International Issues in Education

Kai Ruggeri
The Queen's University, Belfast, Northern Ireland

Project undertaken in collaboration with:
Dra. Carmen Díaz
Universidad de Huelva, Spain
Dr. Karl Kelley
North Central College, USA
Prof. Dr. Ilona Papousek
Karl-Franzens-Universität, Graz, Austria

And under the supervision of:
Dr. Martin Dempster
Dr. Donncha Hanna
The Queen's University, Belfast, Northern Ireland

Abstract

Issues presented in the teaching of statistics to undergraduates in research-based degrees have negative effects on students regardless of where they study. Though countless measures have looked at these obstacles, none have consolidated a multilingual, multinational effort using a consistent method. Over 400 Spanish-, English-, and German-speaking undergraduate psychology students enrolled in introductory statistics courses were given the Composite Survey of Statistics Anxiety and Attitudes to determine the precursors and effects of existing problems. Results indicated meaningful similarities and differences regarding student background, attitudes, and anxieties across the groups tested. As well, the measure was supported as a viable first step in improving statistics education, meaning results and possible interventions can reasonably be applied to more than a single classroom. Also noted was the need for all research-based programs to examine internally the implementation of statistics in the degree, irrespective of language or location.

Background

With the growing importance of statistics education in various academic programs of all types (Bandalos, Finney, & Geske, 2003), issues surrounding the teaching and learning are necessary to examine (Batanero, 2004). Specifically at the post-secondary level, where universities now have the obligation both to educate students and prepare them for professional work (Bakker, Chance, Jun, & Watson, 2004), obstacles preventing students from achieving statistical literacy—anxiety, cognitive deficits, poor attitudes—must be addressed (Ben-Zvi & Garfield, 2004).

While a range of anecdotal solutions to issues have been presented by long-time statistics educators (i.e. Gelman & Nolan, 2002; Wainer, 2005), they are generally presented based on beliefs of the teacher that certain methods will better assist their students and not an any empirical data (Bartsch, 2006). Other attempts have targeted overall appeal, by implementing presumptively engaging activities on the first day of the course (Henslee, Burgess, & Buskist, 2006). Yet, all of these attempts have been based on impressions instructors have taken from students and were not built to address learned problems in teaching statistics. While the impression educators have taken from student sentiment may, in fact, be accurate (Gal & Ginsburg, 1994), a specific issue must be targeted for interventions to work beyond a single classroom.

Two commonly addressed issues in statistics education are statistics anxiety and attitudes toward statistics. They have been noted as the most pertinent issues to address in teaching statistics (Blalock, 1987) These have also been linked to negative outcomes, such as poor performance and avoidance of statistics (Zeidner, 1991).

Statistics anxiety is a unique construct and, while parallel, different from mathematical anxiety (Baloğlu, 1999). It has been linked with a variety of negative outcomes in various degree programs (Onwuegbuzie & Wilson, 2003), particularly research-based areas such as psychology (Tremblay, Gardner, & Heipel, 2000). Though it may be linked with other anxieties, it specifically is the negative reaction to anything involving statistical information,

computation, or interpretation in both academic and practical situations (Cruise, Cash, & Bolton, 1985; Onwuegbuzie & Daly, 1999).

Attitudes toward statistics have generally been noted by reactions of both students and educators in the subject (Garfield, Hogg, Schau, Wittinghill, 2002). These attitudes are the response to how individuals experience statistics (Gal, Ginsburg, Schau, 1997). Like statistics anxiety, a variety of measures exist to gauge these feelings.

While tests for statistics anxiety exist, the Statistics Anxiety Rating Scale (STARS; Cruise & Wilkins, 1980) was the first created solely to address this particular phenomenon. Other measures, such as the Revised Mathematics Anxiety Rating Scale (Plake & Parker, 1982) and the Statistics Anxiety Inventory (Zeidner, 1991), were developed either as a link to mathematical anxiety or as single-use measures for a particular study. Furthermore, validity scores of the STARS have shown the six subscales (worth of statistics, interpretation anxiety, test and class anxiety, computation self-concept, fear of asking for help, fear of statistics teachers) are best suited to address the potential aspects of the problem (Baloğlu, 2002).

