

RESEARCH REPORT

Across the seas
a user-based evaluation of candidate
telecommunication icons

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Research report

Institutionen för Arbetsvetenskap
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Across the Seas: A User-Based Evaluation of Candidate Telecommunication Icons

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SUMMARY

This project aimed to (a) to evaluate candidate telecommunication graphical symbols (icons and pictograms) developed in the west by means of different memory tests. Prospective users from eastern (Asian) and western countries were used as subjects. These countries were *Indonesia, Malaysia, Philippines, Thailand, Sri Lanka, Finland, Sweden and the USA*; (b) to examine the roles of profession and country by means of a quasi-experimental approach; and (c) to analyze the potential of semantic differential technique for the above evaluations.

A pilot study in one Asian country (Philippines) was initially done to gather some information on how Asian subjects understand graphical symbols designed in western countries. Three sets of twenty-three videophone symbols used in this study were designed in Japan, USA and England. Cued response, subjective certainty and semantic differential tests were utilized. The pilot study was followed by another study of the same symbols, this time using Filipino and Swedish subjects.

The succeeding studies utilized videophone symbols based on studies done by the Human Factors Technical Committee (HFTC) of the European Telecommunication Standards Institute (ETSI). The ETSI-recommended symbols for 7 videophone functions or referents were tested using two hundred-forty Asian subjects from 5 countries. They were from Indonesia, Malaysia, Philippines, Thailand, and Sri Lanka. Two other sets of 7 symbols each from the ETSI study were also tested among the Asian subjects. Based on the results and learnings from the two earlier studies, more measurement parameters were used this time. With simulating actual user scenarios in mind, the test was divided into four parts: spontaneous identification or free recall, the cued response, and the preference tests. Subjective certainty scaling tests complemented the subjects' answers for the first two parts. Semantic differential scaling tests (SDT) were also done as added evaluatory tool.

Results from the free recall tests (spontaneous identification) revealed very poor identification of most of the symbols in contrast to the cued response test results. The first test simulates the users' initial encounters with the symbols. Barely recognizing what the symbols meant strongly suggested the need to either redesign the symbols or to ensure adequate opportunities for familiarizing and educating the prospective users with the new symbols. The subjective certainty scores helped in studying the level of confidence of the answers by the subjects. Furthermore, the studies revealed that symbols could be easily recognized (high hit rates) but also confused as representing another (wrong) function at the same time. These were the "false alarms," instances when the symbols were chosen under the wrong referent contexts. The "missing values" were also important since they indicated situations when respondents either did not know the answer or thought that none among the symbols were comprehensible or representative of a desired function. The preference tests pertained to aesthetics of the symbols individually and as a set. In turn, the SDT scores revealed that symbols could have different connotative meanings in relation to the functions they were intended to represent.

Overall, Asian subjects performed comparably well with the European and American subjects used in earlier studies, preferring the same set of videophone symbols, but usually at the expense of more errors and confusions. Occupation or work seemed to have no significant influence on performance. However, tests with the elderly revealed an entirely different set of preferences than the younger group. Equally important, they failed to perform the free recall

and semantic tests claiming they were either too difficult or complicated. These strongly suggested the need to have simpler and more practical tests for the elderly. These also implied the gravity of the problem that can occur if graphical symbols are introduced arbitrarily without considering and involving the prospective users (e.g. the elderly) at the earliest design stages possible.

PROJECT ACTIVITIES TIME FLOW

- The Icon Project commenced with Study I December 1995 in the Philippines. This was immediately followed by a counterpart experiment in Sweden, which started January 1996 till March 1996. Presentation of initial results were presented in international conferences, these were:
 - Ohlsson, K., and Piamonte, P., 1995, On the search for generic icons, *International Interdisciplinary Semiotic Symposium on the Emergence of Codes and Intentions as a Basis of Sign Processes*, Odense University, Denmark, October 26-28.
 - Piamonte, D. P. T., Abeysekera, J. D. A. and Ohlsson, K., 1996, A user-based evaluation of telecommunication icons: some cross-cultural issues, *Proceedings of the First Asia-Pacific Conference on Computer-Human Interface - Human Factors of IT: Enhancing Productivity and Quality of Life*, Singapore, June 25-28, pp. 145-150.
- The year 1997 was marked by completion of the remaining test evaluations and research papers on the icon study. For the past 12 months, a number of papers were presented and conferences/seminars attended with regards to the *Icon Project: Across the Seas: A User-Based Evaluation of Candidate Telecommunication Icons*. Since the study involved potential users from Europe, Asia and America, the results of the studies were presented in key cities in these country groups. Further tests with subjects from USA and Sweden were likewise finished this year. In all, the project now encompass studies involving 5 Asian countries, USA, Sweden, Finland, as well as 8-9 other western European countries in collaboration with an earlier study done on videophone symbols. 1997 also marked the year where several conferences and seminars were attended both in Sweden and abroad. These were:
 - *Symbols and Design Evaluation*, Seminar organized under the Forum for Corporate Usability within Ericsson, by Ericsson Telecommunications Corp., April 18, 1997. (Current results of the studies were presented and discussed with the company's different design engineers, human factor specialists, etc.)
 - Piamonte, D. P. T., Ohlsson, K., and Abeysekera, J. D. A., 1997, Icon identification among different cultures, *Proceedings of the Society for Risk Analysis Conference*, Stockholm, June 15-18, pp. 679-685.

- Piamonte, D. P. T., Ohlsson, K., and Abeysekera, J. D. A., 1997, Evaluating telecom icons among Asian countries, *Advances in Human Factors/Ergonomics, Proceedings of the Human-Computer Interaction Conference '97*, San Francisco, California, USA, August 24-28, Vol. 21A, pp. 169-172.
- Piamonte, D. P. T., Ohlsson, K., and Abeysekera, J. D. A., 1997, Spontaneous identification and cued responses in symbols evaluation in Southeast Asia, *Proceedings of the Southeast Asian Ergonomics Society (SEAES) Conference*, Kuala Lumpur, Malaysia, November 6-8, pp. 281-286.
- *Symbols Evaluation among Different Countries*, A short seminar-report about the results of the Icon Project to participants of the study in Manila, Philippines, HealthDev Institute, Ateneo de Manila University, Quezon City, Metro-Manila, Philippines, November 10, 1997.
- The year 1998 was equally fruitful. In April 1998, the doctoral student involved in the project presented a Licentiate Seminar. A few more papers were likewise written in the remainder of the year. The project was also invited to be part of a special session in the forthcoming HCI '99 on August 1999 in München, Germany.
 - Piamonte, D. P. T., 1998, *A User-based Evaluation of Candidate Telecommunication Icons*, Industrial Ergonomics Division and Engineering Psychology Division, Human Work Sciences Department, Luleå University of Technology, ISSN: 1402-1757, ISRN:LTU-LIC, 98/12-SE, Sweden.
 - Piamonte, D. P. T., 1999, The relevance of error analysis in graphical symbols evaluation, (submitted) *International Journal of Occupational Safety and Ergonomics*, Warszawa, Poland, January 1999.
 - Piamonte, D. P. T., Abeysekera, J. D. A., and Ohlsson, K., 1999, An empirical evaluation of Videophone symbols: An International Study, (accepted for presentation) *Advances in Human Factors/Ergonomics, Proceedings of the Human-Computer Interaction Conference '99*, München, Germany, August 1999.
 - Piamonte, D. P. T., Abeysekera, J. D. A., and Ohlsson, K., 1999, Testing videophone Graphical Symbols in Southeast Asia, (accepted for presentation) *Advances in Human Factors/Ergonomics, Proceedings of the Human-Computer Interaction Conference '99*, München, Germany, August 1999.
 - Piamonte, D. P. T., Ohlsson, K., and Abeysekera, J. D. A., 1998, Evaluating Public Graphic Symbols Using Multiple Test Parameters, (submitted) *International Journal on Occupational Ergonomics*, December 1998.

I. INTRODUCTION

The development of telecommunication services increases rapidly at present. Technical innovations are continuously replacing each other, with shorter lead times. This trend is present not only in western societies, but also in Japan and Australia, and even in developing countries. China is now facing its largest GNP expansion. In South East Asia, despite the current economic crisis, the potential market for new information technology is still growing fast. For example, within the Health Care sector the purchase of telecommunication equipment and computer based Decision Support Systems entails a large amount of money. Dispatch centers are more and more dependent on modern information technology and implying a restructuring/reduction of the labour force.

Swedish enterprises have a large production of telecommunication equipment and an unprecedented good reputation when it comes to IT-applications. In addition to the low price, customers appreciate more user friendliness of the equipment in question. Usability criteria could in fact be considered as prime features of a good product. User friendliness, as an important aspect of usability, is also frequently used in advertisements. The need for a good knowledge about appropriate interface design is increasingly important in a more and more international competition.

Along with the importation of computer systems and telecommunication equipment are problems regarding transfer of technology. The transfer problems can work in both directions in the sense that more and more of the production is allocated to companies in Asia, with export to other developed or developing countries with vastly different cultures. Foremost among these problems are lacking usability and user friendliness of the products. Asian buyers and probably most consumers in the world, usually compare different brands of computer and telecommunication products before deciding what to buy. When they go into stores and choose, merchants try to introduce what functions or features each product has, which may be present or not in other brands. And, here icons play an important role with respect to usability and user friendliness. They are supposed to speed up the task desired and promote a sense of ease of use. On the other hand, icons that are unfamiliar, obscure, difficult to understand or comprehend, or even unappealing may have the opposite effect.

Visual or graphical symbols are non-text-based signs that convey messages in a pictorial manner. They are generally divided into *icons* and *pictograms*. The former refers to symbols that are simple, concrete and usually self-explanatory of the ideas, objects, or functions they represent (Wood and Wood, 1987). The latter are usually more abstract, conveying messages by analogy or symbolism. Thus, pictograms require certain learning processes to be understood. Böcker (1997) further elaborated that visual symbols should not necessarily be pure icons nor pure pictograms. Rather, it is better to understand the terms “iconic” and “pictographic” as “endpoints” or anchors on a continuous scale. A symbol may thus be anywhere along such a scale depending on its composition. For example, a drawing of a door when combined with an arrow may mean exit or entrance.

II. PROBLEM IDENTIFICATION

In this present age of computer and Internet technology, the word *icon* has come to be used as an encompassing term for graphical symbols whether they are abstract or concrete. It has become synonymous to any small visual symbol. Horton (1994) defined icons as small pictorial symbols used on the computer menus, windows, and screens. They represent the capabilities of the computer system. They can be activated and bring forth these capabilities into action. However, the term graphical symbols or symbols would generally be used in this report to pertain to both icons and pictograms.

The conventional uses of symbols are mainly for denoting locations, services as well as warnings in transportation (Zwaga, 1989). They are also utilized in the context of controls or manipulating several functions in modern technical devices like telephones, microwave ovens, washing machines, and computer-based interfaces (Böcker, 1993). However, with the advent of the microprocessor and the realization of its wide applicability, the use of symbols has gone into high gear. By using powerful microprocessors or microchips almost any device can now be equipped with additional (and usually more complex) functions. Graphical symbols are thus ideal as interface. They use very little space but can convey lots of information (Maguire, 1985).

Several other reasons have been given why icons and pictographs have become so popular, most of them pointing to their advantages over text-based messages. Compared to text, symbols are more distinct (Maguire, 1985), faster and easier to recognize (Collins and Lerner, 1982), and can even reduce the likelihood of errors (Lodding, 1982). Horton (1994) pointed out those graphical symbols such as icons used in computers and computer-related products make these products go global. In their paper on safety pictograms, Davies, Haines, Norris and Wilson (1998) mentioned that in the light of the emerging European market, graphical symbols have become very attractive since they have the potential to cross the language barrier. Messages may need not always be translated or explained in the 13 languages of the Union.

The use of graphical symbols, however, is not devoid of problems. Foremost among these is that some symbols are simply not understood well (Brelsford, Wogalter and Scoggins, 1994). The above advantages were cited as evident when the concepts being represented were well understood or concrete, and not when ideas become more abstract. Sanders (1998) further added that the superiority of symbols can only be attained if they contain a small amount of detail, are sufficiently distinct in shape, and are unambiguous. Regarding older people, Davis et al (1998) cited the studies of Easterby and Hakiel (1981) showing that although symbols are easily recognizable, understanding their meaning are generally poorer compared to younger people. Thus, as in any interface design, graphical symbols have to be adequately tested for their intended uses and preferably by the intended users.

Reviews of the studies on icons reveal at least two important elements that can affect the evaluation results -the methods used and the subjects involved. The present study is focused on methodological issues and differential aspects as well as cross-cultural comparisons.

TRADITIONAL TEST METHODS

Various methods have been utilized to evaluate icons and pictograms. Some of the methods frequently used were a) appropriateness tests, b) preference ratings tests, c) naming and matching tests d) comprehension tests, e) recognition and recall tests, and f) paired-comparison tests (Green and Pew, 1978; Sloan and Eshelman, 1978; Mackett-Stout and Dewar, 1981; Jones, 1983; Rogers, 1986; Nolan, 1989; Zwaga, 1989; Magyar, 1990; Salasoo, 1990; Stammers, 1990; Clarke and Brown, 1992; Lin and Kreifeldt, 1992; and Lin, Kreifeldt and Chi, 1992). Webb, Sorensen and Lyons (1989) described these and other methods of evaluating symbols as involving psychophysics, scaling, recognition and memory testing, as well as statistical modeling and analysis. Generally, appropriateness testing was the preliminary procedure to screen several candidate designs. Matching studies determined how well the symbols performed as a set and their likelihood of being confused with each other (Nolan, 1989).

THE SEMANTIC DIFFERENTIAL TEST

The semantic differential technique or SDT was originally developed to measure the connotative meaning of a concept or idea (Osgood, Suci and Tannenbaum, 1957; Edwards and Porter, 1972; Henerson, Morris and Fitz-Gibbon, 1987). Its basic purpose was to analyze concepts in question based on a limited number of dimensions of meaning. This involved subjective ratings of the stimuli on a number of bipolar adjectives belonging to three or four semantic differential factors - evaluative, potency, activity and understandability, with the first three known as the EPA factors of Osgood (Osgood et al., 1957). Other semantic factors can actually be derived as shown by Caron, Jamieson and Dewar (1980). Concepts can also be compared with other concepts to evaluate their similarity or difference in meanings, or compare the same sets of concepts among different groups, including national and language groups (Oppenheim, 1986).

SDT has also been used to evaluate pictograms and other graphic symbols (Dewar and Ells, 1977; Caron et al., 1980; and Vora, Helander, Swede and Wilson, 1991). In their study of 20 traffic sign symbols, Dewar and Ells (1977) considered the understandability factor as representing the extent to which the subject knows (familiarity) and comprehends the object or concept in question. Potency and action in turn were related to comprehension and subjective meaning. Comprehension for each symbol was determined by computing the percentage of correct responses. Semantic differential scores for each symbol were then calculated using mean ratings of the adjective pairs comprising the index of meaning for each factor. Through rank order correlation, they analyzed the relationship between percentages of correct comprehension and semantic differential scores. They found out that the evaluative and understandability semantic factors might be useful in evaluating the users' perception and understanding of the symbols. In contrast, Vora et al. (1991) used adjective pairs commonly used by graphic designers (such as balanced - unbalanced) but had only one factor able to explain more than 60 percent of the variation. In a series of studies, Lin and his colleagues employed the principles of semantic differentials in proposing a tool that computer symbol designers can use in predicting information needed for evaluating and modifying them (Lin, 1992; Lin and Kreifeldt, 1992; and Lin et al. 1992). Instead of using the EPA factors of Osgood, they derived three cognitive factors, which they believe affected symbol recognition and comprehension. They tested its applicability in actual symbol evaluations where the factors they derived were able to explain about 87% of the variances. However, it would have

been equally interesting had they tested the method using prospective users also. This way, symbol evaluation would have had more credence by using the users as evaluators. Still, SDT can indeed give insights on the possible psychological factors, which affects symbol recognition and comprehension. Ossner (1990) mentioned the findings quoted by Aicher and Krampen (1977) which showed that the results of various methods may be 'related to the semantic features inherent in the content/proposition without, however, determining them.' SDT may be a useful tool in graphic symbol evaluation but more studies are needed using prospective users instead, which brings us to the second factor affecting symbol usability - the users themselves.

PROSPECTIVE USERS AS SUBJECTS

Another critical factor affecting symbol evaluation is the type of subjects involved in the studies. Take the ordinary situation wherein prospective users are choosing between different models of a computer-related product. Each model has the same functions as the others but represented by different types of icons or pictograms (one icon type or family, one model). Thus, as each user proceeds in matching the functions with the symbols, he gets to encounter how usable the product is for him. After trying the functions of a product based on the symbols, the user gets to know if he did it right or not. This is usually the part where users give comments that the 'keys' or the symbols or icons are difficult to recognize, or not compatible with the functions (referents). Thus, using graphical symbols as interfaces in computer-based systems play a critical role in their usability (and appeal) to the users. Users must be able to see and use symbols as appropriate, meaningful, memorable, and learnable in order for them to fully utilize the products. However, icons and pictograms are generally designed and developed with 'western users' in mind but targeted for international use. To compound these, the subjects used in some of the methods mentioned above could hardly even be described as representing typical users (industrial design students, professionals, and even communication employees) and thus contrary to the points raised by Nielsen (1993 and 1994) and Kurosu (1996).

POSSIBLE ROLE OF CULTURE

Finally, users' involvement become more crucial when users' backgrounds are vastly different as in eastern vs. western users, where one culture develops the products and their symbols, and another culture/s use/s them. Keesing (1974) defined culture as something that also influences the 'publicly available symbolic forms through which people experience and express meaning.' Although the influence of culture on technology has been recognized, empirical studies are still inadequate (Abeysekera, Shahnnavaz, and Chapman, 1990; Sukaviriya and Moran, 1990; and Shahnnavaz, 1991). In his studies on culture, technology and ergonomics, Shahnnavaz (1998) revealed that pictorial signs and symbols for public use are very much related to culture. He suggested that the best way to consider cultural aspects in the design is to adapt a user-centered design approach. The users' needs and backgrounds have to be reflected in the design and evaluation of the candidate symbols. For example, Böcker (1993) stressed the need to explain and test the functions (represented by the symbols) in manners reflecting actual or typical user scenarios. Tudor (1994), in using subjects who were potential customers as well, pointed out the relevance of involving actual prospective users, including novices, of the products where the symbols are intended to be used. Symbol evaluation involving prospective users and based on actual user scenarios may be difficult but essential in developing user-product interfaces that are more user-friendly or attuned to the needs and backgrounds of the users.

Altogether, graphical symbols have grown in number and types. They are being used across an equally increasing number of applications and products. This is ably exemplified by the videophone as discussed in this study. The videophone's forerunner is the ordinary telephone that facilitates verbal communication between two or more parties separated by some distance. Through technological developments, the videophone not only relays voice or audio inputs. It can even send video and data between communicating parties. For additional functions under limited space, symbols as interface are thus very suitable. However, although graphical symbols have the potential to ease the introduction and use of complex devices such as the videophone, poorly designed symbols can cause the opposite effect. Moreover, if they are targeted for a wide spectrum of user groups (different age, language, or even culture groups), an empirical evaluative method using prospective users as subjects and reflecting user scenarios is needed to properly evaluate their usability among all target users.

III. OBJECTIVES

The purpose of the present project was three-fold: a) to evaluate candidate symbols' used in telecommunication-communication products developed in the west by means of different memory tests such as recognition and recall. Prospective users involved were from eastern (Asian) countries like Indonesia, Malaysia, Philippines, Thailand and Sri Lanka. For comparative purposes, subjects from Finland, Sweden and USA were utilized; b) to examine the role of profession by means of a quasi experimental approach, c) to examine the potential of the semantic differential technique for the above evaluations.

IV. STUDY I: PILOT STUDY

In the pilot study, thirty subjects (15 males and 15 females) aged 22 to 45 years old (Mean=31.1, S.D.=4.6) from Metro-Manila were randomly selected to participate. All were office employees with 2 to 5 years' experience working with computers.

In the form of booklets, several graphical symbols representing certain videophone referents or functions were tested. Twenty-three (23) referents and 69 symbols used by Tudor (1994) were selected (Figures 1 and 2). The symbols were grouped into three types (sets): abstract, concrete and proposed based on their general attributes. Sixty-two of the videophone symbols were designed in England. The remaining seven were designed in Japan. These were the proposed symbols for "Volume", "Achieve Dial Tone", "Hold", "Music on Hold", "Mute", "Store", and "Speakerphone". The questionnaire had two parts: recognition/subjective certainty tests, and semantic differential. Questionnaires were produced per symbol set with the symbols and their referents presented in random orders. In the recognition tests, the videophone symbols and referents were presented and to be matched correctly. For each recognition test, certainty levels on the answers were indicated using a 7-point scale. After one week, the semantic differential testing was performed. The semantic differential was composed of six bipolar adjectives in seven point scales also arranged in random orders for each of the symbols or referents. The symbols were again presented. This time, they were to rate each symbol based on the six bipolar adjectives. The same tasks were done for the three symbol families. Thus, each subject performed 69 recognition/subjective certainty tests, and 69 semantic differential tests, for the three symbol sets.

REFERENTS	ABSTRACT SYMBOLS	CONCRETE SYMBOLS	PROPOSED SYMBOLS
1. Achieve Dial Tone			
2. Answer Ringing Call			
3. Call Log			
4. Conference			
5. Dialpad			
6. Drop			
7. Help Specific			
8. Help System			
9. HFAI			
10. Hold			
11. Message			
12. Music On Hold			

FIGURE 1. The 23 referents and 69 videophone symbols used in Studies I and II.

REFERENTS	ABSTRACT SYMBOLS	CONCRETE SYMBOLS	PROPOSED SYMBOLS
13. Mute			
14. Notes			
15. Phone Call Active			
16. Retrieve			
17. Ringer Select			
18. Speakerphone			
19. Speed Dial			
20. Store			
21. Switch Hook Control			
22. Transfer Call			
23. Volume			

FIGURE 2. The 23 referents and 69 videophone symbols used in Studies I and II (continued).

Three orderings of the videophone symbol sets were generated and randomly assigned to the subjects during the identification/subjective certainty task. The order of the referents was likewise randomized when presented. The response variables were the hit rates (percentage of correctly matching the symbols to their proper referents or functions) and subjective certainties using 7-point scales. A within-subject (repeated measures) three-level design was used for statistical analysis. The within factor was symbol set (abstract, concrete, and proposed) as utilized in the study by Tudor (1994). Since the hit rates were basically binomial in distribution, arcsine transformations would be done to meet the assumptions of normality and hence make the statistical analyses (ANOVA) valid.

In the semantic differential tests, the symbol sets and referents were also presented in random order among the subjects. The response variables in SDT were in the form of ratings using 7-point scales anchored in 5 bipolar adjectives. Spearman's rank order correlation was used to study the relationship between hit rates and semantic differential scores of the different videophone symbols.

V. STUDY II: PHIL-SWEDE STUDY

This study was an extension of the first study. Additional subjects participated, this time there were fifty Filipinos and fifty Swedes. The same methods and questionnaires from the first study were utilized. Multifactor ANOVA (with country and set as main effects) in repeated-measures design were used to analyze the hit rates after arcsine transformations. Certainty ratings were compared between subjects of the two countries using Mann-Whitney Tests. Spearman's rank order correlation was used in analyzing hit rates and semantic differential scores of the different videophone symbols.

VI. STUDY III: THE SOUTHEAST ASIAN STUDY

METHODOLOGY

In the design of the methodology for Study III, the following were considered: the recommendations by Tudor (1994) and Böcker (1993) in using prospective users as subjects and considering typical user scenarios for the tests; as well as by Dewar and Ells (1977), Carron et al. (1980), and Lin (1992) on applying SDT to evaluate symbol perception and comprehension. A total of 240 subjects from five Asian countries participated in the study. These countries were Indonesia, Malaysia, Philippines, Thailand, and Sri Lanka. In all studies, the subjects were students, employees, and professionals (doctors, lawyers, and engineers), all of whom were computer-literate or had at least experienced using computers or computer-related products for the past 2-5 years.

MATERIALS AND EQUIPMENT

Three sets of videophone symbols from the European Telecommunications Standards Institute (ETSI) including the one eventually proposed by ETSI (Figure 3) were tested in the form of questionnaires. Each symbol set contained seven symbols representing seven videophone functions. The seven videophone functions tested were the following (Böcker, 1993; ETSI, 1993):

- a) Videophone / Telephone: upgrading / downgrading the call
- b) Camera on / off: turning on and off picture transmission
- c) Microphone on / off: turning on and off sound transmission
- d) Selfview on / off: turning on and off selfview function
- e) Document Camera on / off: switching between document and person camera
- f) Still Picture on / off: turning on and off screen freeze
- g) Handsfree on / off: switching between handset and handsfree modes

Referents	Set 1	Set 2	Set 3
Camera			
Document Camera			
Handsfree			
Microphone			
Selfview			
Still Picture			
Videophone			

FIGURE 3. Graphical symbols used in the present study (Papers 2-6) as based on the studies by Böcker (1993) for the European Telecommunications Standards Institute (ETSI, 1993).

Testing of the subjects were done around Metro-Manila, Philippines, Bangkok, Thailand, Bandung, Indonesia, Sarawak, Malaysia, and Sri Lanka, and in small groups in each country, lasting for about 45-60 minutes. Subjects were randomly given one of three versions of the questionnaires. The subjects were shown an illustration of a videophone. Its general functions were then discussed. Afterwards, instructions were given on how to go about the different test parts. Questions were entertained prior to the administration of the tests. Emphasis was given on avoiding omissions in trials in order to get back to them later on. The order of the tests would also be strictly followed; that is, Part One followed by Parts Two, Three, and Four.

In the spontaneous identification test (Part One), each page contained one set of the seven videophone symbols, for a total of three pages for the three symbol sets. On spaces provided for, they would write what videophone function they thought was represented by each symbol. They were also asked to rate the level of certainty for each of their answers using a seven-point rating scale (from “very certain” to “very uncertain”). In the cued response test (Part Two), the subjects first read a referent and its description. Then they had to choose one symbol from a set of seven symbols which they thought best represented the referent in question. Each page contained one referent-description and one set of symbols. They were also asked to rate their certainties for their answers using the 7-point rating scales. There were seven videophone referents tested on three sets of symbols rendering a total of twenty-one trials in Part Two.

In the third part, five semantic scales were used to evaluate each symbol together with its correct referent, for a total of twenty-one SDTs. In Part Four, the three symbols (one for each set) together with the referent they represented were shown. The subjects had to choose one symbol they thought best represent that referent. Next, with the three symbols sets presented together, they had to choose the set they prefer most. In all, the subjects would choose seven symbols to represent the seven referents and one symbol set they preferred most.

EXPERIMENTAL DESIGN

The main study utilized a 2 x 5 x 3 (Occupation x Country x Symbol Set) repeated measures design with 2 between and 1 within factors. Between factors were those of occupation (students and employees/professionals) and country (Indonesia, Malaysia, Philippines, Thailand and Sri Lanka). The within factor consisted mainly of the symbol sets (Sets 1, 2 and 3). The videophone symbols were based on the studies by Böcker (1993) and ETSI (1993), with Set 1 as the proposed set of symbols for seven basic functions to be found in a videophone. In all four parts of the tests, the order of the symbol sets was counterbalanced across all subject groups. Three orderings of the symbol presentation and referents were generated and randomly distributed in each subject group.

The results of the different test parameters were analyzed using multiple analyses of variances in repeated measure designs. Spearman’s rank order correlation was used in studying the results of the subjective certainty and semantic ratings. The response variables were the following:

- a) Hits and misses (mean percentages of correct and incorrect identification and recognition in Parts One and Two, using ISO 9186 of 66% correct recognition as a general guide)
- b) False alarms for each videophone symbol (total numbers and frequency distributions)
- c) Missing values (No answers in Parts One and Two)
- d) Subjective certainty ratings using 7-point scales for answers in Parts One and Two
- e) Semantic differential ratings of all symbols in the three sets using five 7-point scales each anchored in bipolar adjectives (Part Three)
- f) Symbol and symbol set preferences (percent distribution, Part Four)

VII. STUDY IV: CASE STUDIES

Study III was likewise extended on subjects from Finland and USA. The former was a special case involving elderly subjects while the latter pertained to subjects who were students and

employees in the USA. The same methods, tools and procedures of Study III were used in these case studies.

VIII. RESULTS AND DISCUSSION

STUDY I: PILOT STUDY

Tables 1 and 2 contained the results of recognition/certainty tests and the semantic differential testing for the pilot test (Study I). Between sets, the proposed icon set had the most number of icons (11) with mean recognition rates above 66% as recommended by the Organization for International Standardization's ISO 9186 (Davies et al., 1998). The concrete icon set followed with 9, and the abstract set last, with 7. Most of these symbols also exhibited high mean rating scores for the certainty tests. When the 3 symbol sets are considered altogether, only 5 of the 23 referents had means of at least 66%. These were the symbols for "Conference", "Dialpad", "Music On Hold", "Speakerphone", and "Volume".

TABLE 1. Recognition rates (%) and certainty ratings for the 23 referents by the three sets of videophone symbols in Study I, $N = 30$. Bold-faced values refer to those having at least 66% recognition rate of ISO 9186.

REFERENTS	ABSTRACT ICONS		CONCRETE ICONS		PROPOSED ICONS	
	Mean Recognition	Mean Ratings	Mean Recognition	Mean Ratings	Mean Recognition	Mean Ratings
1. Achieve Dial Tone	27.6	3.38	32.1	3.44	23.3	3.14
2. Answer Ringing Call	10.0	4.33	60.0*	4.89	56.7*	4.76
3. Call Log	50.0	3.93	26.7	4.63	46.7	2.97
4. Conference	80.0	5.00	93.3	5.57	93.3	5.54
5. Dialpad	83.3	4.96	83.3	5.28	80.0	5.54
6. Drop	37.9	4.18	37.9	4.45	33.3	4.70
7. Help Specific	21.4	2.33	71.4	4.70	42.9	4.67
8. Help System	36.7	2.09	20.0	2.83	33.3	4.40
9. HFAI	25.0	4.00	34.5	3.00	39.3	4.09
10 Hold	35.7	3.30	50.0	5.60	73.3	5.32
11. Message	36.7	4.18	20.0	3.83	89.7**	5.23
12. Music On Hold	93.3	5.39	90.0	6.11	90.0	6.04
13. Mute	70.0*	4.86	56.7	4.88	40.0	4.83
14. Notes	44.8	4.31	58.6	5.41	76.7	5.17
15. Phone Call Active	51.7	3.87	33.3	4.60	50.0	4.67
16. Retrieve	72.4*	4.71	50.0*	4.27	10.7	4.00
17. Ringer Select	43.3	3.85	86.7*	6.23	83.3*	5.52
18. Speed Dial	50.0	4.80	70.0	4.95	75.9	4.36
19. Speakerphone	63.3	5.63	86.7**	5.81	70.0	5.19
20. Store	43.3	4.31	43.3	3.77	56.7	3.35
21. Switch Hook Control	27.6	3.13	23.3	4.00	43.3	3.92
22. Transfer	43.3	3.77	76.7*	5.74	83.3*	5.56
23. Volume	90.0	5.48	80.0	5.46	79.3	6.09

****Hit rates** as significantly higher than those of 2 symbols for the same referent, at $p < 0.05$.

***Hit rates** as significantly higher than the lowest of the 2 other remaining symbols for the same referent, at $p < 0.05$.

These results point to the possible role of familiarity to symbol recognition. The referents and their counterpart symbols are very common and familiar and most probably played a big

role in their high rates of correct recognition. Nonetheless, the number of symbols with at least 66% correct comprehension was rather low, less than half of the total for the best performing set (11 out of 23 with the Proposed Set). And when overall mean recognition rates between the 3 symbol sets were considered, they even fell between 50% to 59%. The results of one-way ANOVA (Appendix 1) also showed that only two symbols were significantly higher than their counterpart symbols from the two other sets. These were the proposed symbols for “Message” ($F(2, 5) = 52.96, p < 0.0046$), and the concrete symbol for “Speakerphone” ($F(2, 5) = 24.47, p < 0.0139$). In some, both the proposed and concrete symbols were significantly higher than the abstract versions. These were “Answer Ringing Call” ($F(2, 5) = 34.11, p < 0.0086$), “Ringer Select” ($F(2, 5) = 17.07, p < 0.0230$), and “Transfer Call” ($F(2, 5) = 33.66, p < 0.0088$). On the other hand, the abstract and concrete symbols were higher than the proposed version for “Retrieve” ($F(2, 5) = 63.81, p < 0.0035$).

The above observations are quite significant. Very few of the symbols had high recognition rates (of at least 66%). These revealed that situations wherein prospective users encounter difficulties in recognizing what the symbols stand for could easily occur. Hence, when a device in question is new the symbols’ role in making it usable is rather low. Emphases on repeated use, familiarity and even icon re-design considerations become manifest.

The SDT scales revealed symbols with low recognition often had low semantic scores as well. On the other hand, rank order correlations were high between the semantic scales and the percent mean of correct recognition regardless of icon or symbol sets (Table 2). Across sets, the scales for concreteness, familiarity and simplicity had higher correlations. These results also demonstrated the role of the symbols’ general attributes (i.e. concrete or abstract) in their proper recognition – that such semantic attributes could significantly influence their correct recognition. Thus, SDT testing could be valuable in studying of how messages of symbols like the icons are perceived and understood as far as their semantics are concerned, but more studies are needed to further explore this observation.

TABLE 2. Correlations (rank order) between semantic differential scores and percentage correct recognition ($N = 30$); * $p < 0.01$.

Semantic Scales	Abstract Icons	Concrete Icons	Proposed Icons
Concrete - Abstract	0.707*	0.887*	0.888*
Familiar - Strange	0.673*	0.871*	0.867*
Meaningful - Meaningless	0.656*	0.886*	0.883
Related - Unrelated	0.668*	0.859*	0.714*
Sharp - Dull	0.667*	0.878*	0.833*
Simple - Complex	0.716*	0.879*	0.896*

Regarding culture, a few insights can be gleaned from the results. Culture can be defined as something which also influences the publicly available symbolic forms through which people experience, express and understand meanings (Keesing, 1974). Of the 7 icons designed in Japan, 4 had mean recognition rates above the ISO 9186 level of at least 66%. These results differed from those of Tudor (1994). Using American subjects, only 2 of the 7 icons designed in Japan had mean recognition rates at least 66%. This could be a reflection of the Philippine socio-economic condition where majority of current computerized and electronic appliances is imported from Japan. Icons or other graphical symbols are commonly found in these products. Americans on the other hand are obviously more akin to be exposed to products they have made. Although USA still ranks as the major trading partner of the

Philippines followed by Japan, the latter ranks first in terms of the computer and telecom products marketed and used locally. Thus, this renders the view that cultural familiarity and meaning of icons can affect their usability when applied as interface tools in new or modern technologies. Admittedly, there are limitations in this pilot study. First, a distinct group of potential users (educated and computer literate) was used as subjects. Second, only one type of recognition test was done. To validate the observations made regarding the possible role of culture, similar and other types of tests would be needed using different cultural groups. Consequently, subjects from Asia, Europe and America were then targeted for the next series of experiments.

