British Journal of Guidance & Counselling

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cbjg20

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To cite this article: Adrian Furnham & George Horne (08 May 2023): The perceived usefulness of a degree as a function of discipline, British Journal of Guidance & Counselling, DOI: 10.1080/03069885.2023.2174951

To link to this article: https://doi.org/10.1080/03069885.2023.2174951

Published online: 08 May 2023.

BRITISH JOURNAL OF GUIDANCE & COUNSELLING
https://doi.org/10.1080/03069885.2023.2174951

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Taylor & Francis Group

The perceived usefulness of a degree as a function of discipline

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ABSTRACT

Over 500 British respondents rated the extent to which a degree in 35 different subjects/disciplines (Anthropology to Zoology) would lead to useful skills acquisition and thence a well-paid job. These ratings factored into five groups: Social/Applied Natural Sciences and Humanities; Professional and Applied STEM; Languages; People and Information Management; and Pure Science. These ratings were then related to eight individual difference variables (demography, ideology, self-evaluations) through correlational and regression analysis. Applied STEM and Pure Science factors were considered the most useful (with minimal disagreement), whereas there were a number of demographic correlates on the factors considered to be less useful. Speculations are made about the origin and validity of these beliefs. Implications of these results, and limitations are acknowledged.

ARTICLE HISTORY
Received 22 February 2021
Revised 8 October 2022
Accepted 12 January 2023

KEYWORDS
Discipline; subject; degree; job; employability; vocational guidance

Introduction

Because of its obvious importance, there is a long history of research into what has been variously called career/vocational counselling, education and guidance, now sometimes called careerography (Duffy & Dik, 2013; Hirschi, 2011; Park-Taylor et al., 2021). Hooley and Rice (2019) have argued that career guidance has a vital role to play in helping people navigate transitions between education and employment across the lifespan. As trends change there has been an interest in why potential students seek out, or avoid, particular disciplines and what can be done about it (Özbilgin et al., 2005; Palmer et al., 2017; Rodrigues et al., 2007).

Career or vocational guidance helps individuals in the career-decision-making process and traditionally has involved finding the best fit between own abilities, personality and motivation and the work/occupational requirements in various work sectors (Bakshi & Goss, 2019). It is usually designed to help people make appropriate vocational choices and adjustments, and to facilitate the efficient and cost-effective functioning of organisations by the appropriate exploitation of individual assets and abilities (Dik et al., 2009). The idea is that a good fit between personal abilities, motives and traits and vocational characteristics (skills and temperament required) promotes satisfaction and happiness, though it has also been suggested that career success is also a function of personality (Boehm & Lyubomirsky, 2008; Haase et al., 2012).

Vocational psychology focuses on people thinking about, and understanding careers, and helping them prepare for the occupations of their choice; although constraints of gender, class and poverty also need to be acknowledged (Bakshi, 2016; Blustein et al., 2019). Occupational/vocational/career choice is impacted on many factors, including socioeconomic status, ethnicity, gender, intelligence,

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aptitudes and interests, as well as the community from which people come. Vocational psychologists help people explore their long-range personal and professional goals, look at personal strengths and weaknesses, as well as environmental threats and opportunities whilst examining salient and suitable career alternatives.

People elect to go to university for many reasons. Furnham (2012) noted that there are orthodox, cynical, as well as good reasons to go to university. He suggested that a very common reason is to get a degree/qualification which improves job prospects: getting a well-paid and rewarding job. This suggests that some people may choose to go to university and study a particular course for many reasons other than knowledge and skill acquisition, which is the focus of this paper.

There is also certainly a good deal of circumstantial evidence that many people choose the wrong university course which they later regret. Pizzolitto (2021) was interested in why some students perceive a discrepancy between their ambitions and their university course choices to understand the students' perception of emotional costs associated with the discrepancy between their vocational identity and their university degree choices. After interviewing Italian students, he noted that the emotional cost of wrong degree choices hindered the process of overcoming their psychosocial crises.

This study

The question addressed in this study is what discipline people think leads to skill and knowledge acquisition and thence well-paid jobs. This study is a general public's perceptions of the economic usefulness of a degree. Some professional degrees like architecture, dentistry and medicine usually teach skills directly relevant and specific for a particular job. Some of the pure sciences like mathematics and physics as well as statistics can be seen to be useful in a large number of (well paid) jobs that require numeracy. Further, people understand that some skills (i.e. computational) may be more highly valued and rewarded than others (i.e. linguistic), though these ideas are both contentious and changeable depending on labour market factors.

