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## **Bright and Dark-Side Traits associated with interests in Commerce vs Science: Different Personality Profiles of the Scientist- Practitioner.**

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## **Abstract**

This study focused on the idea that there are predictable differences between those individuals who opt for Scientific rather than the Commerce/Practitioner jobs and consulting assignments. A total of 2278 adults from a variety of occupations completed three validated questionnaires: the first assessed the behavioural tendency of an individual when one is exposed to stress and which could derail one's business career (HDS: Hogan Development Survey); the second the values and preferences that indicate work motivation (MVPI: The Motives, Values and Preferences Inventory), and the third, seven bright-side personality factors (HPI: Hogan Personality Inventory). The MVPI measured interests in scientific and commercial/enterprising activities. Correlations, regressions and SEM indicated both similarities and differences in the relationship between personality traits and values. Bright-side personality traits accounted for more the variance for those interested in Science while dark-side traits accounted for more variance for those interested in the Commerce. The biggest difference occurred in Inquisitiveness (Curiosity, Openness to Experience) which was much higher for those interested in science. Implications for personnel selection, job-fit and promotion were discussed.

*Keywords:* Values; vocational choice; science; commerce; personality.

Some individuals are driven by scientific curiosity and others by commercial interests: some by neither, a few by both. Using a measure of the core goals, values, drivers, and interests that determine what people desire and strive to attain, this study looks at the bright- and dark-side personality correlates of those two preferences. We are interested in vocational choice and preference and those who express an interest in, and preferences for, science as opposed to commerce, activities and jobs.

Nearly all areas of applied psychology (clinical, education, organisational) have a tension between those who are interested in, and advocate, the “pure science” of the sub-discipline, as opposed to those interested in its “application” (Anderson, 2005, 2007; Cohen, 2007; Gelade, 2006; Hyatt et al, 1996). This tension is particularly manifest in work or I/O psychology. It can also be observed in the world of HR where many practitioners claim to benefit very little from scientific journals and reports (Rynes et al, 1999; 2002; 2007) leading to a current interest in evidence-based HR by academic scientists (van der Toft & Rasmussen, 2017).

One of the manifestations of this debate is the “evidence-based” movement which has spread from medicine to management and through a number of the social sciences (Brennan, 2004; Chwalisz, 2003; Lilienfeld et al., 2013; Martelli, & Hayirli., 2018; Pfeffer & Sutton, 2006; Scheibe et al., 2019). The primary concern is that practitioners in many fields are advocating and performing practices that have no basis in scientific evidence. On the one side are practitioners, often in management (consultants, marketers) and on the other the academic scientists who often interrogate claims, particularly with reference to change.

There are, no doubt, differences between those who choose a career in predominantly a Science, as opposed to those who choose to work in a Commercial organisation. These differences may occur in many areas: motivation and ability; cognitive ability and style, as well as personality differences which is the focus of this paper. There has been a considerable interest in why certain groups based on gender or race choose or avoid STEM disciplines and a career in Science (Ferriman et al, 2009; Sonnet 2009). Academic interest is often driven by public concerns with young people being less or

more interested in particular academic disciplines with their attendant employment opportunities (Nye et al., 2020).

We are, in this paper chiefly interested in differences in personality trait correlate of those who value and are motivated by Science vs Commerce. This study used three measures to explore whether those interested in Science would be different from those interested in Business/Commerce in terms of their “bright-” and “dark-side” personality profile. This is also informed by the literature in creativity which suggests that creativity in the arts is different from that in the sciences and both differ from those interested in creativity in the business world (Furnham, 2017).

There is a vast literature on the concept of fit which is about fitting the person to the job (Kristof-Brown et al., 2005; Nye et al., 2020; Stoll, Trautwein, 2017; Stoll et al., 2020; Su, & Nye, 2017; Su et al., 2018; Van Iddekinge et al., 2011). There are a large number of measures and models (Holland, 1997; Tay et al., 2011) of vocational preferences and fit and this study uses one such measure based on the Holland typology (Hogan & Hogan, 1997)

There is indeed a scattered literature which informs this issue, with three areas in particular.