STUDY II: THE PHIL-SWEDE STUDY

As a concrete next step to meet the recommendations in Study I, comparing two potential user groups of different cultures comprised Study II. One hundred subjects (50 each from the Philippines and Sweden) participated in the study. The Filipino subjects had a mean age of 30.1 years (Range = 21-42 years, S.D.=4.60). The Swedish subjects' mean age was 26.6 years (Range = 21-49 years, S.D.=5.21). In both groups, the subjects were university students and office employees of small- to medium-sized companies (25-100 employees/company). All subjects had at least two years experience using computers or computer-related devices at work and at home. This study utilized the same questionnaires and graphical symbols as in the previous one. The same procedures were likewise followed.

Table 3 summarized the results for recognition tasks (see Appendices 2 and 3 for details). Concerning the referents and both countries in general, the results were similar to Study I. Only 4 of the 23 referents had symbols with at least 66% mean recognition in all three sets ("Conference", "Dialpad", "Music on Hold", and "Volume"). All the other icons had rates less than 66% regardless of which icon set they belonged. Again, since the hit rates (proportion of answers considered as 'correct') were basically binomial in distribution, arcsine transformations were performed so to meet assumptions of normality and that multifactor ANOVAs would be valid.

Main Effects

Between sets, the Proposed Icons had the most number of high (at least 66%) recognition rates (Phil.: 11, Sweden: 8), followed by the Concrete Icons (Phil.: 9, Sweden: 8), and Abstract Icons last (Phil.: 6, Sweden: 4). Between these icons, the results of multifactor ANOVA with *set* as main effect showed that for the referents "Answer Ringing Call", "Message", "Mute", "Retrieve", "Ringer Select", "Speed Dial", and "Transfer Call", the Concrete and/or Proposed icons had significantly higher recognition rates compared to the Abstract versions ($F(2, 6)$ and $p<0.05$).

When the country factor was taken as the other main effect, the Filipino subjects scored significantly higher recognition rates than the Swedish subjects for the icons representing "Answer Ringing Call", "Retrieve Call", "Speed Dial" and "Transfer Call". However, except for the latter case, these rates were generally below the 66% correct recognition of ISO 9186.

Interactions

For interaction effects between country and icon set, in both subject groups recognition rates were generally significantly higher with either the Concrete or Proposed icons ($F(2, 6)$, $p<0.05$) for their symbols for "Retrieve Call", "Speed Dial" and "Transfer Call".

TABLE 3. Study II: Recognition rates in percent (first rows, bold-faced: above 66%) and certainty ratings (second rows) for the 23 Referents by subjects from Philippines and Sweden (N=100). Note: Phil. = Philippines, Swed. = Sweden.

Referents	Abstract Icons		Concrete Icons		Proposed Icons	
	PHIL.	SWED.	PHIL.	SWED.	PHIL.	SWED.
1. Achieve Dial Tone	24	20	26	38	22	26
	2.72	2.64	3.68	3.74	3.06	3.20
2. Answer Ringing Call	12	8	60	16	58	34
	3.62	2.56	4.58	4.20	4.38	4.02
3. Call Log	50	14	26	22	42	52
	3.40	3.36	3.36	3.02	2.80	3.24
4. Conference	78	94	96	96	96	92
	4.82	5.60	5.56	5.18	5.60	5.60
5. Dialpad	86	82	86	90	80	92
	4.78	5.42	5.02	6.06	5.22	5.82
6. Drop	34	28	38	26	34	26
	3.46	2.78	3.80	3.72	3.98	3.50
7. Help Specific	20	42	64	36	38	46
	2.32	2.94	4.22	2.28	3.74	4.88
8. Help System	34	14	20	46	34	32
	2.38	3.42	3.70	3.52	4.06	5.12
9. HFAI	24	44	30	06	38	20
	2.68	3.40	2.66	4.02	2.80	2.40
10. Hold	34	58	48	60	80	58
	2.88	3.12	4.48	3.28	4.78	3.96
11. Message	36	24	20	10	90	74
	4.60	4.12	4.20	4.68	5.08	4.52
12. Music On Hold	96	92	92	90	88	92
	5.34	5.54	6.24	5.34	5.78	5.32
13. Mute	68	62	60	72	46	56
	4.14	4.06	4.12	5.10	3.70	4.22
14. Notes	46	60	58	38	78	76
	3.90	3.38	4.96	6.06	4.98	5.02
15. Phone Call Active	46	26	34	52	46	44
	3.50	3.16	3.74	3.90	4.32	3.32
16. Retrieve Call	70	22	44	16	10	8
	4.16	3.32	3.64	3.12	2.62	2.34
17. Ringer Select	44	56	86	90	84	86
	3.44	3.60	5.96	5.14	5.36	5.56
18. Speed Dial	52	42	74	34	70	62
	4.14	3.22	4.50	3.74	3.60	4.08
19. Speakerphone	62	72	90	80	72	84
	5.60	4.78	5.44	5.14	4.98	4.64
20. Store	46	50	38	30	52	24
	3.58	2.92	4.00	2.92	2.82	3.20
21. Switch Hook Control	28	48	20	22	44	20
	2.64	2.22	3.46	2.54	3.32	3.14
22. Transfer Call	42	28	76	70	90	30
	3.34	3.30	5.30	3.84	5.48	3.30
23. Volume	90	96	80	94	80	88
	5.50	5.42	5.06	6.06	5.62	5.68

TABLE 4. Correlations (rank order) between semantic differential scores and percentage correct identification (N=100); *p < 0.01.

Referents	Abstract Icons		Concrete Icons		Proposed Icons	
	PHIL.	SWED.	PHIL.	SWED.	PHIL.	SWED.
1. Achieve Dial Tone						
Concreteness	.419*	.409*	.389*	.308	.375*	.187
Familiarity	.274	.078	.379*	.181	.535*	.292
Meaningfulness	.348	.011	.365*	.004	.544*	.102
Relatedness	.217	.203	.224	.137	.465*	.049
Sharpness	.337	.277	.480*	.068	.548*	.144
Simplicity	.353	.185	.365*	.009	.308	.377*
2. Answer Ringing Call						
Concreteness	.109	.210	.159	.236	.498*	.076
Familiarity	.318	.215	.064	.249	.441*	.126
Meaningfulness	.333	.083	.158	.213	.443*	.170
Relatedness	.323	.145	.168	.147	.490*	.108
Sharpness	.295	.155	.267	.089	.580*	.041
Simplicity	.136	.477*	.083	.055	.581*	.013
3. Call Log						
Concreteness	.330	.366*	.019	.460*	.023	.376*
Familiarity	.028	.088	.206	.281	.063	.504*
Meaningfulness	.258	.127	.106	.582*	.042	.171
Relatedness	.246	.002	.046	.363*	.042	.182
Sharpness	.085	.039	.064	.513*	.059	.261
Simplicity	.221	.162	.115	.574*	.097	.230
4. Conference						
Concreteness	.336	.108	.225	.273	.198	.026
Familiarity	.388*	.356	.158	.319	.151	.174
Meaningfulness	.350	.170	.064	.082	.104	.008
Relatedness	.432*	.393*	.284	.111	.206	.019
Sharpness	.467	.065	.243	.347	.135	.102
Simplicity	.465*	.330	.214	.272	.194	.000
5. Dialpad						
Concreteness	.359	.007	.346	.106	.272	.014
Familiarity	.044	.249	.326	.153	.388*	.038
Meaningfulness	.114	.202	.371*	.115	.388*	.273
Relatedness	.233	.198	.407*	.118	.385*	.107
Sharpness	.288	.107	.268	.005	.274	.110
Simplicity	.211	.280	.471*	.112	.543*	.080
6. Drop						
Concreteness	.536*	.330	.695*	.348	.604*	.193
Familiarity	.702*	.210	.418*	.387*	.619*	.363*
Meaningfulness	.602*	.448*	.425*	.358	.732*	.429*
Relatedness	.659*	.433*	.469*	.310	.746*	.418*
Sharpness	.315*	.251	.253*	.310	.698*	.483*
Simplicity	.598*	.233	.752*	.193	.735*	.341
7. Help Specific						
Concreteness	.472*	.463*	.313	.153	.298	.236
Familiarity	.478*	.440*	.593*	.312	.211	.175
Meaningfulness	.367*	.090	.411*	.128	.007	.120
Relatedness	.324	.149	.610*	.279	.214	.049
Sharpness	.159	.150	.270	.342	.230	.190
Simplicity	.324	.543*	.196	.133	.079	.075

TABLE 5. Correlations (rank order) between semantic differential scores and percentage correct identification (N=100); *p < 0.01, *continued*.

Referents	Abstract Icons		Concrete Icons		Proposed Icons	
	PHIL.	SWED.	PHIL.	SWED.	PHIL.	SWED.
8. Help System						
Concreteness	.250	.000	.443*	.128	.231	.028
Familiarity	.129	.152	.451*	.171	.182	.074
Meaningfulness	.049	.078	.622*	.228	.191	.075
Relatedness	.080	.246	.554*	.172	.230	.018
Sharpness	.052	.131	.429*	.222	.184	.598*
Simplicity	.277	.233	.539*	.061	.083	.366*
9. HFAI						
Concreteness	.037	.250	.204	.422*	.142	.393*
Familiarity	.507*	.033	.125	.354	.430*	.212
Meaningfulness	.404*	.237	.135	.292	.552*	.165
Relatedness	.479*	.132	.081	.403*	.547*	.397*
Sharpness	.434*	.265	.252	.357	.368*	.124
Simplicity	.502*	.098	.108	.402*	.459*	.167
10. Hold						
Concreteness	.197	.421*	.315	.205	.269	.029
Familiarity	.280	.276	.304	.403*	.397*	.493*
Meaningfulness	.269	.009	.414*	.198	.257	.153
Relatedness	.266	.104	.390*	.349	.223	.341
Sharpness	.166	.014	.308	.383*	.201	.039
Simplicity	.264	.209	.365*	.377*	.420*	.093
11. Message						
Concreteness	.091	.116	.110	.404*	.084	.193
Familiarity	.290	.191	.009	.285	.132	.315
Meaningfulness	.141	.183	.106	.380*	.145	.150
Relatedness	.263	.313	.062	.80*	.222	.162
Sharpness	.143	.539*	.085	.342	.094	.076
Simplicity	.162	.075	.046	.279	.212	.167
12. Music On Hold						
Concreteness	.272	.166	.325	.437*	.300	.039
Familiarity	.287	.080	.312	.071	.455*	.057
Meaningfulness	.303	.320	.304	.445*	.227	.008
Relatedness	.295	.115	.304	.397*	.284	.117
Sharpness	.246	.260	.164	.357	.306	.081
Simplicity	.269	.300	.307	.455*	.391*	.055
13. Mute						
Concreteness	.432*	.319	.568*	.284	.301	.317
Familiarity	.181	.085	.590*	.351	.389*	.366*
Meaningfulness	.445*	.388*	.462*	.369*	.408*	.121
Relatedness	.392*	.345	.523*	.339	.443*	.387*
Sharpness	.370*	.322	.635*	.527*	.377*	.251
Simplicity	.307	.072	.428*	.098	.451*	.267

TABLE 6. Correlations (rank order) between semantic differential scores and percentage correct identification (N=100); *p < 0.01, *continued*.

Referents	Abstract Icons		Concrete Icons		Proposed Icons	
	PHIL.	SWED.	PHIL.	SWED.	PHIL.	SWED.
14. Notes						
Concreteness	.260	.097	.117	.009	.289	.091
Familiarity	.221	.080	.005	.246	.219	.183
Meaningfulness	.113	.423*	.008	.140	.219	.023
Relatedness	.260	.155	.036	.036	.253	.000
Sharpness	.045	.065	.178	.177	.191	.289
Simplicity	.221	.037	.151	.041	.270	.015
15. Phone Call Active						
Concreteness	.447*	.542*	.152	.246	.397*	.099
Familiarity	.388*	.400*	.232	.289	.227	.121
Meaningfulness	.493*	.538*	.371*	.179	.427*	.277
Relatedness	.557*	.375*	.274	.418*	.163	.170
Sharpness	.467*	.240	.205	.213	.271	.168
Simplicity	.178	.175	.207	.454*	.230	.102
16. Retrieve Call						
Concreteness	.435*	.386*	.083	.151	.034	.038
Familiarity	.449*	.321	.270	.201	.041	.103
Meaningfulness	.563*	.171	.205	.362*	.031	.457*
Relatedness	.275	.261	.272	.052	.097	.269
Sharpness	.359	.437*	.425*	.108	.002	.016
Simplicity	.441*	.283	.239	.353	.211	.378*
17. Ringer Select						
Concreteness	.406*	.072	.019	.250	.440*	.249
Familiarity	.617*	.110	.165	.177	.421*	.089
Meaningfulness	.523*	.305	.068	.075	.288	.067
Relatedness	.734*	.128	.135	.065	.364*	.189
Sharpness	.323	.276	.057	.233	.317	.200
Simplicity	.472*	.070	.014	.161	.198	.222
18. Speed Dial						
Concreteness	.448*	.026	.470*	.092	.304	.112
Familiarity	.240	.043	.714*	.016	.112	.031
Meaningfulness	.772*	.222	.525*	.035	.295	.161
Relatedness	.614*	.092	.380*	.072	.333	.224
Sharpness	.574*	.057	.580*	.188	.349	.268
Simplicity	.612*	.015	.452*	.109	.189	.032
19. Speakerphone						
Concreteness	.627*	.406*	.141	.212	.352	.307
Familiarity	.613*	.376*	.155	.344	.403*	.189
Meaningfulness	.788*	.395*	.149	.229	.336	.349
Relatedness	.805*	.387*	.208	.243	.453*	.357
Sharpness	.652*	.420*	.141	.229	.398*	.194
Simplicity	.786*	.272	.211	.258	.565*	.256

TABLE 7. Correlations (rank order) between semantic differential scores and percentage correct identification (N=100); *p < 0.01, *continued*.

Referents	Abstract Icons		Concrete Icons		Proposed Icons	
	PHIL.	SWED.	PHIL.	SWED.	PHIL.	SWED.
20. Store						
Concreteness	.060	.213	.258	.356	.241	.073
Familiarity	.032	.017	.340	.483*	.413*	.193
Meaningfulness	.112	.146	.228	.204	.378*	.206
Relatedness	.096	.003	.295	.256	.421*	.050
Sharpness	.028	.059	.065	.139	.032	.075
Simplicity	.110	.037	.481*	.103	.240	.129
21. Switch Hook Control						
Concreteness	.249	.043	.251	.026	.397*	.283
Familiarity	.411*	.153	.197	.129	.496*	.109
Meaningfulness	.456*	.161	.311	.268	.701*	.535*
Relatedness	.515*	.030	.293	.031	.634*	.188
Sharpness	.496*	.164	.330	.171	.428*	.227
Simplicity	.334	.045	.379	.122	.459*	.579*
22. Transfer Call						
Concreteness	.268	.193	.205	.441*	.225	.141
Familiarity	.185	.184	.159	.162	.091	.030
Meaningfulness	.172	.412*	.209	.347	.155	.120
Relatedness	.094	.433*	.177	.015	.261	.397*
Sharpness	.335	.164	.034	.171	.256	.250
Simplicity	.013	.299	.231	.351	.318	.060
23. Volume						
Concreteness	.347	.260	.213	.117	.389*	.328
Familiarity	.148	.197	.274	.079	.627*	.280
Meaningfulness	.111	.200	.289	.064	.518*	.449*
Relatedness	.412*	.249	.321	.007	.528*	.384*
Sharpness	.025	.249	.233	.044	.485*	.391*
Simplicity	.110	.185	.308	.080	.584*	.397*

The countries were likewise compared regarding certainty ratings to their answers in the recognition tasks using Mann-Whitney tests (Appendix 3). For the abstract set, the following icons showed significant differences in certainty rating between the two countries: “Answer Ringing Call”, “Conference Call”, “Dialpad”, “Drop”, “Help System”, and “Speed Dial”. For the Concrete Set, these were icons for “Dialpad”, “Help Specific”, “HFAI”, “Hold”, “Music on Hold”, “Mute”, Notes, “Ringer Select”, “Store”, “Switch Hook Control”, “Transfer”, and “Volume”. For the Proposed Set, significant differences in certainty rating scales were noted for “Dialpad”, “Help Specific”, “Help System”, and “Phone Call Active”.

Among the four referents with above 66% correct recognition in all sets and except for the concrete version of “Music on Hold”, the Swedish subjects exhibited significantly higher ratings than their Filipino counterparts. But when comparing icons for referents with less than 66% recognition and where the two countries significantly differ in their recognition ratings, the Filipinos had the higher certainty ratings for “Answer Ringing Call”, “Ringer Select”, “Speed Dial”, and “Transfer Call”. Swedish subjects had significantly higher ratings only for the concrete icon for “Mute”. There were no differences for their ratings for icons “Message” and “Retrieve”.

Tables 4 to 7 contained the different levels of correlation between the icons of the three icon sets and the semantic scales for each country. When the countries were further compared in their semantic scales of the icons, the Filipinos gave consistently higher ratings on almost all scales compared to the Swedish subjects (Appendix 4). Further, the semantic scales for concreteness, simplicity and familiarity had the most number of significant correlations to the rate of correct recognition of the icons.

The results of the first two studies revealed a few but very important findings. First, the subjects poorly recognized majority of the icons than expected. This may mean that icons as interface per se without any other visual cue, aid or even prior practice to their use is not always helpful. They need to be tested thoroughly to be sure that as stand-alone symbols, they are easily and correctly recognized. Second, although very few differences were noted between countries regarding their recognition rates of the icons, significant differences were present in their certainty and semantic ratings. Filipinos tend to give higher ratings compared to the Swedes who generally were more conservative and gave lower ratings. Filipinos, like most Asians tend to give higher ratings than westerners. This could represent a kind of cultural bias on evaluation tasks and need to be studied further. Nonetheless, it turned out that concreteness and simplicity of the icons were equally, if not more important. These results supported other studies pointing to the relevance concreteness of the design and the function in their recognition. It is easier for subjects to recognize icons or symbols that represent concrete icons compared to abstract ones.

Lastly, compared to studies done by Tudor (1994) using the same icon sets among America subjects, The Filipino subjects (followed by Swedish subjects) had the highest recognition scores for most of the icons designed in Japan. The tests used in all these studies were cued-response tests. The target functions were presented and explained and subjects were asked to match the appropriate icons. Dewar (1994) has pointed out that matching tests or multiple tests could greatly influence results of symbol recognition tests. He considered the spontaneous identification or “open-ended” tests as the “main standard” of measuring symbol understanding and thus must be the basis of comparing other symbol test results. Still, most of the icons in the two studies had very low recognition scores (<66%). To properly evaluate graphical symbols these latter points must be seriously taken into consideration as well.

STUDY III: SOUTHEAST ASIAN STUDIES

This study involved a total of two hundred forty-eight subjects (127 males and 113 females) from the five Asian countries as respondents. Compared to the earlier two studies, Study III used multiple test parameters in evaluating a particular type of icons – videophone icons. The different parameters discussed in these studies were hit rates for both spontaneous identification and cued responses, subjective certainties, false alarms or confusions, missing values, preferences, and semantic differential scores.

Hit rates and subjective certainties

Regarding *test* as a within factor, hit rates in the cued response tests (Part Two) were significantly higher (at $F(1, 111)$, $p < 0.05$) than in the spontaneous identification tests (Part One), except for the symbols for “microphone” (Table 8). Between symbol *sets*, Set 1 had significantly higher hits in both tests for all referents except for “document camera” and “handsfree” ($F(2, 111)$, $p < 0.05$). On the other hand, Set 2 garnered the lowest hits in both Parts One and Two of the test. Furthermore, only the symbols (of Sets 1 and 3) for referents “microphone” and “videophone” garnered hit rates of at least 66% in Part One. Altogether in

both tests and across all symbol sets, the highest hit rates were for “camera”, microphone” and “videophone” while the “document camera”, “handsfree”, “selfview” and “still picture” had the lowest hit rates in all countries.

TABLE 8. Parts One and Two hit rates (%) and mean subjective certainties (Cert.) per country ($n = 48$ per country).

	<i>Part 1-Spontaneous Identification</i>						<i>Part 2-Cued Responses</i>					
	Set 1	Cert.	Set 2	Cert.	Set 3	Cert.	Set 1	Cert.	Set 2	Cert.	Set 3	Cert.
<i>Indonesia</i>												
Camera	62.5	5.0	12.5	3.8	60.4	4.6	83.3	5.3	41.7	3.5	68.8	4.7
Doc. Camera	31.3	4.1	8.3	3.5	10.4	5.8	60.4	4.3	25.0	4.2	52.1	4.1
Handsfree	31.3	5.1	10.4	4.7	12.5	4.6	72.9	4.5	35.4	3.7	64.6	4.4
Microphone	77.1	5.4	43.8	4.9	70.8	5.4	91.7	4.6	79.2	4.3	85.4	5.1
Selfview	18.8	4.5	6.3	5.8	6.3	5.7	39.6	4.3	16.7	3.1	27.1	4.4
Still Picture	25.0	5.0	6.3	3.7	10.4	5.0	43.8	4.3	20.8	4.1	35.4	4.1
Videophone	75.0	5.7	25.0	3.8	66.7	5.4	87.5	5.7	54.2	3.8	77.1	5.2
<i>Malaysia</i>												
Camera	60.4	5.4	14.6	4.0	56.3	4.9	91.7	4.6	62.5	4.2	85.4	5.2
Doc. Camera	25.0	4.0	10.4	5.1	20.8	5.1	77.1	4.6	33.3	3.2	64.6	4.6
Handsfree	16.7	4.8	4.2	4.2	18.8	5.1	70.8	4.5	20.8	3.5	37.5	3.7
Microphone	75.0	5.4	52.1	5.1	81.3	5.5	93.8	5.9	77.1	4.5	87.5	5.4
Selfview	6.3	4.3	2.1	4.6	8.3	4.9	37.5	3.7	16.7	3.1	35.4	3.8
Still Picture	18.8	4.4	6.3	4.4	20.8	4.5	72.9	4.3	27.1	3.6	62.5	4.1
Videophone	45.8	5.2	10.4	2.7	43.8	5.1	87.5	5.8	41.7	4.1	72.9	4.3
<i>Philippines</i>												
Camera	81.3	5.3	22.9	3.6	60.4	5.6	89.6	6.1	62.5	4.4	79.2	5.9
Doc. Camera	35.4	3.7	4.2	3.5	27.1	5.6	81.3	3.8	31.3	3.0	70.8	4.6
Handsfree	25.0	5.1	2.1	4.2	25.0	4.3	81.3	4.2	31.3	3.7	68.8	4.8
Microphone	83.3	5.6	58.3	5.2	81.3	5.8	93.8	6.3	68.8	4.6	85.4	5.4
Selfview	4.2	5.0	0.0	5.2	2.1	5.4	35.4	4.1	25.0	3.9	33.3	3.8
Still Picture	20.8	4.8	2.1	3.4	8.3	5.1	66.7	4.4	31.3	3.1	45.8	4.6
Videophone	64.6	5.7	10.4	2.9	60.4	5.4	83.3	4.4	39.6	3.3	79.2	4.5
<i>Thailand</i>												
Camera	72.9	5.6	16.7	3.4	50.0	5.0	87.5	4.7	52.1	3.9	77.1	4.6
Doc. Camera	20.8	3.5	6.3	3.9	16.7	4.6	50.0	3.9	31.3	3.2	35.4	4.3
Handsfree	29.2	4.4	12.5	3.1	22.9	4.6	60.4	4.6	35.4	3.9	60.4	5.0
Microphone	85.4	5.8	52.1	5.0	77.1	5.8	91.7	5.9	79.2	4.6	89.6	5.5
Selfview	27.1	3.9	8.3	3.1	18.8	5.5	56.3	4.3	33.3	3.4	47.9	3.6
Still Picture	31.3	5.1	14.6	5.2	22.9	5.2	83.3	5.1	45.8	3.5	68.8	4.9
Videophone	75.0	5.4	16.7	4.0	60.4	5.3	89.6	6.0	62.5	4.4	77.1	5.1
<i>Sri Lanka</i>												
Camera	37.5	5.2	6.3	4.5	41.7	5.1	66.7	5.1	35.4	4.5	54.2	5.6
Doc. Camera	4.2	4.0	2.1	3.5	6.3	4.7	18.8	4.6	12.5	3.8	8.3	4.6
Handsfree	6.3	5.6	2.1	4.2	8.3	5.1	37.5	5.1	14.6	4.1	25.0	4.3
Microphone	60.4	6.1	37.5	5.0	70.8	5.2	81.3	5.6	47.9	4.5	75.0	4.9
Selfview	14.6	5.1	6.3	4.9	14.6	4.9	41.7	5.4	29.2	4.2	45.8	4.7
Still Picture	12.5	5.0	4.2	4.3	12.5	4.6	39.6	4.8	20.8	4.0	39.6	4.2
Videophone	37.5	5.3	16.7	3.9	54.2	5.1	75.0	4.2	41.7	4.5	75.0	4.7

Between countries, there were significant differences ($F(4, 111)$, $p < 0.05$) in hit rates for symbols for “camera”, “document camera”, “handsfree”, “still picture”, and “videophone” (Appendix 5). The most instances of significant inter-country differences in hit rates were noted in “camera”, “document camera” and “handsfree”. In these symbols, Sri Lankan subjects generally had the lowest hits compared to the other four countries. Certainty ratings were mostly higher for Sets 1 and 3 compared to Set 2 in both Part One and Part Two (see also Appendix 6). Certainty ratings of the symbols for microphone and videophone were either very high (Sets 1 and 3) or very low (Set 2) in both Parts One and Two. No significant differences were noted when subjects were compared based on occupation (student vs. employees/professionals).

When symbols are intended as parts of interfaces of devices for international use, different tests are usually needed. In the main part of the study, the different parts were designed to measure initial (a priori) meaning and appropriateness, ease of learning and remembering, as well as the probability of confusion with other designs. The spontaneous identification test (Part One) had significantly lower hit rates compared with the hit rates in the cued response test (Part Two). Part One and together with Part Two simulate (though in a limited manner) real videophone call scenarios wherein the symbols are placed on the terminal with one function to be performed at a time. Part One is a situation akin to using the technology the first time with minimal knowledge and instructions. Thus, only familiar symbols or those that are concrete representations of the functions would have higher hit rates (ex. microphone, camera and videophone). Further, it was interesting to note that symbols could indeed be quite difficult to understand or comprehend based on the very low hit rates in Part One. The cued response tests were similar to situations when using the videophone the first few times but with more information and instructions given. This finding gives further credence to the importance of providing the prospective users all the possible cues and learning aids when attempting to use a new product or device the first few times (Lund, 1997, Shahnavaz, 1998 and Wolff and Wogalter, 1998). Lastly, subjective certainties were also relevant. They reflected the subjects’ degree of confidence or confusion with their answers and could thus help in weighing the hit rates between symbols and symbol sets.

Confusions and missing values

Confusions or false alarms were instances when a symbol was associated to the wrong referents (μ -errors). They were derived during the cued response test in Part Two (Tables 9 to 11). Set 2 had the most number of false alarms and Set 1 the least number of false alarms. Across symbol sets, “Selfview” and “Videophone” symbols had the highest number of false alarms. False alarms could be very helpful in determining the distinctness of a symbol from other symbols. For example, in the case of the symbols for selfview, although Sets 1 and 3 appear to have similar hit rates, the former seemed to be better by having much lesser false alarms (116 vs. 169). The same was true for the videophone symbols of Sets 1 and 3. They had similar hit rates but the videophone of Set 1 seemed to be more distinct, having lesser instances of false alarms (97 vs. 192). These observations also appeared to support Böcker’s contention that a false alarm may even be more hazardous than a miss or α -error, since the former represents how often a symbol is mistakenly chosen or confused under different referent conditions thereby decreasing its usability (Böcker, 1993).

When confusions are concentrated to one or a few referents, they also represent the degree of confusing a symbol to another symbol presented at the same time. For example, Set 1’s microphone symbol was often associated with the referent handsfree (Indonesia and

Malaysia). Such situations could mean that the symbols were be so similar to each other that a re-design is on order to make them more distinct.

Missing values were situations when subjects did not write any answers in the first two parts of the tests. Here, Part One had more missing values than Part Two with Set 2 as having the highest missing values for both Parts. There were no major differences between countries for missing Values in Part One. In Part Two, Indonesia followed by Thailand had missing values a bit higher compared to Malaysia, Philippines and Sri Lanka, with the latter as having no missing values at all. Aside from hit rates and certainties, missing values are important. For example, although Sri Lanka had the lowest hits for some of the symbols in both tests, it had the lowest missing values, especially when compared to Indonesia and Thailand. This could suggest a type of response bias and/or differences in understanding test procedures not reflected in the other parameters.

TABLE 9. False alarms and missing values per country in Symbol Set 1. (Note: For Tables 6 to 11, Ind. = Indonesia, Mal. = Malaysia, Phi. = Philippines, Tha. = Thailand, S.L. = Sri Lanka. In the Missing Values portion, the first column in each country denotes missing values in Part One and the second column for missing values in Part Two.)

Symbol Set 1	<i>False Alarms</i>					<i>Missing Values</i>									
	Ind.	Mal.	Phi.	Tha.	S.L.	Ind.	Mal.	Phi.	Tha.	S.L.					
Camera	14	8	7	20	17	5	3	1	0	3	0	2	0	5	0
Doc. Camera	10	9	14	9	21	0	1	0	0	0	0	0	0	0	0
Handsfree	7	7	7	4	19	5	3	2	0	3	0	3	2	1	0
Microphone	13	12	8	8	11	2	0	0	0	0	0	0	0	3	0
Selfview	21	19	17	18	41	5	4	3	0	8	0	1	0	1	0
Still Picture	11	11	8	13	24	2	0	4	0	5	0	2	0	3	0
Videophone	19	15	20	13	30	0	0	1	0	1	0	1	0	1	0

TABLE 10. False alarms and missing values per country in Symbol Set 2.

Symbol Set 2	<i>False Alarms</i>					<i>Missing Values</i>									
	Ind.	Mal.	Phi.	Tha.	S.L.	Ind.	Mal.	Phi.	Tha.	S.L.					
Camera	17	23	13	18	21	8	0	3	0	8	1	4	0	4	0
Doc. Camera	24	29	19	17	51	7	0	8	0	7	0	9	0	7	0
Handsfree	21	22	25	21	16	8	7	2	1	6	1	2	2	4	0
Microphone	11	27	18	24	30	25	7	21	0	20	0	13	3	10	0
Selfview	19	35	40	19	40	19	11	10	0	12	1	10	3	11	0
Still Picture	28	15	29	17	32	13	3	10	0	10	0	8	0	10	0
Videophone	48	49	50	47	49	10	8	6	0	4	0	2	2	6	0

TABLE 11. False alarms and missing values per country in Symbol Set 3.

Symbol Set 3	<i>False Alarms</i>					<i>Missing Values</i>									
	Ind.	Mal.	Phi.	Tha.	S.L.	Ind.	Mal.	Phi.	Tha.	S.L.					
Camera	15	15	13	27	28	6	0	5	0	3	0	4	1	6	0
Doc. Camera	10	7	11	3	30	7	1	13	0	6	0	4	0	9	0
Handsfree	12	8	4	7	11	5	1	1	0	3	0	4	1	7	0
Microphone	7	5	12	11	7	2	1	1	0	0	1	2	0	4	0
Selfview	29	32	34	25	44	4	0	7	0	5	0	7	0	5	0
Still Picture	14	10	14	15	13	2	0	1	0	3	0	2	0	1	0
Videophone	49	44	25	27	47	1	0	3	0	1	0	2	0	3	0

Symbol and set preferences

Regarding preferences (Tables 12 and 13), at least 50 percent of the subjects preferred five of the seven symbols of Set 1 compared to those of symbols of Sets 2 and 3. Between sets, Set 1 was clearly preferred among the three sets (58.3% to 68.8%) in all countries. Preferences generally indicate the aesthetics; the subjects' personal judgment that symbols and set best represented the referents in question (Böcker, 1993 and Mackett-Stout and Dewar, 1981). Aesthetic judgments as reflected in preference tests can be helpful when confronted with choosing between symbols representing the same function whose performance parameters were nearly equal.

TABLE 12. Symbol preferences in (%) with all countries combined (N = 240).

	Symbol Preferences		
	Set 1	Set 2	Set 3
Camera	26.3	37.5	35.8
Doc. Camera	50.8	19.6	29.6
Handsfree	52.9	20.4	22.5
Microphone	52.1	8.3	39.2
Selfview	44.2	7.5	48.3
Still Picture	55.0	25.8	18.8
Videophone	67.9	4.2	27.9

TABLE 13. Symbol set preferences in (%) per country.

	Set Preferences		
	Set 1	Set 2	Set 3
Ind.	68.8	4.1	27.1
Mal.	58.3	6.3	35.4
Phi.	68.8	0.0	31.2
Tha.	64.6	6.2	29.2
S. L.	62.5	2.1	35.4
<i>Means</i>	64.6	3.7	31.7

TABLE 14. Mean semantic differential test scores for the seven referents using the three symbol sets. (Total number of subjects = 240, $n = 48$ per country).