Equally, it is unclear how any labour market values a degree in Anthropology, Philosophy or Theology. It is clear that very different people are attracted to different degrees, for a multitude of reasons. Indeed, studies have shown, for instance, that Arts vs Science students differ in their abilities, personality and values, which are factors that determine whether these disciplines are selected or not (Furnham & Crump, 2013).

There are a number of popular websites that give people advice as to the usefulness and uselessness of degrees in particular disciplines, however, they are not backed by empirical evidence. Google search on "Choosing a Degree" shows up a large number of websites giving advice to those who are interested, although many websites seem to encourage people to go to various universities and other educational institutions, rather than give dispassionate career advice.

There have been studies on the public's perception of various academic departments, asking opinions on which departments should receive public funding (Furnham, 2002; Furnham & Sisterson, 2000), with the assumption that people would be more willing to fund disciplines that provide individuals with skills and jobs that would be useful to the society as a whole. They found that traditional disciplines/departments like English, Maths and Medicine received highest ratings and more recent disciplines like Media Studies and Sport Sciences lowest ratings by the general public.

There are some salient studies such as that of Swami et al. (2010) who asked 315 members of the Austrian general public to rate 34 higher-education courses in terms of funding cuts or increases, and the perceived life chances of graduates. Overall, professional and biological stream courses were rated the most favourably, whereas arts and humanities courses were rated the least favourably. Participants' demographic variables had little influence on their decisions. There was general agreement that studying for a specific occupation, as well as those with a heavy Science, technology, engineering and mathematics (STEM) content, were viewed as improving life chances much more than general arts or social science courses and disciplines.

In this study we were interested in three things. First, the extent to which people perceived studying 30, very different, disciplines at university lead to good, well-paid jobs. With a great emphasis of STEM subjects over the past years we were interested in whether people thought choosing them would clearly lead to the skill acquisition necessary to be selected for well-paid jobs. Equally, we were interested in their perceptions of studying a variety of languages (French, German, Japanese) which have shown a decline in numbers, as well as the social sciences (Anthropology, Psychology, Sociology) some of which have seen a large increase in numbers. We were also interested in sex differences: namely whether men and women had very different perceptions of these issues.

Second, we were interested in the factor structure of these ratings to see how they clustered into meaningful categories. We wondered whether they would resemble the way universities group departments into faculties? Third, and perhaps most importantly, we were interested in individual difference correlates of these beliefs. Thus, we were interested in whether a person's demography (age, sex, education), their ideology (religious and political beliefs) and the number of languages they spoke related systematically to these ratings. Would people with higher educational qualifications rate arts subjects more favourably? Would more right-wing people rate the social sciences as less useful? Would people who had higher self-esteem (as measured by aggregated self-evaluations) be more predisposed to the less obviously professional disciplines?

This was an exploratory study. However, we hypothesised that there would be a clear factor structure for the perceptions so that disciplines would factor into pure science, applied/social science and the humanities; as well as being professional vs non-professional (i.e. whether the degree was directly linked with the practice of a specific profession such as dentistry, architecture). Second, that the more clearly professional the degree is, the more it would be rated in terms of knowledge acquisition and pay. Third, the pure science would be rated higher than both social sciences and humanities.

Method

Participants

A total of 520 British participants completed the questionnaire; three participants' data were removed because this data failed attention checks. Of the 517 remaining, 259 were men and 258 were women, ranging in age from 18 to 70 years with the mean age was 21.48 years ($SD = 8.3$). All participants had at least a secondary school education and 37% were graduates. Participants competently spoke an average of 1.94 languages ($SD = .823$) and 46.4% of the participants had children. Additionally, they rated themselves on three scales: How religious are you? (Not all at 1 to Very 8) and they scored 2.09 ($SD = 2.75$); How would you describe your political beliefs? (Very Left Wing 1 to Very Right Wing 8) and they scored 5.38 ($SD = 1.97$); How Optimistic are you (Not at all 1 to Very 8) and they scored 5.68 ($SD = 1.94$).

Measures

Vocational Guidance. Participants were asked to rate the usefulness of 35 university courses (see Table 2). These were derived from Swami et al. (2010) with some modifications to update courses. We hoped that this scale was comprehensive enough to assess most of the more popular courses at most modern universities. The instructions were:

> This short questionnaire concerns the advice you might give to young people about to go to university. We want you to imagine that a group of young people have asked for your advice. They have listed a number of degrees all of which they are interested in. But they are worried about getting a job afterwards. They want to know which subject will give them the *best knowledge and skills to get a good well-paid job.* That is keeping their options for employment they want to know what you believe is the best subject to study at university to ensure employability. Clearly employers seem to believe that some subjects are better than others. Below is a list of subjects.