Likewise, the Survey of Attitudes Toward Statistics (SATS; Schau, Stevens, Dauphinee, Del Vecchio, 1997) has demonstrated that the four-dimensional model it provides (affect, cognitive competence, value, difficulty) is the most reliable measure available (Schau, 2003). While the Attitudes Toward Statistics questionnaire and Statistics Attitude Survey do not cover all necessary variables in their assessment (Gal, et al, 1997). This addresses more possible factors, whereas others only focus on single or two-dimensional approaches.

Many previous studies have utilised both STARS and SATS – some even concurrently (Nasser, 2004) – but few potential antecedents, externalities, or personal characteristics (aside from gender and previous mathematics experience) which may contribute to the issues in developing statistical literacy are addressed in either. Many untested suggestions of likely causes of negative attitudes and statistics anxiety exist (i.e. Haynes, Mullins, & Stein, 2004), such as family background, previous statistics experience, and workload, among many.

Furthermore, statistics anxiety and attitude literature has been produced from all over the world, yet a joint effort of educators from different universities, nationalities, and languages is lacking. For any intervention to be applicable beyond a situational context, broad measurement must first take place. Given that much of the previous work in the area has been undertaken in English- and Spanish-speaking locations, American, British, and Spanish universities were an appropriate first sample. Additional participation only increases the scope of the understanding.

Potential cultural differences were expected to vary the results somewhat, it is still important to compare these findings in order to address the problem from a perspective that all may benefit. Due to diversity within and between universities of students and educators alike, all research in the area of statistics education will face the predicament of lacking homogeneity (Ben-Zvi & Garfield, 2004).

The goals of this particular work were thus fourfold:

1. Create an internationally reliable testing measure to address issues in statistics education.

2. Identify similarities and differences in statistics education between multiple locations.

3. Find potential causes for the obstacles found in statistics education.

4. Encourage other research-based institutions to consider issues in their own curriculum in order to improvement the development of future researchers.

Method

Instrument

The Composite Survey of Statistics Anxiety and Attitudes (COSSAA) is a consolidation of previously developed questionnaires (SATS, STARS) along with a variety of untested questions about potential external factors (demographics, previous experiences, and expectations). The ten subscales (four from SATS, six from STARS) remained unchanged, but additional questions addressed the following:

Academic level
Age
Gender
First language
Awareness of statistics in degree program
Expectation of success
Family background in degree subject
Non-traditional student (i.e. mature, international)
Class size preference
Statistical relevance to subject
Secondary school mathematics
Confidence in statistical thinking
Expectations of statistics course
Professor influence

The original language of each questionnaire is English, as was the completed COSSAA. The composite was translated by a bilingual native Spanish speaker and then checked for fidelity by the author (bilingual, English) and distributor (bilingual, Spanish). A similar process was used for the German version, using two bilingual (German-English, one native speaker of each) academic interpreters.

The entire survey had good internal consistency, with a Cronbach's alpha of .77. The STARS and SATS section showed comparable reliability (.81 and .84, respectively) to what had been found previously.

Participants

Undergraduate psychology students from a medium public university in Spain, large universities in both the United Kingdom and Austria, and a small private college in the

United States were asked to complete the Composite Study of Statistics Anxiety and Attitudes. In total, 463 participants (73.2% female) ranging in age from 17 to 52 (*M*=20.9) from all undergraduate levels took part. Of the entire sample, only five students were not enrolled in courses taught in their native language.

Figure 1: Sample Demographics

Nationality (participants*)	% Female	Mean Age
Spanish (85)	79.3%	21.63
British (196)	71.9%	20.66
American (42)	66.7%	20.35
Austrian (104)	82.7%	20.86
German (27)	51.9%	21.15
Other** (5)	100%	21.20

*Some students did not complete the demographic section.
**One participant from each Italy, Romania, Pakistan, Norway, and Bosnia-Herzegovina.