### **The Scientist-Practitioner (S-P) Model**

There is an extensive literature on the S-P model which is relevant here (Bartels et al., 2016; Chartrand, 1994; Hays-Thomas, 2006; Latham, 2019; Lejeune & Luoma, 2015; Lowman, 2012; Rupp & Beal, 2007). There are other variations on this model such as the Scholar-Practitioner model often called the Vail model (Thompson et al. 2005). Concern with this issues is most often found in clinical and counselling psychology (Chang et al., 2008; Fox et al., 2018; Horn et al., 2007; Lilienfeld et al., 2013; The model was originally designed for clinical psychologists to ensure they had training *both* in scientific research *and* clinical skills. The idea is that practitioners from all areas of applied psychology need to be able to utilize and produce scientific research. Whilst it seems obvious that science should inform practice and practice be a fine place to test theories, there have been many criticisms of this somewhat idealistic approach. There is a consistent concern among educators that

I/O Consultants and Practitioners have been well educated in basic science so the advice they give and practices they advocate are grounded in research (Bartlett & Francis-Smythe, 2016; Hodgkinson, Herriot & Anderson, 2001; Rowe, 2018).

One theme constantly mentioned over the years is that people interested in science are predominantly different from those interested in practice. Thus Martin et al., (2007) demonstrated that students studying clinical psychology have little interest in research, while students in the experimental psychology program have little interest in practice. They, like others, concluded that the role of researcher is incompatible with the role of practitioner due to differing talents and interests, and the two opposing roles cannot coexist in individuals. This assumption, namely that the personality profile of those who favour science over commerce will be different is at the heart of this study.

### **Job Choice**

It is usually assumed that vocational choice is based on a mix of things such as a person's ability, personality and values, as well as their social background (Furnham, 2008; Kowalski et al.2017) Further, through experience and socialization people in different jobs become more homogenous in background within certain industries/sectors, and therefore different from those in others. Chatman, Wong and Joyce (2008) have noted how this process of *attraction-selection-attrition* (ASA) process leads organizations and groups within them to become increasingly homogenous, and in turn different from other groups. In this sense it is possible to talk of person-job "fit" or "misfit" or of "congruity" between a person and their work-group. (Schneider, Smith, Fleenor & Taylor, 1998). Clearly, people seek out organizations which fit their needs and values. Further, different personality factors within organizations predict upward mobility with specific job types and sectors (Resick, Baltes & Shantz, 2007).

Indeed, the whole of vocational guidance is based on the principle of job fit, which all people understand. Recent studies have shown that vocational interest tests predict a wide range of work-

related criteria like job knowledge and performance as well as continuance intentions (Iddekinge, Putka & Campbell, 2011). More importantly perhaps the data suggests that vocational interests show substantial continuity over time (Low et al., 2005).

For instance, in a mental health literacy study by Furnham and Petropoulou (2018) the authors asked people to read vignettes of people with personality disorders and suggest which type of job would suit them best. There was a tendency for people to believe those with OCD to be suited to Accountancy, Narcissism and Paranoia to General Management, Histrionic PD to being an Actor and Schizotypal an Artist. Surprisingly, Paranoid and Sadistic people were judged to be good managers and Histrionic, Passive Aggressive and Schizotypal the worst. People in Cluster C were judged as best managers, but those in Cluster B as better adjusted.

There have been a number of studies that have explored the difference in personality traits between sectors and much of this has focused on a comparison between the public sector and the private sector (Buelens & Van den Broeck, 2007). Furnham, Hyde and Trickey (2014) tested both private and public sector workers on dark-side measures. They found many significant differences and the analysis of the three specific occupational groups showed those in the Emergency Services differed on most traits whilst Finance and Insurance industry personnel were very similar.

From this literature one may expect those interested in Science to be very different from those interested in Commerce. It is of course possible that people are interested in both and neither. This study examines differences in the personality correlates of those interested in those two different values, and hence vocations.

### **Arts vs Science**

For over 60 years there has long been an interest in the different thinking styles of those in Arts/Humanities from those in Sciences (Snow, 1959). Hudson (1966) suggested that those with a bias towards convergent thinking moved towards the physical sciences, while those with a divergent thinking bias moved towards the humanities. The book's thesis attracted criticism (Kinsbourne, 1968) but also replication and extension (Child & Smithers, 1973; Hartley & Greggs, 1997)

There have also been, over the years, a number of studies that have investigated personality differences in the choice of discipline at university. For instance, Furnham and Crump (2013) tested 794 young people aged around 30 yrs on the 16PF and various intelligence tests. In all 173 were identified clearly as Arts graduates and 518 as Science students on the 16PF. An analysis of co-variance controlling for sex showed eight (of 16) significant trait differences and significant differences on all three intelligence test measures. Compared to Science students, Arts students scored higher on Factors A (Warmth), I (Sensitivity), L (Vigilance), M (Abstractness), Q1 (Open to Change), T (Tension) and GMA Verbal but lower on Factor G (Rule Conscientiousness), Q3 (Perfectionism), Raven's Progressive Matrices and GMA Numerical. Discriminant analysis showed the top five measures to be Factor I (Sensitivity), M (Abstractness), student sex, GMA numerical and Raven's Progressive Matrices.