	Sets	Country											
		Overall		Indonesia		Malaysia		Philippines		Thailand		Sri Lanka	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Camera	1	5.74	1.61	5.81	1.42	6.08	1.31	5.76	1.57	6.04	1.23	5.00	2.12
	2	5.55	1.76	5.74	1.58	6.17	1.31	5.44	1.67	5.70	1.57	4.70	2.23
	3	5.75	1.62	5.97	1.29	6.16	1.07	5.76	1.60	5.85	1.55	5.03	2.14
Doc. Camera	1	5.12	2.00	5.41	1.71	5.01	2.02	5.34	1.82	5.57	1.68	4.25	2.41
	2	5.11	1.83	5.45	1.78	5.30	1.76	4.87	1.65	5.23	1.57	4.71	2.24
	3	4.94	2.04	4.94	2.02	5.06	2.08	4.94	1.92	5.28	1.75	4.45	2.30
Handsfree	1	3.65	2.11	4.52	1.92	3.29	2.07	3.05	1.95	3.33	2.00	4.03	2.27
	2	3.82	2.23	4.51	2.13	3.83	2.27	3.46	2.10	3.63	2.19	3.69	2.34
	3	3.68	2.20	4.57	2.10	3.42	2.18	3.41	2.15	3.57	2.15	3.44	2.23
Microphone	1	6.09	1.37	6.18	1.29	6.33	1.00	6.25	1.05	6.29	0.99	5.40	2.02
	2	2.50	1.84	2.73	1.69	2.55	1.96	2.06	1.46	2.08	1.50	3.09	2.25
	3	6.08	1.60	6.11	1.56	6.56	1.11	6.13	1.37	6.35	1.12	5.25	2.24
Selfview	1	4.98	1.85	4.92	1.80	5.10	1.76	5.21	1.74	5.29	1.59	4.38	2.17
	2	2.81	1.96	2.91	1.97	2.72	1.95	2.48	1.76	2.77	1.84	3.19	2.17
	3	5.25	1.74	5.39	1.45	5.45	1.55	5.28	1.77	5.39	1.59	4.73	2.15
Still Picture	1	5.03	1.80	5.30	1.60	5.21	1.73	5.43	1.55	4.69	1.83	4.54	2.10
	2	3.59	2.12	3.48	1.77	3.67	2.25	2.85	1.80	3.45	2.16	4.52	2.25
	3	4.52	2.13	4.97	1.85	4.50	2.18	4.58	2.07	4.40	2.06	4.17	2.39
Videophone	1	6.14	1.94	6.13	1.40	6.10	1.46	6.24	1.26	6.35	0.96	5.85	3.49
	2	3.32	1.94	3.74	1.92	3.48	1.89	2.69	1.55	2.92	1.68	3.75	2.34
	3	5.96	1.45	6.22	1.27	5.98	1.22	6.05	1.08	6.10	1.35	5.45	2.01

Semantic Differential Tests

Table 14 summarizes the results of the semantic differential tests for the three symbol sets. Generally, symbols representing familiar or common functions had high semantic ratings (ex. camera and microphone) across all sets. Among the sets, Set 2 had the lower semantic ratings. Set 2's low hit rates and semantic scores confirmed one of the hypotheses; that is, abstract symbols would tend to have poor comprehension and rating. Novel or complex functions in turn had lower semantic ratings (ex. handsfree, selfview) and could indicate again the need for more learning time. Furthermore, frequency distributions of the ratings can also help analyze the relationships between the functions and the symbols representing them. Figures 4 to 10 contain the frequency distributions for the twenty-one symbols depicting the seven-videophone functions. Positive skewness (high frequency distributions towards positive side, i.e. ratings of 5 to 7) were characteristic for symbols with high hits (at least 66%) and certainty ratings in both Parts One and Two (see also Appendix 7). For example, Sets 1 and 3's symbols for microphone and videophone had hit rates of sixty percent or more in both Parts One and Two. Correspondingly, their SDT scores were highly skewed on the positive side. These strongly suggest the subjects' high levels of confidence and understanding of these symbols in relation to the functions they represented. The symbols can thus be expected to perform satisfactorily when used by the subjects. On the other hand, negatively skewed and platykurtic (low humped or scattered) distributions can suggest lower levels of semantic or connotative concepts of the symbols in relation to the functions. These can be seen from the frequency distributions of symbols for handsfree (Sets 1-3), microphone (Set 2), still picture (Sets 2-3) and videophone (Set 2). These suggest the need to re-design the symbols. On the other hand, the referents or functions themselves may also need to be learned or explained further. This latter view in a way also supports on of the observations made by Rutter and Becka (1997). In a usability testing of cordless telephones, their subjects were tested on their comprehension of labels (functions) currently available in such telephones. Very few of these functions were understood by majority of their subjects (Rutter and Becka, 1997). Thus, when confronted with using new devices, part of the problem may lie on possibility that the subjects do not even understand some of the functions themselves.

In all, Study III results had symbols of Set 3 (ETSI Proposed Symbols) as the best symbols considering all the test parameters. They were closely followed by Set 2 symbols especially for the symbols for camera, selfview, and microphone. Part One results presented the high rate again of failing to identify these icons when presented with no other cues or learning , and even confusing them with other symbols (Part Two, "false alarms" or confusions).

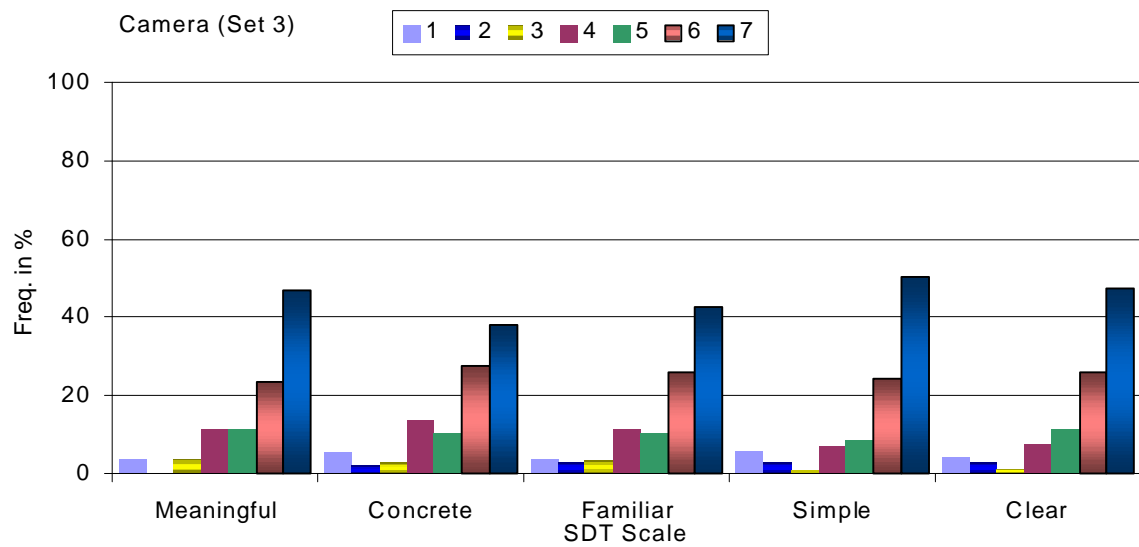
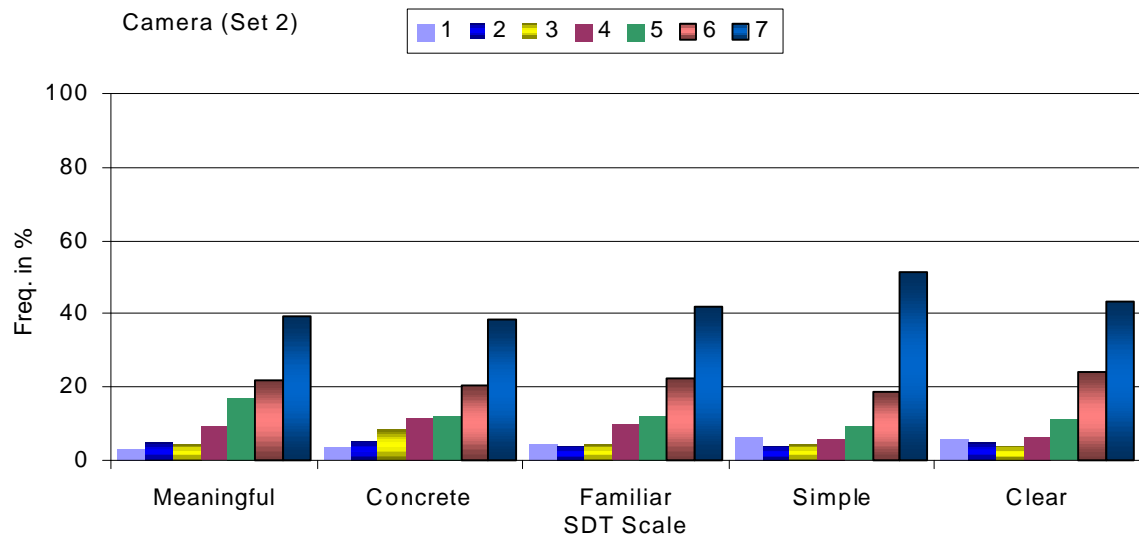
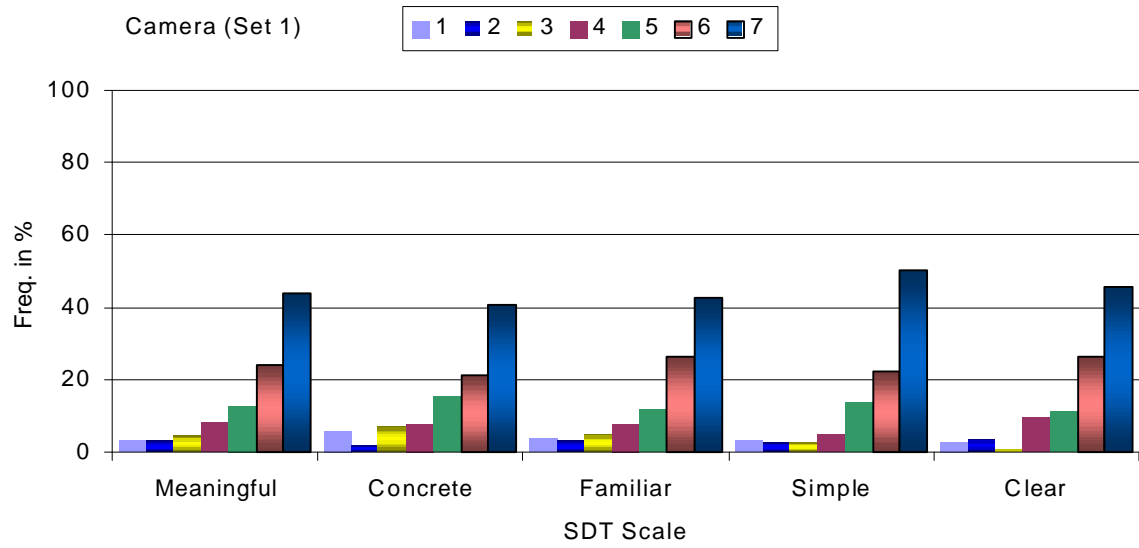


FIGURE 4. Frequency distributions of the semantic differential scores for camera (all countries, $N = 240$; per country, $n = 48$ per country).

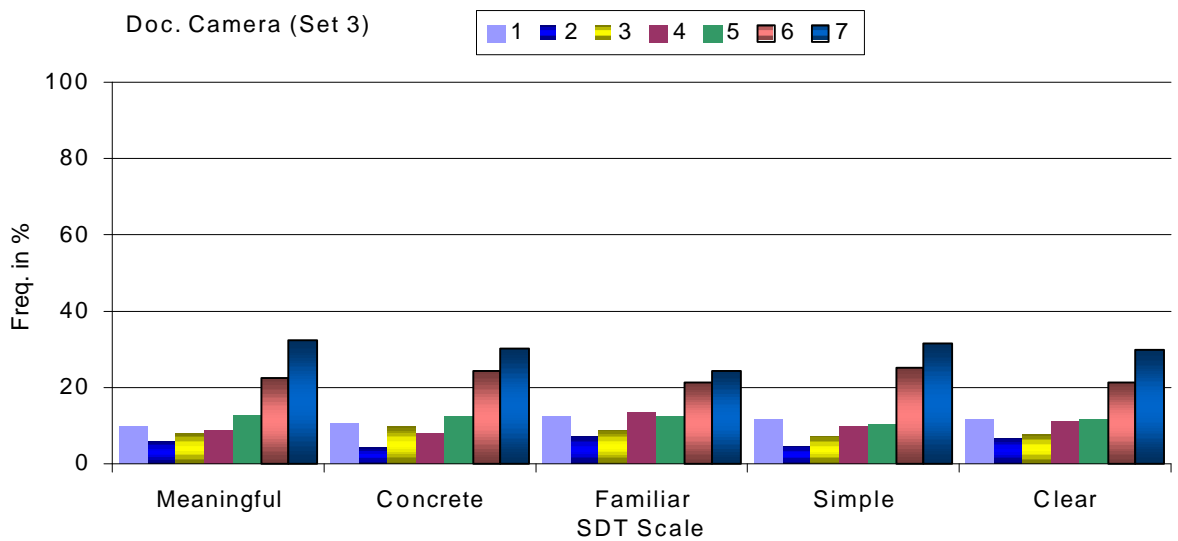
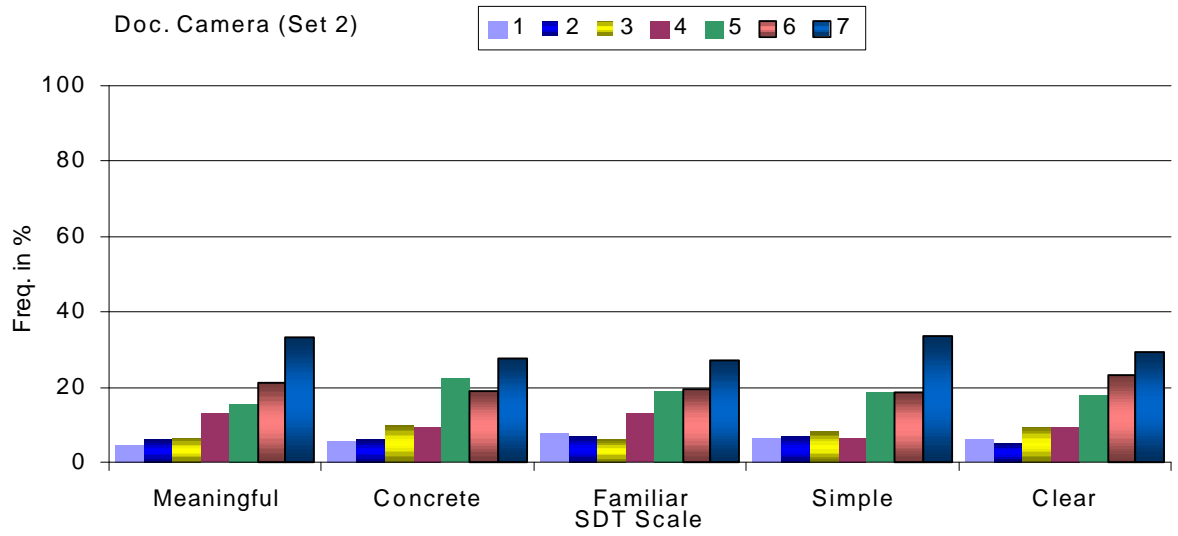
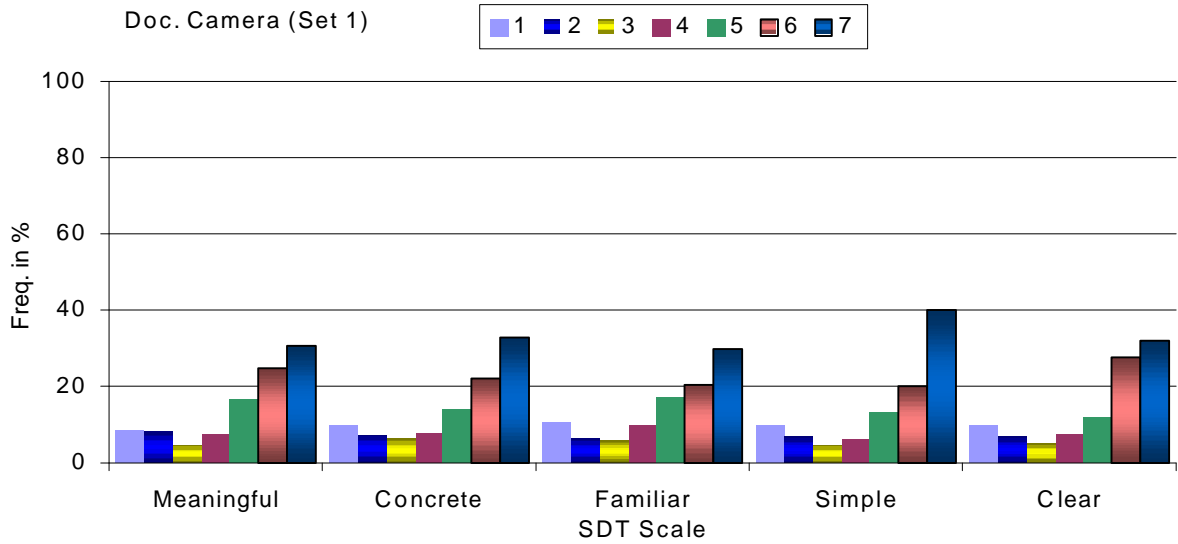


FIGURE 5. Frequency distributions of the semantic differential scores for document camera (all countries, $N = 240$; per country, $n = 48$ per country).

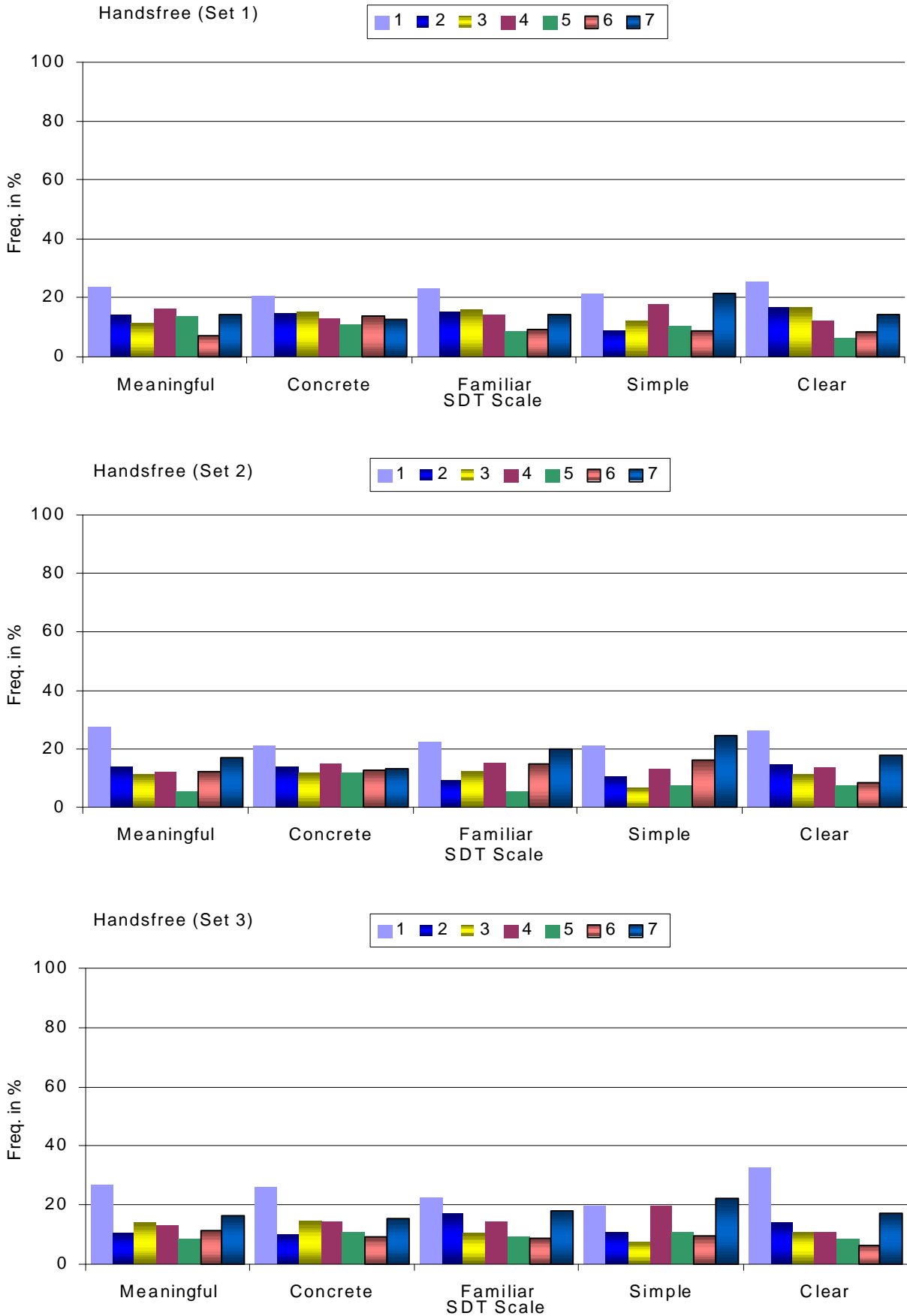


FIGURE 6. Frequency distributions of the semantic differential scores for handsfree (all countries, $N = 240$; per country, $n = 48$ per country).

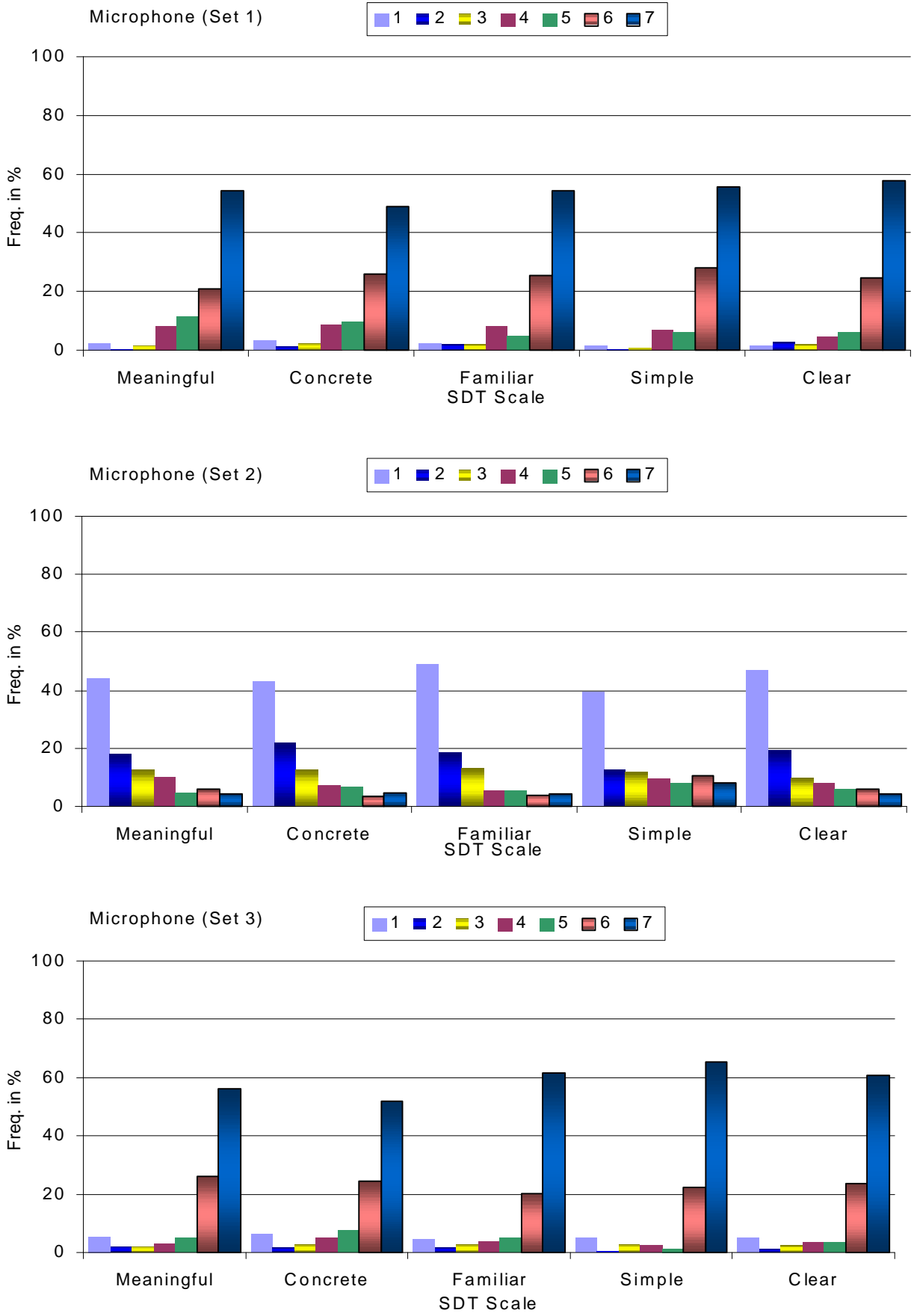


FIGURE 7. Frequency distributions of the semantic differential scores for microphone (all countries, $N = 240$; per country, $n = 48$ per country).

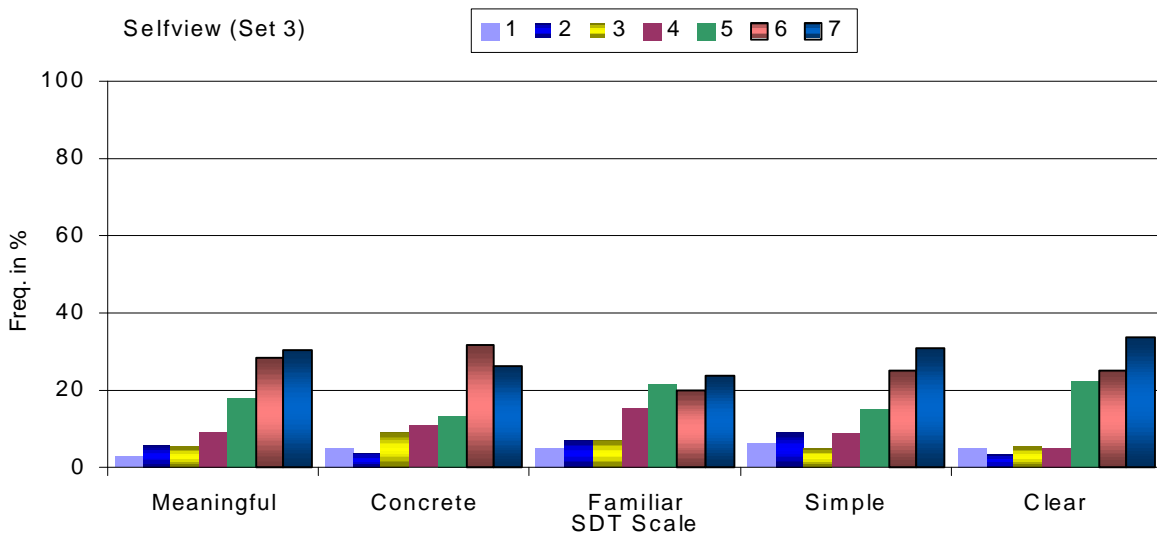
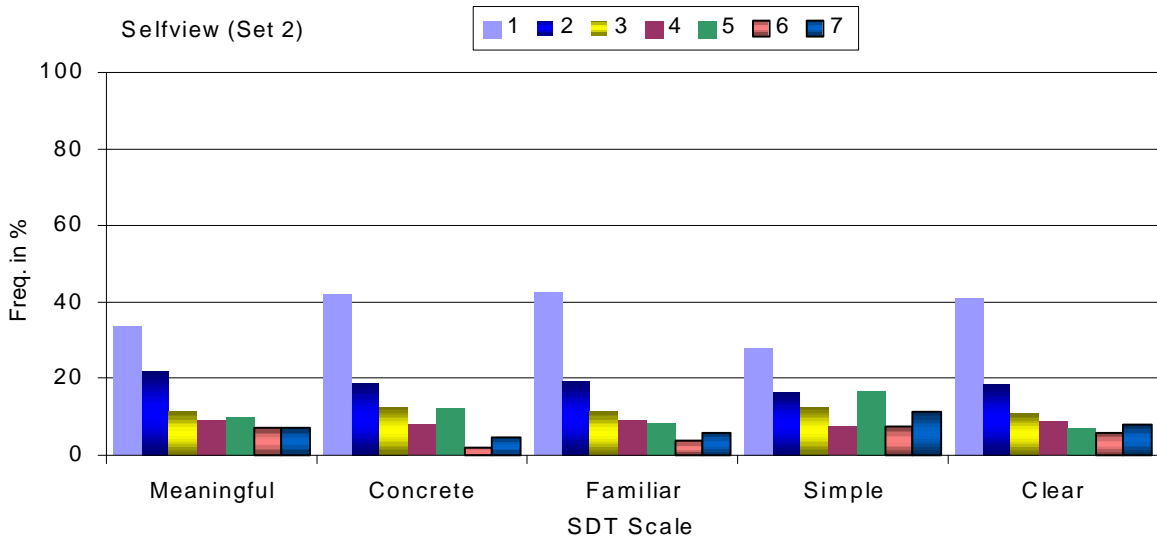
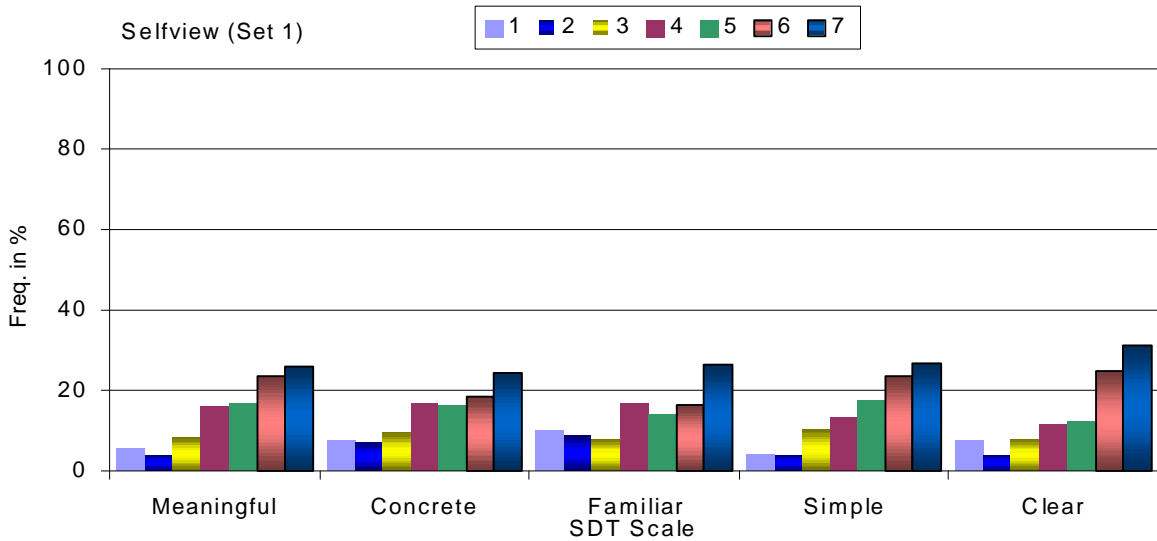


FIGURE 8. Frequency distributions of the semantic differential scores for selfview (all countries, $N = 240$; per country, $n = 48$ per country).

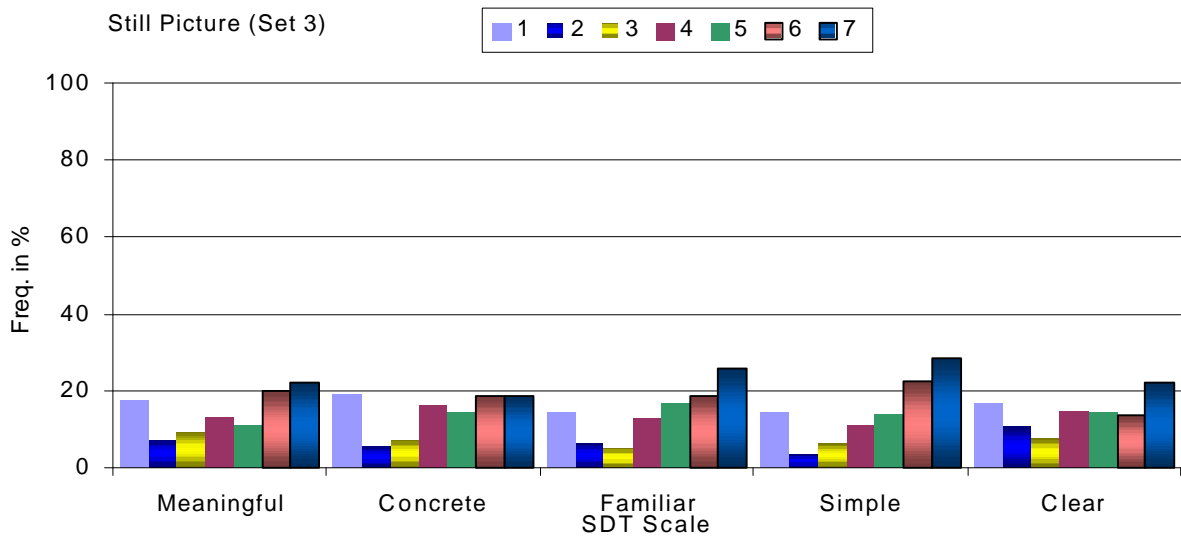
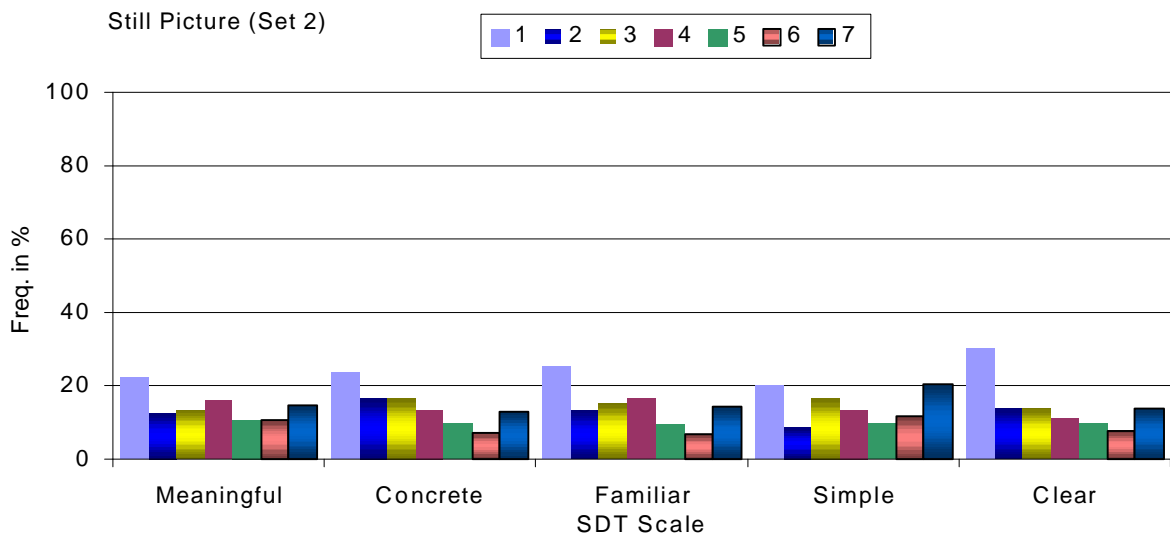
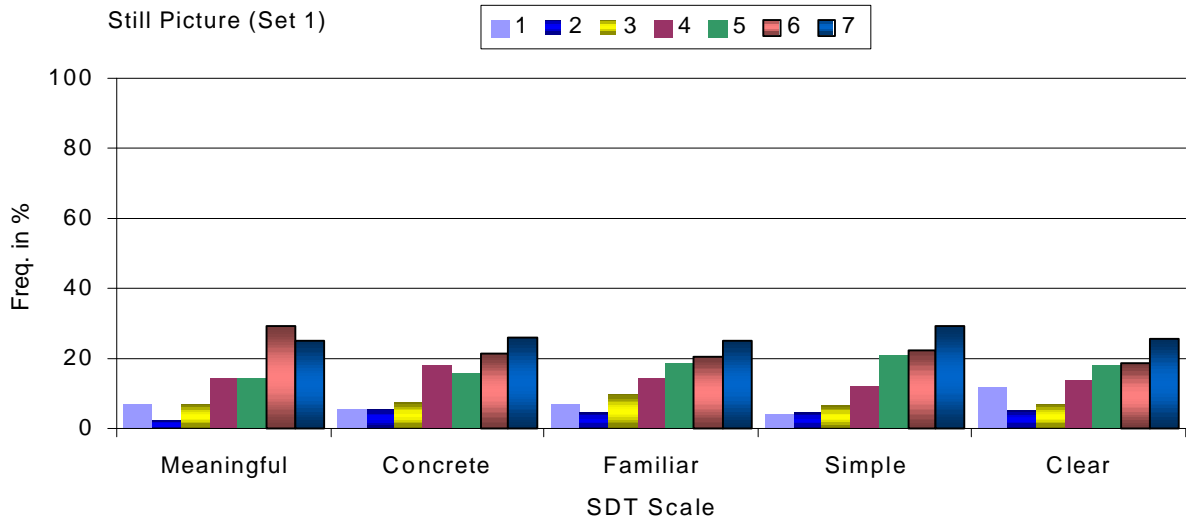


FIGURE 9. Frequency distributions of the semantic differential scores for still picture (all countries, $N = 240$; per country, $n = 48$ per country).

