2014) who demonstrated different relationships between openness facets and life history strategy. Furthermore, while neuroticism was a relatively weak predictor of safety and practicality, its facet ‘anxiety’ was a moderate predictor, suggesting that specifically

anxious, rather than emotionally unstable people (more generally) are inclined to value safety and practicality in motor vehicles.

Our findings were generally in line with our expectations and theoretically consistent with LHT: the primary factors underlying car preferences align closely with a fast life history strategy (style and performance) and a slow life history strategy (safety and practicality). Similarly, personality traits known to be associated with these life history strategies were – for the most part – found to be uniquely associated with respective care preference dimensions. The clear notable exception was narcissism. Surprisingly, studies exploring narcissism in the context of LHT indicate it is more aligned with a slow, rather than a fast life strategy (e.g. Jonason et al., 2017; Jonason, Koenig, & Tost., 2010). Somewhat consistent with this, we did find a significant, unique positive association between narcissism and safety and practicality which might reflect this association. It is possible therefore that our finding that narcissism is moderately to strongly associated with style and performance factors is not attributable to life history theory. On the contrary, consistent with Martin et al., (2019) it is likely that narcissistic individuals value style and performance factors because it aligns with consumption behavior characterised by vanity and self-enhancement.

From a practical perspective, our findings have implications for consumers who are faced with a wide range of vehicles and features available when considering a vehicle purchase. We believe that our results will assist consumers in purchasing a vehicle likely to align with their broader life goals. For example, those high in extraversion will likely obtain more enjoyment from a car that stands out, compared to someone high in agreeableness who is more interested in safety and practicality. Similarly, our results have implications for marketers who can potentially modify their marketing strategies by targeting consumers most likely to respond positively to campaigns showcasing different car features.

## 5. Conclusions

When looking at purchasing an automobile, consumers are faced with a broad range of choices regarding vehicle characteristics and features. However, despite this, consumer preferences are largely captured by two high-order factors related to style and performance, and safety and practicality. Personality traits can partially account for individual differences in such preferences, with agreeableness, conscientiousness, and narcissism the strongest predictors of safety and practicality, and extraversion, low compassion and narcissism the strongest predictors of style and performance.

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Table 1.

*Factor loading matrix (pattern matrix) of 11 lower order car preference factors onto the two higher order car preference factors.*

	Style and performance	Safety and practicality
Fashion and attention seeking	.941	
Luxury additions	.899	
Classic car features <sup>1</sup>	.834	
High performance	.797	
Appropriate for recreation	.616	
Modern technology	.578	
Large and family friendly	.501	
Safe and reliable		.900
Practical		.731
Economical/low cost		.604
Basic features <sup>2</sup>		.430

<sup>1</sup> Includes preference for features such as 8-cylinder engine, exhaust system with good tone, manual transmission

<sup>2</sup> Includes preference for features such as 4-doors and automatic transmission

Table 2.

*Correlations between the 15 BFI-2 facets, Narcissism, and the 11 car preference factors (N = 1000).*