Again, this research area would lead to expect personality differences in those interested in Commerce vs the Sciences. Science students tend to low on Neuroticism and Agreeableness, high on Conscientiousness and very high on Openness. while Commerce students tend to be higher on Extraversion and Agreeableness.

### **This Study**

In this study we used the concept of Values, Motives and Preferences (MVPI) to define those interested in Science and Commerce. The measure attempts to get at the core goals, values, drivers, and interests that determine what people desire and strive to attain. By assessing values, it is possible to understand what motivates people to succeed in particular jobs, and in what type of position, job, and environment they will be the most productive. Our belief is that the best way to measure motivation (e.g. vocational choice) is to do so through values, and that the best measure of these is the MVPI. This has been used successfully in a number of relevant studies (Furnham, et al., 2013).

Participants completed three well established questionnaire which allowed us to examine demographic as well as bright and dark-side personality correlates of their value preferences. Based



on the above literature we predicted that an interest in Commerce would be positively correlated with traits Ambition, Prudence, Boldness and Imaginativeness, while interested in Science would be significantly positively correlated with traits Inquisitive, Learning Approach, and Diligence (Furnham et al., 2012, 2013, 2014). We speculated also that there would be sex differences with males favouring Science more than females.

We chose our tests for pragmatic but also theoretical reasons. All three measure have attracted a great deal of research and each has an impressive data base supporting the reliability and validity of each measure (Hogan et al, 2007). A number of studies has particularly explored correlates of some of the MVPI scales (Furnham, 2020)

## **Method**

### **Participants**

There were 2,279 participants: 1474 were male and 805 were female. Their ages ranged from 20-63yrs with a median of 39 years and a mean of 38.88 years. In all, 89.7% of them were at manager level. They came from a range of different industries and organisations, and were mostly middle managers. 91.4% of the participants were based in United Kingdom offices. All were native English speakers

### **Measures**

**The Hogan Personality Inventory** (HPI; Hogan, 1997) is a traditional personality measure which is composed of 206 true–false self-report items; it measures seven dimensions of normal personality based on reinterpretation of the FFM and is designed specifically for use with working adults. Extensive details are given about the reliability (test-retest internal) and validity (concurrent, construct, predictive) in the manual. Both are highly satisfactory. The test has been used in over 100 published papers (Furnham, 2018a). The alpha was calculated for each of the seven scales are were

all satisfactory  $>.70$ . Adjustment:  $.77$ ; Ambition:  $.76$ ; Sociability  $.79$ ; Interpersonal Sensitivity  $.70$ ; Prudence  $.71$ ; Inquisitiveness  $.80$ ; Learning Approach  $.76$ .

**Hogan Development Survey** (HDS, Hogan, 2009) is a non-clinical inventory includes 168 items, designed to score for 11 scales, each grouping 14 true-false self-report items. These 11 scales are interpreted in terms of risk, with higher scores indicating an increased potential for work-related problems. These eleven scales/traits could also be grouped into three categories or higher order factors, which are, following Horney's (1950) three themes of "neurotic needs": Moving Away from people (when one manages stress by avoiding contact with others), Moving Against people (when one manages stress by dominating others) and Moving Towards people (when one manages stress by building alliances with others). Extensive details are given about the reliability (test-retest internal) and validity (concurrent, construct, predictive) in the manual which are excellent. The test has been used in over 50 published papers (Furnham, 2018a) and reviewed recently (Harms, 2017). The alpha co-efficient were calculated and very similar to those shown in the manual: Excitable;  $.63$ ; Sceptical  $.66$ ; Cautious  $.68$ ; Reserved  $.59$ ; Leisurely  $.51$ ; Bold  $.66$ ; Mischievous  $.59$ ; Colourful  $.68$ ; Imaginative  $.61$ ; Diligent  $.66$ ; Dutiful  $.51$ .