Procedure

In order to assess if issues in teaching statistics were prevalent regardless of the location, timing, and educator, students from each location completed the COSSAA at different points in their academic calendar. Each university implemented the statistics portion of psychology differently (as a single course or as an aspect of a research course, for example) and utilised different methods of instruction, assessment.

Results

Personal Background

Previous work had suggested family background in research might have improved attitudes and decreased anxiety, based on a more thorough understanding of requirements. However, even with 15.4% of participants fitting that category, it did not count for significant variance in the measures of expectation, statistics anxiety, nor attitudes; $F(20,450)=0.957$, $p>.05$.

Age was a factor, accounting for 3.4% of the variance, though it was not even moderately correlated with a single item or subscale from the study. Contrarily, academic level did influence results, accounting for 16.4% of the variance; $F(20,444)=5.361$, $p<.001$.

While 63.7% of students did indicate they would have preferred a smaller class size for instruction, this was not associated overall with results; $F(20.450)=1.347$, $p>.05$.

Expectations

On the whole, many students did not anticipate doing statistics in their course, with only 49.1% indicating an awareness of it.

University	Percent Aware
Austria	71.4%
Spain	14.1%
USA	57.1%
UK/Ireland	46.4%

However, 86.3% expected to succeed at introductory statistics, which meant lacking awareness was not an absolute barrier to confidence. Though the overwhelming majority of students did see the relevance of statistics to their area, the 8.0% who did not had equal or lower expectations, higher anxiety levels, and more negative attitudes toward statistics (see Appendix A). Furthermore, failing to see the relevance accounted for 15.2% of the variance; $F(20, 450)=5.043$, $p<.001$.

Furthermore, students were overall confident in their ability to master introductory statistics ($M=4.67$, $s=1.531$; 1= no confidence, 7=extreme confidence). This had a clear influence on attitudes and anxiety, accounting for 49.6% of the variance in the ten subscales; $F(19, 450)=24.345$, $p<.001$).

Statistics Anxiety

Overall scores of statistics anxiety subscales were approximately similar to those presented in previous work (Baloğlu, 2003). Aside from the fear of asking for help, subscales varied heavily between countries (see Appendix B-1). However, *post hoc* tests showed these differences were typically between one extreme group per subscale, and not necessarily between the entire group (see Appendix B-2).

Attitudes Toward Statistics

Much like the statistics anxiety subscales, all attitude subscales varied based on location (See Appendix C-1). Similarly, these variations were consistently traced back to a single extreme location (see Appendix C-2).

Teacher Influence

The amount of influence a professor had on the experience of a course varied between universities; $F(2,266)=3.065$, $p=.05$. Additionally, this was associated with attitudes, anxiety, or expectations of success, $F(20,259)=3.223$, $p<.001$.

NOTE: The sample for this question did not include UK/Irish students, as this question was added after they were tested.

Discussion

The overall finding of the research indicates that issues involving undergraduate students' learning of statistics can be found across universities and nationalities. While specific inferences may be made about several of these aspects, the main purpose was not to determine where some areas were strong and others were weak, but to highlight the importance of the issues at hand for all.

The factors related to statistics anxiety and attitudes display quite clearly that students are, for a variety of possible reasons, having quite intense issues in their statistics courses. Furthermore, the background of the students indicated possible reasons for those issues which may be addressed within a course. These are both incredibly relevant concepts in the light of improving the problem.

In order to address how to go about developing such an intervention, the feedback of the students must be considered. First, unique attention should be paid to the primary areas of concern produced. For example, as many students simply did not consider statistics of value, seeking ways to provide students incentive and motivation to learn statistics may be necessary.

Considering the relationship between the teacher influence, attitudes, and anxiety, the teaching of the course is clearly something which must be addressed. However, a more focused attempt to determine how teaching influences these constructs is necessary. Also, as the expectations of students clearly played a role in their experience of the course, the role teaching may play in improving these should also be investigated concurrently.

If students are actually affected by their awareness – or lack thereof – then this must be addressed immediately. Whether the oneness of this is upon the university or the secondary school likely depends on the location. However, if secondary school counsellors are responsible for guiding students as they select tertiary academic degrees, then they automatically qualify as primary sources of providing that awareness. Furthermore, universities have an obligation to admit students who are capable of succeeding in their course, thus they should also be expected to make the statistics requirement known.