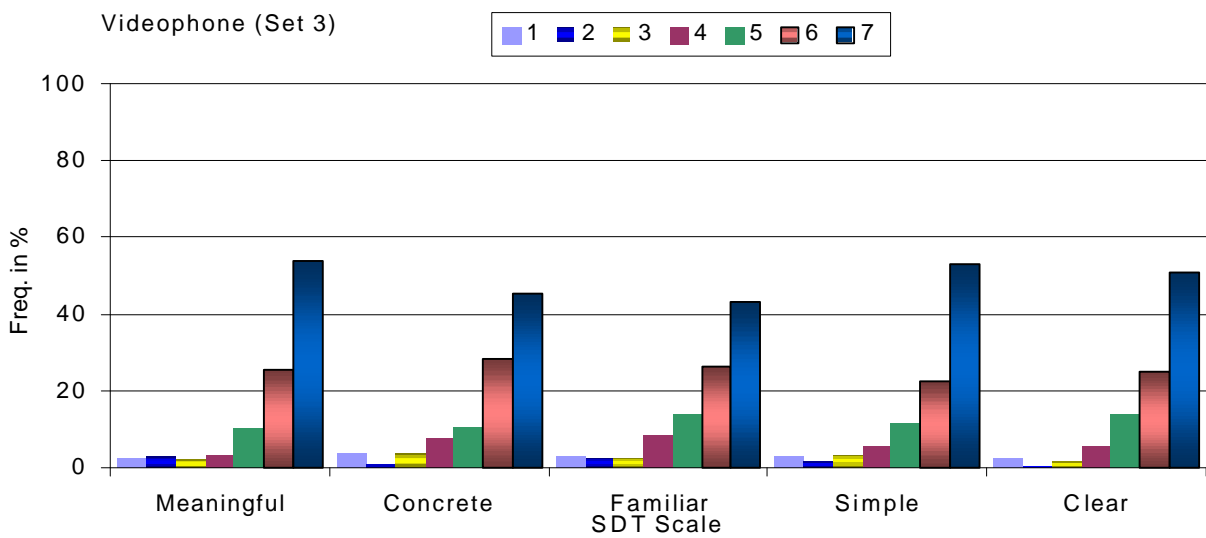
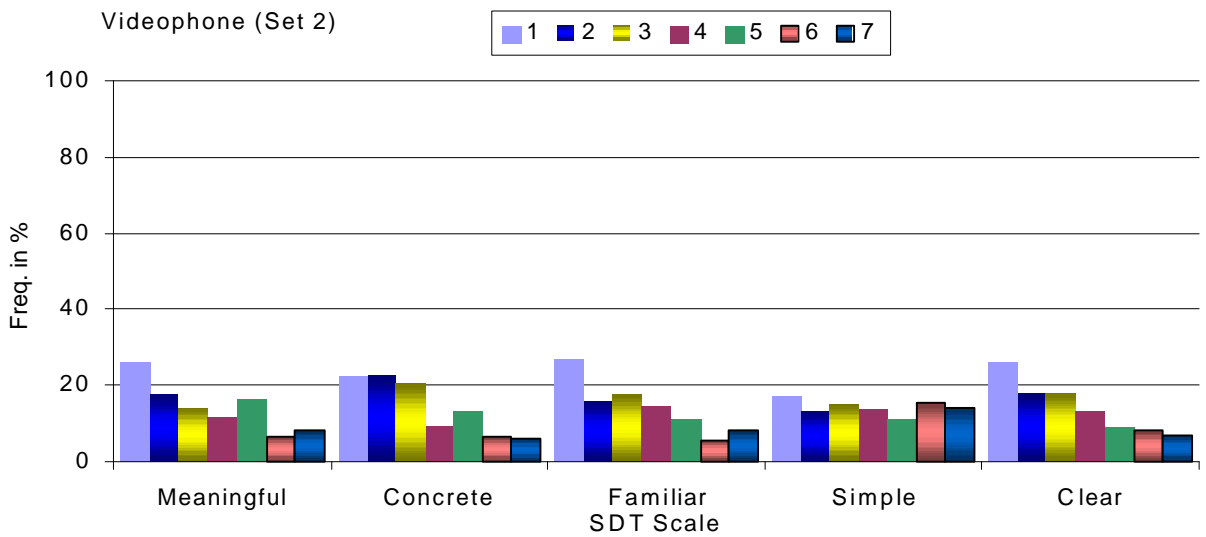
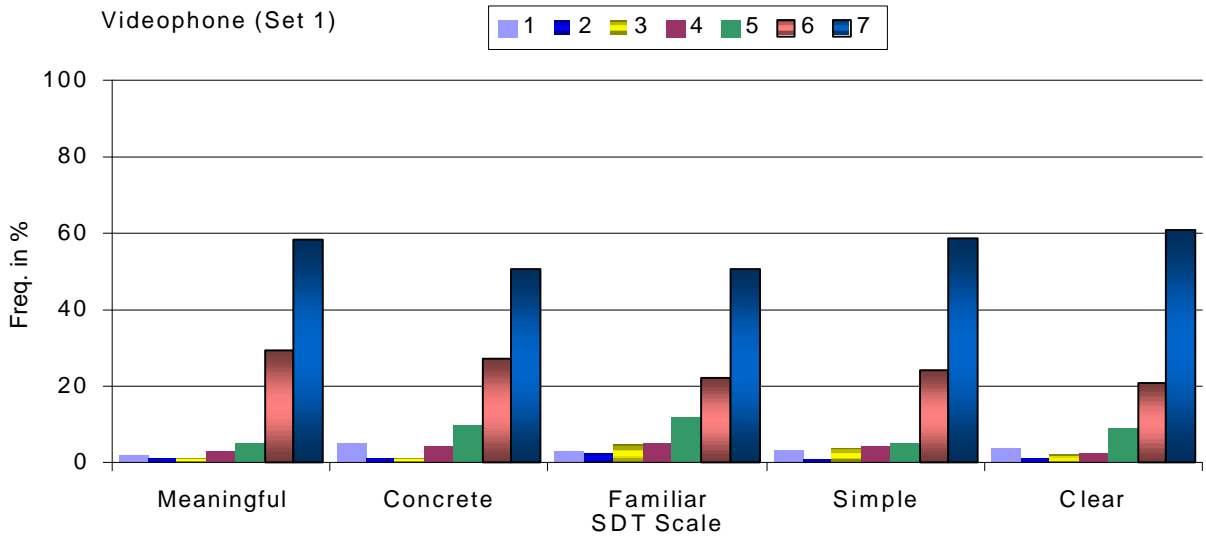


FIGURE 10. Frequency distributions of the semantic differential scores for videophone (all countries, $N = 240$; per country, $n = 48$ per country).

Comparing work groups and countries

Students did not significantly differ in all parameters compared to employees and professionals. It may be that these groups were still quite homogenous considering that their computer backgrounds were quite similar. Between countries and across the 3 sets, only Sri Lanka had significantly lower hit rates and only in Part Two for all the functions except for microphone and videophone. This may be partially due to the language problem. Although local translations/instructions were made available, the actual questionnaires used were in English.

Regarding eastern and western subjects, initial comparisons with the studies done by Böcker (1993) using the same symbols and test type (cued response test) revealed that European and Asian subjects had comparable hit rates and generally preferred the same symbol groups (Set 1). This negated the hypothesis that Asians would register lower hit rates compared to Europeans. However, Asian subjects seemed to exhibit higher instances of false alarms compared to the European subjects. Asians tended to confuse some of the symbols more often than Europeans. These could suggest a certain form of subjective bias that may be dependent on cultural or demographic factors although more studies would be needed to confirm these. Lastly, Study III again showed Asians tending to have higher certainty ratings compared to their European counterparts. These may show another cultural difference -that in giving ratings the Europeans tended to be more conservative than Asians.

STUDY IV: CASE STUDIES OF THE FINNISH ELDERLY AND SUBJECTS FROM USA

The Finnish Elderly

The multiple index tests used in the Asian study were similarly carried out with 29 elderly subjects (14 women and 15 men). The women were 61 to 81 years old (mean age: 69.6 years) and the men 60 to 88 years old (mean age: 70.9 years). The mean age for the whole group was 70.3 years. Compared to the subjects from Southeast Asia and even the USA, the Finnish elderly failed to do parts One and Three. Majority of the subjects claimed that the tasks were either too difficult or too complicated. Nonetheless, Tables 15 and 16 contained the results for Part Two while Tables 13 and 14 contain the results for Part Four. Compared to younger subjects (from Asia and US), the elderly subjects had much lower hit rates in all symbols of the 3 sets used.

TABLE 15. The results for cued-response tests (Part Two), using Finnish elderly as subjects, N=29.

Function	Set 1		Set 2		Set 3	
	n	%	n	%	n	%
Camera	10	34	3	11	8	30
Document camera	14	48	10	36	7	26
Handsfree	6	21	6	21	3	11
Microphone	13	45	7	25	17	63
Selfview	7	24	5	18	8	30
Still Picture	4	14	4	14	2	7
Videophone	15	52	5	18	14	52

In Part Two, the subjects also expressed the level of certainty to their answers using a response scale from 1 (very certain) to 7 (very uncertain). Table 16 shows the computed mean certainty level and standard deviation for each icon in different icon family.

TABLE 16. Certainty ratings for the cued-response tests (Part Two) using Finnish elderly, N=29.

Function	Set 1		Set 2		Set 3	
	Mean	S. D.	Mean	S. D.	Mean	S. D.
Camera	4.4	1.9	4.6	1.9	4.1	1.8
Document camera	4.1	1.9	4.5	1.7	4.2	2.0
Handsfree	4.5	2.0	5.0	1.7	4.7	1.6
Microphone	4.2	2.0	4.8	1.8	4.0	1.8
Selfview	4.2	1.9	4.5	2.0	4.3	1.9
Still Picture	4.1	2.3	4.3	1.9	3.9	1.8
Videophone	4.1	2.2	5.0	1.5	4.1	1.9

In Part Four, the subjects chose for each of the seven videophone referents the symbol or icon that he/she preferred most. The subjects also had to choose from the three icon families the icon family he/she preferred most. Table 17 presents the number and percentages of the subjects, who liked the icon best and also the number of subjects who did not answer to the question. It was quite evident that the elderly subjects preferred the most of the symbols of Set 3 and even preferred Set 3 as a whole. These were in stark contrast to subjects from Southeast Asia and USA, who preferred Set 1 and its symbols, the proposed standard set by ETSI.

TABLE 17. The results for Part Four, N=28.

Function	Set 1	%	Set 2	%	Set 3	%	None	%
Camera	6	21	17	61	4	14	1	4
Document camera	9	32	6	21	12	43	1	4
Handsfree	12	41	9	31	5	17	3	10
Microphone	3	11	8	29	16	57	1	4
Selfview	12	43	9	32	6	21	1	4
Still Picture	5	18	10	36	12	43	1	4
Videophone	10	36		0	17	61	1	4
Family		0	11	39	16	57	1	4

Part Four also contained questions regarding attitudes towards technology. The results showed that majority of the subjects, both men and women either agreed totally or almost totally to the view that the advantages of technological progress outweigh the disadvantages (Table 18). 91% of the men and 54 % of the women thought that the progress in technology totally or almost totally makes life a lot of easier (Table 19). The progress in technology was thought to make life more difficult by about 13 % of the subjects.

TABLE 18. Frequency distribution for the question: Advantages of technological progress outweigh the disadvantages.

	N	%	Men	%	Women	%
Do not agree at all	1	1	4		1	8
	2					
	3	2	8		2	15
	4	12	50	5	45	7
Totally agree	5	11	38	6	55	5

TABLE 19. Frequency distribution for the question: Progress in technology makes life a lot easier:

	N	%	Men	%	Women	%	
Do not agree at all	1	3	13	1	9	2	15
	2	1	4			1	8
	3	3	13			3	23
	4	7	29	3	27	4	31
Totally agree	5	10	42	7	64	3	23

TABLE 20. Frequency distribution for the question: Some aspects of today's technological progress are worrying.

	N	%	Men	%	Women	%	
Do not agree at all	1	2	8	2	18		
	2	1	4			1	8
	3	5	21	3	27	2	15
	4	10	42	4	36	6	46
Totally agree	5	6	25	2	18	4	31

However, about sixty-seven percent (67%) of the subjects (54 % of the men and 77 % of the women) were totally or almost totally worried about some aspects of today's technological progress (Table 20). Eighteen percent of the men were not worried at all. These findings showed that elderly people are not entirely hostile to modern technology as commonly believed. What may worry them, more probably, is the usability of modern products, so life can indeed be better or easier for them.

The trend of demographic evolution shows that the European population, in particular, is one that is becoming old. This trend will have implications on the social structure, where respect for an independent living should be taken into consideration, taking into account the new services and products just available or those under development, such as tele-alarms and teleservices to assist people at home or elsewhere.

There can be many pleasures and satisfaction to seniority, but there are also negative physical, cognitive, and social consequences of aging. Understanding the human factors of aging can lead to computer designs that will facilitate access by the elderly. The benefits to the elderly include practical needs for writing, accounting, and the full range of computer tools, plus the satisfactions of education, entertainment, social interaction, communication and challenge. In this case, symbols were intended to improve the usability of a product (i.e. videophone). But the results showed that the opposite might occur among the elderly. Other benefits include increased access of the society to the elderly for their experience, increased participation of the elderly in society through communication networks, and improved chances for productive employment of the elderly. (Schneiderman, 1992). The results in this case study emphasize these points as well. Only by a conscious and active participation of the elderly in designing and developing modern products will their needs be truly met.

The US Subjects

For purposes of extended comparisons, subjects from the United States were also included using the same method used in the Southeast Asian studies. The nineteen subjects were students and employees in the University of Central Florida. The age range was 19-43 years with a mean of 22.6 years (SD = 5.24). All of them have used computers and computer-

related products at home and at work, with 78.9% (n = 15) using both graphics-based and DOS-based programs.

TABLE 21. Parts One and Two hit rates (%) and mean subjective certainties (Cert.), n = 19.

	<i>Spontaneous Identification Tests</i>						<i>Cued Response Tests</i>					
	<i>Set 1</i>	<i>Cert.</i>	<i>Set 2</i>	<i>Cert.</i>	<i>Set 3</i>	<i>Cert.</i>	<i>Set 1</i>	<i>Cert.</i>	<i>Set 2</i>	<i>Cert.</i>	<i>Set 3</i>	<i>Cert.</i>
Camera	73.7	5.6	79.0	5.0	79.0	5.2	79.0	3.2	68.9	3.7	57.9	4.2
Doc. Camera	21.0	4.0	10.5	4.1	21.0	3.8	89.5	3.4	89.5	3.9	79.0	4.4
Handsfree	0.0	4.3	0.0	5.2	0.0	5.5	52.6	3.4	36.8	3.5	31.6	3.6
Microphone	89.5	5.3	10.5	2.8	89.5	5.6	100.0	5.8	52.6	4.2	89.5	6.0
Selfview	10.5	4.4	0.0	3.6	10.5	4.3	100.0	3.4	47.4	3.5	79.0	4.4
Still Picture	10.5	5.1	10.5	4.0	21.0	5.5	63.2	3.0	47.4	3.2	42.1	4.1
Videophone	73.7	4.9	0.0	4.7	52.6	5.6	100.0	6.5	31.6	3.8	84.2	5.6

Table 21 summarizes the results for both Parts One and Two of the test (spontaneous identification and cued responses, and their certainty ratings). Similar to the main study (Study III), the US subjects performed poorly in Part One, even failing to identify the handsfree symbols in all 3 sets. The still picture symbols likewise failed to score hits above 66% in both Part One and Part Two. In contrast, the symbols for camera, microphone and videophone had high recognition rates regardless of test type and set. Set 1 had the most number of symbols with recognition rates above 66% and Set 2 with the least. Certainty ratings generally were higher when the hits were higher as well.

The results of the semantic scale tests correlated well with the hit rates (Appendix 8). For example, the symbols with high hit rates (Sets 1 and 3 symbols for camera, microphone and videophone) tended to have higher semantic scores with their distributions positively skewed. In turn, most of Set 2's symbols were negatively skewed and platykurtic. These latter patterns were similarly exhibited by all three symbols for handsfree.

TABLE 22. Symbol preferences in (%), N = 19.

	Symbol Preferences		
	Set 1	Set 2	Set 3
Camera	26.3	47.4	26.3
Doc. Camera	42.1	21.1	36.8
Handsfree	52.6	31.6	15.8
Microphone	52.6	10.5	36.8
Selfview	15.8	10.5	73.7
Still Picture	47.4	15.8	36.8
Videophone	73.7	0.0	26.3
Preferred Set	47.4	0.0	47.4

Regarding preferences, although the US subjects preferred five of seven of Set 1's symbols, results that are similar to Study III (Southeast Asian subjects). However, they differ from the former group by equally preferring Sets 1 and 3 as a group. One important factor that leads subjects or potential users to their choice of symbols is easy recognition. Set 3's hit rates were generally comparable to Set 1. Hence, it was not surprising for preference to be similar as well.

IX. CONCLUSIONS AND RECOMMENDATIONS

Based on all the studies, the aims of the project were realized. Different tests were utilized in order to evaluate candidate telecommunication symbols developed in the west using subjects from eastern (Asian) and western countries. Specifically, a quasi-experimental approach utilizing multiple test parameters was adopted in testing different sets of graphical symbols for the videophone (icons from CIAJ of Japan, IDEO of London, both from studies by Tudor (1994), and ETSI of Europe). Appendix 9 contains the videophone symbols that performed best based on all the test parameters used in the studies. The following conclusions can then be drawn. First, majority of the icons tested was poorly recognized by all subject groups when using the ISO 9186 66% recognition rate on spontaneous identification tests as basis. The icons or symbols above this level were mostly concrete representations of their referents and/or quite familiar to the users already (CIAJ and ETSI proposed symbols).

Second, although Asian subjects generally had comparable recognition rates to western subjects, they had more instances of confusions. They also tended to have lesser number missing values, which are possible response biases. Third, empirical tests using multiple indices are important to properly evaluate the symbols on their usability especially across different user groups. The evaluation method should also simulate actual usage scenarios to determine the suitability of each symbol alone, but together with the other symbols as well. This can be exemplified by the elderly and US subject groups who chose symbol sets quite different from the Asians. Hit rate is an important parameter, but must be tested under different user scenarios (spontaneous identification and cued responses) to determine if the symbols indeed are understood with and without cues. At the same time hits rates alone are not enough. Subjective certainties, false alarms, preferences, and even missing values are equally useful factors needed to make a deeper analysis. They enable the tester to see other often subtle but important differences (i.e. subjective biases, confusing symbols to other referents and symbols) on how users perceive and understand symbols. Using semantic differential scales could also help in understanding how symbols are perceived in relation to the functions they are supposed to represent. Taken altogether, they are highly beneficial not only in properly interpreting test results of different user groups but also in formulating instructions and other aids in learning to use new products faster and more satisfactorily.

Evaluating graphical symbols is complicated and the use of multiple indices can help a lot in understanding how symbols are recognized, understood and learned by different user groups. Still, there are a few limitations in this study that need to be addressed in future studies towards better designing and testing of symbols.

- The symbols were presented on paper. More insights may be obtained if the symbols are tested using actual interfaces (computer screens, dialpads, etc.) and under more varied scenarios (e.g. with and without help options, 'normal vs. highly-stressed situations', cross-applications). The functions themselves need to be tested for their comprehension among the subjects or prospective users.
- The parameters or indices measured in the study were mostly elements under the signal detection theorem. Latency and learning factors may also need to be studied. The semantic differential testing results were interesting but discussed here in a limited manner. Succeeding work will focus on examining them in more detail and with possibly more subjects from other countries as well.

- In a more ergonomics approach, users and experts should both be considered not only at testing but also in all possible stages of design and testing. One simple but concrete follow-up is to design an iterative type of method to generate graphical symbols. Briefly, such method will involve a process of eliciting from the subjects their own ideas of how the symbols should look like, identifying the design factors behind them that can then be used by ergonomics experts and designers to contrive alternative symbols. These symbols would then be re-tested by the subjects under different user-based scenarios.

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APPENDIX 1

ONE-WAY ANOVA TABLE FOR RECOGNITION TEST (Study I, Transformed Data)

1. ANOVA Table for ACHIEVE DIAL TONE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.023071	2	0.0115355	0.50	0.6495
Within groups	0.0692131	3	0.023071		
Total (Corr.)	0.0922841	5			

2. ANOVA Table for ANSWER RINGING CALL by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	1.63135	2	0.815674	34.11	0.0086
Within groups	0.0717439	3	0.0239146		
Total (Corr.)	1.70309	5			

Multiple Range Tests for ANSWER RINGING CALL by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
1	2	0.63495	X
3	2	1.70485	X
2	2	1.77405	X

Contrast	Difference	+/- Limits
1 - 2	*-1.1391	0.645706
1 - 3	*-1.0699	0.645706
2 - 3	0.0692	0.645706

* denotes a statistically significant difference.

3. ANOVA Table for CALL LOG by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.3709	2	0.18545	1.13	0.4299
Within groups	0.490863	3	0.163621		
Total (Corr.)	0.861763	5			

4. ANOVA Table for CONFERENCE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.314584	2	0.157292	1.40	0.3715
Within groups	0.336474	3	0.112158		
Total (Corr.)	0.651057	5			

5. ANOVA Table for DIALPAD by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.00531739	2	0.00265869	0.02	0.9816
Within groups	0.425758	3	0.141919		
Total (Corr.)	0.431076	5			

6. ANOVA Table for DROP CALL by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.00952033	2	0.00476017	0.08	0.9277
Within groups	0.185504	3	0.0618346		
Total (Corr.)	0.195024	5			

7. ANOVA Table for HELSPECIFIC by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	1.07816	2	0.53908	3.64	0.1575
Within groups	0.443947	3	0.147982		
Total (Corr.)	1.52211	5			

8. ANOVA Table for HELP SYSTEM by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.189995	2	0.0949977	0.39	0.7082
Within groups	0.734786	3	0.244929		
Total (Corr.)	0.924781	5			

9. ANOVA Table for HFAI by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.10383	2	0.0519152	0.76	0.5402
Within groups	0.204535	3	0.0681782		
Total (Corr.)	0.308365	5			

10. ANOVA Table for HOLD by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.76062	2	0.38031	2.59	0.2222
Within groups	0.440791	3	0.14693		
Total (Corr.)	1.20141	5			

11. ANOVA Table for MESSAGE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	2.35121	2	1.17561	52.96	0.0046
Within groups	0.0665979	3	0.0221993		
Total (Corr.)	2.41781	5			

Multiple Range Tests for MESSAGE by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
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2	2	0.91645	X
1	2	1.3002	X
3	2	2.394	X

Contrast	Difference	+/- Limits
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1 - 2	0.38375	0.622118
1 - 3	*-1.0938	0.622118
2 - 3	*-1.47755	0.622118

* denotes a statistically significant difference.

12. ANOVA Table for MUSIC ON HOLD by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.0704107	2	0.0352053	0.14	0.8717
Within groups	0.734776	3	0.244925		
Total (Corr.)	0.805186	5			

13. ANOVA Table for MUTE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.388348	2	0.194174	3.38	0.1702
Within groups	0.172149	3	0.0573829		
Total (Corr.)	0.560497	5			

14. ANOVA Table for NOTES by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.499464	2	0.249732	4.22	0.1344
Within groups	0.177724	3	0.0592414		
Total (Corr.)	0.677188	5			

15. ANOVA Table for PHONE CALL ACTIVE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.157277	2	0.0786386	4.06	0.1402
Within groups	0.058152	3	0.019384		
Total (Corr.)	0.215429	5			

16. ANOVA Table for RETRIEVE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	1.9097	2	0.954849	63.81	0.0035
Within groups	0.0448921	3	0.014964		
Total (Corr.)	1.95459	5			

Multiple Range Tests for RETRIEVE by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
3	2	0.63495	X
2	2	1.5708	X
1	2	1.98345	X

Contrast	Difference	+/- Limits
1 - 2	0.41265	0.510772
1 - 3	*1.3485	0.510772
2 - 3	*0.93585	0.510772

* denotes a statistically significant difference.

17. ANOVA Table for RINGER SELECT by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	1.12395	2	0.561973	17.07	0.0230
Within groups	0.0987672	3	0.0329224		
Total (Corr.)	1.22271	5			

Multiple Range Tests for RINGER SELECT by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
1	2	1.43425	X
3	2	2.30415	X
2	2	2.394	X

Contrast	Difference	+/- Limits
1 - 2	*-0.95975	0.757615
1 - 3	*-0.8699	0.757615
2 - 3	0.08985	0.757615

* denotes a statistically significant difference.

18. ANOVA Table for SPEED DIAL by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.278827	2	0.139414	6.37	0.0832
Within groups	0.0656289	3	0.0218763		
Total (Corr.)	0.344456	5			

19. ANOVA Table for SPEAKERPHONE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.329398	2	0.164699	24.47	0.0139
Within groups	0.0201915	3	0.00673051		
Total (Corr.)	0.349589	5			

Multiple Range Tests for SPEAKERPHONE by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
1	2	1.8414	X
3	2	1.98345	X
2	2	2.394	X

Contrast	Difference	+/- Limits
1 - 2	*-0.5526	0.342552
1 - 3	-0.14205	0.342552
2 - 3	*0.41055	0.342552

* denotes a statistically significant difference.

20. ANOVA Table for STORE by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.101488	2	0.0507439	0.38	0.7130
Within groups	0.401158	3	0.133719		
Total (Corr.)	0.502646	5			

21. ANOVA Table for SWITCH HOOK CONTROL by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.229305	2	0.114652	0.88	0.5017
Within groups	0.392777	3	0.130926		
Total (Corr.)	0.622081	5			

22. ANOVA Table for TRANSFER CALL by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.84591	2	0.422955	33.66	0.0088
Within groups	0.0377001	3	0.0125667		
Total (Corr.)	0.88361	5			

Multiple Range Tests for TRANSFER CALL by SET

Method: 95.0 percent Tukey HSD

SET	Count	Mean	Homogeneous Groups
1	2	1.43675	X
2	2	2.1353	X
3	2	2.30415	X

Contrast	Difference	+/- Limits
1 - 2	*-0.69855	0.468073
1 - 3	*-0.8674	0.468073
2 - 3	-0.16885	0.468073

* denotes a statistically significant difference.

23. ANOVA Table for VOLUME by SET

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	0.330082	2	0.165041	0.91	0.4924
Within groups	0.54678	3	0.18226		
Total (Corr.)	0.876863	5			

APPENDIX 2

MULTI-FACTOR ANOVA TABLE FOR RECOGNITION TEST (Study II. Transformed Data)

1. Analysis of Variance for ACHIEVE DIAL TONE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0177562	1	0.01776	0.31	0.5997
B: Set	0.127159	2	0.0635796	1.10	0.3922
INTERACTIONS					
AB	0.0750675	2	0.0375338	0.65	0.5559
RESIDUAL	0.347284	6	0.0578806		
TOTAL (CORRECTED)	0.567267	11			

All F-ratios are based on the residual mean square error.

2. Analysis of Variance for ANSWER RINGING CALL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.854614	1	0.854614	17.06	0.0061
B: Set	1.61319	2	0.806596	16.11	0.0039
INTERACTIONS					
AB	0.33137	2	0.165685	3.31	0.1076
RESIDUAL	0.300494	6	0.0500823		
TOTAL (CORRECTED)	3.09967	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for ANSWER RINGING CALL by Country

Method: 95.0 percent Tukey HSD

Country	Count	LS Mean	Homogeneous Groups
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2	6	0.867183	X
1	6	1.40092	X

Contrast	Difference	+/- Limits
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1 - 2	*0.533733	0.316156
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* denotes a statistically significant difference.

Multiple Range Tests for ANSWER RINGING CALL by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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1	4	0.626675	X
2	4	1.29513	X
3	4	1.48035	X

Contrast	Difference	+/- Limits
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1 - 2	*-0.66845	0.485539
1 - 3	*-0.853675	0.485539
2 - 3	-0.185225	0.485539

* denotes a statistically significant difference.

3. Analysis of Variance for CALL LOG - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.160106	1	0.160106	1.63	0.2486
B: Set	0.565988	2	0.282994	2.88	0.1325
INTERACTIONS					
AB	0.616866	2	0.308433	3.14	0.1164
RESIDUAL	0.588664	6	0.0981106		
TOTAL (CORRECTED)	1.93162	11			

All F-ratios are based on the residual mean square error.

4. Analysis of Variance for CONFERENCE CALL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0671554	1	0.0671554	0.54	0.4907
B: Set	0.208251	2	0.104126	0.84	0.4787
INTERACTIONS					
AB	0.379802	2	0.189901	1.52	0.2918
RESIDUAL	0.748144	6	0.124691		
TOTAL (CORRECTED)	1.40335	11			

All F-ratios are based on the residual mean square error.

5. Analysis of Variance for DIALPAD - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0804749	1	0.0804749	0.69	0.4388
B: Set	0.0916703	2	0.0458352	0.39	0.6921
INTERACTIONS					
AB	0.112739	2	0.0563694	0.48	0.6398
RESIDUAL	0.70246	6	0.117077		
TOTAL (CORRECTED)	0.987344	11			

All F-ratios are based on the residual mean square error.

6. Analysis of Variance for DROP CALL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.112966	1	0.112966	3.38	0.1158
B: Set	0.00299638	2	0.00149819	0.04	0.9565
INTERACTIONS					
AB	0.0104482	2	0.0052241	0.16	0.8588
RESIDUAL	0.200738	6	0.0334564		
TOTAL (CORRECTED)	0.327149	11			

All F-ratios are based on the residual mean square error.

7. Analysis of Variance for HELP SPECIFIC - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.00309123	1	0.00309123	0.04	0.8413
B: Set	0.346393	2	0.173196	2.45	0.1667
INTERACTIONS					
AB	0.598971	2	0.299486	4.24	0.0712
RESIDUAL	0.42404	6	0.0706733		
TOTAL (CORRECTED)	1.3725	11			

All F-ratios are based on the residual mean square error.

8. Analysis of Variance for HELP SYSTEM - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.00415152	1	0.00415152	0.03	0.8643
B: Set	0.104518	2	0.0522592	0.40	0.6866
INTERACTIONS					
AB	0.578055	2	0.289028	2.22	0.1903
RESIDUAL	0.782835	6	0.130473		
TOTAL (CORRECTED)	1.46956	11			

All F-ratios are based on the residual mean square error.

9. Analysis of Variance for HFAI - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.136256	1	0.136256	1.98	0.2090
B: Set	0.35293	2	0.176465	2.57	0.1567
INTERACTIONS					
AB	0.659008	2	0.329504	4.79	0.0571
RESIDUAL	0.412774	6	0.0687956		
TOTAL (CORRECTED)	1.56097	11			

All F-ratios are based on the residual mean square error.

10. Analysis of Variance for HOLD - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0206172	1	0.0206172	0.33	0.5878
B: Set	0.517446	2	0.258723	4.11	0.0750
INTERACTIONS					
AB	0.54047	2	0.270235	4.30	0.0695
RESIDUAL	0.377429	6	0.0629048		
TOTAL (CORRECTED)	1.45596	11			

All F-ratios are based on the residual mean square error.

11. Analysis of Variance for MESSAGE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.29881	1	0.29881	3.36	0.1165
B: Set	5.18942	2	2.59471	29.17	0.0008
INTERACTIONS					
AB	0.00574062	2	0.00287031	0.03	0.9684
RESIDUAL	0.53363	6	0.0889383		
TOTAL (CORRECTED)	6.0276	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for MESSAGE by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
2	4	0.76815	X
1	4	1.1536	X
3	4	2.31535	X

Contrast	Difference	+/- Limits
1 - 2	0.38545	0.647034
1 - 3	*-1.16175	0.647034
2 - 3	*-1.5472	0.647034

* denotes a statistically significant difference.

12. Analysis of Variance for MUSIC ON HOLD - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.000906541	1	0.000906541	0.00	0.9506
B: Set	0.172496	2	0.0862479	0.40	0.6887
INTERACTIONS					
AB	0.0329382	2	0.0164691	0.08	0.9278
RESIDUAL	1.30285	6	0.217141		
TOTAL (CORRECTED)	1.50919	11			

All F-ratios are based on the residual mean square error.

13. Analysis of Variance for MUTE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0710556	1	0.0710556	2.41	0.1718
B: Set	0.349765	2	0.174882	5.92	0.0380
INTERACTIONS					
AB	0.118972	2	0.0594861	2.02	0.2140
RESIDUAL	0.177117	6	0.0295195		
TOTAL (CORRECTED)	0.71691	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for MUTE by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
3	4	1.52908	X
1	4	1.8778	XX
2	4	1.90333	X

Contrast	Difference	+/- Limits
1 - 2	-0.025525	0.372767
1 - 3	0.348725	0.372767
2 - 3	*0.37425	0.372767

* denotes a statistically significant difference.

14. Analysis of Variance for NOTES - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.000540021	1	0.000540021	0.01	0.9417
B: Set	1.00342	2	0.50171	5.40	0.0455
INTERACTIONS					
AB	0.300109	2	0.150054	1.62	0.2745
RESIDUAL	0.557135	6	0.0928558		
TOTAL (CORRECTED)	1.8612	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for NOTES by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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2	4	1.5296	X
1	4	1.5908	X
3	4	2.17132	X

Contrast	Difference	+/- Limits
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1 - 2	0.0612	0.66113
1 - 3	-0.580525	0.66113
2 - 3	-0.641725	0.66113

* denotes a statistically significant difference.