	Style and Performance							Safety and Practicality			
	Performance	Classic car features	Luxury additions	Fashion and attention	Recreation	Technology	Family friendly	Safe and reliable	Practical and easy to use	Economical/ low cost	Basic features
Sociability (E)	.13**	.08**	.14**	.13**	.11**	.10**	.08*	.06*	-.02	.01	.06
Assertiveness (E)	.16**	.11**	.10**	.16**	.18**	.10**	.12**	.12**	.03	.08**	.03
Energy (E)	.11**	-.01	.08*	.08*	.09**	.16**	.07*	<b>.23**</b>	.12**	.13**	.06
Compassion (A)	-.07*	<b>-.29**</b>	-.18**	<b>-.22**</b>	-.15**	.02	-.05	<b>.29**</b>	<b>.22**</b>	.14**	.13**
Respectfulness (A)	-.05	<b>-.25**</b>	-.18**	-.18**	-.15**	.05	-.06*	<b>.30**</b>	<b>.21**</b>	.14**	.11**
Trust (A)	.01	-.04	-.04	.00	.03	.07*	.06	.13**	.05	.08*	.01
Organisation (C)	.02	-.19**	-.06	-.08**	-.10**	.10**	-.08*	.24**	.13**	.08*	.14**
Productive (C)	.04	-.13**	-.03	-.06	-.02	.15**	-.01	<b>.30**</b>	.19**	.15**	.12**
Responsibility (C)	-.02	<b>-.26**</b>	-.13**	-.15**	-.17**	.010**	-.10**	<b>.30**</b>	<b>.22**</b>	.16**	.17**
Anxiety (N)	-.02	-.04	-.03	-.04	.03	-.01	.01	.01	.05	.01	.12**
Depression (N)	-.03	.05	.01	.01	.02	-.08*	.01	-.16**	-.08**	-.05	-.02
Emotional volatility (N)	-.00	.06*	.05	.05	.05	-.05	.05	-.13**	-.11**	-.10**	.02
Intellectual Curiosity (O)	-.03	-.09**	-.08*	-.10**	.00	-.04	-.07*	.13**	.10**	.07*	-.04
Aesthetic Sensitivity (O)	.05	.06	.03	.01	.05	.06	-.02	.09**	.09**	.08*	.03
Creative Imagination (O)	.04	-.07*	-.04	-.06*	.05	.02	-.02	.19**	.13**	.13**	.03
Narcissism	<b>.35**</b>	<b>.41**</b>	<b>.42**</b>	<b>.50**</b>	<b>.30**</b>	<b>.22**</b>	<b>.26**</b>	-.07*	-.07*	.03	.07*

Note. \*  $p < .05$ . \*\*  $p < .001$ . Coefficients in bold represent correlations above 0.20.

Table 3.

*Summary statistics from hierarchical regression analyses of BFI-2 traits and narcissism predicting two high order car preference factors controlling for demographics (N = 1000).*

	Model	Safety and practicality			Style and performance		
		Beta	R <sup>2</sup> Ch.	R <sup>2</sup>	Beta	R <sup>2</sup> Ch.	R <sup>2</sup>
Age	1	.18**			-.25**		
Gender	1	.19**			-.10**		
Married	1	.09*			.09*		
Income	1	-.08*			.08*		
Children	1	.05	.09**	.09**	.04	.07**	.07**
Extraversion	2	.08*			.21**		
Agreeableness	2	.10*			-.06		
Conscientiousness	2	.15**			-.04		
Neuroticism	2	.08*			.01		
Openness	2	.05	.05**	.15**	-.02	.04**	.11*
Narcissism	3	.14**	.01**	.16**	.41**	.12**	.24**

Note. \*  $p < .05$ . \*\*  $p < .001$

Table 4.

*Summary statistics from hierarchical regression analyses of BFI-2 facets and narcissism predicting two high order car preference factors controlling for demographics (N = 1000).*

	Model	Safety and practicality			Style and performance		
		Beta	R <sup>2</sup> Ch.	R <sup>2</sup>	Beta	R <sup>2</sup> Ch.	R <sup>2</sup>
Age	1	.18**			-.25**		
Gender	1	.19**			-.10*		
Married	1	.09*			.09*		
Income	1	-.08*			.08*		
Children	1	.05	.09**	.09**	.04	.07**	.07**
Sociability (E)	2	-.05			.05		
Assertiveness (E)	2	.010*			.12*		
Energy (E)	2	.010*			.08*		
Compassion (A)	2	.08			-.15**		
Respectfulness (A)	2	.06			-.02		
Trust (A)	2	-.03			.10*		
Organisation (C)	2	-.01			-.05		
Productive (C)	2	.04			.09		
Responsibility (C)	2	.07			-.01		
Anxiety (N)	2	.16**			.00		
Depression (N)	2	.00			.03		
Emotional volatility (N)	2	-.08			.01		
Intellectual Curiosity (O)	2	-.05			-.12**		
Aesthetic Sensitivity (O)	2	.02			.12**		
Creative Imagination (O)	2	.06	.08**	.17**	-.02	.07**	.15**
Narcissism	3	.14**	.01**	.19**	.41**	.12**	.26**

Note. \*  $p < .05$ . \*\*  $p < .001$