While many published interventions to improve statistics education do exist, they primarily address classroom-specific issues. This is a problem in that not all of these strategies are practical for more than a very similar situation (i.e. small class size, social science-only students) which provides a comparable target group. Furthermore, almost none of these studies provided control groups, before and after results, nor standardised testing measures.

Sample Differences

There was a lack of homogeneity between the groups tested. Each university had very different sizes of students enrolled in the course, thus varying heavily the number of participants from each. This clearly affects the extent to which results can be compared and contrasted.

Three concepts which were not addressed specifically by the COSSAA were culture, timing, and educators. In that these may play as much of a role in the experiences and responses to

the teaching of this, or any, course, it is not sufficient to only relate student backgrounds to the result.

For the universities tested, these were three heavily different confounds. American participants each attended a small, private Midwestern college where the professor was very much involved with students' interaction with material (i.e. teaching all lectures in a small classroom, responsible for all assessment). Students in the United Kingdom also took an English version of the survey, but did so in a very large university, where multiple lecturers handle the teaching of statistics and rarely interact with students. Spanish and Austrian students did take language-appropriate versions, but were in one of multiple statistics courses required of their degree, whereas English-speaking students were tested at the onset of their first course. Any of these could clearly influence differences in the results.

The major drawback of this sample problem is the possibility of new biases introduced via the translated testing method. To correct this, future administrations or expansions of this study must first address and test potential biases before implementation. While this issue may not apply to yes-no and background questions, variations may indicate biases, not culture or language, are in fact the cause (Muñiz, 2004).

Determining the Relevance

One of the main difficulties in understanding issues in statistics education is the lack of a standardised testing measure. While links have been made to poor performance in a course, it is yet to be determined if this is applicable to any type of assessment. In that curricular standards will vary even within a discipline, producing a standardised test may be superfluous. For instance, whereas psychological statistics curricula will likely address the same topics, different universities will vary in the implementation of this teaching. (i.e. handwritten formulae and calculations versus using computerised statistical programs).

Interdisciplinary standards potentially vary to an even greater degree. This may be seen when comparing a sociological course focused on demographic and interpretative learning to a biological course, which would focus heavily on sampling and distribution. In response, future work can identify what specific aspects of learning are affected by the issues presented by statistics anxiety and negative attitudes.

Conclusion

The importance of understanding statistics to produce appropriate methodologies for research means that statistics education must become a focal point of study. Institutions of higher education must take note of this, as it is now their duty to both prepare students as future researchers and develop skills beyond their immediate focus. Though students may not particularly desire learning the subject, it is something they must do.

Forthcoming work must address negative attitudes, statistics anxiety, and expectations if it is to produce any meaningful effect. Furthermore, it must do so using standardised measures which others can use as a barometer of success for students and educators in all places. As

there may be only one opportunity to provide this teaching, these improvements are urgently needed.

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Appendix A

T-Score Table of Group Differences and Similarities Based on Awareness of Statistics in the Program

	T	N	p
Daily Statistical Confidence	4.218	45	0.000
Stats are Useful	2.070	45	0.039
Stats are Enjoyable	1.400	46	0.162
Stats are Difficult	-	46	0.000
Influence of Professor	1.809	26	0.072
Secondary School Math Performance	1.515	45	0.131
Good at Mathematics	2.705	45	0.007
Confidence in Mastering Statistics	0.769	45	0.442
Worth of Statistics	0.733	45	0.464
Interpretation Anxiety	3.064	45	0.002
Test and Class Anxiety	5.266	45	0.000
Computation Self-Concept	-	46	0.000
Fear of Asking for Help	-	46	0.000
Fear of Statistics Teacher	-	46	0.000
Affect	-	46	0.000
Cognitive Competence	-	46	0.030
Value	-	46	0.002
Difficulty	-	46	0.001