**The Motives, Values, and Preferences Inventory** (MVPI; Hogan, 1999) self-report inventory consisting of 200 statements with a three-point response scale (1=agree, 2=disagree, and 3=uncertain) measuring 10 scales. Each scale consists of 20 items and taps into five content areas:(a) Lifestyles, which concern the manner in which a person would like to live; (b) Beliefs, which involve 'shoulds', ideals and ultimate life goals; (c) Occupational Preferences, which include the work an individual would like to do, what constitutes a good job, and preferred work materials; (d) Aversions, which reflect attitudes and behaviours that are either disliked or distressing; and (e) Preferred Associates, which include the kind of persons desired as co-workers and friends. In this study were interested in just two of the values: Commerce: defined as being interested in money, profits, investment, and business opportunities; Science: defined as wanting knowledge, research, technology, and data.

Details are given about the reliability (test-retest internal) and validity (concurrent, construct, predictive) in the manual. Both are very satisfactory. The test has been used in over 100 published papers (Furnham, 2018a)

In this study we are interested in two scales which are described in the manual and participant report thus: Commerce: Interest in earning money, realising profits, finding new business opportunities, and a lifestyle organised around investments and financial planning. Each scale has 20 items. This has an alpha of .72. Science: Being interested in science, comfortable with technology, preferring data based - as opposed to intuitive - decisions, and spending time learning how things work. This had an alpha of .78.

## **Procedure**

Participants were tested by a British-based psychological consultancy over a 10-year period. Participants were tested in assessment centres for different purposes, but mainly for development. The data was supplied to the authors on participants who has completed all three measures in the years 2010 to 2013. All data was logged in their system after each candidate completed the assessments on-line. Each participant took the measures as part of their development programme and received personal detailed feedback on their score through an external psychological consultant. They also did a range of other tests as well as specific tasks. All agreed that their anonymised data could be used for research purposes. Ethics permission from the relevant body was sought and received (CEHP/514/2017).

## **Results**

Insert Table 1 here

Table 1 shows the correlations between sex and age, the two MVPI values, bright- and dark-trait personality variables. The table shows that of the 14 correlations with the HPI variables 9 were significant. The highest correlation for those interested in Commerce was Bold ( $r=.33$ ) while for those

interested in Science it was Inquisitive ( $r=.56$ ) and Learning Approach ( $r=.33$ ). In all 16 of the 18 correlations between the HDS variables and the two value preferences were significant, the highest correlations being with Bold. Three traits: Interpersonal Sensitivity (Agreeableness), Reserved and Dutiful were not related to either an interest in Commerce or Science. There were no examples where a bright or dark-side trait correlated positive with one interest (science vs commerce) and the opposite with the other. This concurs with the observation that interests in science and commerce are indeed positively correlated

Both values correlated similarly negatively with gender (around  $r= -.21$ ) suggesting that males were more interested in these two areas compared to females. Neither were correlated with age.

It is also interesting to observe that the correlation between the two criterion variables was  $r=.30$  which suggests, not unreasonably that people could be interested in both Commerce and Science. These may be modern entrepreneurs: however, this warrants further analysis

Insert Table 2 and 3 here

Table 2 shows the stepwise regression with the seven HPI Bright-Side variables as predictors for the two criteria values. There were interesting similarities and differences. In both gender was an important correlate accounting for as much as 5% of the variance. Younger males were more interested than older females in both Commerce and Science. For both regressions Adjustment, Prudence, Inquisitiveness and Learning Approach were positively and Interpersonal Sensitivity negatively associated with both interests/values. However, the single trait Inquisitiveness had a much higher beta for those interested in Science rather than Commerce. Interestingly, while Ambition and Sociability were positively associated with an interest in Commerce the opposite was true for an interest in Science.

Table 3 shows the regression results for the eleven HDS dark-side variables. Three things are apparent: first, the dark side variables account for almost twice times of the variance in those

interested in commerce as opposed to science. Second, where both dark side factors are significant in both regressions (e.g., Excitable, Bold, Diligent) they are similar in size and direction. Third, five of the significant dark side variables for commerce and three for science suggests that those with specific subclinical disorders are attracted to both areas of employment.