15. Analysis of Variance for PHONE CALL ACTIVE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.00293907	1	0.00293907	0.05	0.8282
B: Set	0.0765891	2	0.0382946	0.67	0.5466
INTERACTIONS					
AB	0.316116	2	0.158058	2.76	0.1411
RESIDUAL	0.343347	6	0.0572245		
TOTAL (CORRECTED)	0.738991	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for PHONE CALL ACTIVE by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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1	4	1.2801	X
2	4	1.424	X
3	4	1.4669	X

Contrast	Difference	+/- Limits
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1 - 2	-0.1439	0.519007
1 - 3	-0.1868	0.519007
2 - 3	-0.0429	0.519007

* denotes a statistically significant difference.

16. Analysis of Variance for RETRIEVE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.978523	1	0.978523	63.36	0.0002
B: Set	1.53277	2	0.766387	49.63	0.0002
INTERACTIONS					
AB	0.453762	2	0.226881	14.69	0.0049
RESIDUAL	0.0926601	6	0.0154433		
TOTAL (CORRECTED)	3.05772	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for RETRIEVE by Country

Method: 95.0 percent Tukey HSD

Country	Count	LS Mean	Homogeneous Groups
2	6	0.786667	X
1	6	1.35778	X

Contrast	Difference	+/- Limits
1 - 2	*0.571117	0.175562

* denotes a statistically significant difference.

Multiple Range Tests for RETRIEVE by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
3	4	0.607	X
2	4	1.13375	X
1	4	1.47592	X

Contrast	Difference	+/- Limits
1 - 2	*0.342175	0.269621
1 - 3	*0.868925	0.269621
2 - 3	*0.52675	0.269621

* denotes a statistically significant difference.

17. Analysis of Variance for RINGER SELECT - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.117039	1	0.117039	1.05	0.3441
B: Set	2.10176	2	1.05088	9.47	0.0139
INTERACTIONS					
AB	0.0351165	2	0.0175583	0.16	0.8572
RESIDUAL	0.666123	6	0.111021		
TOTAL (CORRECTED)	2.92004	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for RINGER SELECT by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
1	4	1.5702	X
3	4	2.36702	X
2	4	2.52715	X

Contrast	Difference	+/- Limits
1 - 2	*-0.95695	0.72291
1 - 3	*-0.796825	0.72291
2 - 3	0.160125	0.72291

* denotes a statistically significant difference.

18. Analysis of Variance for SPEED DIAL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.487227	1	0.487227	21.10	0.0037
B: Set	0.315844	2	0.157922	6.84	0.0284
INTERACTIONS					
AB	0.270225	2	0.135113	5.85	0.0389
RESIDUAL	0.138569	6	0.0230949		
TOTAL (CORRECTED)	1.21187	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for SPEED DIAL by Country

Method: 95.0 percent Tukey HSD

Country	Count	LS Mean	Homogeneous Groups
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2	6	1.48902	X
1	6	1.89202	X

Contrast	Difference	+/- Limits
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1 - 2	*0.403	0.214692
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* denotes a statistically significant difference.

Multiple Range Tests for SPEED DIAL by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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1	4	1.50985	X
2	4	1.65837	XX
3	4	1.90333	X

Contrast	Difference	+/- Limits
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1 - 2	-0.148525	0.329716
1 - 3	*-0.393475	0.329716
2 - 3	-0.24495	0.329716

* denotes a statistically significant difference.

19. Analysis of Variance for SPEAKERPHONE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.0340907	1	0.0340907	0.43	0.5381
B: Set	0.427147	2	0.213574	2.67	0.1481
INTERACTIONS					
AB	0.198063	2	0.0990315	1.24	0.3547
RESIDUAL	0.479953	6	0.0799921		
TOTAL (CORRECTED)	1.13925	11			

All F-ratios are based on the residual mean square error.

20. Analysis of Variance for STORE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.176758	1	0.176758	1.58	0.2553
B: Set	0.198852	2	0.0994258	0.89	0.4589
INTERACTIONS					
AB	0.267787	2	0.133894	1.20	0.3650
RESIDUAL	0.670763	6	0.111794		
TOTAL (CORRECTED)	1.31416	11			

All F-ratios are based on the residual mean square error.

21. Analysis of Variance for SWITCH HOOK CONTROL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.000595021	1	0.000595021	0.00	0.9507
B: Set	0.302027	2	0.151014	1.05	0.4052
INTERACTIONS					
AB	0.522491	2	0.261245	1.82	0.2405
RESIDUAL	0.859449	6	0.143242		
TOTAL (CORRECTED)	1.68456	11			

All F-ratios are based on the residual mean square error.

22. Analysis of Variance for TRANSFER CALL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	1.05607	1	1.05607	33.89	0.0011
B: Set	1.32624	2	0.66312	21.28	0.0019
INTERACTIONS					
AB	0.878589	2	0.439295	14.10	0.0054
RESIDUAL	0.186957	6	0.0311595		
TOTAL (CORRECTED)	3.44786	11			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for TRANSFER CALL by Country

Method: 95.0 percent Tukey HSD

Country	Count	LS Mean	Homogeneous Groups
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2	6	1.41588	X
1	6	2.0092	X

Contrast	Difference	+/- Limits
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1 - 2	*0.593317	0.249376
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* denotes a statistically significant difference.

Multiple Range Tests for TRANSFER CALL by Set

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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1	4	1.26105	X
3	4	1.82472	X
2	4	2.05185	X

Contrast	Difference	+/- Limits
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1 - 2	*-0.7908	0.382981
1 - 3	*-0.563675	0.382981
2 - 3	0.227125	0.382981

* denotes a statistically significant difference.

23. Analysis of Variance for VOLUME - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A: Country	0.167773	1	0.167773	1.74	0.2354
B: Set	0.296307	2	0.148154	1.54	0.2894
INTERACTIONS					
AB	0.0709266	2	0.0354633	0.37	0.7070
RESIDUAL	0.578964	6	0.096494		
TOTAL (CORRECTED)	1.11397	11			

All F-ratios are based on the residual mean square error.

APPENDIX 3

MANN-WHITNEY TEST FOR CERTAINTY RATINGS BETWEEN COUNTRIES (Study II, Philippines-Sweden)

Ranks					Ranks				
	Country	N	Mean Rank	Sum of Ranks		Country	N	Mean Rank	Sum of Ranks
ACHIEVE	1	50	51.18	2559.00	CONFERENCE-	1	50	43.86	2193.00
DIAL	2	50	49.82	2491.00	Certainty	2	50	57.14	2857.00
TONE-Certainty					(Abstract)				
(Abstract)	Total	100			Total	100			
ACHIEVE	1	50	49.71	2485.50	CONFERENCE-	1	50	52.32	2616.00
DIAL	2	50	51.29	2564.50	Certainty	2	50	48.68	2434.00
TONE-Certainty					(Concrete)				
(Concrete)	Total	100			Total	100			
ACHIEVE	1	50	50.21	2510.50	CONFERENCE-	1	50	49.78	2489.00
DIAL	2	50	50.79	2539.50	Certainty	2	50	51.22	2561.00
TONE-Certainty					(Proposed)				
(Proposed)	Total	100			Total	100			
ANSWER	1	50	60.74	3037.00	DIALPAD-Cert.	1	50	44.89	2244.50
RINGING	2	50	40.26	2013.00	(Abstract)	2	50	56.11	2805.50
CALL-Certainty									
(Abstract)	Total	100			Total	100			
ANSWER	1	50	51.32	2566.00	DIALPAD-Cert.	1	50	43.09	2154.50
RINGING	2	50	49.68	2484.00	(Concrete)	2	50	57.91	2895.50
CALL-Certainty									
(Concrete)	Total	100			Total	100			
ANSWER	1	50	51.41	2570.50	DIALPAD-Cert.	1	50	44.64	2232.00
RINGING	2	50	49.59	2479.50	(Proposed)	2	50	56.36	2818.00
CALL-Certainty									
(Proposed)	Total	100			Total	100			
CALL	1	50	50.83	2541.50	DROP-Certainty	1	50	56.08	2804.00
LOG-Certainty	2	50	50.17	2508.50	(Abstract)	2	50	44.92	2246.00
(Abstract)									
	Total	100			Total	100			
CALL	1	50	53.63	2681.50	DROP-Certainty	1	50	51.21	2560.50
LOG-Certainty	2	50	47.37	2368.50	(Concrete)	2	50	49.79	2489.50
(Concrete)									
	Total	100			Total	100			
CALL	1	50	46.97	2348.50	DROP-Certainty	1	50	53.67	2683.50
LOG-Certainty	2	50	54.03	2701.50	(Proposed)	2	50	47.33	2366.50
(Proposed)									
	Total	100			Total	100			

Ranks

	Country	N	Mean Rank	Sum of Ranks
HELP SPECIFIC-Certainty (Abstract)	1	50	46.02	2301.00
	2	50	54.98	2749.00
	Total	100		
HELP SPECIFIC-Certainty (Concrete)	1	50	63.81	3190.50
	2	50	37.19	1859.50
	Total	100		
HELP SPECIFIC-Certainty (Proposed)	1	50	41.88	2094.00
	2	50	59.12	2956.00
	Total	100		
HELP SYSTEM-Certainty (Abstract)	1	50	44.63	2231.50
	2	50	56.37	2818.50
	Total	100		
HELP SYSTEM-Certainty (Concrete)	1	50	52.11	2605.50
	2	50	48.89	2444.50
	Total	100		
HELP SYSTEM-Certainty (Proposed)	1	50	42.11	2105.50
	2	50	58.89	2944.50
	Total	100		
HFAI-Cert. (Abstract)	1	50	45.75	2287.50
	2	50	55.25	2762.50
	Total	100		
HFAI-Cert. (Concrete)	1	50	41.26	2063.00
	2	50	59.74	2987.00
	Total	100		
HFAI-Cert. (Proposed)	1	50	55.59	2779.50
	2	50	45.41	2270.50
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
HOLD-Certainty (Abstract)	1	50	49.72	2486.00
	2	50	51.28	2564.00
	Total	100		
HOLD-Certainty (Concrete)	1	50	59.43	2971.50
	2	50	41.57	2078.50
	Total	100		
HOLD-Certainty (Proposed)	1	50	57.49	2874.50
	2	50	43.51	2175.50
	Total	100		
MESSAGE-Certainty (Abstract)	1	50	52.87	2643.50
	2	50	48.13	2406.50
	Total	100		
MESSAGE-Certainty (Concrete)	1	50	46.71	2335.50
	2	50	54.29	2714.50
	Total	100		
MESSAGE-Certainty (Proposed)	1	50	52.59	2629.50
	2	50	48.41	2420.50
	Total	100		
MUSIC ON HOLD-Certainty (Abstract)	1	50	50.32	2516.00
	2	50	50.68	2534.00
	Total	100		
MUSIC ON HOLD-Certainty (Concrete)	1	50	56.34	2817.00
	2	50	44.66	2233.00
	Total	100		
MUSIC ON HOLD-Certainty (Proposed)	1	50	54.05	2702.50
	2	50	46.95	2347.50
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
MUTE-Certainty (Abstract)	1	50	51.85	2592.50
	2	50	49.15	2457.50
	Total	100		
MUTE-Certainty (Concrete)	1	50	41.60	2080.00
	2	50	59.40	2970.00
	Total	100		
MUTE-Certainty (Proposed)	1	50	46.87	2343.50
	2	50	54.13	2706.50
	Total	100		
NOTES-Certainty (Abstract)	1	50	54.60	2730.00
	2	50	46.40	2320.00
	Total	100		
NOTES-Certainty (Concrete)	1	50	41.46	2073.00
	2	50	59.54	2977.00
	Total	100		
NOTES-Certainty (Proposed)	1	50	49.77	2488.50
	2	50	51.23	2561.50
	Total	100		
PHONE CALL ACTIVE-Certainty	1	50	52.91	2645.50
	2	50	48.09	2404.50
	Total	100		
PHONE CALL ACTIVE-Certainty	1	50	49.33	2466.50
	2	50	51.67	2583.50
	Total	100		
PHONE CALL ACTIVE-Certainty	1	50	58.45	2922.50
	2	50	42.55	2127.50
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
RETRIEVE-Certainty (Abstract)	1	50	55.62	2781.00
	2	50	45.38	2269.00
	Total	100		
RETRIEVE-Certainty (Concrete)	1	50	55.42	2771.00
	2	50	45.58	2279.00
	Total	100		
RETRIEVE-Certainty (Proposed)	1	50	55.61	2780.50
	2	50	45.39	2269.50
	Total	100		
RINGER SELECT-Certainty (Abstract)	1	50	50.14	2507.00
	2	50	50.86	2543.00
	Total	100		
RINGER SELECT-Certainty (Concrete)	1	50	56.64	2832.00
	2	50	44.36	2218.00
	Total	100		
RINGER SELECT-Certainty (Proposed)	1	50	49.06	2453.00
	2	50	51.94	2597.00
	Total	100		
SPEED DIAL-Certainty (Abstract)	1	50	56.79	2839.50
	2	50	44.21	2210.50
	Total	100		
SPEED DIAL-Certainty (Concrete)	1	50	56.00	2800.00
	2	50	45.00	2250.00
	Total	100		
SPEED DIAL-Certainty (Proposed)	1	50	47.71	2385.50
	2	50	53.29	2664.50
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
SPEAKERPHONE-Certainty (Abstract)	1	50	56.78	2839.00
	2	50	44.22	2211.00
	Total	100		
SPEAKERPHONE-Certainty (Concrete)	1	50	50.74	2537.00
	2	50	50.26	2513.00
	Total	100		
SPEAKERPHONE-Certainty (Proposed)	1	50	53.09	2654.50
	2	50	47.91	2395.50
	Total	100		
STORE-Certainty (Abstract)	1	50	55.07	2753.50
	2	50	45.93	2296.50
	Total	100		
STORE-Certainty (Concrete)	1	50	58.78	2939.00
	2	50	42.22	2111.00
	Total	100		
STORE-Certainty (Proposed)	1	50	47.82	2391.00
	2	50	53.18	2659.00
	Total	100		
SWITCH HOOK CONTROL-Certain. (Abstract)	1	50	54.46	2723.00
	2	50	46.54	2327.00
	Total	100		
SWITCH HOOK CONTROL-Certain. (Concrete)	1	50	58.31	2915.50
	2	50	42.69	2134.50
	Total	100		
SWITCH HOOK CONTROL-Certain. (Proposed)	1	50	53.02	2651.00
	2	50	47.98	2399.00
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
TRANSFER-Certainty (Abstract)	1	50	51.71	2585.50
	2	50	49.29	2464.50
	Total	100		
TRANSFER-Certainty (Concrete)	1	50	61.02	3051.00
	2	50	39.98	1999.00
	Total	100		
TRANSFER-Certainty (Proposed)	1	50	64.12	3206.00
	2	50	36.88	1844.00
	Total	100		
VOLUME-Certainty (Abstract)	1	50	49.71	2485.50
	2	50	51.29	2564.50
	Total	100		
VOLUME-Certainty (Concrete)	1	50	42.95	2147.50
	2	50	58.05	2902.50
	Total	100		
VOLUME-Certainty (Proposed)	1	50	49.64	2482.00
	2	50	51.36	2568.00
	Total	100		

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
ACHIEVE DIAL TONE-Certainty (Abstract)	1216.000	2491.000	-.240	.810
ACHIEVE DIAL TONE-Certainty (Concrete)	1210.500	2485.500	-.276	.782
ACHIEVE DIAL TONE-Certainty (Proposed)	1235.500	2510.500	-.102	.919
ANSWER RINGING CALL-Certainty (Abstract)	738.000	2013.000	-3.599	.000
ANSWER RINGING CALL-Certainty (Concrete)	1209.000	2484.000	-.290	.772
ANSWER RINGING CALL-Certainty (Proposed)	1204.500	2479.500	-.321	.748
CALL LOG-Certainty (Abstract)	1233.500	2508.500	-.117	.907
CALL LOG-Certainty (Concrete)	1093.500	2368.500	-1.098	.272
CALL LOG-Certainty (Proposed)	1073.500	2348.500	-1.244	.214
CONFERENCE-Certainty (Abstract)	918.000	2193.000	-2.345	.019
CONFERENCE-Certainty (Concrete)	1159.000	2434.000	-.646	.518
CONFERENCE-Certainty (Proposed)	1214.000	2489.000	-.260	.795
DIALPAD-Certainty (Abstract)	969.500	2244.500	-1.980	.048
DIALPAD-Certainty (Concrete)	879.500	2154.500	-2.654	.008
DIALPAD-Certainty (Proposed)	957.000	2232.000	-2.116	.034
DROP-Certainty (Abstract)	971.000	2246.000	-1.959	.050
DROP-Certainty (Concrete)	1214.500	2489.500	-.248	.804
DROP-Certainty (Proposed)	1091.500	2366.500	-1.114	.265

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
HELP SPECIFIC-Certainty (Abstract)	1026.000	2301.000	-1.591	.112
HELP SPECIFIC-Certainty (Concrete)	584.500	1859.500	-4.713	.000
HELP SPECIFIC-Certainty (Proposed)	819.000	2094.000	-3.014	.003
HELP SYSTEM-Certainty (Abstract)	956.500	2231.500	-2.079	.038
HELP SYSTEM-Certainty (Concrete)	1169.500	2444.500	-.562	.574
HELP SYSTEM-Certainty (Proposed)	830.500	2105.500	-2.938	.003
HFAI-Certainty (Abstract)	1012.500	2287.500	-1.670	.095
HFAI-Certainty (Concrete)	788.000	2063.000	-3.242	.001
HFAI-Certainty (Proposed)	995.500	2270.500	-1.855	.064
HOLD-Certainty (Abstract)	1211.000	2486.000	-.274	.784
HOLD-Certainty (Concrete)	803.500	2078.500	-3.223	.001
HOLD-Certainty (Proposed)	900.500	2175.500	-2.448	.014
MESSAGE-Certainty (Abstract)	1131.500	2406.500	-.831	.406
MESSAGE-Certainty (Concrete)	1060.500	2335.500	-1.326	.185
MESSAGE-Certainty (Proposed)	1145.500	2420.500	-.736	.462
MUSIC ON HOLD-Certainty (Abstract)	1241.000	2516.000	-.064	.949
MUSIC ON HOLD-Certainty (Concrete)	958.000	2233.000	-2.163	.031
MUSIC ON HOLD-Certainty (Proposed)	1072.500	2347.500	-1.287	.198

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
MUTE-Certainty (Abstract)	1182.500	2457.500	-.472	.637
MUTE-Certainty (Concrete)	805.000	2080.000	-3.121	.002
MUTE-Certainty (Proposed)	1068.500	2343.500	-1.269	.204
NOTES-Certainty (Abstract)	1045.000	2320.000	-1.435	.151
NOTES-Certainty (Concrete)	798.000	2073.000	-3.230	.001
NOTES-Certainty (Proposed)	1213.500	2488.500	-.259	.796
PHONE CALL ACTIVE-Certainty (Abstract)	1129.500	2404.500	-.854	.393
PHONE CALL ACTIVE-Certainty (Concrete)	1191.500	2466.500	-.409	.683
PHONE CALL ACTIVE-Certainty (Proposed)	852.500	2127.500	-2.786	.005
RETRIEVE-Certainty (Abstract)	994.000	2269.000	-1.793	.073
RETRIEVE-Certainty (Concrete)	1004.000	2279.000	-1.725	.084
RETRIEVE-Certainty (Proposed)	994.500	2269.500	-1.836	.066
RINGER SELECT-Certainty (Abstract)	1232.000	2507.000	-.126	.900
RINGER SELECT-Certainty (Concrete)	943.000	2218.000	-2.208	.027
RINGER SELECT-Certainty (Proposed)	1178.000	2453.000	-.513	.608
SPEAKERPHONE-Certainty (Abstract)	936.000	2211.000	-2.223	.026
SPEAKERPHONE-Certainty (Concrete)	1238.000	2513.000	-.086	.931
SPEAKERPHONE-Certainty (Proposed)	1120.500	2395.500	-.911	.362

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
SPEED DIAL-Certainty (Abstract)	935.500	2210.500	-2.210	.027
SPEED DIAL-Certainty (Concrete)	975.000	2250.000	-1.927	.054
SPEED DIAL-Certainty (Proposed)	1110.500	2385.500	-.975	.330
STORE-Certainty (Abstract)	1021.500	2296.500	-1.602	.109
STORE-Certainty (Concrete)	836.000	2111.000	-2.902	.004
STORE-Certainty (Proposed)	1116.000	2391.000	-.947	.344
SWITCH HOOK CONTROL-Certainty (Abstract)	1052.000	2327.000	-1.428	.153
SWITCH HOOK CONTROL-Certainty (Concrete)	859.500	2134.500	-2.783	.005
SWITCH HOOK CONTROL-Certainty (Proposed)	1124.000	2399.000	-.883	.377
TRANSFER-Certainty (Abstract)	1189.500	2464.500	-.423	.672
TRANSFER-Certainty (Concrete)	724.000	1999.000	-3.693	.000
TRANSFER-Certainty (Proposed)	569.000	1844.000	-4.768	.000
VOLUME-Certainty (Abstract)	1210.500	2485.500	-.283	.777
VOLUME-Certainty (Concrete)	872.500	2147.500	-2.736	.006
VOLUME-Certainty (Proposed)	1207.000	2482.000	-.314	.753

a. Grouping Variable: Country

APPENDIX 4

MANN-WHITNEY TEST FOR SEMANTIC SCORES BETWEEN COUNTRIES (Study II, Philippines-Sweden)

Ranks					Ranks				
	Country	N	Mean Rank	Sum of Ranks		Country	N	Mean Rank	Sum of Ranks
ACHIEVE DIAL TONE-Concrete (Abstract)	1	50	64.43	3221.50	ANSWER RINGING	1	50	53.70	2685.00
	2	50	36.57	1828.50	CALL-Concrete (Abstract)	2	50	47.30	2365.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Familiar (Abstract)	1	50	65.51	3275.50	ANSWER RINGING	1	50	59.51	2975.50
	2	50	35.49	1774.50	CALL-Familiar (Abstract)	2	50	41.49	2074.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Abstract)	1	50	65.29	3264.50	ANSWER RINGING	1	50	65.02	3251.00
	2	50	35.71	1785.50	CALL-Meaningful (Abstract)	2	50	35.98	1799.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Abstract)	1	50	67.30	3365.00	ANSWER RINGING	1	50	63.36	3168.00
	2	50	33.70	1685.00	CALL-Related (Abstract)	2	50	37.64	1882.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Sharp (Abstract)	1	50	62.77	3138.50	ANSWER RINGING	1	50	59.85	2992.50
	2	50	38.23	1911.50	CALL-Sharp (Abstract)	2	50	41.15	2057.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Simple (Abstract)	1	50	62.61	3130.50	ANSWER RINGING	1	50	56.61	2830.50
	2	50	38.39	1919.50	CALL-Simple (Abstract)	2	50	44.39	2219.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Concrete (Concrete)	1	50	55.97	2798.50	ANSWER RINGING	1	50	46.89	2344.50
	2	50	45.03	2251.50	CALL-Concrete (Concrete)	2	50	54.11	2705.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Familiar (Concrete)	1	50	56.86	2843.00	ANSWER RINGING	1	50	56.20	2810.00
	2	50	44.14	2207.00	CALL-Familiar (Concrete)	2	50	44.80	2240.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Concrete)	1	50	55.66	2783.00	ANSWER RINGING	1	50	51.01	2550.50
	2	50	45.34	2267.00	CALL-Meaningful (Concrete)	2	50	49.99	2499.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Concrete)	1	50	59.25	2962.50	ANSWER RINGING	1	50	49.50	2475.00
	2	50	41.75	2087.50	CALL-Related (Concrete)	2	50	51.50	2575.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Sharp (Concrete)	1	50	57.49	2874.50	ANSWER RINGING	1	50	57.84	2892.00
	2	50	43.51	2175.50	CALL-Sharp (Concrete)	2	50	43.16	2158.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Simple (Concrete)	1	50	59.50	2975.00	ANSWER RINGING	1	50	48.00	2400.00
	2	50	41.50	2075.00	CALL-Simple (Concrete)	2	50	53.00	2650.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Concrete (Proposed)	1	50	52.37	2618.50	ANSWER RINGING	1	50	58.12	2906.00
	2	50	48.63	2431.50	CALL-Concrete (Proposed)	2	50	42.88	2144.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Familiar (Proposed)	1	50	60.85	3042.50	ANSWER RINGING	1	50	57.36	2868.00
	2	50	40.15	2007.50	CALL-Familiar (Proposed)	2	50	43.64	2182.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Proposed)	1	50	59.34	2967.00	ANSWER RINGING	1	50	60.65	3032.50
	2	50	41.66	2083.00	CALL-Meaningful (Proposed)	2	50	40.35	2017.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Related (Proposed)	1	50	60.09	3004.50	ANSWER RINGING	1	50	59.08	2954.00
	2	50	40.91	2045.50	CALL-Related (Proposed)	2	50	41.92	2096.00
	Total	100			Total	100			
ACHIEVE DIAL TONE-Sharp (Proposed)	1	50	58.50	2925.00	ANSWER RINGING	1	50	62.91	3145.50
	2	50	42.50	2125.00	CALL-Sharp (Proposed)	2	50	38.09	1904.50
	Total	100			Total	100			
ACHIEVE DIAL TONE-Simple (Proposed)	1	50	56.36	2818.00	ANSWER RINGING	1	50	58.25	2912.50
	2	50	44.64	2232.00	CALL-Simple (Proposed)	2	50	42.75	2137.50
	Total	100			Total	100			