Mean Table Indicating Difference in Awareness Results

	Unaware of statistics	**Aware of Statistics**
Daily Statistical Confidence	3.154867	2.793991
Stats are Useful	3.110132	2.931624
Stats are Enjoyable	2.427313	2.280851
Stats are Difficult	3.471366	3.782979
Influence of Professor	4.264706	4.061069
Secondary School Math Performance	5.080357	4.863248
Good at Mathematics	4.620536	4.247863
Confidence in Mastering Statistics	4.982143	4.871795
Worth of Statistics	3.339286	3.222222
Interpretation Anxiety	4.2287	3.784483
Test and Class Anxiety	5.049107	4.318966

Computation Self-Concept	35.67841	41.26809
Fear of Asking for Help	25.74009	29.67234
Fear of Statistics Teacher	23.42291	26.68936
Affect	16.9207	19.52766
Cognitive Competence	8.581498	9.348936
Value	9.92511	10.9234
Difficulty	23.71366	25.98298

Appendix B-1

ANOVA Summary of Statistics Anxiety Feedback Based on University

		Sum of Squares	Df	Mean Square	F	Sig.
Worth of Statistics	Between Groups	3603.472	3.000	1201.157	9.071	0.000
	Within Groups	60782.213	459.000	132.423		
	Total	64385.685	462.000			
Interpretation Anxiety	Between Groups	8312.531	3.000	2770.844	49.917	0.000
	Within Groups	25478.890	459.000	55.510		
	Total	33791.421	462.000			
Test and Class Anxiety	Between Groups	3672.718	3.000	1224.239	30.337	0.000
	Within Groups	18522.785	459.000	40.355		
	Total	22195.503	462.000			
Computation Self-Concept	Between Groups	2021.168	3.000	673.723	19.234	0.000
	Within Groups	16077.623	459.000	35.028		
	Total	18098.790	462.000			
Fear of Asking for Help	Between Groups	40.909	3.000	13.636	0.943	0.419
	Within Groups	6634.668	459.000	14.455		
	Total	6675.577	462.000			
Fear of Statistics Teachers	Between Groups	467.346	3.000	155.782	13.296	0.000
	Within Groups	5377.682	459.000	11.716		
	Total	5845.028	462.000			

Appendix B-2

***Post Hoc* Comparisons of Statistics Anxiety Between Universities**

Tukey HSD

Dependent Variable	(I) University	(J) University	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Upper Bound	Lower Bound
Worth	Austria	USA	.938	2.025	.967	-4.28	6.16
		Spain	.202	1.582	.999	-3.88	4.28
		UK/Ireland	-5.412(*)	1.273	.000	-8.70	-2.13
	USA	Austria	-.938	2.025	.967	-6.16	4.28
		Spain	-.736	2.170	.987	-6.33	4.86
		UK/Ireland	-6.350(*)	1.957	.007	-11.40	-1.31
	Spain	Austria	-.202	1.582	.999	-4.28	3.88
		USA	.736	2.170	.987	-4.86	6.33
		UK/Ireland	-5.614(*)	1.495	.001	-9.47	-1.76
	UK/Ireland	Austria	5.412(*)	1.273	.000	2.13	8.70
		USA	6.350(*)	1.957	.007	1.31	11.40
		Spain	5.614(*)	1.495	.001	1.76	9.47
Interpretation Anxiety	Austria	USA	-6.783(*)	1.311	.000	-10.16	-3.40
		Spain	-7.474(*)	1.024	.000	-10.12	-4.83
		UK/Ireland	-9.965(*)	.824	.000	-12.09	-7.84
	USA	Austria	6.783(*)	1.311	.000	3.40	10.16
		Spain	-.690	1.405	.961	-4.31	2.93
		UK/Ireland	-3.182	1.267	.059	-6.45	.08
	Spain	Austria	7.474(*)	1.024	.000	4.83	10.12
		USA	.690	1.405	.961	-2.93	4.31
		UK/Ireland	-2.492	.968	.050	-4.99	.00
	UK/Ireland	Austria	9.965(*)	.824	.000	7.84	12.09
		USA	3.182	1.267	.059	-.08	6.45
		Spain	2.492	.968	.050	.00	4.99
Test and Class Anxiety	Austria	USA	-2.940(*)	1.118	.043	-5.82	-.06
		Spain	-6.494(*)	.874	.000	-8.75	-4.24
		UK/Ireland	-6.092(*)	.703	.000	-7.90	-4.28
	USA	Austria	2.940(*)	1.118	.043	.06	5.82