### **Structural Equation Modelling**

SEM was used to further explore the relationship between bright and dark personality traits in predicting Scientific or Commerce motivations. This methodology has been validated within the literature before, as can be seen in other papers such as (Barreiro & Treglown, 2020; Treglown et al, 2016; 2018). SEM was used to conduct multivariate regressions to allow for any relationships between dependent variables as well as potential co-variance estimates in predicting the two dependent variables simultaneously. Due to the unavailability of item level data, factors had to be entered into the model as observed (rather than latent) variables. Demographic factors (Age and Gender), two MVPI factors (Science and Commerce), the seven HPI traits (Adjustment, Ambition, Interpersonal Sensitivity, Sociability, Prudence, Inquisitive, and Learning Approach), and the 11 HDS traits (Excitable, Skeptical, Cautious, Reserved, Leisurely, Bold, Mischievous, Imaginative, Colourful, Dutiful, and Diligent) were entered into the model. Non-significant regressions were removed in a backward elimination fashion, where the model was re-tested until only significant terms remained. The results of the model can be found in Figure 1. The chi-square statistic was not significant ( $\chi^2(6) = 8.184, p = .225$ ; Satorra-Bentler scaling correction factor = 1.464). However, as previously mentioned, other indices were used to assess the goodness of fit, all of which indicated that the model was an excellent fit of the data:  $\chi^2/df = 1.364$ ; CFI = .998; TLI = .992; RMSEA = .013.

Higher levels of scientific motivation, indicated by a higher Science score, was significantly predicted by Gender (with men scoring higher than women), Sociability (negative), Interpersonal Sensitivity (negative), Inquisitive (positive), Learning Approach (positive), Cautious (positive), Bold

(positive), Mischievous (negative), Diligent (positive), and Dutiful (positive). Commerce was significantly predicted by Gender (with men scoring higher than women), Prudence (positive), Learning Approach (positive), Skeptical (positive), Cautious (negative), Bold (positive), Mischievous (positive), Colourful (positive), Diligent (positive), and Dutiful (positive).

## **Discussion**

In this study we found that there appears to be a common core of traits to those interested in both Science and Commerce: both are related to higher Learning Approach, Boldness, Diligence, and Dutifulness. Interestingly both were related to lower Interpersonal Sensitivity (Agreeableness/Emotional Intelligence) and whereas some traits were positively associated with an interest in commerce (Ambition and Sociability) they were negatively associated with an interest in science.

Studies that have looked at personality determinants of occupational (and educational) success have identified three traits (in addition to intelligence): Conscientiousness (Prudence), low Neuroticism (Adjustment) and Openness (Inquisitive, Learning Approach) (Furnham, 2018a). All of these traits were positively associated with interests in both Science and Commerce, though Adjustment was much higher and Inquisitive much lower for those interested in Commerce compared to Science. Clearly to be successful in science or business requires people to be resilient (low Neuroticism), hard-working and planful (Conscientious) and creative (Open and Inquisitive). However the results may be very different if the powerful motives of people were related to values such as altruistic motives involve concern about the welfare of others, especially the less fortunate, a desire to help them, and in some way, contribute to the development of a better society.

There are also some traits that appear to differentiate the Scientist from the person interested in Commerce, in particular Cautiousness, which is positively associated with a scientific approach but negatively associated with a commerce approach. Cautiousness is about risk-taking. The test manual suggests Cautious people are overly worried about being criticized and as a result seem resistant to

change and reluctant to take chances. Clearly whilst this trait might be beneficial at some stage in a scientific career it is most important that people in business regularly take well-researched risks to succeed.

Additionally, people who are motivated by Science are also characterised as being more Inquisitive but having lower Mischievousness, Sociability and Interpersonal Sensitivity. This is the stereotypic low emotional intelligent, rule-following introvert who is deeply involved in, and excited by understanding and extending scientific processes and procedures.

However, people who are motivated by Commerce are characterised by higher Prudence, Scepticism, Colourfulness, and Mischievousness. The growing work on leadership derailment and failure points to the latter two traits (sub-clinical hysterical and psychopathic personality disorder) being associated with leadership emergence but less so with success (Furnham, 2018a). The extensive and growing literature on the dark-side of work success suggests that the Moving Against Others dark-side traits were often associated with work success particularly sub-clinical Narcissism (Boldness), Histrionic (Colourful) and Schizotypal (Imaginative). However, the literature suggests a curvilinear relationship between these variables and success such that high scores may be beneficial but very high scores deleterious to work success.