Table 2. Correlations between the different variables.

Spearman's ρ	Mean	SD	α	1	2	3	4	5	6	7	8	F1	F2	F3	F4
1. Sex	1.52	.500		1.00											
2. Age	29.7	10.2		.268***	1.00										
3. Degree	.455	.498		.081	.245***	1.00									
4. Religiousness	2.01	2.68		−.003	.027	.097*	1.00								
5. Liberalism	5.84	1.83		.103*	−.027	.123**	−.232***	1.00							
6. Optimism	5.69	1.86		.030	.008	.027	.163***	.026	1.00						
7. Languages Spoken	1.94	.832		−.264***	−.224***	.104*	.086	−.057	−.013	1.00					
8. Self-Evaluations	67.5	12.6	.670	−.089	.023	.073	.200***	.007	.343***	.162***	1.00				
F1. Social Sciences, Humanities and Arts	5.18	1.64	.926	.199***	.151***	−.122**	.074	−.048	.143**	−.024	.039	1.00			
F2. STEM and Professional	8.18	1.26	.867	.109*	.098*	.120**	−.020	.106*	−.038	.009	.024	.218***	1.00		
F3. Languages	4.95	2.27	.900	.182***	.099*	.005	.113*	.052	.104*	.071	.079	.480***	.210***	1.00	
F4. People and Information	6.74	1.70	.687	.043	.040	−.050	.098*	.099*	.062	.240***	.085	.469***	.354***	.292***	1.00
F5. Pure Sciences	7.07	1.54	.823	.062	.004	.072	−.011	.097*	.022	.090*	.049	.511***	.548****	.324***	.410***

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Sex coded as Male = 1, Female = 2.

> We want you to rate them on a 10-point scale: 0 stands for not useful, 10 stands for extremely useful in getting a job.

Self-Evaluations (Furnham & Grover, 2020). This was a short measure that essentially assessed general self-esteem. Participants rated their intelligence, emotional intelligence, physical health and physical attractiveness out of 100. This measure has been shown to be a brief but robust self-evaluation akin to global self-esteem. These measures were averaged to create a composite self-evaluation measure with an alpha of .67. Versions of it have been used in a number of studies (Furnham et al., 2020).

Procedure

Departmental ethical approval was gained prior to data collection. Data were collected on *Prolific*, an online research platform, and participants compensated the recommended rate for their time. The questionnaire took an average of 23 min to complete and participants were paid £1.98 for participation.

Analysis

Missing data were minimal, 113 points over 48 variables (0.455%), and were assumed to be missing at random. Missing data were imputed using the R's *mice* package (Van Buuren, 2020; Zhang, 2016). Exploratory and confirmatory factor analyses were conducted to identify a factor model for the university courses. Factors were then correlated with demographic variables, a series of ANOVAs were used to assess sex differences among courses and factors, and a series of multiple regressions were run to assess the predictive strength of demographic results onto the factors created.

Results

Exploratory factor analysis

First, Mahalanoblis' distance (d^2) values were used to identify 42 outlying cases exceeding the X^2 cut-off within the vocational guidance data (65.4, $df = 34$, $p < .001$), using the outlier() function in R's *psych* package (Revelle, 2020). These were removed from the further data analysis. Due to the nature of prolific data collection, it is possible that a high number of these were participants that were incentivised to rush through the questionnaire, answering the survey quickly to receive the same money in less time, and reducing the quality of the data. This left 475 data cases.

Data were then tested for multivariate normality using Mardia's skewness and kurtosis values, and univariate normality using Shapiro–Wilk tests. All variables were found to be non-normal individually ($p < .001$ in all cases), and the data were significantly skewed and kurtic (12446, $p < .001$; 36.13, $p < .001$ respectively).

Data were then randomly halved, where 237 cases were used in an exploratory factor analysis, and 238 in the subsequent confirmatory factor analysis. Velicer's minimum average partial factor retention methods (MAP; Velicer, 1976) and a parallel analysis scree plot both suggested a 5-factor model for the vocational guidance data.