		Spain	-3.553(*)	1.198	.017	-6.64	-.46
		UK/Ireland	-3.151(*)	1.080	.019	-5.94	-.37
	Spain	Austria	6.494(*)	.874	.000	4.24	8.75
		USA	3.553(*)	1.198	.017	.46	6.64
		UK/Ireland	.402	.825	.962	-1.73	2.53
	UK/Ireland	Austria	6.092(*)	.703	.000	4.28	7.90
		USA	3.151(*)	1.080	.019	.37	5.94
		Spain	-.402	.825	.962	-2.53	1.73
Computation Self-Concept	Austria	USA	1.093	1.041	.720	-1.59	3.78
		Spain	-1.340	.814	.354	-3.44	.76
		UK/Ireland	-4.285(*)	.655	.000	-5.97	-2.60
	USA	Austria	-1.093	1.041	.720	-3.78	1.59
		Spain	-2.433	1.116	.131	-5.31	.45
		UK/Ireland	-5.378(*)	1.006	.000	-7.97	-2.78
	Spain	Austria	1.340	.814	.354	-.76	3.44
		USA	2.433	1.116	.131	-.45	5.31
		UK/Ireland	-2.945(*)	.769	.001	-4.93	-.96
	UK/Ireland	Austria	4.285(*)	.655	.000	2.60	5.97
		USA	5.378(*)	1.006	.000	2.78	7.97
		Spain	2.945(*)	.769	.001	.96	4.93
Fear of Asking for Help	Austria	USA	-.817	.669	.614	-2.54	.91
		Spain	-.753	.523	.474	-2.10	.59
		UK/Ireland	-.456	.421	.699	-1.54	.63
	USA	Austria	.817	.669	.614	-.91	2.54
		Spain	.063	.717	1.000	-1.79	1.91
		UK/Ireland	.361	.646	.944	-1.31	2.03
	Spain	Austria	.753	.523	.474	-.59	2.10
		USA	-.063	.717	1.000	-1.91	1.79
		UK/Ireland	.297	.494	.931	-.98	1.57
	UK/Ireland	Austria	.456	.421	.699	-.63	1.54
		USA	-.361	.646	.944	-2.03	1.31
		Spain	-.297	.494	.931	-1.57	.98
Fear of Statistics Teachers	Austria	USA	1.117	.602	.249	-.44	2.67
		Spain	1.094	.471	.094	-.12	2.31
		UK/Ireland	-1.326(*)	.379	.003	-2.30	-.35
	USA	Austria	-1.117	.602	.249	-2.67	.44
		Spain	-.023	.646	1.000	-1.69	1.64
		UK/Ireland	-2.442(*)	.582	.000	-3.94	-.94
	Spain	Austria	-1.094	.471	.094	-2.31	.12
		USA	.023	.646	1.000	-1.64	1.69

		UK/Ireland	-2.419(*)	.445	.000	-3.57	-1.27
	UK/Ireland	Austria	1.326(*)	.379	.003	.35	2.30
		USA	2.442(*)	.582	.000	.94	3.94
		Spain	2.419(*)	.445	.000	1.27	3.57

* The mean difference is significant at the .05 level.