Ranks				
	Country	N	Mean Rank	Sum of Ranks
CALL LOG-Concrete (Abstract)	1	50	62.24	3112.00
	2	50	38.76	1938.00
	Total	100		
CALL Log-Familiar (Abstract)	1	50	56.30	2815.00
	2	50	44.70	2235.00
	Total	100		
CALL LOG-Meaningful (Abstract)	1	50	61.88	3094.00
	2	50	39.12	1956.00
	Total	100		
CALL LOG-Related (Abstract)	1	50	57.92	2896.00
	2	50	43.08	2154.00
	Total	100		
CALL LOG-Sharp (Abstract)	1	50	57.46	2873.00
	2	50	43.54	2177.00
	Total	100		
CALL LOG-Simple (Abstract)	1	50	59.91	2995.50
	2	50	41.09	2054.50
	Total	100		
CALL LOG-Concrete (Concrete)	1	50	54.79	2739.50
	2	50	46.21	2310.50
	Total	100		
CALL Log-Familiar (Concrete)	1	50	60.44	3022.00
	2	50	40.56	2028.00
	Total	100		
CALL LOG-Meaningful (Concrete)	1	50	58.41	2920.50
	2	50	42.59	2129.50
	Total	100		
CALL LOG-Related (Concrete)	1	50	62.31	3115.50
	2	50	38.69	1934.50
	Total	100		
CALL LOG-Sharp (Concrete)	1	50	62.59	3129.50
	2	50	38.41	1920.50
	Total	100		
CALL LOG-Simple (Concrete)	1	50	58.17	2908.50
	2	50	42.83	2141.50
	Total	100		
CALL LOG-Concrete (Proposed)	1	50	63.33	3166.50
	2	50	37.67	1883.50
	Total	100		
CALL Log-Familiar (Proposed)	1	50	61.24	3062.00
	2	50	39.76	1988.00
	Total	100		
CALL LOG-Meaningful (Proposed)	1	50	63.72	3186.00
	2	50	37.28	1864.00
	Total	100		
CALL LOG-Related (Proposed)	1	50	61.41	3070.50
	2	50	39.59	1979.50
	Total	100		
CALL LOG-Sharp (Proposed)	1	50	60.99	3049.50
	2	50	40.01	2000.50
	Total	100		
CALL LOG-Simple (Proposed)	1	50	53.78	2689.00
	2	50	47.22	2361.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
CONFERENCE-Concrete (Abstract)	1	50	60.98	3049.00
	2	50	40.02	2001.00
	Total	100		
CONFERENCE-Familiar (Abstract)	1	50	57.16	2858.00
	2	50	43.84	2192.00
	Total	100		
CONFERENCE-Meaningful (Abstract)	1	50	51.04	2552.00
	2	50	49.96	2498.00
	Total	100		
CONFERENCE-Related (Abstract)	1	50	55.10	2755.00
	2	50	45.90	2295.00
	Total	100		
CONFERENCE-Sharp (Abstract)	1	50	51.18	2559.00
	2	50	49.82	2491.00
	Total	100		
CONFERENCE-Simple (Abstract)	1	50	57.06	2853.00
	2	50	43.94	2197.00
	Total	100		
CONFERENCE-Concrete (Concrete)	1	50	56.55	2827.50
	2	50	44.45	2222.50
	Total	100		
CONFERENCE-Familiar (Concrete)	1	50	60.90	3045.00
	2	50	40.10	2005.00
	Total	100		
CONFERENCE-Meaningful (Concrete)	1	50	61.24	3062.00
	2	50	39.76	1988.00
	Total	100		
CONFERENCE-Related (Concrete)	1	50	58.47	2923.50
	2	50	42.53	2126.50
	Total	100		
CONFERENCE-Sharp (Concrete)	1	50	64.76	3238.00
	2	50	36.24	1812.00
	Total	100		
CONFERENCE-Simple (Concrete)	1	50	59.76	2988.00
	2	50	41.24	2062.00
	Total	100		
CONFERENCE-Concrete (Proposed)	1	50	55.51	2775.50
	2	50	45.49	2274.50
	Total	100		
CONFERENCE-Familiar (Proposed)	1	50	50.37	2518.50
	2	50	50.63	2531.50
	Total	100		
CONFERENCE-Meaningful (Proposed)	1	50	55.28	2764.00
	2	50	45.72	2286.00
	Total	100		
CONFERENCE-Related (Proposed)	1	50	55.01	2750.50
	2	50	45.99	2299.50
	Total	100		
CONFERENCE-Sharp (Proposed)	1	50	63.48	3174.00
	2	50	37.52	1876.00
	Total	100		
CONFERENCE-Simple (Proposed)	1	50	57.20	2860.00
	2	50	43.80	2190.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
DIALPAD-Concrete (Abstract)	1	50	56.15	2807.50
	2	50	44.85	2242.50
	Total	100		
DIALPAD-Familiar (Abstract)	1	50	54.71	2735.50
	2	50	46.29	2314.50
	Total	100		
DIALPAD-Meaningful (Abstract)	1	50	58.01	2900.50
	2	50	42.99	2149.50
	Total	100		
DIALPAD-Related (Abstract)	1	50	57.73	2886.50
	2	50	43.27	2163.50
	Total	100		
DIALPAD-Sharp (Abstract)	1	50	62.41	3120.50
	2	50	38.59	1929.50
	Total	100		
DIALPAD-Simple (Abstract)	1	50	57.89	2894.50
	2	50	43.11	2155.50
	Total	100		
DIALPAD-Concrete (Concrete)	1	50	49.83	2491.50
	2	50	51.17	2558.50
	Total	100		
DIALPAD-Familiar (Concrete)	1	50	44.46	2223.00
	2	50	56.54	2827.00
	Total	100		
DIALPAD-Meaningful (Concrete)	1	50	48.56	2428.00
	2	50	52.44	2622.00
	Total	100		
DIALPAD-Related (Concrete)	1	50	48.34	2417.00
	2	50	52.66	2633.00
	Total	100		
DIALPAD-Sharp (Concrete)	1	50	49.47	2473.50
	2	50	51.53	2576.50
	Total	100		
DIALPAD-Simple (Concrete)	1	50	50.18	2509.00
	2	50	50.82	2541.00
	Total	100		
DIALPAD-Concrete (Proposed)	1	50	50.63	2531.50
	2	50	50.37	2518.50
	Total	100		
DIALPAD-Familiar (Proposed)	1	50	50.16	2508.00
	2	50	50.84	2542.00
	Total	100		
DIALPAD-Meaningful (Proposed)	1	50	49.20	2460.00
	2	50	51.80	2590.00
	Total	100		
DIALPAD-Related (Proposed)	1	50	54.59	2729.50
	2	50	46.41	2320.50
	Total	100		
DIALPAD-Sharp (Proposed)	1	50	53.85	2692.50
	2	50	47.15	2357.50
	Total	100		
DIALPAD-Simple (Proposed)	1	50	52.54	2627.00
	2	50	48.46	2423.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
DROP-Concrete (Abstract)	1	50	47.13	2356.50
	2	50	53.87	2693.50
	Total	100		
DROP-Simple (Abstract)	1	50	52.56	2628.00
	2	50	48.44	2422.00
	Total	100		
DROP-Meaningful (Abstract)	1	50	47.42	2371.00
	2	50	53.58	2679.00
	Total	100		
DROP-Related (Abstract)	1	50	51.21	2560.50
	2	50	49.79	2489.50
	Total	100		
DROP-Sharp (Abstract)	1	50	47.34	2367.00
	2	50	53.66	2683.00
	Total	100		
DROP-Simple (Abstract)	1	50	50.65	2532.50
	2	50	50.35	2517.50
	Total	100		
DROP-Concrete (Concrete)	1	50	62.12	3106.00
	2	50	38.88	1944.00
	Total	100		
DROP-Simple (Concrete)	1	50	58.33	2916.50
	2	50	42.67	2133.50
	Total	100		
DROP-Meaningful (Concrete)	1	50	57.93	2896.50
	2	50	43.07	2153.50
	Total	100		
DROP-Related (Concrete)	1	50	60.72	3036.00
	2	50	40.28	2014.00
	Total	100		
DROP-Sharp (Concrete)	1	50	58.58	2929.00
	2	50	42.42	2121.00
	Total	100		
DROP-Simple (Concrete)	1	50	63.91	3195.50
	2	50	37.09	1854.50
	Total	100		
DROP-Concrete (Proposed)	1	50	58.99	2949.50
	2	50	42.01	2100.50
	Total	100		
DROP-Simple (Proposed)	1	50	59.62	2981.00
	2	50	41.38	2069.00
	Total	100		
DROP-Meaningful (Proposed)	1	50	60.35	3017.50
	2	50	40.65	2032.50
	Total	100		
DROP-Related (Proposed)	1	50	61.21	3060.50
	2	50	39.79	1989.50
	Total	100		
DROP-Sharp (Proposed)	1	50	57.82	2891.00
	2	50	43.18	2159.00
	Total	100		
DROP-Simple (Proposed)	1	50	60.44	3022.00
	2	50	40.56	2028.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
HFAI-Concrete (Abstract)	1	50	49.88	2494.00
	2	50	51.12	2556.00
	Total	100		
HFAI-Familiar (Abstract)	1	50	51.73	2586.50
	2	50	49.27	2463.50
	Total	100		
HFAI-Meaningful (Abstract)	1	50	50.29	2514.50
	2	50	50.71	2535.50
	Total	100		
HFAI-Related (Abstract)	1	50	51.28	2564.00
	2	50	49.72	2486.00
	Total	100		
HFAI-Sharp (Proposed)	1	50	46.85	2342.50
	2	50	54.15	2707.50
	Total	100		
HFAI-Simple (Abstract)	1	50	50.43	2521.50
	2	50	50.57	2528.50
	Total	100		
HFAI-Concrete (Concrete)	1	50	61.98	3099.00
	2	50	39.02	1951.00
	Total	100		
HFAI-Familiar (Concrete)	1	50	64.44	3222.00
	2	50	36.56	1828.00
	Total	100		
HFAI-Meaningful (Concrete)	1	50	61.64	3082.00
	2	50	39.36	1968.00
	Total	100		
HFAI-Related (Concrete)	1	50	63.26	3163.00
	2	50	37.74	1887.00
	Total	100		
HFAI-Sharp (Concrete)	1	50	63.00	3150.00
	2	50	38.00	1900.00
	Total	100		
HFAI-Simple (Concrete)	1	50	64.52	3226.00
	2	50	36.48	1824.00
	Total	100		
HFAI-Concrete (Proposed)	1	50	47.79	2389.50
	2	50	53.21	2660.50
	Total	100		
HFAI-Familiar (Proposed)	1	50	47.83	2391.50
	2	50	53.17	2658.50
	Total	100		
HFAI-Meaningful (Proposed)	1	50	57.21	2860.50
	2	50	43.79	2189.50
	Total	100		
HFAI-Related (Proposed)	1	50	55.90	2795.00
	2	50	45.10	2255.00
	Total	100		
HFAI-Sharp (Proposed)	1	50	60.55	3027.50
	2	50	40.45	2022.50
	Total	100		
HFAI-Simple (Proposed)	1	50	51.61	2580.50
	2	50	49.39	2469.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
HOLD-Concrete (Abstract)	1	50	55.86	2793.00
	2	50	45.14	2257.00
	Total	100		
HOLD-Familiar (Abstract)	1	50	54.71	2735.50
	2	50	46.29	2314.50
	Total	100		
HOLD-Meaningful (Abstract)	1	50	61.18	3059.00
	2	50	39.82	1991.00
	Total	100		
HOLD-Related (Abstract)	1	50	58.40	2920.00
	2	50	42.60	2130.00
	Total	100		
HOLD-Sharp (Abstract)	1	50	56.45	2822.50
	2	50	44.55	2227.50
	Total	100		
HOLD-Simple (Abstract)	1	50	53.88	2694.00
	2	50	47.12	2356.00
	Total	100		
HOLD-Concrete (Concrete)	1	50	64.46	3223.00
	2	50	36.54	1827.00
	Total	100		
HOLD-Familiar (Concrete)	1	50	62.36	3118.00
	2	50	38.64	1932.00
	Total	100		
HOLD-Meaningful (Concrete)	1	50	61.68	3084.00
	2	50	39.32	1966.00
	Total	100		
HOLD-Related (Concrete)	1	50	64.50	3225.00
	2	50	36.50	1825.00
	Total	100		
HOLD-Sharp (Concrete)	1	50	67.94	3397.00
	2	50	33.06	1653.00
	Total	100		
HOLD-Simple (Concrete)	1	50	64.25	3212.50
	2	50	36.75	1837.50
	Total	100		
HOLD-Concrete (Proposed)	1	50	62.48	3124.00
	2	50	38.52	1926.00
	Total	100		
HOLD-Familiar (Proposed)	1	50	59.82	2991.00
	2	50	41.18	2059.00
	Total	100		
HOLD-Meaningful (Proposed)	1	50	63.34	3167.00
	2	50	37.66	1883.00
	Total	100		
HOLD-Related (Proposed)	1	50	59.77	2988.50
	2	50	41.23	2061.50
	Total	100		
HOLD-Sharp (Proposed)	1	50	64.62	3231.00
	2	50	36.38	1819.00
	Total	100		
HOLD-Simple (Proposed)	1	50	62.52	3126.00
	2	50	38.48	1924.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
HELP SPECIFIC-Concrete (Abstract)	1	50	42.64	2132.00
	2	50	58.36	2918.00
	Total	100		
HELP SPECIFIC-Familiar (Abstract)	1	50	39.43	1971.50
	2	50	61.57	3078.50
	Total	100		
HELP SPECIFIC-Meaningful (Abstract)	1	50	36.86	1843.00
	2	50	64.14	3207.00
	Total	100		
HELP SPECIFIC-Related (Abstract)	1	50	34.47	1723.50
	2	50	66.53	3326.50
	Total	100		
HELP SPECIFIC-Sharp (Abstract)	1	50	35.93	1796.50
	2	50	65.07	3253.50
	Total	100		
HELP SPECIFIC-Simple (Abstract)	1	50	38.16	1908.00
	2	50	62.84	3142.00
	Total	100		
HELP SPECIFIC-Concrete (Concrete)	1	50	63.17	3158.50
	2	50	37.83	1891.50
	Total	100		
HELP SPECIFIC-Familiar (Concrete)	1	50	62.02	3101.00
	2	50	38.98	1949.00
	Total	100		
HELP SPECIFIC-Meaningful (Concrete)	1	50	61.16	3058.00
	2	50	39.84	1992.00
	Total	100		
HELP SPECIFIC-Related (Concrete)	1	50	59.95	2997.50
	2	50	41.05	2052.50
	Total	100		
HELP SPECIFIC-Sharp (Concrete)	1	50	59.92	2996.00
	2	50	41.08	2054.00
	Total	100		
HELP SPECIFIC-Simple (Concrete)	1	50	64.52	3226.00
	2	50	36.48	1824.00
	Total	100		
HELP SPECIFIC-Concrete (Proposed)	1	50	40.76	2038.00
	2	50	60.24	3012.00
	Total	100		
HELP SPECIFIC-Familiar (Proposed)	1	50	40.80	2040.00
	2	50	60.20	3010.00
	Total	100		
HELP SPECIFIC-Meaningful (Proposed)	1	50	38.67	1933.50
	2	50	62.33	3116.50
	Total	100		
HELP SPECIFIC-Related (Proposed)	1	50	39.22	1961.00
	2	50	61.78	3089.00
	Total	100		
HELP SPECIFIC-Sharp (Proposed)	1	50	43.58	2179.00
	2	50	57.42	2871.00
	Total	100		
HELP SPECIFIC-Simple (Proposed)	1	50	38.43	1921.50
	2	50	62.57	3128.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
HELP SYSTEM-Concrete (Abstract)	1	50	49.40	2470.00
	2	50	51.60	2580.00
	Total	100		
HELP SYSTEM-Familiar (Abstract)	1	50	47.24	2362.00
	2	50	53.76	2688.00
	Total	100		
HELP SYSTEM-Meaningful (Abstract)	1	50	45.54	2277.00
	2	50	55.46	2773.00
	Total	100		
HELP SYSTEM-Related (Abstract)	1	50	53.97	2698.50
	2	50	47.03	2351.50
	Total	100		
HELP SYSTEM-Sharp (Abstract)	1	50	41.22	2061.00
	2	50	59.78	2989.00
	Total	100		
HELP SYSTEM-Simple (Abstract)	1	50	46.67	2333.50
	2	50	54.33	2716.50
	Total	100		
HELP SYSTEM-Concrete (Concrete)	1	50	44.62	2231.00
	2	50	56.38	2819.00
	Total	100		
HELP SYSTEM-Familiar (Concrete)	1	50	49.44	2472.00
	2	50	51.56	2578.00
	Total	100		
HELP SYSTEM-Meaningful (Concrete)	1	50	48.13	2406.50
	2	50	52.87	2643.50
	Total	100		
HELP SYSTEM-Related (Concrete)	1	50	47.10	2355.00
	2	50	53.90	2695.00
	Total	100		
HELP SYSTEM-Sharp (Concrete)	1	50	44.65	2232.50
	2	50	56.35	2817.50
	Total	100		
HELP SYSTEM-Simple (Concrete)	1	50	47.07	2353.50
	2	50	53.93	2696.50
	Total	100		
HELP SYSTEM-Concrete (Proposed)	1	50	36.08	1804.00
	2	50	64.92	3246.00
	Total	100		
HELP SYSTEM-Familiar (Proposed)	1	50	42.44	2122.00
	2	50	58.56	2928.00
	Total	100		
HELP SYSTEM-Meaningful (Proposed)	1	50	38.62	1931.00
	2	50	62.38	3119.00
	Total	100		
HELP SYSTEM-Related (Proposed)	1	50	36.45	1822.50
	2	50	64.55	3227.50
	Total	100		
HELP SYSTEM-Sharp (Proposed)	1	50	42.20	2110.00
	2	50	58.80	2940.00
	Total	100		
HELP SYSTEM-Simple (Proposed)	1	50	37.80	1890.00
	2	50	63.20	3160.00
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
MESSAGE	1	50	59.08	2954.00
-Concrete (Abstract)	2	50	41.92	2096.00
	Total	100		
MESSAGE	1	50	57.03	2851.50
-Familiar (Abstract)	2	50	43.97	2198.50
	Total	100		
MESSAGE	1	50	58.69	2934.50
-Meaningful (Abstract)	2	50	42.31	2115.50
	Total	100		
MESSAGE	1	50	62.17	3108.50
-Related (Abstract)	2	50	38.83	1941.50
	Total	100		
MESSAGE	1	50	63.02	3151.00
-Sharp (Abstract)	2	50	37.98	1899.00
	Total	100		
MESSAGE	1	50	56.95	2847.50
-Simple (Abstract)	2	50	44.05	2202.50
	Total	100		
MESSAGE	1	50	47.68	2384.00
-Concrete (Concrete)	2	50	53.32	2666.00
	Total	100		
MESSAGE	1	50	52.63	2631.50
-Familiar (Concrete)	2	50	48.37	2418.50
	Total	100		
MESSAGE	1	50	54.23	2711.50
-Meaningful (Concrete)	2	50	46.77	2338.50
	Total	100		
MESSAGE	1	50	49.55	2477.50
-Related (Concrete)	2	50	51.45	2572.50
	Total	100		
MESSAGE	1	50	48.42	2421.00
-Sharp (Concrete)	2	50	52.58	2629.00
	Total	100		
MESSAGE	1	50	50.21	2510.50
-Simple (Concrete)	2	50	50.79	2539.50
	Total	100		
MESSAGE	1	50	53.17	2658.50
-Concrete (Proposed)	2	50	47.83	2391.50
	Total	100		
MESSAGE	1	50	50.14	2507.00
-Familiar (Proposed)	2	50	50.86	2543.00
	Total	100		
MESSAGE	1	50	51.53	2576.50
-Meaningful (Proposed)	2	50	49.47	2473.50
	Total	100		
MESSAGE	1	50	50.96	2548.00
-Related (Proposed)	2	50	50.04	2502.00
	Total	100		
MESSAGE	1	50	54.62	2731.00
-Sharp (Proposed)	2	50	46.38	2319.00
	Total	100		
MESSAGE	1	50	47.56	2378.00
-Simple (Proposed)	2	50	53.44	2672.00
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
MUSIC ON	1	50	67.32	3366.00
HOLD-Concrete (Abstract)	2	50	33.68	1684.00
	Total	100		
MUSIC ON	1	50	70.41	3520.50
HOLD-Familiar (Abstract)	2	50	30.59	1529.50
	Total	100		
MUSIC ON	1	50	67.38	3369.00
HOLD-Meaningful (Abstract)	2	50	33.62	1681.00
	Total	100		
MUSIC ON	1	50	67.03	3351.50
HOLD-Related (Abstract)	2	50	33.97	1698.50
	Total	100		
MUSIC ON	1	50	65.43	3271.50
HOLD-Sharp (Abstract)	2	50	35.57	1778.50
	Total	100		
MUSIC ON	1	50	70.31	3515.50
HOLD-Simple (Abstract)	2	50	30.69	1534.50
	Total	100		
MUSIC ON	1	50	58.85	2942.50
HOLD-Concrete (Concrete)	2	50	42.15	2107.50
	Total	100		
MUSIC ON	1	50	61.20	3060.00
HOLD-Familiar (Concrete)	2	50	39.80	1990.00
	Total	100		
MUSIC ON	1	50	57.50	2875.00
HOLD-Meaningful (Concrete)	2	50	43.50	2175.00
	Total	100		
MUSIC ON	1	50	55.73	2786.50
HOLD-Related (Concrete)	2	50	45.27	2263.50
	Total	100		
MUSIC ON	1	50	57.45	2872.50
HOLD-Sharp (Concrete)	2	50	43.55	2177.50
	Total	100		
MUSIC ON	1	50	60.31	3015.50
HOLD-Simple (Concrete)	2	50	40.69	2034.50
	Total	100		
MUSIC ON	1	50	65.79	3289.50
HOLD-Concrete (Proposed)	2	50	35.21	1760.50
	Total	100		
MUSIC ON	1	50	66.14	3307.00
HOLD-Familiar (Proposed)	2	50	34.86	1743.00
	Total	100		
MUSIC ON	1	50	62.79	3139.50
HOLD-Meaningful (Proposed)	2	50	38.21	1910.50
	Total	100		
MUSIC ON	1	50	62.10	3105.00
HOLD-Related (Proposed)	2	50	38.90	1945.00
	Total	100		
MUSIC ON	1	50	66.12	3306.00
HOLD-Sharp (Proposed)	2	50	34.88	1744.00
	Total	100		
MUSIC ON	1	50	62.48	3124.00
HOLD-Simple (Proposed)	2	50	38.52	1926.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
MUTE-Concrete (Abstract)	1	50	48.11	2405.50
	2	50	52.89	2644.50
	Total	100		
MUTE-Familiar (Abstract)	1	50	47.65	2382.50
	2	50	53.35	2667.50
	Total	100		
MUTE-Meaningful (Abstract)	1	50	48.92	2446.00
	2	50	52.08	2604.00
	Total	100		
MUTE-Related (Abstract)	1	50	51.11	2555.50
	2	50	49.89	2494.50
	Total	100		
MUTE-Sharp (Abstract)	1	50	49.21	2460.50
	2	50	51.79	2589.50
	Total	100		
MUTE-Simple (Abstract)	1	50	44.34	2217.00
	2	50	56.66	2833.00
	Total	100		
MUTE-Concrete (Concrete)	1	50	52.18	2609.00
	2	50	48.82	2441.00
	Total	100		
MUTE-Familiar (Concrete)	1	50	56.15	2807.50
	2	50	44.85	2242.50
	Total	100		
MUTE-Meaningful (Concrete)	1	50	56.60	2830.00
	2	50	44.40	2220.00
	Total	100		
MUTE-Related (Concrete)	1	50	58.33	2916.50
	2	50	42.67	2133.50
	Total	100		
MUTE-Sharp (Concrete)	1	50	53.98	2699.00
	2	50	47.02	2351.00
	Total	100		
MUTE-Simple (Concrete)	1	50	57.33	2866.50
	2	50	43.67	2183.50
	Total	100		
MUTE-Concrete (Proposed)	1	50	48.71	2435.50
	2	50	52.29	2614.50
	Total	100		
MUTE-Familiar (Proposed)	1	50	49.68	2484.00
	2	50	51.32	2566.00
	Total	100		
MUTE-Meaningful (Proposed)	1	50	53.30	2665.00
	2	50	47.70	2385.00
	Total	100		
MUTE-Related (Proposed)	1	50	51.00	2550.00
	2	50	50.00	2500.00
	Total	100		
MUTE-Sharp (Proposed)	1	50	52.99	2649.50
	2	50	48.01	2400.50
	Total	100		
MUTE-Simple (Proposed)	1	50	46.56	2328.00
	2	50	54.44	2722.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
NOTES-Concrete (Abstract)	1	50	65.01	3250.50
	2	50	35.99	1799.50
	Total	100		
NOTES-Familiar (Abstract)	1	50	63.32	3166.00
	2	50	37.68	1884.00
	Total	100		
NOTES-Meaningful (Abstract)	1	50	61.83	3091.50
	2	50	39.17	1958.50
	Total	100		
NOTES-Related (Abstract)	1	50	64.96	3248.00
	2	50	36.04	1802.00
	Total	100		
NOTES-Sharp (Abstract)	1	50	63.30	3165.00
	2	50	37.70	1885.00
	Total	100		
NOTES-Simple (Abstract)	1	50	65.24	3262.00
	2	50	35.76	1788.00
	Total	100		
NOTES-Concrete (Concrete)	1	50	59.87	2993.50
	2	50	41.13	2056.50
	Total	100		
NOTES-Familiar (Concrete)	1	50	58.07	2903.50
	2	50	42.93	2146.50
	Total	100		
NOTES-Meaningful (Concrete)	1	50	58.19	2909.50
	2	50	42.81	2140.50
	Total	100		
NOTES-Related (Concrete)	1	50	58.72	2936.00
	2	50	42.28	2114.00
	Total	100		
NOTES-Sharp (Concrete)	1	50	55.53	2776.50
	2	50	45.47	2273.50
	Total	100		
NOTES-Simple (Concrete)	1	50	60.93	3046.50
	2	50	40.07	2003.50
	Total	100		
NOTES-Concrete (Proposed)	1	50	56.16	2808.00
	2	50	44.84	2242.00
	Total	100		
NOTES-Familiar (Proposed)	1	50	58.96	2948.00
	2	50	42.04	2102.00
	Total	100		
NOTES-Meaningful (Proposed)	1	50	57.45	2872.50
	2	50	43.55	2177.50
	Total	100		
NOTES-Related (Proposed)	1	50	57.09	2854.50
	2	50	43.91	2195.50
	Total	100		
NOTES-Sharp (Proposed)	1	50	58.48	2924.00
	2	50	42.52	2126.00
	Total	100		
NOTES-Simple (Proposed)	1	50	57.17	2858.50
	2	50	43.83	2191.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
PHONE CALL	1	50	47.28	2364.00
ACTIVE-Concrete (Abstract)	2	50	53.72	2686.00
	Total	100		
PHONE CALL	1	50	55.65	2782.50
ACTIVE-Familiar (Abstract)	2	50	45.35	2267.50
	Total	100		
PHONE CALL	1	50	43.84	2192.00
ACTIVE-Meaningful (Abstract)	2	50	57.16	2858.00
	Total	100		
PHONE CALL	1	50	46.42	2321.00
ACTIVE-Related (Abstract)	2	50	54.58	2729.00
	Total	100		
PHONE CALL	1	50	43.93	2196.50
ACTIVE-Sharp (Abstract)	2	50	57.07	2853.50
	Total	100		
PHONE CALL	1	50	44.49	2224.50
ACTIVE-Simple (Abstract)	2	50	56.51	2825.50
	Total	100		
PHONE CALL	1	50	57.83	2891.50
ACTIVE-Concrete (Concrete)	2	50	43.17	2158.50
	Total	100		
PHONE CALL	1	50	57.72	2886.00
ACTIVE-Familiar (Concrete)	2	50	43.28	2164.00
	Total	100		
PHONE CALL	1	50	50.51	2525.50
ACTIVE-Meaningful (Concrete)	2	50	50.49	2524.50
	Total	100		
PHONE CALL	1	50	51.98	2599.00
ACTIVE-Related (Concrete)	2	50	49.02	2451.00
	Total	100		
PHONE CALL	1	50	59.41	2970.50
ACTIVE-Sharp (Concrete)	2	50	41.59	2079.50
	Total	100		
PHONE CALL	1	50	55.86	2793.00
ACTIVE-Simple (Concrete)	2	50	45.14	2257.00
	Total	100		
PHONE CALL	1	50	58.34	2917.00
ACTIVE-Concrete (Proposed)	2	50	42.66	2133.00
	Total	100		
PHONE CALL	1	50	55.63	2781.50
ACTIVE-Familiar (Proposed)	2	50	45.37	2268.50
	Total	100		
PHONE CALL	1	50	61.37	3068.50
ACTIVE-Meaningful (Proposed)	2	50	39.63	1981.50
	Total	100		
PHONE CALL	1	50	62.48	3124.00
ACTIVE-Related (Proposed)	2	50	38.52	1926.00
	Total	100		
PHONE CALL	1	50	53.44	2672.00
ACTIVE-Sharp (Proposed)	2	50	47.56	2378.00
	Total	100		
PHONE CALL	1	50	55.99	2799.50
ACTIVE-Simple (Proposed)	2	50	45.01	2250.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
RETRIEVE-Concrete (Abstract)	1	50	52.07	2603.50
	2	50	48.93	2446.50
	Total	100		
RETRIEVE-Familiar (Abstract)	1	50	54.24	2712.00
	2	50	46.76	2338.00
	Total	100		
RETRIEVE-Meaningful (Abstract)	1	50	49.65	2482.50
	2	50	51.35	2567.50
	Total	100		
RETRIEVE-Related (Abstract)	1	50	49.59	2479.50
	2	50	51.41	2570.50
	Total	100		
RETRIEVE-Sharp (Abstract)	1	50	47.47	2373.50
	2	50	53.53	2676.50
	Total	100		
RETRIEVE-Simple (Abstract)	1	50	49.34	2467.00
	2	50	51.66	2583.00
	Total	100		
RETRIEVE-Concrete (Concrete)	1	50	59.88	2994.00
	2	50	41.12	2056.00
	Total	100		
RETRIEVE-Familiar (Concrete)	1	50	63.17	3158.50
	2	50	37.83	1891.50
	Total	100		
RETRIEVE-Meaningful (Concrete)	1	50	60.75	3037.50
	2	50	40.25	2012.50
	Total	100		
RETRIEVE-Related (Concrete)	1	50	60.68	3034.00
	2	50	40.32	2016.00
	Total	100		
RETRIEVE-Sharp (Concrete)	1	50	61.87	3093.50
	2	50	39.13	1956.50
	Total	100		
RETRIEVE-Simple (Concrete)	1	50	64.88	3244.00
	2	50	36.12	1806.00
	Total	100		
RETRIEVE-Concrete (Proposed)	1	50	58.16	2908.00
	2	50	42.84	2142.00
	Total	100		
RETRIEVE-Familiar (Proposed)	1	50	59.58	2979.00
	2	50	41.42	2071.00
	Total	100		
RETRIEVE-Meaningful (Proposed)	1	50	63.92	3196.00
	2	50	37.08	1854.00
	Total	100		
RETRIEVE-Related (Proposed)	1	50	58.00	2900.00
	2	50	43.00	2150.00
	Total	100		
RETRIEVE-Sharp (Proposed)	1	50	56.24	2812.00
	2	50	44.76	2238.00
	Total	100		
RETRIEVE-Simple (Proposed)	1	50	57.76	2888.00
	2	50	43.24	2162.00
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
RINGER	1	50	55.96	2798.00
SELECT-Concrete (Abstract)	2	50	45.04	2252.00
	Total	100		
RINGER	1	50	59.18	2959.00
SELECT-Familiar (Abstract)	2	50	41.82	2091.00
	Total	100		
RINGER	1	50	55.11	2755.50
SELECT-Meaningful (Abstract)	2	50	45.89	2294.50
	Total	100		
RINGER	1	50	58.20	2910.00
SELECT-Related (Abstract)	2	50	42.80	2140.00
	Total	100		
RINGER	1	50	58.32	2916.00
SELECT-Sharp (Abstract)	2	50	42.68	2134.00
	Total	100		
RINGER	1	50	58.58	2929.00
SELECT-Simple (Abstract)	2	50	42.42	2121.00
	Total	100		
RINGER	1	50	59.54	2977.00
SELECT-Concrete (Concrete)	2	50	41.46	2073.00
	Total	100		
RINGER	1	50	56.06	2803.00
SELECT-Familiar (Concrete)	2	50	44.94	2247.00
	Total	100		
RINGER	1	50	50.94	2547.00
SELECT-Meaningful (Concrete)	2	50	50.06	2503.00
	Total	100		
RINGER	1	50	52.64	2632.00
SELECT-Related (Concrete)	2	50	48.36	2418.00
	Total	100		
RINGER	1	50	56.42	2821.00
SELECT-Sharp (Concrete)	2	50	44.58	2229.00
	Total	100		
RINGER-Select (Concrete)	1	50	58.47	2923.50
	2	50	42.53	2126.50
	Total	100		
RINGER	1	50	62.99	3149.50
SELECT-Concrete (Proposed)	2	50	38.01	1900.50
	Total	100		
RINGER	1	50	58.83	2941.50
SELECT-Familiar (Proposed)	2	50	42.17	2108.50
	Total	100		
RINGER	1	50	59.87	2993.50
SELECT-Meaningful (Proposed)	2	50	41.13	2056.50
	Total	100		
RINGER	1	50	65.13	3256.50
SELECT-Related (Proposed)	2	50	35.87	1793.50
	Total	100		
RINGER	1	50	60.91	3045.50
SELECT-Sharp (Proposed)	2	50	40.09	2004.50
	Total	100		
RINGER-Select (Proposed)	1	50	61.13	3056.50
	2	50	39.87	1993.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
SPEED	1	50	61.65	3082.50
DIAL-Concrete (Abstract)	2	50	39.35	1967.50
	Total	100		
SPEED	1	50	59.65	2982.50
DIAL-Familiar (Abstract)	2	50	41.35	2067.50
	Total	100		
SPEED	1	50	59.62	2981.00
DIAL-Meaningful (Abstract)	2	50	41.38	2069.00
	Total	100		
SPEED	1	50	61.93	3096.50
DIAL-Related (Abstract)	2	50	39.07	1953.50
	Total	100		
SPEED	1	50	56.85	2842.50
DIAL-Sharp (Abstract)	2	50	44.15	2207.50
	Total	100		
SPEED	1	50	63.58	3179.00
DIAL-Simple (Abstract)	2	50	37.42	1871.00
	Total	100		
SPEED	1	50	65.14	3257.00
DIAL-Concrete (Concrete)	2	50	35.86	1793.00
	Total	100		
SPEED	1	50	63.82	3191.00
DIAL-Familiar (Concrete)	2	50	37.18	1859.00
	Total	100		
SPEED	1	50	56.18	2809.00
DIAL-Meaningful (Concrete)	2	50	44.82	2241.00
	Total	100		
SPEED	1	50	57.64	2882.00
DIAL-Related (Concrete)	2	50	43.36	2168.00
	Total	100		
SPEED	1	50	64.12	3206.00
DIAL-Sharp (Concrete)	2	50	36.88	1844.00
	Total	100		
SPEED	1	50	59.38	2969.00
DIAL-Simple (Concrete)	2	50	41.62	2081.00
	Total	100		
SPEED	1	50	58.75	2937.50
DIAL-Concrete (Proposed)	2	50	42.25	2112.50
	Total	100		
SPEED	1	50	54.09	2704.50
DIAL-Familiar (Proposed)	2	50	46.91	2345.50
	Total	100		
SPEED	1	50	58.19	2909.50
DIAL-Meaningful (Proposed)	2	50	42.81	2140.50
	Total	100		
SPEED	1	50	56.12	2806.00
DIAL-Related (Proposed)	2	50	44.88	2244.00
	Total	100		
SPEED	1	50	59.67	2983.50
DIAL-Sharp (Proposed)	2	50	41.33	2066.50
	Total	100		
SPEED	1	50	60.31	3015.50
DIAL-Simple (Proposed)	2	50	40.69	2034.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
SPEAKERPHONE- Concrete (Abstract)	1	50	48.82	2441.00
	2	50	52.18	2609.00
	Total	100		
SPEAKERPHONE- Familiar (Abstract)	1	50	47.80	2390.00
	2	50	53.20	2660.00
	Total	100		
SPEAKERPHONE- Meaningful (Abstract)	1	50	50.94	2547.00
	2	50	50.06	2503.00
	Total	100		
SPEAKERPHONE- Related (Abstract)	1	50	49.74	2487.00
	2	50	51.26	2563.00
	Total	100		
SPEAKERPHONE- Sharp (Abstract)	1	50	51.20	2560.00
	2	50	49.80	2490.00
	Total	100		
SPEAKERPHONE- Simple (Abstract)	1	50	50.06	2503.00
	2	50	50.94	2547.00
	Total	100		
SPEAKERPHONE- Concrete (Concrete)	1	50	53.44	2672.00
	2	50	47.56	2378.00
	Total	100		
SPEAKERPHONE- Familiar (Concrete)	1	50	55.24	2762.00
	2	50	45.76	2288.00
	Total	100		
SPEAKERPHONE- Meaningful (Concrete)	1	50	51.85	2592.50
	2	50	49.15	2457.50
	Total	100		
SPEAKERPHONE- Related (Concrete)	1	50	55.51	2775.50
	2	50	45.49	2274.50
	Total	100		
SPEAKERPHONE- Sharp (Concrete)	1	50	54.32	2716.00
	2	50	46.68	2334.00
	Total	100		
SPEAKERPHONE- Simple (Concrete)	1	50	54.99	2749.50
	2	50	46.01	2300.50
	Total	100		
SPEAKERPHONE- Concrete (Proposed)	1	50	49.45	2472.50
	2	50	51.55	2577.50
	Total	100		
SPEAKERPHONE- Familiar (Proposed)	1	50	49.07	2453.50
	2	50	51.93	2596.50
	Total	100		
SPEAKERPHONE- Meaningful (Proposed)	1	50	58.20	2910.00
	2	50	42.80	2140.00
	Total	100		
SPEAKERPHONE- Related (Proposed)	1	50	53.05	2652.50
	2	50	47.95	2397.50
	Total	100		
SPEAKERPHONE- Sharp (Proposed)	1	50	49.45	2472.50
	2	50	51.55	2577.50
	Total	100		
SPEAKERPHONE- Simple (Proposed)	1	50	52.07	2603.50
	2	50	48.93	2446.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
STORE-Concrete (Abstract)	1	50	45.45	2272.50
	2	50	55.55	2777.50
	Total	100		
STORE-Familiar (Abstract)	1	50	48.33	2416.50
	2	50	52.67	2633.50
	Total	100		
STORE-Meaningful (Abstract)	1	50	49.21	2460.50
	2	50	51.79	2589.50
	Total	100		
STORE-Familiar (Abstract)	1	50	52.85	2642.50
	2	50	48.15	2407.50
	Total	100		
STORE-Sharp (Abstract)	1	50	47.92	2396.00
	2	50	53.08	2654.00
	Total	100		
STORE-Simple (Abstract)	1	50	50.45	2522.50
	2	50	50.55	2527.50
	Total	100		
STORE-Concrete (Concrete)	1	50	55.03	2751.50
	2	50	45.97	2298.50
	Total	100		
STORE-Familiar (Concrete)	1	50	60.94	3047.00
	2	50	40.06	2003.00
	Total	100		
STORE-Meaningful (Concrete)	1	50	61.08	3054.00
	2	50	39.92	1996.00
	Total	100		
STORE-Familiar (Concrete)	1	50	61.76	3088.00
	2	50	39.24	1962.00
	Total	100		
STORE-Sharp (Concrete)	1	50	55.98	2799.00
	2	50	45.02	2251.00
	Total	100		
STORE-Simple (Concrete)	1	50	57.83	2891.50
	2	50	43.17	2158.50
	Total	100		
STORE-Concrete (Proposed)	1	50	54.11	2705.50
	2	50	46.89	2344.50
	Total	100		
STORE-Familiar (Proposed)	1	50	52.51	2625.50
	2	50	48.49	2424.50
	Total	100		
STORE-Meaningful (Proposed)	1	50	55.54	2777.00
	2	50	45.46	2273.00
	Total	100		
STORE-Familiar (Proposed)	1	50	53.59	2679.50
	2	50	47.41	2370.50
	Total	100		
STORE-Sharp (Proposed)	1	50	56.83	2841.50
	2	50	44.17	2208.50
	Total	100		
STORE-Simple (Proposed)	1	50	52.59	2629.50
	2	50	48.41	2420.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
SWITCH HOOK	1	50	48.17	2408.50
CONTROL-Concrete (Abstract)	2	50	52.83	2641.50
	Total	100		
SWITCH HOOK	1	50	48.00	2400.00
CONTROL-Familiar (Abstract)	2	50	53.00	2650.00
	Total	100		
SWITCH HOOK	1	50	56.40	2820.00
CONTROL-Meaningful (Abstract)	2	50	44.60	2230.00
	Total	100		
SWITCH HOOK	1	50	51.68	2584.00
CONTROL-Related (Abstract)	2	50	49.32	2466.00
	Total	100		
SWITCH HOOK	1	50	58.08	2904.00
CONTROL-Sharp (Abstract)	2	50	42.92	2146.00
	Total	100		
SWITCH HOOK	1	50	45.55	2277.50
CONTROL-Simple (Abstract)	2	50	55.45	2772.50
	Total	100		
SWITCH HOOK	1	50	55.35	2767.50
CONTROL-Concrete (Concrete)	2	50	45.65	2282.50
	Total	100		
SWITCH HOOK	1	50	55.11	2755.50
CONTROL-Familiar (Concrete)	2	50	45.89	2294.50
	Total	100		
SWITCH HOOK	1	50	57.68	2884.00
CONTROL-Meaningful (Concrete)	2	50	43.32	2166.00
	Total	100		
SWITCH HOOK	1	50	57.01	2850.50
CONTROL-Related (Concrete)	2	50	43.99	2199.50
	Total	100		
SWITCH HOOK	1	50	55.01	2750.50
CONTROL-Sharp (Concrete)	2	50	45.99	2299.50
	Total	100		
SWITCH HOOK	1	50	56.12	2806.00
CONTROL-Simple (Concrete)	2	50	44.88	2244.00
	Total	100		
SWITCH HOOK	1	50	62.20	3110.00
CONTROL-Concrete (Proposed)	2	50	38.80	1940.00
	Total	100		
SWITCH HOOK	1	50	65.32	3266.00
CONTROL-Familiar (Proposed)	2	50	35.68	1784.00
	Total	100		
SWITCH HOOK	1	50	65.61	3280.50
CONTROL-Meaningful (Proposed)	2	50	35.39	1769.50
	Total	100		
SWITCH HOOK	1	50	65.61	3280.50
CONTROL-Related (Proposed)	2	50	35.39	1769.50
	Total	100		
SWITCH HOOK	1	50	64.95	3247.50
CONTROL-Sharp (Proposed)	2	50	36.05	1802.50
	Total	100		
SWITCH HOOK	1	50	62.77	3138.50
CONTROL-Simple (Proposed)	2	50	38.23	1911.50
	Total	100		