The unweighted least squares method was used to extract factors from the data. This was chosen as they have higher accuracy than maximum likelihood methods with non-normal, ordinal data and with samples of this size (Li, 2016; Mîndrilă, 2010; Wolins, 1995), and as the communalities between the factors were expected to be high, due to many courses having common content (Muthén & Kaplan, 1985). Promax rotations were used as factors were thought to correlate. Table 1 shows the pattern matrix and factor correlations. Pattern coefficients below .3 were omitted from the table.

The first factor (Factor 1) could be broadly described as "Social/Applied Natural Sciences and Humanities" with Philosophy and Sociology having the largest pattern coefficients onto it. The

Table 1. Factor analysis pattern matrix.

Vocation	Mean	*SD*	1	2	3	4	5	h^2
Anthropology	4.12	2.21	.50					.25
Accounting	7.76	1.84		.50				.33
Architecture	7.16	2.04		.73				.47
Biology	6.93	1.89					.62	.65
Chemistry	7.14	1.88		.36			.55	.61
Computer Science	8.86	1.34		.40				.47
Crime Science	6.43	1.98	.44	.40				.65
Dentistry	8.14	1.86		.96				.47
Earth Sciences	5.78	2.19	.46					.39
Education	7.18	2.18	.44					.72
English	6.83	2.42	.30					.46
Engineering	8.77	1.41	−.32	.46				.38
Fine Arts	3.95.	2.24	.62					.30
French	5.03	2.32			.95			.56
Geography	4.97	2.15	.57					.48
German	5.12	2.29			.94			.87
History	4.82	2.23	.62					.54
Information Science	7.25	2.09				.50		.33
Japanese	4.90	2.58			.74			.59
Law	7.93	1.59		.49				.39
Management Science	7.17	1.94		.31		.57		.48
Mathematics	7.41	1.98					.71	.43
Media Studies	5.92	2.25	.33			.45		.32
Medicine	8.76	1.47		.73				.60
Pharmacology	8.20	1.62		.78				.61
Physics	7.20	1.85					.89	.64
Plant Science	5.38	2.15	.43				.41	.52
Psychology	6.43	2.09	.45			.30		.44
Philosophy	3.93	2.37	.88			.33		.72
Political Science	5.15	2.40	.53			.49		.49
Sport Science	4.74	2.31	.63			.34		.49
Sociology	4.80	2.31	.78		.	.51		.67
Statistics	6.74	2.16				30	.46	.43
Theology	3.23	2.45	.73					.46
Zoology	5.04	2.42	.55					.45
Factor Correlations		1	1.00	.17	.41	.03	.39	
		2		1.00	.17	.28	.59	
		3			1.00	.27	.40	
		4				1.00	.30	

second factor (Factor 2) is broader again in scope as "Professional and Applied STEM" with high loadings from Dentistry and Pharmacology, but also including Law and Accounting. The third factor (Factor 3), "Languages", is the most distinct of the five and includes all and only the three language courses: French, German and Japanese. Conversely the fourth factor (Factor 4), "People and Information Management" is the most unusual, only including Information Science, Management Science and Media Studies. Sociology also had a high coefficient on this factor (.51) but was included in the first factor for subsequent confirmatory factor analysis. The fifth factor (Factor 5) represents "Pure Science" with its highest loadings on Maths and Physics, but also including Biology, Chemistry and Statistics. Notably, there are reasonable intercorrelations between the factors.

Confirmatory factor analysis

Using R Lavaan package (Rosseel et al., 2019), a confirmatory factor analysis was run on the second half of the data to assess the validity of the 5-factor model. Degree subjects were mapped once onto the factor they loaded best. Fit statistics comparative fit index (CFI), Tucker Lewis Index (TLI), root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR)

were applied to the model. Repeatedly, this model failed to fit the appropriate thresholds for each: CFI = .942 and TLI = .937 both marginally missed the .95 threshold identified by Hu and Bentler (1999) and the SRMR = .092 missed the < .08 limit. Most extreme of all was the RMSEA = .488, far above the recommended .1 limit (Browne & Cudeck, 1993). Potential reasons for this poor model fit are the high non-normality of the data in addition to the heavy cross loading between degree subjects. The latter point is likely unavoidable for degree subjects as many could share content while having occupational differences unknown to many. As such this model and subsequent analysis with the factors should be seen as a heuristic for future theory.

Correlational analysis

These factors were then correlated with each of the demographic variables (see Table 2). Spearman's rho correlation coefficients were used to limit falsely significant results arising from the non-normal data (de Winter et al., 2016; Puth et al., 2015).