Appendix C-1

ANOVA Summary of Statistics Attitudes Feedback Based on University

		Sum of Squares	Df	Mean Square	F	Sig.
Affecti	Between Groups	2419.190	3.000	806.397	15.691	0.000
	Within Groups	23588.793	459.000	51.392		
	Total	26007.983	462.000			
CognitiveCompi	Between Groups	1941.629	3.000	647.210	15.520	0.000
	Within Groups	19140.911	459.000	41.701		
	Total	21082.540	462.000			
Valuei	Between Groups	1683.594	3.000	561.198	6.416	0.000
	Within Groups	40145.810	459.000	87.464		
	Total	41829.404	462.000			
Difficultyi	Between Groups	1226.257	3.000	408.752	9.454	0.000
	Within Groups	19845.371	459.000	43.236		
	Total	21071.629	462.000			

Appendix C-2

***Post Hoc* Comparisons of Statistics Attitudes Between Universities**

Tukey HSD

Multiple Comparisons

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) University	(J) University	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Upper Bound	Lower Bound
Affect	Austria						
		USA	.140	1.261	1.000	-3.11	3.39
		Spain	-1.207	.986	.612	-3.75	1.33
		UK/Ireland	-4.902(*)	.793	.000	-6.95	-2.86
	USA	Austria	-.140	1.261	1.000	-3.39	3.11
		Spain	-1.348	1.352	.751	-4.83	2.14
		UK/Ireland	-5.043(*)	1.219	.000	-8.19	-1.90
	Spain	Austria	1.207	.986	.612	-1.33	3.75
		USA	1.348	1.352	.751	-2.14	4.83
		UK/Ireland	-3.695(*)	.931	.000	-6.10	-1.29
	UK/Ireland	Austria	4.902(*)	.793	.000	2.86	6.95
		USA	5.043(*)	1.219	.000	1.90	8.19
		Spain	3.695(*)	.931	.000	1.29	6.10
Cognitive Competence	Austria						
		USA	2.248	1.136	.198	-.68	5.18
		Spain	1.517	.888	.321	-.77	3.81
		UK/Ireland	-3.065(*)	.715	.000	-4.91	-1.22
	USA	Austria	-2.248	1.136	.198	-5.18	.68

		Spain	-.731	1.218	.932	-3.87	2.41
		UK/Ireland	-5.313(*)	1.098	.000	-8.14	-2.48
	Spain	Austria	-1.517	.888	.321	-3.81	.77
		USA	.731	1.218	.932	-2.41	3.87
		UK/Ireland	-4.582(*)	.839	.000	-6.74	-2.42
	UK/Ireland	Austria	3.065(*)	.715	.000	1.22	4.91
		USA	5.313(*)	1.098	.000	2.48	8.14
		Spain	4.582(*)	.839	.000	2.42	6.74
Value	Austria						
		USA	3.183	1.645	.215	-1.06	7.43
		Spain	1.084	1.286	.834	-2.23	4.40
		UK/Ireland	-2.609	1.035	.058	-5.28	.06
	USA	Austria	-3.183	1.645	.215	-7.43	1.06
		Spain	-2.100	1.764	.633	-6.65	2.45
		UK/Ireland	-5.793(*)	1.590	.002	-9.89	-1.69
	Spain	Austria	-1.084	1.286	.834	-4.40	2.23
		USA	2.100	1.764	.633	-2.45	6.65
		UK/Ireland	-3.693(*)	1.215	.013	-6.82	-.56
	UK/Ireland	Austria	2.609	1.035	.058	-.06	5.28
		USA	5.793(*)	1.590	.002	1.69	9.89
		Spain	3.693(*)	1.215	.013	.56	6.82
Difficulty	Austria						
		USA	3.883(*)	1.157	.005	.90	6.87
		Spain	3.965(*)	.904	.000	1.63	6.30
		UK/Ireland	.565	.728	.865	-1.31	2.44
	USA	Austria	-3.883(*)	1.157	.005	-6.87	-.90
		Spain	.082	1.240	1.000	-3.12	3.28
		UK/Ireland	-3.318(*)	1.118	.017	-6.20	-.44
	Spain	Austria	-3.965(*)	.904	.000	-6.30	-1.63
		USA	-.082	1.240	1.000	-3.28	3.12
		UK/Ireland	-3.400(*)	.854	.000	-5.60	-1.20
	UK/Ireland	Austria	-.565	.728	.865	-2.44	1.31
		USA	3.318(*)	1.118	.017	.44	6.20
		Spain	3.400(*)	.854	.000	1.20	5.60

* The mean difference is significant at the .05 level.