Figure 1 shows which of dark and bright-side traits are related uniquely to each interest, which are similarly shared and which differentiate between them. Those interested in science are Open, Disagreeable, Introverts (high curiosity, low interpersonal sensitivity and low sociability). This confirms many findings in this area showing that those studying science and interested in scientific careers tend to intelligent, phlegmatic types with relatively low emotional intelligence (Furnham & Crump, 2013). Those interested in commerce tend towards histrionic personality (Colourful). Those interested in both Commerce and Science tend to be Curious (learning approach), Narcissistic (bold), Conscientious (diligent), and surprisingly Dependent (dutiful).

Two dark-side traits differentiated between the two groups. Cautiousness (Avoidant PD) was positively associated with an interest in Science, but negatively correlated with an interest in

Commerce while the opposite was true for Mischievous (Anti-Social PD) which was positively associated with Commerce and negatively associated with Scientific interests.

The regressions and the SEM analysis confirms the widely held view that males are more interested in Science than females, though this may be changing. Indeed, the regressions indicate that gender is a more powerful determinant of the interests in both science and commerce than either bright- or dark-side personality factors.

It is apparent that people could be interested in both and neither Science and Commerce as vocations. Some organisations who employ R & D scientists hope that they have an interest in both the pure science as well as business. There are also people in the arts who are happy to admit that neither type of vocation interests them very much. The positive correlation of  $r=.30$  (see table 1) suggest they however are modestly related: that is, people interest in science are also interested in business which why explain why so many top business people have a background in science, particularly engineering.

It would thus be possible to devise a 2 x 2 table which considers those interest in both and neither and also those strongly in favour of the one but against the other. The latter may indeed be more differentiate in their traits: but this is a topic for further research. It is also possible that there is overall much more heterogeneity in terms of personality among Scientists vs Business people (or vice versa) which merits exploration.

.To some extent this paper poses as many questions as it answers. The first whether those applied psychologists who choose a purely or primary scientific or consultant/commercial route are very different on the two MVPI values outlined in this study. This is quite plausible but requires empirical proof. It would also be particularly interesting to look at those psychologists who scored high on both values as they clearly exist (Furnham, 2018)

This study confirms the literature from many different areas that those interested in Business/Commerce are predictably different from those interested in Science. This does not present an issue or problem for many who simply make career and educational choices but it does for those



professions, many in psychology, where there is the expectation of the Science-Practitioner: the commercially involved practitioner who is expected to practice good science.

Like all others, this study had limitations. It would have been desirable to know more about the participants including their education and current, as well as previous, employment. Most worked for big organisations in a variety of departments including finance, marketing, R&D, HR, Operations and Legal. Few were entrepreneurs or pure scientists. Indeed, it is possible that the effect sizes in this study were attenuated by the particular sample, given their particular interests. Ideally however this study could be replicated on the authors and readers of this particular academic journal based on whether they would classify themselves as exclusively or primarily academic scientists or applied practitioners and also whether the latter work for private or public companies. Equally it should be noted that an interest in, and motivation toward, science and commerce does not necessarily mean that people are successful in those areas of work

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Table 1.