Endorsement of the Social Science, Humanities and Arts factor was more likely to come from older, optimistic, women ($r = .151, .141, .199$ respectively, all $p < .001$) who did not have a university degree ($r = -.122$ $p = .008$, respectively). The second STEM and Professional factor had generally weaker correlations on similar points, except that it was more likely to be endorsed by university educated and liberal people ($r = .120$ $p = .023$; $r = .106$ $p = .021$, respectively). The third Languages factor's associations were similar to the first factor except for it having no significant relationship with education. The fourth, People and Information factor had positive weak relationships with Religiousness and Optimism ($r = .098$, $p = .033$; $r = .099$, $p = .031$, respectively) and a slightly stronger positive relationship with the number of languages the participant spoke ($r = .240$, $p < .001$). The final fifth factor only had weak positive associations with liberalism ($r = .097$, $p = .035$) and the number of languages spoken by the participant ($r = .090$, $p = .049$). Young men ($r = -.264$, $-.224$; $p < .001$, respectively) with a degree ($r = .104$, $p = .023$) were likely to speak more languages.

Gender differences

A series of one-way ANOVAs were run on the degree subjects and the five factors to look for gender differences in endorsement (see Table 3). Due to the strong non-normality of the data, 2000 data sets were simulated to provide 95% confidence intervals for each condition (Field et al., 2012).

Across the data, the general trend was that women were more likely to endorse degrees in general than men. Women had significantly higher endorsement scores for the first three factors (i.e. Social/Applied Natural Sciences and Humanities; Professional and Applied STEM; and Languages) ($F = 19.74$, $p < .001$; $F = 4.88$, $p < .028$; $F = 15.38$, $p < .001$), however, differences in endorsement were nonsignificant on the final two (i.e. People and Information Management; and Pure Science).

Multiple regressions

Finally, five multiple regressions were conducted to see how the demographic variables (Sex, Age, Education, Optimism, Religiousness, Languages Spoken and Liberalism) predicted the five factors while controlling for each other (see Table 4). These regressions were similarly bootstrapped to the ANOVAs. Forced entry regressions were chosen over other methods to limit the influence of random variation (Studenmund & Cassidy, 1987), and due to one of the basic demographic variables (sex) being measured in isolation already.

Variance inflation factor (VIF) scores ranged from 1.08 to 1.24. This is far below the >10 threshold and suggests that the multicollinearity assume was met (Myers, 1990). Errors were also mostly independent as Durbin-Watson scores (Durbin & Watson, 1951) ranged from 1.91 to 2.05 between the regressions, close to the ideal value of 2 (Field et al., 2012).