Ranks				
	Country	N	Mean Rank	Sum of Ranks
TRANSFER-Concrete (Abstract)	1	50	52.32	2616.00
	2	50	48.68	2434.00
	Total	100		
TRANSFER-Familiar (Abstract)	1	50	56.74	2837.00
	2	50	44.26	2213.00
	Total	100		
TRANSFER-Meaningful (Abstract)	1	50	53.08	2654.00
	2	50	47.92	2396.00
	Total	100		
TRANSFER-Related (Abstract)	1	50	55.26	2763.00
	2	50	45.74	2287.00
	Total	100		
TRANSFER-Sharp (Abstract)	1	50	56.53	2826.50
	2	50	44.47	2223.50
	Total	100		
TRANSFER-Simple (Abstract)	1	50	53.68	2684.00
	2	50	47.32	2366.00
	Total	100		
TRANSFER-Concrete (Concrete)	1	50	58.29	2914.50
	2	50	42.71	2135.50
	Total	100		
TRANSFER-Familiar (Concrete)	1	50	66.49	3324.50
	2	50	34.51	1725.50
	Total	100		
TRANSFER-Meaningful (Concrete)	1	50	66.40	3320.00
	2	50	34.60	1730.00
	Total	100		
TRANSFER-Related (Concrete)	1	50	66.50	3325.00
	2	50	34.50	1725.00
	Total	100		
TRANSFER-Sharp (Concrete)	1	50	62.96	3148.00
	2	50	38.04	1902.00
	Total	100		
TRANSFER-Simple (Concrete)	1	50	64.64	3232.00
	2	50	36.36	1818.00
	Total	100		
TRANSFER-Concrete (Proposed)	1	50	58.28	2914.00
	2	50	42.72	2136.00
	Total	100		
TRANSFER-Familiar (Proposed)	1	50	62.06	3103.00
	2	50	38.94	1947.00
	Total	100		
TRANSFER-Meaningful (Proposed)	1	50	58.60	2930.00
	2	50	42.40	2120.00
	Total	100		
TRANSFER-Related (Proposed)	1	50	63.03	3151.50
	2	50	37.97	1898.50
	Total	100		
TRANSFER-Sharp (Proposed)	1	50	64.56	3228.00
	2	50	36.44	1822.00
	Total	100		
TRANSFER-Simple (Proposed)	1	50	60.86	3043.00
	2	50	40.14	2007.00
	Total	100		

Ranks

	Country	N	Mean Rank	Sum of Ranks
VOLUME-Concrete (Abstract)	1	50	51.34	2567.00
	2	50	49.66	2483.00
	Total	100		
VOLUME-Familiar (Abstract)	1	50	54.86	2743.00
	2	50	46.14	2307.00
	Total	100		
VOLUME-Meaningful (Abstract)	1	50	52.54	2627.00
	2	50	48.46	2423.00
	Total	100		
VOLUME-Related (Abstract)	1	50	52.08	2604.00
	2	50	48.92	2446.00
	Total	100		
VOLUME-Sharp (Abstract)	1	50	57.14	2857.00
	2	50	43.86	2193.00
	Total	100		
VOLUME-Simple (Abstract)	1	50	53.42	2671.00
	2	50	47.58	2379.00
	Total	100		
VOLUME-Concrete (Concrete)	1	50	43.42	2171.00
	2	50	57.58	2879.00
	Total	100		
VOLUME-Familiar (Concrete)	1	50	43.09	2154.50
	2	50	57.91	2895.50
	Total	100		
VOLUME-Meaningful (Concrete)	1	50	43.10	2155.00
	2	50	57.90	2895.00
	Total	100		
VOLUME-Related (Concrete)	1	50	40.76	2038.00
	2	50	60.24	3012.00
	Total	100		
VOLUME-Sharp (Concrete)	1	50	42.76	2138.00
	2	50	58.24	2912.00
	Total	100		
VOLUME-Simple (Concrete)	1	50	43.34	2167.00
	2	50	57.66	2883.00
	Total	100		
VOLUME-Concrete (Proposed)	1	50	38.58	1929.00
	2	50	62.42	3121.00
	Total	100		
VOLUME-Familiar (Proposed)	1	50	46.93	2346.50
	2	50	54.07	2703.50
	Total	100		
VOLUME-Meaningful (Proposed)	1	50	46.57	2328.50
	2	50	54.43	2721.50
	Total	100		
VOLUME-Related (Proposed)	1	50	45.42	2271.00
	2	50	55.58	2779.00
	Total	100		
VOLUME-Sharp (Proposed)	1	50	43.19	2159.50
	2	50	57.81	2890.50
	Total	100		
VOLUME-Simple (Proposed)	1	50	46.60	2330.00
	2	50	54.40	2720.00
	Total	100		

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
ACHIEVE DIAL TONE-Concrete (Abstract)	553.500	1828.500	-4.939	.000
ACHIEVE DIAL TONE-Familiar (Abstract)	499.500	1774.500	-5.300	.000
ACHIEVE DIAL TONE-Related (Abstract)	510.500	1785.500	-5.204	.000
ACHIEVE DIAL TONE-Related (Abstract)	410.000	1685.000	-5.895	.000
ACHIEVE DIAL TONE-Sharp (Abstract)	636.500	1911.500	-4.323	.000
ACHIEVE DIAL TONE-Simple (Abstract)	644.500	1919.500	-4.260	.000
ACHIEVE DIAL TONE-Concrete (Concrete)	976.500	2251.500	-1.925	.054
ACHIEVE DIAL TONE-Familiar (Concrete)	932.000	2207.000	-2.232	.026
ACHIEVE DIAL TONE-Related (Concrete)	992.000	2267.000	-1.856	.063
ACHIEVE DIAL TONE-Related (Concrete)	812.500	2087.500	-3.099	.002
ACHIEVE DIAL TONE-Sharp (Concrete)	900.500	2175.500	-2.568	.010
ACHIEVE DIAL TONE-Simple (Concrete)	800.000	2075.000	-3.183	.001
ACHIEVE DIAL TONE-Concrete (Proposed)	1156.500	2431.500	-.657	.511
ACHIEVE DIAL TONE-Familiar (Proposed)	732.500	2007.500	-3.631	.000
ACHIEVE DIAL TONE-Related (Proposed)	808.000	2083.000	-3.132	.002
ACHIEVE DIAL TONE-Related (Proposed)	770.500	2045.500	-3.381	.001
ACHIEVE DIAL TONE-Sharp (Proposed)	850.000	2125.000	-2.816	.005
ACHIEVE DIAL TONE-Simple (Proposed)	957.000	2232.000	-2.062	.039
ANSWER RINGING CALL-Concrete (Abstract)	1090.000	2365.000	-1.137	.255
ANSWER RINGING CALL-Familiar (Abstract)	799.500	2074.500	-3.184	.001
ANSWER RINGING CALL-Meaningful (Abstract)	524.000	1799.000	-5.156	.000
ANSWER RINGING CALL-Related (Abstract)	607.000	1882.000	-4.560	.000
ANSWER RINGING CALL-Sharp (Abstract)	782.500	2057.500	-3.345	.001
ANSWER RINGING CALL-Simple (Abstract)	944.500	2219.500	-2.177	.029
ANSWER RINGING CALL-Concrete (Concrete)	1069.500	2344.500	-1.278	.201
ANSWER RINGING CALL-Familiar (Concrete)	965.000	2240.000	-2.031	.042
ANSWER RINGING CALL-Meaningful (Concrete)	1224.500	2499.500	-.182	.855
ANSWER RINGING CALL-Related (Concrete)	1200.000	2475.000	-.358	.720
ANSWER RINGING CALL-Sharp (Concrete)	883.000	2158.000	-2.602	.009
ANSWER RINGING CALL-Simple (Concrete)	1125.000	2400.000	-.888	.374
ANSWER RINGING CALL-Concrete (Proposed)	869.000	2144.000	-2.698	.007
ANSWER RINGING CALL-Familiar (Proposed)	907.000	2182.000	-2.404	.016
ANSWER RINGING CALL-Meaningful (Proposed)	742.500	2017.500	-3.561	.000
ANSWER RINGING CALL-Related (Proposed)	821.000	2096.000	-3.060	.002
ANSWER RINGING CALL-Sharp (Proposed)	629.500	1904.500	-4.351	.000
ANSWER RINGING CALL-Simple (Proposed)	862.500	2137.500	-2.739	.006

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
CALL LOG-Concrete (Abstract)	663.000	1938.000	-4.168	.000
CALL Log-Familiar (Abstract)	960.000	2235.000	-2.055	.040
CALL LOG-Meaningful (Abstract)	681.000	1956.000	-4.031	.000
CALL LOG-Related (Abstract)	879.000	2154.000	-2.606	.009
CALL LOG-Sharp (Abstract)	902.000	2177.000	-2.457	.014
CALL LOG-Simple (Abstract)	779.500	2054.500	-3.319	.001
CALL LOG-Concrete (Concrete)	1035.500	2310.500	-1.504	.133
CALL Log-Familiar (Concrete)	753.000	2028.000	-3.479	.001
CALL LOG-Meaningful (Concrete)	854.500	2129.500	-2.780	.005
CALL LOG-Related (Concrete)	659.500	1934.500	-4.143	.000
CALL LOG-Sharp (Concrete)	645.500	1920.500	-4.250	.000
CALL LOG-Simple (Concrete)	866.500	2141.500	-2.692	.007
CALL LOG-Concrete (Proposed)	608.500	1883.500	-4.542	.000
CALL Log-Familiar (Proposed)	713.000	1988.000	-3.834	.000
CALL LOG-Meaningful (Proposed)	589.000	1864.000	-4.656	.000
CALL LOG-Related (Proposed)	704.500	1979.500	-3.839	.000
CALL LOG-Sharp (Proposed)	725.500	2000.500	-3.706	.000
CALL LOG-Simple (Proposed)	1086.000	2361.000	-1.160	.246
CONFERENCE-Concrete (Abstract)	726.000	2001.000	-3.684	.000
CONFERENCE-Familiar (Abstract)	917.000	2192.000	-2.339	.019
CONFERENCE-Meaningful (Abstract)	1223.000	2498.000	-.193	.847
CONFERENCE-Related (Abstract)	1020.000	2295.000	-1.646	.100
CONFERENCE-Sharp (Abstract)	1216.000	2491.000	-.241	.810
CONFERENCE-Simple (Abstract)	922.000	2197.000	-2.331	.020
CONFERENCE-Meaningful (Concrete)	713.000	1988.000	-3.847	.000
CONFERENCE-Related (Concrete)	851.500	2126.500	-2.868	.004
CONFERENCE-Sharp (Concrete)	537.000	1812.000	-5.018	.000
CONFERENCE-Simple (Concrete)	787.000	2062.000	-3.337	.001
CONFERENCE-Concrete (Proposed)	999.500	2274.500	-1.800	.072
CONFERENCE-Familiar (Proposed)	1243.500	2518.500	-.047	.962
CONFERENCE-Meaningful (Proposed)	1011.000	2286.000	-1.715	.086
CONFERENCE-Related (Proposed)	1024.500	2299.500	-1.635	.102
CONFERENCE-Sharp (Proposed)	601.000	1876.000	-4.613	.000
CONFERENCE-Simple (Proposed)	915.000	2190.000	-2.461	.014

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
DIALPAD-Concrete (Abstract)	967.500	2242.500	-1.998	.046
DIALPAD-Familiar (Abstract)	1039.500	2314.500	-1.494	.135
DIALPAD-Meaningful (Abstract)	874.500	2149.500	-2.650	.008
DIALPAD-Related (Abstract)	888.500	2163.500	-2.602	.009
DIALPAD-Sharp (Abstract)	654.500	1929.500	-4.220	.000
DIALPAD-Simple (Abstract)	880.500	2155.500	-2.624	.009
DIALPAD-Concrete (Concrete)	1216.500	2491.500	-.244	.807
DIALPAD-Familiar (Concrete)	948.000	2223.000	-2.202	.028
DIALPAD-Meaningful (Concrete)	1153.000	2428.000	-.703	.482
DIALPAD-Related (Concrete)	1142.000	2417.000	-.783	.434
DIALPAD-Sharp (Concrete)	1198.500	2473.500	-.367	.713
DIALPAD-Simple (Concrete)	1234.000	2509.000	-.118	.906
DIALPAD-Concrete (Proposed)	1243.500	2518.500	-.047	.963
DIALPAD-Familiar (Proposed)	1233.000	2508.000	-.122	.903
DIALPAD-Meaningful (Proposed)	1185.000	2460.000	-.463	.643
DIALPAD-Related (Proposed)	1045.500	2320.500	-1.480	.139
DIALPAD-Sharp (Proposed)	1082.500	2357.500	-1.184	.236
DIALPAD-Simple (Proposed)	1148.000	2423.000	-.731	.465
DROP-Concrete (Abstract)	1081.500	2356.500	-1.185	.236
DROP-Simple (Abstract)	1147.000	2422.000	-.735	.463
DROP-Meaningful (Abstract)	1096.000	2371.000	-1.082	.279
DROP-Related (Abstract)	1214.500	2489.500	-.249	.803
DROP-Sharp (Abstract)	1092.000	2367.000	-1.118	.264
DROP-Simple (Abstract)	1242.500	2517.500	-.053	.958
DROP-Concrete (Concrete)	669.000	1944.000	-4.079	.000
DROP-Simple (Concrete)	858.500	2133.500	-2.762	.006
DROP-Meaningful (Concrete)	878.500	2153.500	-2.609	.009
DROP-Related (Concrete)	739.000	2014.000	-3.599	.000
DROP-Sharp (Concrete)	846.000	2121.000	-2.839	.005
DROP-Simple (Concrete)	579.500	1854.500	-4.697	.000
DOP-Concrete (Proposed)	825.500	2100.500	-3.017	.003
DROP-Simple (Proposed)	794.000	2069.000	-3.217	.001
DROP-Meaningful (Proposed)	757.500	2032.500	-3.454	.001
DROP-Related (Proposed)	714.500	1989.500	-3.745	.000
DROP-Sharp (Proposed)	884.000	2159.000	-2.569	.010
DROP-Simple (Proposed)	753.000	2028.000	-3.482	.000

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
HFAI-Concrete (Abstract)	1219.000	2494.000	-.219	.827
HFAI-Familiar (Abstract)	1188.500	2463.500	-.433	.665
HFAI-Meaningful (Abstract)	1239.500	2514.500	-.074	.941
HFAI-Related (Abstract)	1211.000	2486.000	-.276	.782
HFAI-Sharp (Proposed)	1067.500	2342.500	-1.334	.182
HFAI-Simple (Abstract)	1246.500	2521.500	-.025	.980
HFAI-Concrete (Concrete)	676.000	1951.000	-4.049	.000
HFAI-Familiar (Concrete)	553.000	1828.000	-4.969	.000
HFAI-Meaningful (Concrete)	693.000	1968.000	-3.944	.000
HFAI-Related (Concrete)	612.000	1887.000	-4.506	.000
HFAI-Sharp (Concrete)	625.000	1900.000	-4.423	.000
HFAI-Simple (Concrete)	549.000	1824.000	-4.933	.000
HFAI-Concrete (Proposed)	1114.500	2389.500	-.948	.343
HFAI-Familiar (Proposed)	1116.500	2391.500	-.943	.346
HFAI-Meaningful (Proposed)	914.500	2189.500	-2.350	.019
HFAI-Related (Proposed)	980.000	2255.000	-1.898	.058
HFAI-Sharp	747.500	2022.500	-3.540	.000
HFAI-Simple (Proposed)	1194.500	2469.500	-.388	.698
HOLD-Concrete (Abstract)	982.000	2257.000	-1.916	.055
HOLD-Familiar (Abstract)	1039.500	2314.500	-1.494	.135
HOLD-Meaningful (Abstract)	716.000	1991.000	-3.773	.000
HOLD-Related (Abstract)	855.000	2130.000	-2.782	.005
HOLD-Sharp (Abstract)	952.500	2227.500	-2.102	.036
HOLD-Simple (Abstract)	1081.000	2356.000	-1.191	.234
HOLD-Concrete (Concrete)	552.000	1827.000	-4.944	.000
HOLD-Familiar (Concrete)	657.000	1932.000	-4.139	.000
HOLD-Meaningful (Concrete)	691.000	1966.000	-3.943	.000
HOLD-Related (Concrete)	550.000	1825.000	-4.923	.000
HOLD-Sharp (Concrete)	378.000	1653.000	-6.128	.000
HOLD-Simple (Concrete)	562.500	1837.500	-4.820	.000
HOLD-Concrete (Proposed)	651.000	1926.000	-4.209	.000
HOLD-Familiar (Proposed)	784.000	2059.000	-3.289	.001
HOLD-Meaningful (Proposed)	608.000	1883.000	-4.575	.000
HOLD-Related (Proposed)	786.500	2061.500	-3.318	.001
HOLD-Sharp (Proposed)	544.000	1819.000	-4.961	.000
HOLD-Simple (Proposed)	649.000	1924.000	-4.240	.000

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
HELP SPECIFIC-Concrete (Abstract)	857.000	2132.000	-2.825	.005
HELP SPECIFIC-Familiar (Abstract)	696.500	1971.500	-3.906	.000
HELP SPECIFIC-Meaningful (Abstract)	568.000	1843.000	-4.791	.000
HELP SPECIFIC-Related (Abstract)	448.500	1723.500	-5.681	.000
HELP SPECIFIC-Sharp (Abstract)	521.500	1796.500	-5.147	.000
HELP SPECIFIC-Simple (Abstract)	633.000	1908.000	-4.349	.000
HELP SPECIFIC-Concrete (Concrete)	616.500	1891.500	-4.444	.000
HELP SPECIFIC-Familiar (Concrete)	674.000	1949.000	-4.046	.000
HELP SPECIFIC-Meaningful (Concrete)	717.000	1992.000	-3.760	.000
HELP SPECIFIC-Related (Concrete)	777.500	2052.500	-3.333	.001
HELP SPECIFIC-Sharp (Concrete)	779.000	2054.000	-3.306	.001
HELP SPECIFIC-Simple (Concrete)	549.000	1824.000	-4.922	.000
HELP SPECIFIC-Concrete (Proposed)	763.000	2038.000	-3.466	.001
HELP SPECIFIC-Familiar (Proposed)	765.000	2040.000	-3.556	.000
HELP SPECIFIC-Meaningful (Proposed)	658.500	1933.500	-4.296	.000
HELP SPECIFIC-Related (Proposed)	686.000	1961.000	-4.067	.000
HELP SPECIFIC-Sharp (Proposed)	904.000	2179.000	-2.450	.014
HELP SPECIFIC-Simple (Proposed)	646.500	1921.500	-4.457	.000
HELP SYSTEM-Concrete (Abstract)	1195.000	2470.000	-.413	.680
HELP SYSTEM-Familiar (Abstract)	1087.000	2362.000	-1.186	.236
HELP SYSTEM-Meaningful (Abstract)	1002.000	2277.000	-1.749	.080
HELP SYSTEM-Related (Abstract)	1076.500	2351.500	-1.229	.219
HELP SYSTEM-Sharp (Abstract)	786.000	2061.000	-3.293	.001
HELP SYSTEM-Simple (Abstract)	1058.500	2333.500	-1.402	.161
HELP SYSTEM-Concrete (Concrete)	956.000	2231.000	-2.080	.037
HELP SYSTEM-Familiar (Concrete)	1197.000	2472.000	-.375	.708
HELP SYSTEM-Meaningful (Concrete)	1131.500	2406.500	-.844	.399
HELP SYSTEM-Related (Concrete)	1080.000	2355.000	-1.212	.225
HELP SYSTEM-Sharp (Concrete)	957.500	2232.500	-2.071	.038
HELP SYSTEM-Simple (Concrete)	1078.500	2353.500	-1.215	.225
HELP SYSTEM-Concrete (Proposed)	529.000	1804.000	-5.051	.000
HELP SYSTEM-Familiar (Proposed)	847.000	2122.000	-2.829	.005
HELP SYSTEM-Meaningful (Proposed)	656.000	1931.000	-4.196	.000
HELP SYSTEM-Related (Proposed)	547.500	1822.500	-4.952	.000
HELP SYSTEM-Sharp (Proposed)	835.000	2110.000	-2.912	.004
HELP SYSTEM-Simple (Proposed)	615.000	1890.000	-4.495	.000

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
MESSAGE-Concrete (Abstract)	821.000	2096.000	-3.039	.002
MESSAGE-Familiar (Abstract)	923.500	2198.500	-2.328	.020
MESSAGE-Meaningful (Abstract)	840.500	2115.500	-2.924	.003
MESSAGE-Related (Abstract)	666.500	1941.500	-4.128	.000
MESSAGE-Sharp (Abstract)	624.000	1899.000	-4.413	.000
MESSAGE-Simple (Abstract)	927.500	2202.500	-2.335	.020
MESSAGE-Concrete (Concrete)	1109.000	2384.000	-1.005	.315
MESSAGE-Familiar (Concrete)	1143.500	2418.500	-.744	.457
MESSAGE-Meaningful (Concrete)	1063.500	2338.500	-1.309	.191
MESSAGE-Related (Concrete)	1202.500	2477.500	-.334	.739
MESSAGE-Sharp (Concrete)	1146.000	2421.000	-.735	.462
MESSAGE-Simple (Concrete)	1235.500	2510.500	-.101	.919
MESSAGE-Concrete (Proposed)	1116.500	2391.500	-.994	.320
MESSAGE-Familiar (Proposed)	1232.000	2507.000	-.135	.892
MESSAGE-Meaningful (Proposed)	1198.500	2473.500	-.380	.704
MESSAGE-Related (Proposed)	1227.000	2502.000	-.172	.863
MESSAGE-Sharp (Proposed)	1044.000	2319.000	-1.499	.134
MESSAGE-Simple (Proposed)	1103.000	2378.000	-1.127	.260
MUSIC ON HOLD-Concrete (Abstract)	409.000	1684.000	-5.881	.000
MUSIC ON HOLD-Familiar (Abstract)	254.500	1529.500	-7.017	.000
MUSIC ON HOLD-Meaningful (Abstract)	406.000	1681.000	-5.958	.000
MUSIC ON HOLD-Related (Abstract)	423.500	1698.500	-5.790	.000
MUSIC ON HOLD-Sharp (Abstract)	503.500	1778.500	-5.246	.000
MUSIC ON HOLD-Simple (Abstract)	259.500	1534.500	-6.915	.000
MUSIC ON HOLD-Concrete (Concrete)	832.500	2107.500	-3.027	.002
MUSIC ON HOLD-Familiar (Concrete)	715.000	1990.000	-3.854	.000
MUSIC ON HOLD-Meaningful (Concrete)	900.000	2175.000	-2.517	.012
MUSIC ON HOLD-Related (Concrete)	988.500	2263.500	-1.889	.059
MUSIC ON HOLD-Sharp (Concrete)	902.500	2177.500	-2.487	.013
MUSIC ON HOLD-Simple (Concrete)	759.500	2034.500	-3.524	.000
MUSIC ON HOLD-Concrete (Proposed)	485.500	1760.500	-5.389	.000
MUSIC ON HOLD-Familiar (Proposed)	468.000	1743.000	-5.638	.000
MUSIC ON HOLD-Meaningful (Proposed)	635.500	1910.500	-4.443	.000
MUSIC ON HOLD-Related (Proposed)	670.000	1945.000	-4.185	.000
MUSIC ON HOLD-Sharp (Proposed)	469.000	1744.000	-5.498	.000
MUSIC ON HOLD-Simple (Proposed)	651.000	1926.000	-4.302	.000

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
MUTE-Concrete (Abstract)	1130.500	2405.500	-.852	.394
MUTE-Familiar (Abstract)	1107.500	2382.500	-1.016	.310
MUTE-Meaningful (Abstract)	1171.000	2446.000	-.568	.570
MUTE-Related (Abstract)	1219.500	2494.500	-.220	.826
MUTE-Sharp (Abstract)	1185.500	2460.500	-.458	.647
MUTE-Simple (Abstract)	942.000	2217.000	-2.211	.027
MUTE-Concrete (Concrete)	1166.000	2441.000	-.593	.553
MUTE-Familiar (Concrete)	967.500	2242.500	-1.991	.046
MUTE-Meaningful (Concrete)	945.000	2220.000	-2.157	.031
MUTE-Related (Concrete)	858.500	2133.500	-2.764	.006
MUTE-Sharp (Concrete)	1076.000	2351.000	-1.227	.220
MUTE-Simple (Concrete)	908.500	2183.500	-2.400	.016
MUTE-Concrete (Proposed)	1160.500	2435.500	-.628	.530
MUTE-Familiar (Proposed)	1209.000	2484.000	-.287	.774
MUTE-Meaningful (Proposed)	1110.000	2385.000	-.980	.327
MUTE-Related (Proposed)	1225.000	2500.000	-.175	.861
MUTE-Sharp (Proposed)	1125.500	2400.500	-.877	.381
MUTE-Simple (Proposed)	1053.000	2328.000	-1.381	.167
NOTES-Concrete (Abstract)	524.500	1799.500	-5.117	.000
NOTES-Familiar (Abstract)	609.000	1884.000	-4.551	.000
NOTES-Meaningful (Abstract)	683.500	1958.500	-4.057	.000
NOTES-Related (Abstract)	527.000	1802.000	-5.145	.000
NOTES-Sharp (Abstract)	610.000	1885.000	-4.576	.000
NOTES-Simple (Abstract)	513.000	1788.000	-5.253	.000
NOTES-Concrete (Concrete)	781.500	2056.500	-3.392	.001
NOTES-Familiar (Concrete)	871.500	2146.500	-2.709	.007
NOTES-Meaningful (Concrete)	865.500	2140.500	-2.784	.005
NOTES-Related (Concrete)	839.000	2114.000	-2.959	.003
NOTES-Sharp (Concrete)	998.500	2273.500	-1.811	.070
NOTES-Simple (Concrete)	728.500	2003.500	-3.724	.000
NOTES-Concrete (Proposed)	967.000	2242.000	-2.041	.041
NOTES-Familiar (Proposed)	827.000	2102.000	-3.025	.002
NOTES-Meaningful (Proposed)	902.500	2177.500	-2.555	.011
NOTES-Related (Proposed)	920.500	2195.500	-2.406	.016
NOTES-Sharp (Proposed)	851.000	2126.000	-2.838	.005
NOTES-Simple (Proposed)	916.500	2191.500	-2.417	.016

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
PHONE CALL ACTIVE-Concrete (Abstract)	1089.000	2364.000	-1.146	.252
PHONE CALL ACTIVE-Familiar (Abstract)	992.500	2267.500	-1.826	.068
PHONE CALL ACTIVE-Meaningful (Abstract)	917.000	2192.000	-2.336	.019
PHONE CALL ACTIVE-Related (Abstract)	1046.000	2321.000	-1.440	.150
PHONE CALL ACTIVE-Sharp (Abstract)	921.500	2196.500	-2.307	.021
PHONE CALL ACTIVE-Simple (Abstract)	949.500	2224.500	-2.136	.033
PHONE CALL ACTIVE-Concrete (Concrete)	883.500	2158.500	-2.570	.010
PHONE CALL ACTIVE-Familiar (Concrete)	889.000	2164.000	-2.568	.010
PHONE CALL ACTIVE-Meaningful (Concrete)	1249.500	2524.500	-.004	.997
PHONE CALL ACTIVE-Related (Concrete)	1176.000	2451.000	-.526	.599
PHONE CALL ACTIVE-Sharp (Concrete)	804.500	2079.500	-3.151	.002
PHONE CALL ACTIVE-Simple (Concrete)	982.000	2257.000	-1.885	.059
PHONE CALL ACTIVE-Concrete (Proposed)	858.000	2133.000	-2.753	.006
PHONE CALL ACTIVE-Familiar (Proposed)	993.500	2268.500	-1.798	.072
PHONE CALL ACTIVE-Meaningful (Proposed)	706.500	1981.500	-3.820	.000
PHONE CALL ACTIVE-Related (Proposed)	651.000	1926.000	-4.256	.000
PHONE CALL ACTIVE-Sharp (Proposed)	1103.000	2378.000	-1.039	.299
PHONE CALL ACTIVE-Simple (Proposed)	975.500	2250.500	-1.947	.052
RETRIEVE-Concrete (Abstract)	1171.500	2446.500	-.550	.582
RETRIEVE-Familiar (Abstract)	1063.000	2338.000	-1.311	.190
RETRIEVE-Meaningful (Abstract)	1207.500	2482.500	-.300	.764
RETRIEVE-Related (Abstract)	1204.500	2479.500	-.321	.748
RETRIEVE-Sharp (Abstract)	1098.500	2373.500	-1.068	.286
RETRIEVE-Simple (Abstract)	1192.000	2467.000	-.407	.684
RETRIEVE-Concrete (Concrete)	781.000	2056.000	-3.293	.001
RETRIEVE-Familiar (Concrete)	616.500	1891.500	-4.435	.000
RETRIEVE-Meaningful (Concrete)	737.500	2012.500	-3.591	.000
RETRIEVE-Related (Concrete)	741.000	2016.000	-3.576	.000
RETRIEVE-Sharp (Concrete)	681.500	1956.500	-3.991	.000
RETRIEVE-Simple (Concrete)	531.000	1806.000	-5.058	.000
RETRIEVE-Concrete (Proposed)	867.000	2142.000	-2.754	.006
RETRIEVE-Familiar (Proposed)	796.000	2071.000	-3.316	.001
RETRIEVE-Meaningful (Proposed)	579.000	1854.000	-4.746	.000
RETRIEVE-Related (Proposed)	875.000	2150.000	-2.707	.007
RETRIEVE-Sharp (Proposed)	963.000	2238.000	-2.058	.040
RETRIEVE-Simple (Proposed)	887.000	2162.000	-2.579	.010

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
RINGER SELECT-Concrete (Abstract)	977.000	2252.000	-1.981	.048
RINGER SELECT-Familiar (Abstract)	816.000	2091.000	-3.076	.002
RINGER SELECT-Meaningful (Abstract)	1019.500	2294.500	-1.612	.107
RINGER SELECT-Related (Abstract)	865.000	2140.000	-2.695	.007
RINGER SELECT-Sharp (Abstract)	859.000	2134.000	-2.742	.006
RINGERSELECT-Simple (Abstract)	846.000	2121.000	-2.875	.004
RINGER SELECT-Concrete (Concrete)	798.000	2073.000	-3.374	.001
RINGER SELECT-Familiar (Concrete)	972.000	2247.000	-2.083	.037
RINGER SELECT-Meaningful (Concrete)	1228.000	2503.000	-.165	.869
RINGER SELECT-Related (Concrete)	1143.000	2418.000	-.809	.418
RINGER SELECT-Sharp (Concrete)	954.000	2229.000	-2.159	.031
RINGER-Select (Concrete)	851.500	2126.500	-2.979	.003
RINGER SELECT-Concrete (Proposed)	625.500	1900.500	-4.431	.000
RINGER SELECT-Familiar (Proposed)	833.500	2108.500	-2.932	.003
RINGER SELECT-Meaningful (Proposed)	781.500	2056.500	-3.304	.001
RINGER SELECT-Related (Proposed)	518.500	1793.500	-5.141	.000
RINGER SELECT-Sharp (Proposed)	729.500	2004.500	-3.657	.000
RINGER-Select (Proposed)	718.500	1993.500	-3.763	.000
SPEED DIAL-Concrete (Abstract)	692.500	1967.500	-3.944	.000
SPEED DIAL-Familiar (Abstract)	792.500	2067.500	-3.211	.001
SPEED DIAL-Meaningful (Abstract)	794.000	2069.000	-3.190	.001
SPEED DIAL-Related (Abstract)	678.500	1953.500	-4.017	.000
SPEED DIAL-Sharp (Abstract)	932.500	2207.500	-2.230	.026
SPEED DIAL-Simple (Abstract)	596.000	1871.000	-4.580	.000
SPEED DIAL-Concrete (Concrete)	518.000	1793.000	-5.112	.000
SPEED DIAL-Familiar (Concrete)	584.000	1859.000	-4.646	.000
SPEED DIAL-Meaningful (Concrete)	966.000	2241.000	-1.999	.046
SPEED DIAL-Related (Concrete)	893.000	2168.000	-2.511	.012
SPEED DIAL-Sharp (Concrete)	569.000	1844.000	-4.770	.000
SPEED DIAL-Simple (Concrete)	806.000	2081.000	-3.127	.002
SPEED DIAL-Concrete (Proposed)	837.500	2112.500	-2.888	.004
SPEED DIAL-Familiar (Proposed)	1070.500	2345.500	-1.264	.206
SPEED DIAL-Meaningful (Proposed)	865.500	2140.500	-2.691	.007
SPEED DIAL-Related (Proposed)	969.000	2244.000	-1.960	.050
SPEED DIAL-Sharp (Proposed)	791.500	2066.500	-3.208	.001
SPEED DIAL-Simple (Proposed)	759.500	2034.500	-3.424	.001

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
SPEAKERPHONE-Concrete (Abstract)	1166.000	2441.000	-.595	.552
SPEAKERPHONE-Familiar (Abstract)	1115.000	2390.000	-.955	.339
SPEAKERPHONE-Meaningful (Abstract)	1228.000	2503.000	-.158	.875
SPEAKERPHONE-Related (Abstract)	1212.000	2487.000	-.269	.788
SPEAKERPHONE-Sharp (Abstract)	1215.000	2490.000	-.248	.804
SPEAKERPHONE-Simple (Abstract)	1228.000	2503.000	-.157	.876
SPEAKERPHONE-Concrete (Concrete)	1103.000	2378.000	-1.070	.285
SPEAKERPHONE-Familiar (Concrete)	1013.000	2288.000	-1.695	.090
SPEAKERPHONE-Meaningful (Concrete)	1182.500	2457.500	-.486	.627
SPEAKERPHONE-Related (Concrete)	999.500	2274.500	-1.833	.067
SPEAKERPHONE-Sharp (Concrete)	1059.000	2334.000	-1.371	.170
SPEAKERPHONE-Simple (Concrete)	1025.500	2300.500	-1.633	.103
SPEAKERPHONE-Concrete (Proposed)	1197.500	2472.500	-.370	.711
SPEAKERPHONE-Familiar (Proposed)	1178.500	2453.500	-.502	.615
SPEAKERPHONE-Meaningful (Proposed)	865.000	2140.000	-2.715	.007
SPEAKERPHONE-Related (Proposed)	1122.500	2397.500	-.904	.366
SPEAKERPHONE-Sharp (Proposed)	1197.500	2472.500	-.371	.711
SPEAKERPHONE-Simple (Proposed)	1171.500	2446.500	-.553	.580
STORE-Concrete (Abstract)	997.500	2272.500	-1.774	.076
STORE-Familiar (Abstract)	1141.500	2416.500	-.763	.445
STORE-Meaningful (Abstract)	1185.500	2460.500	-.454	.650
STORE-Familiar (Abstract)	1132.500	2407.500	-.823	.410
STORE-Sharp (Abstract)	1121.000	2396.000	-.908	.364
STORE-Simple (Abstract)	1247.500	2522.500	-.018	.986
STORE-Concrete (Concrete)	1023.500	2298.500	-1.589	.112
STORE-Familiar (Concrete)	728.000	2003.000	-3.694	.000
STORE-Meaningful (Concrete)	721.000	1996.000	-3.744	.000
STORE-Familiar (Concrete)	687.000	1962.000	-4.059	.000
STORE-Sharp (Concrete)	976.000	2251.000	-1.938	.053
STORE-Simple (Concrete)	883.500	2158.500	-2.577	.010
STORE-Concrete (Proposed)	1069.500	2344.500	-1.264	.206
STORE-Familiar (Proposed)	1149.500	2424.500	-.702	.483
STORE-Meaningful (Proposed)	998.000	2273.000	-1.761	.078
STORE-Familiar (Proposed)	1095.500	2370.500	-1.086	.278
STORE-Sharp (Proposed)	933.500	2208.500	-2.222	.026
STORE-Simple (Proposed)	1145.500	2420.500	-.731	.465