*Correlation table including demographics, HPA and HDS traits, and MVPI factors*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Age	1																					
2. Gender	0.19**	1																				
3. Adjustment	0.03	-0.10**	1																			
4. Ambition	0.02	-0.18**	0.44**	1																		
5. Sociability	-0.08**	-0.10**	0.07**	0.41**	1																	
6. Interpers Sens	-0.07**	0.15**	0.39**	0.18**	0.24**	1																
7. Prudence	0.00	0.07**	0.41**	0.11**	-0.18**	0.31**	1															
8. Inquisitive	0.00	-0.21**	0.1**	0.25**	0.33**	0.12**	-0.07**	1														
9. Learning App	0.00	0.03	0.18**	0.28**	0.14**	0.12**	0.09**	0.32**	1													
10. Excitable	0.02	0.00	-0.68**	-0.38**	-0.09**	-0.37**	-0.37**	-0.09**	-0.21**	1												
11. Skeptical	-0.08**	-0.05*	-0.37**	-0.08**	0.02	-0.3**	-0.28**	0.07**	-0.02	0.32**	1											
12. Cautious	-0.01	0.15**	-0.52**	-0.64**	-0.33**	-0.2**	-0.14**	-0.21**	-0.22**	0.43**	0.17**	1										
13. Reserved	0.02	-0.12**	-0.26**	-0.26**	-0.34**	-0.45**	-0.21**	-0.1**	-0.12**	0.28**	0.24**	0.27**	1									
14. Leisurely	-0.02	-0.01	-0.31**	-0.22**	-0.07**	-0.14**	-0.18**	-0.05*	-0.08**	0.26**	0.27**	0.33**	0.17**	1								
15. Bold	-0.04	-0.06**	-0.03	0.29**	0.29**	0.02	-0.06**	0.23**	0.23**	-0.03	0.3**	-0.17**	-0.07**	0.17**	1							
16. Mischievous	-0.03	-0.14**	-0.05*	0.24**	0.4**	-0.02	-0.37**	0.29**	0.07**	0.01	0.29**	-0.19**	-0.03	0.12**	0.37**	1						
17. Colorful	-0.01	-0.08**	0.06**	0.48**	0.56**	0.15**	-0.15**	0.25**	0.17**	-0.09**	0.08**	-0.36**	-0.24**	-0.02	0.45**	0.39**	1					
18. Imaginative	0.00	-0.07**	-0.18**	0.14**	0.37**	0.02	-0.31**	0.32**	0.11**	0.09**	0.23**	-0.07**	-0.03	0.13**	0.39**	0.41**	0.37**	1				
19. Diligent	-0.06**	0.03	0.00	0.02	-0.03	0.03	0.34**	0.07**	0.06**	-0.02	0.15**	0.03	-0.02	0.11**	0.13**	-0.05*	-0.1**	0	1			
20. Dutiful	-0.05*	0.06**	-0.13**	-0.24**	0.02	0.19**	0.14**	-0.07**	-0.14**	0.1**	-0.03	0.28**	-0.09**	0.14**	0.07**	-0.13**	-0.1**	0.06**	0.17**	1		
21. Commercial	-0.02	-0.21**	0.02	0.22**	0.18**	0.00	0.08**	0.19**	0.18**	-0.06**	0.21**	-0.17**	-0.03	0.06**	0.33**	0.19**	0.21**	0.14**	0.22**	0.02	1	
22. Scientific	0.00	-0.21**	0.00	0.09**	0.10**	-0.02	-0.02	0.56**	0.32**	-0.02	0.12**	-0.03	0.04	0.06**	0.22**	0.11**	0.09**	0.17**	0.12**	0.00	0.30**	1

**Table 2**

Results of Regressions for Two Motivational Scales with HPI Traits.

		Commerce		Scientific	
		Beta	t	Beta	t
Step 1	Age	-0.093	-2.83**	-0.08	-2.24*
	Gender	-14.32	-11.5**	-12.70	-9.85**
Step 2	Adjustment	-0.17	-6.59***	-0.07	-3.23**
	Ambition	0.15	5.81***	-0.07	-3.10**
	Sociability	0.12	4.52***	-0.07	-3.04**
	Interpersonal S	-0.02	-0.71	-0.06	-2.90**
	Prudence	0.16	6.81***	0.05	2.57*
	Inquisitive	0.09	3.70***	0.58	28.75***
	Learning Appr	0.11	4.92***	0.21	11.34***
F Score	$F(9, 2375) = 41.9^{**}$			$F(9, 2375) = 160.7^{***}$	
Adj. R <sup>2</sup>			.134		.376

\*\*\* p&lt;.001 \*\*p&lt;.01 \*p&lt;.05

Table 3.

Results for Regression on Two motivational scales with HDS Traits

		Commerce			Scientific		
		Beta	t		Beta	t	
Step 1	Age	-0.093	-2.83**		-0.08	-2.24*	
	Gender	-14.32	-11.5**		-12.70	-9.85**	
Step 2	Excitable	-0.06	-2.67***		-0.05	-2.02*	
	Skeptical	0.15	6.52***		0.05	1.69	
	Cautious	-0.10	-4.05***		0.05	1.64	
	Reserved	-0.01	-0.25		0.04	1.55	
	Leisurely	0.01	0.29		-0.02	-0.77	
	Bold	0.19	8.69***		0.16	6.46***	
	Mischievous	0.04	1.46		-0.02	-0.69	
	Colourful	-0.02	-1.09		0.11	4.26***	
	Imaginative	0.06	2.70**		-0.01	-0.39	
	Diligent	0.15	8.66***		0.10	4.82***	
	Dutiful	0.06	3.09 ***		0.01	0.34	
	F Score	$F(13, 2271) = 47.0^{**}$			$F(13, 2271) = 20.6^{**}$		
	Adj. R <sup>2</sup>		.207			.101	