Table 3. Sex differences in the ratings of Vocation Preference

	Male		95% CI		Female		95% CI			
Vocation	M	SD	Lower	Upper	M	SD	Lower	Upper	*F*	*p*
Anthropology	3.68	2.33	3.37	3.98	4.37	2.38	4.07	4.67	10.12	.002
Accounting	7.53	1.90	7.29	7.78	8.13	1.71	7.92	8.34	12.81	.000
Architecture	7.11	2.03	6.85	7.37	7.21	2.14	6.94	7.48	0.29	.589
Biology	6.73	1.94	6.48	7.38	7.13	2.01	6.88	7.38	4.85	.028
Chemistry	6.92	1.91	6.67	7.17	7.29	1.94	7.04	7.53	4.22	.040
Computer Science	8.99	1.33	8.81	9.16	8.77	1.46	8.58	8.95	3.03	.082
Crime Science	6.06	2.10	5.79	6.33	6.61	2.26	6.33	6.90	7.57	.006
Dentistry	7.65	2.10	7.38	7.92	8.27	1.91	8.03	8.51	11.59	.001
Earth Sciences	5.29	2.35	4.99	5.60	6.11	2.26	5.83	6.40	15.12	.000
Education	6.84	2.30	6.54	7.14	7.69	2.08	7.42	7.94	17.81	.000
English	6.49	2.56	6.16	6.82	7.11	2.45	6.58	7.04	7.26	.007
Engineering	8.71	1.51	8.52	8.91	8.63	1.58	8.43	8.83	0.28	.593
Fine Art	3.67	2.21	3.38	3.95	4.29	2.47	3.98	4.60	8.37	.004
French	4.53	2.36	4.22	4.83	5.35	2.36	5.05	5.64	14.31	.000
Geography	4.63	2.38	4.33	4.94	5.27	2.21	4.88	5.55	9.08	.003
German	4.74	2.31	4.44	5.04	5.29	2.48	4.97	5.60	6.06	.014
History	4.44	2.50	4.11	4.76	5.09	2.37	4.80	5.39	8.59	.004
Information Sci	7.12	2.33	6.81	7.42	7.32	2.12	7.05	7.59	0.96	.325
Japanese	4.34	2.60	4.01	4.68	5.40	2.59	5.07	5.72	19.54	.000
Law	7.73	1.75	7.50	7.95	8.01	1.75	7.79	8.23	3.17	.076
Management Sci	7.01	1.83	6.77	7.25	7.18	1.95	6.93	7.42	0.92	.338
Mathematics	7.34	2.02	7.08	7.61	7.67	1.95	7.42	7.92	3.19	.075
Media Studies	5.92	2.19	5.63	6.20	5.93	2.53	5.71	6.14	0.01	.937
Medicine	8.71	1.59	8.50	8.92	8.94	1.45	8.76	9.13	2.92	.088
Pharmacology	7.95	1.75	7.72	8.18	8.44	1.62	8.23	8.64	9.95	.002
Physics	7.23	1.89	6.99	7.48	7.15	1.95	6.91	7.40	0.20	.653
Plant Science	5.22	2.17	4.94	5.50	5.57	2.23	5.29	5.85	2.99	.084
Psychology	6.15	2.21	5.85	6.43	6.73	2.16	6.46	7.00	8.47	.004
Philosophy	3.62	2.44	3.30	3.94	4.26	2.49	3.94	4.57	7.98	.005
Political Science	4.87	2.40	4.56	5.19	5.44	2.32	5.15	5.74	6.95	.009
Sports Science	4.47	2.41	4.14	4.79	5.20	2.31	4.91	5.49	11.28	.001
Sociology	4.46	2.41	4.15	4.77	5.27	2.50	4.96	5.59	12.99	.000
Statistics	6.67	2.21	6.39	6.96	6.56	2.21	6.28	6.83	0.34	.559
Theology	3.06	2.49	2.73	2.38	3.67	2.56	3.35	3.99	6.98	.009
Zoology	5.33	2.44	5.02	5.63	4.97	2.50	4.74	5.19	10.69	.001
Factor 1	4.85	1.61	4.64	5.05	5.50	1.61	5.30	5.70	19.74	.000
Factor 2	8.05	1.28	7.88	8.21	8.30	1.23	8.15	8.46	4.88	.028
Factor 3	4.54	2.21	4.25	4.83	5.34	2.26	5.06	5.63	15.38	.000
Factor 4	6.68	1.64	6.47	6.89	6.81	1.76	6.59	7.03	0.67	.412
Factor 5	6.98	1.50	6.79	7.17	7.16	1.57	6.96	7.36	1.600	.207

The variance was accounted for most for Factor 1 "Social Sciences, Humanities and Arts" (Adj $R^2 = .101$, $F = 7.65$, $p < .001$). This was most strongly predicted by sex (being female; $B = .610$, $t = 4.011$ $p < .001$), but also positively predicted by Age and Optimism ($B = .025$ $t = 3.33$, $p < .001$ and $B = .129$, $t = 3.070$, $p = .002$ respectively) and negatively predicted by having a degree ($B = -.553$, $t = -3.73$, $p < .001$).

Factor 3 "Languages" was also significantly predicted by Sex and Age ($B = .789$, $t = 3.67$, $p < .001$ and $B = .026$, $t = 2.46$, $p = .014$, respectively); also by the number of languages the participant spoke ($B = .368$, $t = 2.81$, $p = .005$); this is contrary to the nonsignificant correlational relationships seen in Table 2.

Number of languages spoken was the highest predictor ($B = .522$, $t = 5.34$, $p < .001$) of Factor 4 "People and Information Management". This factor was also positively predicted by Age, Religiousness and Liberalism ($B = .018$, $t = 2.32$, $p = .021$; $B = .072$, $t = 2.38$, $p = .018$, and $B = .135$, $t = 3.12$, $p = .002$ respectively), and negatively predicted by having a degree ($B = -.440$, $t = -2.81$, $p = .005$).

Conversely, neither Factor 2 "STEM or Vocational" nor Factor 5 "Pure Sciences" yielded significant regression models. Furthermore, Factor 2 had no significant predictors and Factor 5's only significant predictor was the number of languages spoken ($B = .221$, $t = 2.31$, $p = .022$).

Table 4. Multiple Regressions with the five factors as the criteria, and demography, ideology and personal details, and the predictor variables.

Factor 1	*B*	SE	*t*	B Lower Bound	B Upper Bound
Sex	.610	.186	4.01***	.311	.908
Age	.025	.154	3.33***	.010	.039
Degree	−.553	−.168	−3.73***	−.845	−.262
Religiousness	.053	.087	1.86	−.003	.109
Liberalism	−.015	−.017	−0.37	−.096	.065
Optimism	.129	.146	3.07**	.046	.211
Languages Spoken	.149	.075	1.61	−.033	.331
Self-Evaluations	−.005	−.040	−0.81	−.017	.007
F	**7.648*** **				
Adj R^2			**.101**		
Factor 2	B	SE	*t*	B Lower Bound	B Upper Bound
Sex	.217	.122	1.78	−.023	.457
Age	.005	.006	0.83	−.007	.017
Degree	.211	.119	1.77	−.024	.446
Religiousness	.009	.023	0.37	−.037	.054
Liberalism	.059	.033	1.79	−.006	.124
Optimism	−.032	.034	−0.95	−.099	.034
Languages Spoken	.054	.075	0.71	−.093	.200
Self-Evaluations	.001	.005	0.23	−.009	.011
F			**1.847**		
Adj R^2			**.014**		
Factor 3	B	SE	*t*	B Lower Bound	B Upper Bound
Sex	.789	.215	3.67***	.367	1.211
Age	.026	.010	2.46**	.005	.046
Degree	−.245	.210	−1.17	−.658	.167
Religiousness	.076	.040	1.89	−.003	.156
Liberalism	.091	.058	1.56	−.023	.205
Optimism	.107	.059	1.80	−.010	.224
Languages Spoken	.368	.131	2.81**	.110	.626
Self-Evaluations	.002	.009	0.28	−.015	.020
F	**5.02*** **				
Adj R^2			**.064**		
Factor 4	B	SE	*t*	B Lower Bound	B Upper Bound
Sex	.217	.160	1.35	−.098	.532
Age	.018	.008	2.32*	.003	.033
Degree	−.440	.157	−2.81**	−.748	−.133
Religiousness	.072	.030	2.38*	.013	.131
Liberalism	.135	.043	3.12**	.050	.220
Optimism	.020	.044	0.46	−.067	.107
Languages Spoken	.522	.098	5.34***	.330	.715
Self-Evaluations	−.001	.007	−0.18	−.014	.012
F	**5.76*** **				
Adj R^2			**.074**		
Factor 5	B	SE	*t*	B Lower Bound	B Upper Bound
Sex	.190	.150	1.27	−.104	.484
Age	.004	.007	0.57	−.010	.018
Degree	.153	.146	1.05	−.134	.440
Religiousness	.007	.028	0.23	−.049	.062
Liberalism	.076	.040	1.89	−.003	.156
Optimism	.030	.041	0.72	−.051	.111
Languages Spoken	.211	.091	2.31*	.031	.390
Self-Evaluations	−.001	.006	−0.18	−.013	.011
F	**1.70**				
Adj R^2			**.012**		

***$p < 0.01$**$p < .01$ *$p < .05$.

Discussion

The results showed that the ratings of the various disciplines factored into identifiable clusters particularly languages, STEM subjects and management. The first factor contained a number of "new disciplines" like crime-, earth-, plant- and sport- science many of which are an outgrowth of, or

linked to, other more established disciplines which loaded on the same factor like geography, psychology and sociology. In the arts these are classified as studies (i.e. feminist studies) while in the sciences they are called sciences.

The five disciplines with the highest ratings were Computer Science (8.80), Medicine (8.78), Engineering (8.77), Pharmacy (8.20) and Dentistry (8.14) which all loaded on the second factor. By contrast those disciples that received the lowest ratings were Theology (3.23), Philosophy (3.93), Fine Arts (3.94), Anthropology (4.12) and Sports Science (4.74) all of which loaded on the first factor. Thus, the rating for the highest discipline was over twice that of the lowest. Those in the highest rating group were clearly those directly linked to particular professions, compared to the lowest.

The disciplines with the highest ratings would generally be regarded as sciences and be in Medical or Science faculties. Most would require that students have evidence of high ability in mathematics and other related disciples (i.e. Physics). On the other hand, it is often the case that universities are much less particular about the educational specialities (rather than attainment) for study in the disciplines with lowest ratings in Table 1 (Furnham, 2002).