\*\*p&lt;.01 \*p&lt;.05

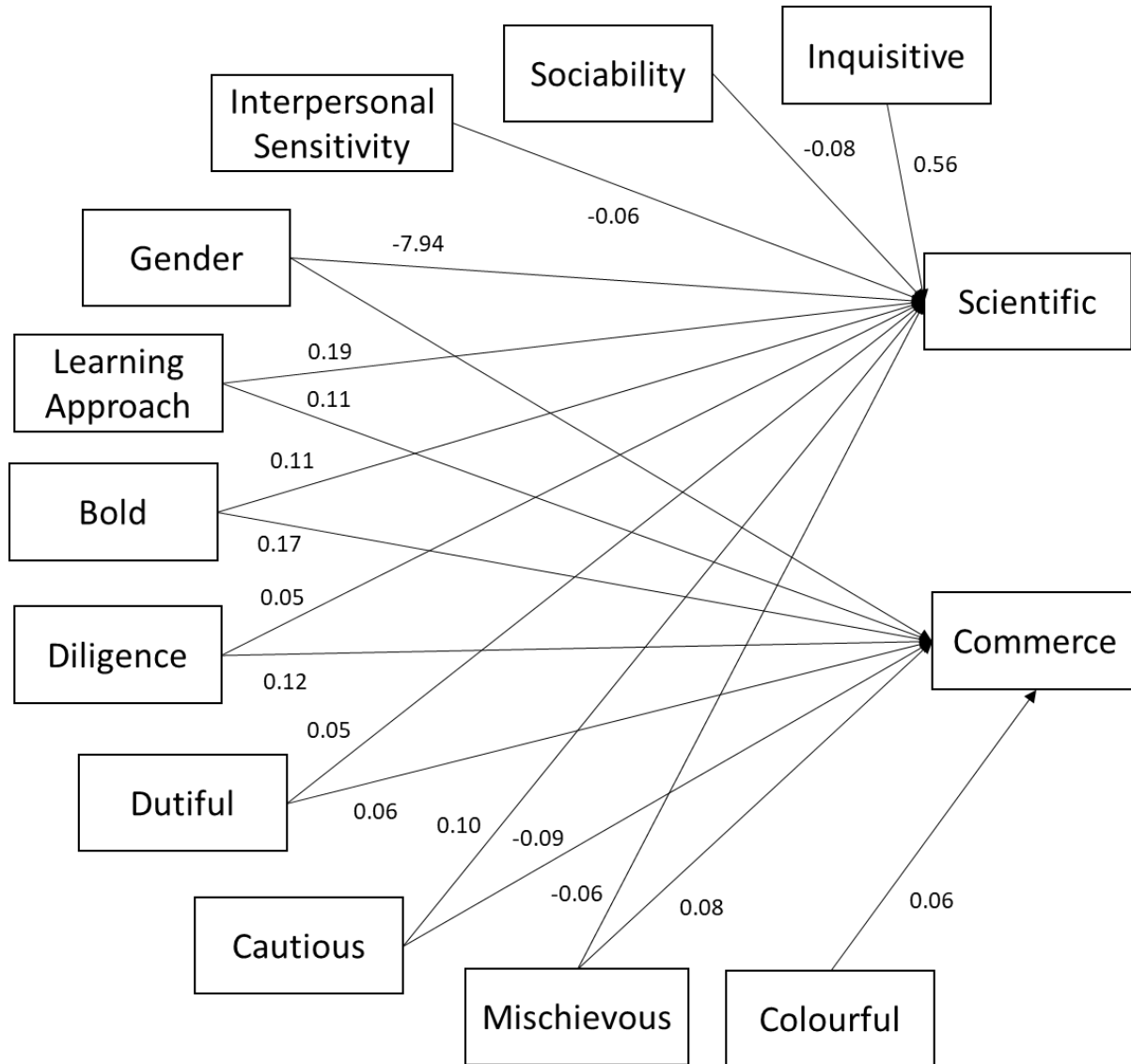


Figure 1. Structural Equation Model of Science-Practitioner. Standardized Betas used.