One important question arising from these results is: Are these figures correct in the sense that these are best paid jobs (i.e. medicine, dentistry pharmacy)? Occasionally tables of statistics are revealed with how much people are paid though there is often a great deal of "guess-timation" acknowledged by those who compile the statistics. In recent British and American web-posts, Medical and Legal jobs come top but also with more modern jobs like Web Developer or Data Scientist. Often jobs in the finance sector (banking, investment consultancy) come high on the list with those being trained in economics.

The results suggest professional, STEM subjects and Pure Science are viewed as leading to well-paid jobs more easily. What they have in common is their stress on numeracy (rather than literacy); as well as the fact they usually demand higher grades for students to be admitted. The problem for professional subjects (i.e. accounting; dentistry) is that they have a very narrow focus while the pure sciences like mathematics can be used in almost any job. It should be noted that we did not ask about job-satisfaction or engagement but focused on the extrinsic factor or pay. It is well known that the relationship between extrinsic and intrinsic motivation, while positive, is small (Furnham, 2012).

However, perhaps the most novel contribution in this paper was on individual who correlates of these perceptions. We examined demographic (sex, age, educations) ideology (religious and political beliefs) as well as various ratings. There were many sex differences in all analyses (correlations, ANOVAs, regressions) which showed consistently that women gave higher ratings than males. Results from first factor with such a strong sex significance could suggest that the difference in gender ratios (at least at undergraduate level) of social sciences is due to women seeing them as more useful, though this hypothesis merit further investigation. Moreover, although statistical significance was high, the magnitude of relationships was modest at best.

Also, older people tended to give higher ratings. The regressions on the five factors showed two things*:* first*,* despite using eight individual difference variables no regression accounted for more than 10% of the variance and two were not significant. Second*,* in three regressions the number of languages spoken by the participants was related to their beliefs that jobs in Factors 3, 4 and 5 were well paid. These results therefore tended to indicate consensus in these judgements.

It is the role of vocational/career guidance experts to help and encourage people in understanding their abilities and strengths, and in selecting careers that suit both their skillset and motivation. Certainly most people would wish for a well-paid job that is relatively easy to obtain, though they recognise that their natural abilities and skillset may prohibit them from getting such a job. Equally others may happily forsake a well-paid job for another because of the stresses associated with it.

Times change and with them technology. Many jobs have disappeared, others have emerged and there is a lot of speculation on the future of jobs. This implies that those in career counselling and guidance need to update themselves frequently about the job market and the call for particular skills (Gough, 2017).

One implication of these findings concerns understanding the extent to which students enrol in different disciplines with the aim of acquiring knowledge and skill that leads to well-paid jobs. Clearly this would not be the case for those who select disciplines like Anthropology or Philosophy and it would be interesting to know what are the major factors that drive their choice. The same applies to potential employers: what assumptions do they have concerning the skills and knowledge base of those who graduate in computer science vs French? There seems to be relative paucity of up-to-date studies on employers' attitudes to, and understanding of, the curricula of various university programmes and the skills and knowledge base obtained by the students in these programmes.

Limitations and recommendations

Like all studies, our study also has limitations. Some disciplines were omitted from the list, simply because it would have become too much for any participant to complete. Retrospectively, it may have been desirable to have included business studies, economics and some of the newer disciplines at "the cutting edge" of creative entrepreneurship. It would also have been ideal, as always, to have a larger and more representative participant group. Also, it would be interesting to know more about the participants particularly their personal educational details as well as their current income. Do those who have a degree in a particular field rate it as more or less useful than those who do not? This may be simply a function of dissonance reduction particularly when the degree does or did not result in a well-paid job. Finally, it would be interesting to contrast the responses of those in the business of vocational guidance with a matched group in other professions to explore their answers.

Conclusion

There are many reasons why people choose to enrol in different disciplines at university. The usual reasons are aptitude and interest: that is, at school they have been shown to be good at a range of subjects (i.e. music, mathematics, languages) *and* that they enjoyed them. In other words, the reasons include a combination of ability and motivation. Another important reason is how useful they believe the degree to be. Here we have shown that one's age, sex and political orientation can also contribute to beliefs about how useful they believe a degree to be. This information can help inform career counsellors on how different options may be evaluated differently by individuals, and highlight some trends on which options may be viewed more favourably by their clients.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability

An SPSS file of the data is available on request from the first author.

Ethics committee approval code

CEHP/2017/514

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A. Furnham: Visualisation, Supervision, Writing -review & editing
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