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
SWITCH HOOK CONTROL-Concrete (Abstract)	1133.500	2408.500	-.831	.406
SWITCH HOOK CONTROL-Familiar (Abstract)	1125.000	2400.000	-.898	.369
SWITCH HOOK CONTROL-Meaningful (Abstract)	955.000	2230.000	-2.097	.036
SWITCH HOOK CONTROL-Related (Abstract)	1191.000	2466.000	-.419	.675
SWITCH HOOK CONTROL-Sharp (Abstract)	871.000	2146.000	-2.698	.007
SWITCH HOOK CONTROL-Simple (Abstract)	1002.500	2277.500	-1.739	.082
SWITCH HOOK CONTROL-Concrete (Concrete)	1007.500	2282.500	-1.701	.089
SWITCH HOOK CONTROL-Familiar (Concrete)	1019.500	2294.500	-1.635	.102
SWITCH HOOK CONTROL-Meaningful (Concrete)	891.000	2166.000	-2.556	.011
SWITCH HOOK CONTROL-Related (Concrete)	924.500	2199.500	-2.312	.021
SWITCH HOOK CONTROL-Sharp (Concrete)	1024.500	2299.500	-1.611	.107
SWITCH HOOK CONTROL-Simple (Concrete)	969.000	2244.000	-1.982	.047
SWITCH HOOK CONTROL-Concrete (Proposed)	665.000	1940.000	-4.107	.000
SWITCH HOOK CONTROL-Familiar (Proposed)	509.000	1784.000	-5.244	.000
SWITCH HOOK CONTROL-Meaningful (Proposed)	494.500	1769.500	-5.343	.000
SWITCH HOOK CONTROL-Related (Proposed)	494.500	1769.500	-5.310	.000
SWITCH HOOK CONTROL-Sharp (Proposed)	527.500	1802.500	-5.119	.000
SWITCH HOOK CONTROL-Simple (Proposed)	636.500	1911.500	-4.302	.000
TRANSFER-Concrete (Abstract)	1159.000	2434.000	-.642	.521
TRANSFER-Familiar (Abstract)	938.000	2213.000	-2.233	.026
TRANSFER-Meaningful (Abstract)	1121.000	2396.000	-.917	.359
TRANSFER-Related (Abstract)	1012.000	2287.000	-1.672	.095
TRANSFER-Sharp (Abstract)	948.500	2223.500	-2.152	.031
TRANSFER-Simple (Abstract)	1091.000	2366.000	-1.114	.265
TRANSFER-Concrete (Concrete)	860.500	2135.500	-2.780	.005
TRANSFER-Familiar (Concrete)	450.500	1725.500	-5.629	.000
TRANSFER-Meaningful (Concrete)	455.000	1730.000	-5.706	.000
TRANSFER-Related (Concrete)	450.000	1725.000	-5.763	.000
TRANSFER-Sharp (Concrete)	627.000	1902.000	-4.414	.000
TRANSFER-Simple (Concrete)	543.000	1818.000	-5.069	.000
TRANSFER-Concrete (Proposed)	861.000	2136.000	-2.801	.005
TRANSFER-Familiar (Proposed)	672.000	1947.000	-4.073	.000
TRANSFER-Meaningful (Proposed)	845.000	2120.000	-2.919	.004
TRANSFER-Related (Proposed)	623.500	1898.500	-4.499	.000
TRANSFER-Sharp (Proposed)	547.000	1822.000	-4.954	.000
TRANSFER-Simple (Proposed)	732.000	2007.000	-3.715	.000

a. Grouping Variable: Country

Test Statistics^a

	Mann-W hitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
VOLUME-Concrete (Abstract)	1208.000	2483.000	-.308	.758
VOLUME-Familiar (Abstract)	1032.000	2307.000	-1.658	.097
VOLUME-Meaningful (Abstract)	1148.000	2423.000	-.776	.438
VOLUME-Related (Abstract)	1171.000	2446.000	-.586	.558
VOLUME-Sharp (Abstract)	918.000	2193.000	-2.394	.017
VOLUME-Simple (Abstract)	1104.000	2379.000	-1.115	.265
VOLUME-Concrete (Concrete)	896.000	2171.000	-2.631	.009
VOLUME-Familiar (Concrete)	879.500	2154.500	-2.736	.006
VOLUME-Meaningful (Concrete)	880.000	2155.000	-2.736	.006
VOLUME-Related (Concrete)	763.000	2038.000	-3.719	.000
VOLUME-Sharp (Concrete)	863.000	2138.000	-2.800	.005
VOLUME-Simple (Concrete)	892.000	2167.000	-2.669	.008
VOLUME-Concrete (Proposed)	654.000	1929.000	-4.299	.000
VOLUME-Familiar (Proposed)	1071.500	2346.500	-1.361	.173
VOLUME-Meaningful (Proposed)	1053.500	2328.500	-1.428	.153
VOLUME-Related (Proposed)	996.000	2271.000	-1.844	.065
VOLUME-Sharp (Proposed)	884.500	2159.500	-2.601	.009
VOLUME-Simple (Proposed)	1055.000	2330.000	-1.416	.157

a. Grouping Variable: Country

APPENDIX 5

MULTI-FACTOR ANOVA TABLE FOR PARTS ONE AND TWO RECOGNITION TESTS (Study III, Transformed Data)

1. Analysis of Variance for CAMERA - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	5.06043	4	1.26511	11.56	0.0000
B:WORK	0.355983	1	0.355983	3.25	0.0740
C:TEST	0.358821	1	0.358821	3.28	0.0729
D:SET	7.90045	2	3.95022	36.09	0.0000
RESIDUAL	12.1498	111	0.109458		
TOTAL (Corr.)	25.8255	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for CAMERA by COUNTRY

Method: 95.0 percent Tukey HSD

COUNTRY	Count	LS Mean	Homogeneous Groups
5	24	1.26872	X
1	24	1.57516	X
2	24	1.65874	XX
4	24	1.69246	XX
3	24	1.90053	X

Contrast	Difference	+/- Limits
1 - 2	-0.0835792	0.264839
1 - 3	*-0.325367	0.264839
1 - 4	-0.117296	0.264839
1 - 5	*0.306442	0.264839
2 - 3	-0.241788	0.264839
2 - 4	-0.0337167	0.264839
2 - 5	*0.390021	0.264839
3 - 4	0.208071	0.264839
3 - 5	*0.631808	0.264839
4 - 5	*0.423738	0.264839

* denotes a statistically significant difference.

Multiple Range Tests for CAMERA by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
2	40	1.26142	X
3	40	1.74512	X
1	40	1.85083	X

Contrast	Difference	+/- Limits
1 - 2	*0.589405	0.175743
1 - 3	0.10571	0.175743
2 - 3	*-0.483695	0.175743

* denotes a statistically significant difference.

2. Analysis of Variance for DOCUMENT CAMERA - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	7.40837	4	1.85209	12.48	0.0000
B:WORK	0.0733789	1	0.0733789	0.49	0.4835
C:TEST	45.8504	1	45.8504	308.85	0.0000
D:SET	2.99979	2	1.4999	10.10	0.0001
RESIDUAL	16.4785	111	0.148455		
TOTAL (CORR.)	72.8104	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for DOCUMENT CAMERA by COUNTRY

Method: 95.0 percent Tukey HSD

COUNTRY	Count	LS Mean	Homogeneous Groups
5	24	0.966771	X
3	24	1.5764	X
1	24	1.57932	X
4	24	1.59349	X
2	24	1.60092	X

Contrast	Difference	+/- Limits
1 - 2	-0.0216	0.30843
1 - 3	0.00292083	0.30843
1 - 4	-0.0141667	0.30843
1 - 5	*0.61255	0.30843

2 - 3	0.0245208	0.30843
2 - 4	0.00743333	0.30843
2 - 5	*0.63415	0.30843
3 - 4	-0.0170875	0.30843
3 - 5	*0.609629	0.30843
4 - 5	*0.626717	0.30843

 * denotes a statistically significant difference.

Multiple Range Tests for DOCUMENT CAMERA by TEST

 Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
1	60	0.845248	X
2	60	2.08151	X

Contrast	Difference	+/- Limits
1 - 2	*-1.23626	0.139395

 * denotes a statistically significant difference.

Multiple Range Tests for DOCUMENT CAMERA by SET

 Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
3	40	1.34513	X
2	40	1.35816	X
1	40	1.68685	X

Contrast	Difference	+/- Limits
1 - 2	*0.328692	0.204669
1 - 3	*0.341725	0.204669
2 - 3	0.0130325	0.204669

 * denotes a statistically significant difference.

3. Analysis of Variance for HANDSFREE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	4.98942	4	1.24736	7.78	0.0000
B:WORK	0.00229338	1	0.00229338	0.01	0.9050
C:TEST	12.2352	1	12.2352	76.33	0.0000
D:SET	2.45088	2	1.22544	7.64	0.0008
RESIDUAL	17.7934	111	0.160301		
TOTAL (CORR.)	37.4712	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for HANDSFREE by COUNTRY

Method: 95.0 percent Tukey HSD

COUNTRY	Count	LS Mean	Homogeneous Groups
5	24	0.59675	X
3	24	0.805754	XX
2	24	0.958604	XX
1	24	0.991508	XX
4	24	1.20988	X

Contrast	Difference	+/- Limits
1 - 2	0.0329042	0.320499
1 - 3	0.185754	0.320499
1 - 4	-0.218367	0.320499
1 - 5	*0.394758	0.320499
2 - 3	0.15285	0.320499
2 - 4	-0.251271	0.320499
2 - 5	*0.361854	0.320499
3 - 4	*-0.404121	0.320499
3 - 5	0.209004	0.320499
4 - 5	*0.613125	0.320499

* denotes a statistically significant difference.

Multiple Range Tests for HANDSFREE by TEST

Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
1	60	0.593187	X
2	60	1.23181	X

Contrast	Difference	+/- Limits
1 - 2	*-0.638623	0.14485

* denotes a statistically significant difference.

Multiple Range Tests for HANDSFREE by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
2	40	0.766242	X
3	40	0.864825	X
1	40	1.10643	X

Contrast	Difference	+/- Limits
1 - 2	*0.340185	0.212678
1 - 3	*0.241602	0.212678
2 - 3	-0.0985825	0.212678

* denotes a statistically significant difference.

4. Analysis of Variance for MICROPHONE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	1.3693	4	0.342324	2.66	0.0562
B:WORK	0.0000234967	1	0.0000235	0.00	0.9892
C:TEST	2.90932	1	2.90932	22.64	0.0000
D:SET	50.2212	2	25.1106	195.41	0.0000
RESIDUAL	14.2638	111	0.128503		
TOTAL (CORR.)	68.7637	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for MICROPHONE by TEST

Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
1	60	1.65981	X
2	60	1.97122	X

Contrast	Difference	+/- Limits
1 - 2	*-0.311412	0.12969

* denotes a statistically significant difference.

Multiple Range Tests for MICROPHONE by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
2	40	0.900733	X
1	40	2.26091	X
3	40	2.2849	X

Contrast	Difference	+/- Limits
1 - 2	*1.36018	0.190419
1 - 3	-0.02399	0.190419
2 - 3	*-1.38417	0.190419

* denotes a statistically significant difference.

5. Analysis of Variance for SELFVIEW - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	2.00518	4	0.501294	2.31	0.0620
B:WORK	0.0451516	1	0.0451516	0.21	0.6490
C:TEST	19.752	1	19.752	91.12	0.0000
D:SET	3.32843	2	1.66421	7.68	0.0008
RESIDUAL	24.0607	111	0.216763		
TOTAL (CORR.)	49.1914	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for SELFVIEW by TEST

Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
1	60	0.519885	X
2	60	1.3313	X

Contrast	Difference	+/- Limits
1 - 2	*-0.811418	0.168439

* denotes a statistically significant difference.

Multiple Range Tests for SELFVIEW by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
2	40	0.77165	X
3	40	0.848193	X
1	40	1.15694	X

Contrast	Difference	+/- Limits
1 - 2	*0.38529	0.247313
1 - 3	*0.308748	0.247313
2 - 3	-0.0765425	0.247313

* denotes a statistically significant difference.

6. Analysis of Variance for STILL PICTURE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	2.44307	4	0.610768	3.51	0.0098
B:WORK	0.0521375	1	0.0521375	0.30	0.5853
C:TEST	46.374	1	46.374	266.35	0.0000
D:SET	22.6518	2	11.3259	65.05	0.0000
RESIDUAL	19.3263	111	0.174111		
TOTAL (CORR.)	90.8473	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for STILL PICTURE by COUNTRY

Method: 95.0 percent Tukey HSD

COUNTRY	Count	LS Mean	Homogeneous Groups
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5	24	1.07906	X
2	24	1.38035	XX
1	24	1.3884	XX
3	24	1.39566	XX
4	24	1.50461	X

Contrast	Difference	+/- Limits
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1 - 2	0.00805	0.334019
1 - 3	-0.00726	0.334019
1 - 4	-0.11621	0.334019
1 - 5	0.30934	0.334019
2 - 3	-0.01531	0.334019
2 - 4	-0.12426	0.334019
2 - 5	0.30130	0.334019
3 - 4	-0.10895	0.334019
3 - 5	0.31660	0.334019
4 - 5	*0.42555	0.334019

* denotes a statistically significant difference.

Multiple Range Tests for STILL PICTURE by TEST

Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
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1	60	0.727967	X
2	60	1.97127	X

Contrast	Difference	+/- Limits
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1 - 2	*-1.2433	0.15096
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* denotes a statistically significant difference.

Multiple Range Tests for STILL PICTURE by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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2	40	0.750247	X
3	40	1.5322	X
1	40	1.76641	X

Contrast	Difference	+/- Limits
1 - 2	*1.01616	0.22165
1 - 3	*0.23422	0.22165
2 - 3	*-0.78195	0.22165

* denotes a statistically significant difference.

7. Analysis of Variance for VIDEOPHONE - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:COUNTRY	3.59104	4	0.89776	4.45	0.0023
B:WORK	0.820285	1	0.820285	4.06	0.0462
C:TEST	10.9935	1	10.9935	54.46	0.0000
D:SET	19.1672	2	9.5836	47.48	0.0000
RESIDUAL	22.4065	111	0.20186		
TOTAL (CORR.)	56.9784	119			

All F-ratios are based on the residual mean square error.

Multiple Range Tests for VIDEOPHONE by COUNTRY

Method: 95.0 percent Tukey HSD

COUNTRY	Count	LS Mean	Homogeneous Groups
5	24	1.28748	X
2	24	1.46293	XX
3	24	1.65925	X
4	24	1.72419	X
1	24	1.7333	X

Contrast	Difference	+/- Limits
1 - 2	0.270367	0.359653
1 - 3	0.074042	0.359653
1 - 4	0.009108	0.359653
1 - 5	*0.445812	0.359653
2 - 3	-0.196325	0.359653
2 - 4	-0.261258	0.359653
2 - 5	0.175446	0.359653
3 - 4	-0.064933	0.359653
3 - 5	*0.371771	0.359653
4 - 5	*0.436704	0.359653

* denotes a statistically significant difference.

Multiple Range Tests for VIDEOPHONE by TEST

Method: 95.0 percent Tukey HSD

Test	Count	LS Mean	Homogeneous Groups
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1	60	1.27075	X
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2	60	1.8761	X
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Contrast	Difference	+/- Limits
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1 - 2	*-0.60535	0.162545
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* denotes a statistically significant difference.

Multiple Range Tests for VIDEOPHONE by SET

Method: 95.0 percent Tukey HSD

Set	Count	LS Mean	Homogeneous Groups
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2	40	1.0121	X
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3	40	1.79694	X
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1	40	1.91126	X
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Contrast	Difference	+/- Limits
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1 - 2	*0.899162	0.23866
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1 - 3	0.11432	0.23866
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2 - 3	*-0.784842	0.23866
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* denotes a statistically significant difference.

APPENDIX 6

**KRUSKAL-WALLIS TEST FOR CERTAINTY RATINGS BETWEEN COUNTRIES
(Study III, Southeast Asian Countries)**

Ranks				Ranks			
	Subject's Country	N	Mean Rank		Subject's Country	N	Mean Rank
Camera1-Certainty (Part 1)	Indonesia	48	104.51	Document Camera1-Certainty (Part 1)	Indonesia	48	134.88
	Malaysia	48	122.34		Malaysia	48	121.64
	Philippines	48	117.30		Philippines	48	120.13
	Thailand	48	136.28		Thailand	48	109.77
	Sri Lanka	48	122.06		Sri Lanka	48	116.09
	Total	240			Total	240	
Camera2-Certainty (Part 1)	Indonesia	48	110.81	Document Camera2-Certainty (Part 1)	Indonesia	48	120.75
	Malaysia	48	122.22		Malaysia	48	126.71
	Philippines	48	114.32		Philippines	48	115.93
	Thailand	48	125.40		Thailand	48	106.72
	Sri Lanka	48	129.75		Sri Lanka	48	132.40
	Total	240			Total	240	
Camera3-Certainty (Part 1)	Indonesia	48	104.57	Document Camera3-Certainty (Part 1)	Indonesia	48	124.93
	Malaysia	48	113.73		Malaysia	48	106.91
	Philippines	48	132.75		Philippines	48	117.28
	Thailand	48	127.32		Thailand	48	130.98
	Sri Lanka	48	124.13		Sri Lanka	48	122.41
	Total	240			Total	240	
Camera1-Certainty (Part 2)	Indonesia	48	103.85	Document Camera1-Certainty (Part 2)	Indonesia	48	122.32
	Malaysia	48	114.03		Malaysia	48	125.92
	Philippines	48	109.43		Philippines	48	112.01
	Thailand	48	128.91		Thailand	48	125.71
	Sri Lanka	48	146.28		Sri Lanka	48	116.54
	Total	240			Total	240	
Camera2-Certainty (Part 2)	Indonesia	48	105.36	Document Camera2-Certainty (Part 2)	Indonesia	48	113.56
	Malaysia	48	120.27		Malaysia	48	120.03
	Philippines	48	121.53		Philippines	48	124.07
	Thailand	48	124.75		Thailand	48	123.17
	Sri Lanka	48	130.58		Sri Lanka	48	121.67
	Total	240			Total	240	
Camera3-Certainty (Part 2)	Indonesia	48	110.92	Document Camera3-Certainty (Part 2)	Indonesia	48	106.63
	Malaysia	48	109.56		Malaysia	48	114.99
	Philippines	48	111.05		Philippines	48	125.02
	Thailand	48	124.32		Thailand	48	125.50
	Sri Lanka	48	146.65		Sri Lanka	48	130.36
	Total	240			Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Handsfree1-Certainty (Part 1)	Indonesia	48	117.73
	Malaysia	48	112.67
	Philippines	48	120.46
	Thailand	48	101.31
	Sri Lanka	48	150.33
	Total	240	
Handsfree2-Certainty (Part 1)	Indonesia	48	126.94
	Malaysia	48	116.99
	Philippines	48	115.60
	Thailand	48	120.27
	Sri Lanka	48	122.70
	Total	240	
Handsfree3-Certainty (Part 1)	Indonesia	48	131.44
	Malaysia	48	117.68
	Philippines	48	126.55
	Thailand	48	117.45
	Sri Lanka	48	109.39
	Total	240	
Handsfree1-Certainty (Part 2)	Indonesia	48	118.48
	Malaysia	48	106.00
	Philippines	48	120.25
	Thailand	48	121.03
	Sri Lanka	48	136.74
	Total	240	
Handsfree2-Certainty (Part 2)	Indonesia	48	111.61
	Malaysia	48	125.07
	Philippines	48	107.55
	Thailand	48	118.91
	Sri Lanka	48	139.35
	Total	240	
Handsfree3-Certainty (Part 2)	Indonesia	48	125.79
	Malaysia	48	114.49
	Philippines	48	118.29
	Thailand	48	109.43
	Sri Lanka	48	134.50
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Microphone1-Certainty (Part 1)	Indonesia	48	111.76
	Malaysia	48	110.52
	Philippines	48	124.29
	Thailand	48	121.60
	Sri Lanka	48	134.32
	Total	240	
Microphone2-Certainty (Part 1)	Indonesia	48	110.66
	Malaysia	48	109.85
	Philippines	48	110.96
	Thailand	48	126.51
	Sri Lanka	48	144.52
	Total	240	
Microphone3-Certainty (Part 1)	Indonesia	46	109.61
	Malaysia	47	106.06
	Philippines	48	127.79
	Thailand	46	121.75
	Sri Lanka	45	117.03
	Total	232	
Microphone1-Certainty (Part 2)	Indonesia	48	103.60
	Malaysia	48	116.99
	Philippines	48	130.52
	Thailand	48	134.40
	Sri Lanka	48	116.99
	Total	240	
Microphone2-Certainty (Part 2)	Indonesia	48	121.83
	Malaysia	48	107.56
	Philippines	48	112.23
	Thailand	48	123.94
	Sri Lanka	48	136.94
	Total	240	
Microphone3-Certainty (Part 2)	Indonesia	48	117.88
	Malaysia	48	121.96
	Philippines	48	122.35
	Thailand	48	129.83
	Sri Lanka	48	110.48
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Selfview1-Certainty (Part 1)	Indonesia	48	116.19
	Malaysia	48	112.52
	Philippines	48	122.71
	Thailand	48	100.90
	Sri Lanka	48	150.19
	Total	240	
Selfview2-Certainty (Part 1)	Indonesia	48	111.69
	Malaysia	48	141.33
	Philippines	48	113.90
	Thailand	48	115.05
	Sri Lanka	48	120.53
	Total	240	
Selfview3-Certainty (Part 1)	Indonesia	48	126.41
	Malaysia	48	115.00
	Philippines	48	126.36
	Thailand	48	109.14
	Sri Lanka	48	125.59
	Total	240	
Selfview1-Certainty (Part 2)	Indonesia	48	108.74
	Malaysia	48	121.39
	Philippines	48	105.26
	Thailand	48	128.15
	Sri Lanka	48	138.97
	Total	240	
Selfview2-Certainty (Part 2)	Indonesia	48	94.79
	Malaysia	48	126.46
	Philippines	48	131.31
	Thailand	48	110.04
	Sri Lanka	48	139.90
	Total	240	
Selfview3-Certainty (Part 2)	Indonesia	48	120.35
	Malaysia	48	110.80
	Philippines	48	122.34
	Thailand	48	134.23
	Sri Lanka	48	114.77
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Still Picture1-Certainty (Part 1)	Indonesia	48	130.38
	Malaysia	48	100.57
	Philippines	48	109.80
	Thailand	48	131.72
	Sri Lanka	48	130.03
	Total	240	
Still Picture2-Certainty (Part 1)	Indonesia	48	116.86
	Malaysia	48	132.01
	Philippines	48	106.26
	Thailand	48	123.50
	Sri Lanka	48	123.86
	Total	240	
Still Picture3-Certainty (Part 1)	Indonesia	48	135.81
	Malaysia	48	104.28
	Philippines	48	119.89
	Thailand	48	121.59
	Sri Lanka	48	120.93
	Total	240	
Still Picture1-Certainty (Part 2)	Indonesia	48	115.33
	Malaysia	48	125.33
	Philippines	48	116.16
	Thailand	48	98.61
	Sri Lanka	48	147.06
	Total	240	
Still Picture2-Certainty (Part 2)	Indonesia	48	115.77
	Malaysia	48	121.34
	Philippines	48	113.81
	Thailand	48	114.61
	Sri Lanka	48	136.96
	Total	240	
Still Picture3-Certainty (Part 2)	Indonesia	48	121.26
	Malaysia	48	102.06
	Philippines	48	128.58
	Thailand	48	117.65
	Sri Lanka	48	132.95
	Total	240	

Ranks

	Subject's Country	N	Mean Rank
Videophone1- Certainty (Part 1)	Indonesia	48	130.97
	Malaysia	48	102.52
	Philippines	48	123.84
	Thailand	48	123.77
	Sri Lanka	48	121.40
	Total	240	
Videophone2- Certainty (Part 1)	Indonesia	48	119.20
	Malaysia	48	126.26
	Philippines	48	117.80
	Thailand	48	113.24
	Sri Lanka	48	126.00
	Total	240	
Videophone3- Certainty (Part 1)	Indonesia	48	123.84
	Malaysia	48	104.03
	Philippines	48	131.51
	Thailand	48	124.50
	Sri Lanka	48	118.61
	Total	240	
Videophone1- Certainty (Part 2)	Indonesia	48	115.25
	Malaysia	48	120.51
	Philippines	48	126.43
	Thailand	48	122.96
	Sri Lanka	48	117.35
	Total	240	
Videophone2- Certainty (Part 2)	Indonesia	48	118.23
	Malaysia	48	116.22
	Philippines	48	111.67
	Thailand	48	120.83
	Sri Lanka	48	135.55
	Total	240	
Videophone3- Certainty (Part 2)	Indonesia	48	112.29
	Malaysia	48	125.59
	Philippines	48	141.58
	Thailand	48	110.43
	Sri Lanka	48	112.60
	Total	240	

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Camera1-Certainty (Part 1)	5.435	4	.245
Camera2-Certainty (Part 1)	2.521	4	.641
Camera3-Certainty (Part 1)	5.251	4	.262
Camera1-Certainty (Part 2)	12.117	4	.017
Camera2-Certainty (Part 2)	3.568	4	.468
Camera3-Certainty (Part 2)	10.346	4	.035
Document Camera1-Certainty (Part 1)	3.534	4	.473
Document Camera2-Certainty (Part 1)	3.721	4	.445
Document Camera3-Certainty (Part 1)	4.228	4	.376
Document Camera1-Certainty (Part 2)	1.505	4	.826
Document Camera2-Certainty (Part 2)	.712	4	.950
Document Camera3-Certainty (Part 2)	3.866	4	.424
Handsfree1-Certainty (Part 1)	13.656	4	.008
Handsfree2-Certainty (Part 1)	.810	4	.937
Handsfree3-Certainty (Part 1)	2.755	4	.600
Handsfree1-Certainty (Part 2)	4.954	4	.292
Handsfree2-Certainty (Part 2)	7.258	4	.123
Handsfree3-Certainty (Part 2)	4.007	4	.405

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Microphone1-Certainty (Part 1)	4.128	4	.389
Microphone2-Certainty (Part 1)	15.368	4	.004
Microphone3-Certainty (Part 1)	4.247	4	.374
Microphone1-Certainty (Part 2)	6.960	4	.138
Microphone2-Certainty (Part 2)	5.084	4	.279
Microphone3-Certainty (Part 2)	2.095	4	.718
Selfview1-Certainty (Part 1)	13.713	4	.008
Selfview2-Certainty	5.836	4	.212
Selfview3-Certainty (Part 1)	2.641	4	.620
Selfview1-Certainty (Part 2)	8.152	4	.086
Selfview2-Certainty (Part 2)	16.509	4	.002
Selfview3-Certainty (Part 2)	3.252	4	.517
Still Picture1-Certainty (Part 1)	8.656	4	.070
Still Picture2-Certainty (Part 1)	2.599	4	.627
Still Picture3-Certainty (Part 1)	5.302	4	.258
Still Picture1-Certainty (Part 2)	12.867	4	.012
Still Picture2-Certainty (Part 2)	3.949	4	.413
Still Picture3-Certainty (Part 2)	5.833	4	.212

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Videophone1-Certainty (Part 1)	4.893	4	.298
Videophone2-Certainty (Part 1)	.881	4	.927
Videophone3-Certainty (Part 1)	4.541	4	.338
Videophone1-Certainty (Part 2)	1.028	4	.906
Videophone2-Certainty (Part 2)	3.779	4	.437
Videophone3-Certainty (Part 2)	7.470	4	.113

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country		Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Camera1-Certainty (Part 1)	5	240	12513.000	11520.000	594.498	1.670	.095
Camera2-Certainty (Part 1)	5	240	12326.000	11520.000	598.053	1.348	.178
Camera3-Certainty (Part 1)	5	240	12578.500	11520.000	598.119	1.770	.077
Camera1-Certainty (Part 2)	5	240	13471.000	11520.000	598.554	3.260	.001
Camera2-Certainty (Part 2)	5	240	12587.500	11520.000	601.451	1.775	.076
Camera3-Certainty (Part 2)	5	240	13166.000	11520.000	596.792	2.758	.006
Document Camera1-Certainty (Part 1)	5	240	10553.500	11520.000	602.137	-1.605	.108
Document Camera2-Certainty (Part 1)	5	240	11601.000	11520.000	602.982	.134	.893
Document Camera3-Certainty (Part 1)	5	240	12017.500	11520.000	602.441	.826	.409
Document Camera1-Certainty (Part 2)	5	240	11310.000	11520.000	596.145	-.352	.725
Document Camera2-Certainty (Part 2)	5	240	11899.500	11520.000	600.224	.632	.527
Document Camera3-Certainty (Part 2)	5	240	12663.500	11520.000	598.350	1.911	.056
Handsfree1-Certainty (Part 1)	5	240	12593.000	11520.000	597.822	1.795	.073
Handsfree2-Certainty (Part 1)	5	240	11474.000	11520.000	593.079	-.078	.938
Handsfree3-Certainty (Part 1)	5	240	10704.000	11520.000	594.428	-1.373	.170
Handsfree1-Certainty (Part 2)	5	240	12561.500	11520.000	602.269	1.729	.084
Handsfree2-Certainty (Part 2)	5	240	12626.500	11520.000	601.638	1.839	.066
Handsfree3-Certainty (Part 2)	5	240	11761.500	11520.000	601.787	.401	.688

a. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country		Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Microphone1-Certainty (Part 1)	5	240	12597.000	11520.000	574.935	1.873	.061
Microphone2-Certainty (Part 1)	5	240	13720.500	11520.000	588.656	3.738	.000
Microphone3-Certainty (Part 1)	5	240	11980.500	11520.000	584.153	.788	.431
Microphone1-Certainty (Part 2)	5	240	12440.000	11520.000	565.548	1.627	.104
Microphone2-Certainty (Part 2)	5	240	12521.500	11520.000	602.452	1.662	.096
Microphone3-Certainty (Part 2)	5	240	11404.000	11520.000	589.893	-.197	.844
Selfview1-Certainty (Part 1)	5	240	12625.500	11520.000	600.485	1.841	.066
Selfview2-Certainty	5	240	11726.500	11520.000	599.811	.344	.731
Selfview3-Certainty (Part 1)	5	240	11432.000	11520.000	599.897	-.147	.883
Selfview1-Certainty (Part 2)	5	240	12886.500	11520.000	601.764	2.271	.023
Selfview2-Certainty (Part 2)	5	240	13165.500	11520.000	602.718	2.730	.006
Selfview3-Certainty (Part 2)	5	240	11778.500	11520.000	601.371	.430	.667
Still Picture1-Certainty (Part 1)	5	240	12078.500	11520.000	598.976	.932	.351
Still Picture2-Certainty (Part 1)	5	240	11721.000	11520.000	602.156	.334	.739
Still Picture3-Certainty (Part 1)	5	240	11292.000	11520.000	586.476	-.389	.697
Still Picture1-Certainty (Part 2)	5	240	12223.500	11520.000	599.457	1.174	.241
Still Picture2-Certainty (Part 2)	5	240	12219.500	11520.000	602.130	1.162	.245
Still Picture3-Certainty (Part 2)	5	240	12279.000	11520.000	599.815	1.265	.206

a. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country	N	Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Videophone1-Certainty (Part 1)	5	240	11564.000	11520.000	588.370	.075	.940
Videophone2-Certainty (Part 1)	5	240	11697.000	11520.000	602.085	.294	.769
Videophone3-Certainty (Part 1)	5	240	11727.000	11520.000	593.752	.349	.727
Videophone1-Certainty (Part 2)	5	240	11661.500	11520.000	531.096	.266	.790
Videophone2-Certainty (Part 2)	5	240	12455.500	11520.000	599.224	1.561	.118
Videophone3-Certainty (Part 2)	5	240	11229.000	11520.000	588.590	-.494	.621

a. Grouping Variable: Subject's Country

APPENDIX 7

KRUSKAL-WALLIS TEST OF SEMANTIC SCORES BETWEEN COUNTRIES (Study III, Southeast Asian Countries)

Ranks				Ranks			
	Subject's Country	N	Mean Rank		Subject's Country	N	Mean Rank
Camera1-Clarity	1	48	121.34	Camera2-Clarity	1	48	125.43
	2	48	130.08		2	48	141.31
	3	48	112.53		3	48	103.59
	4	48	125.40		4	48	122.74
	5	48	113.15		5	48	109.43
	Total	240			Total	240	
Camera1-Concreteness	1	48	119.48	Camera2-Concreteness	1	48	124.22
	2	48	139.24		2	48	144.63
	3	48	125.71		3	48	124.25
	4	48	131.58		4	48	129.27
	5	48	86.49		5	48	80.14
	Total	240			Total	240	
Camera1-Familiarity	1	48	117.57	Camera2-Familiarity	1	48	122.94
	2	48	133.60		2	48	145.20
	3	48	124.53		3	48	119.88
	4	48	130.84		4	48	117.58
	5	48	95.95		5	48	96.91
	Total	240			Total	240	
Camera1-Meaningfulness	1	48	115.75	Camera2-Meaningfulness	1	48	123.23
	2	48	134.66		2	48	143.52
	3	48	122.85		3	48	113.59
	4	48	130.26		4	48	129.49
	5	48	98.98		5	48	92.67
	Total	240			Total	240	
Camera1-Simplicity	1	48	126.30	Camera2-Simplicity	1	48	136.59
	2	48	129.68		2	48	146.28
	3	48	115.32		3	48	104.06
	4	48	129.32		4	48	120.08
	5	48	101.88		5	48	95.48
	Total	240			Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Camera3-Clarity	1	48	121.98
	2	48	132.93
	3	48	115.63
	4	48	123.42
	5	48	108.55
	Total	240	
Camera3-Concreteness	1	48	128.75
	2	48	142.23
	3	48	123.72
	4	48	125.01
	5	48	82.79
	Total	240	
Camera3-Familiarity	1	48	126.53
	2	48	124.56
	3	48	124.20
	4	48	123.71
	5	48	103.50
	Total	240	
Camera3-Meaningfulness	1	48	128.08
	2	48	132.79
	3	48	114.71
	4	48	122.95
	5	48	103.97
	Total	240	
Camera3-Simplicity	1	48	126.86
	2	48	129.50
	3	48	116.15
	4	48	123.47
	5	48	106.52
	Total	240	
Document Camera1-Clarity	1	48	126.15
	2	48	112.97
	3	48	123.19
	4	48	134.68
	5	48	105.52
	Total	240	
Document Camera1-Concreteness	1	48	128.29
	2	48	115.95
	3	48	131.43
	4	48	137.14
	5	48	89.70
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Document Camera1-Familiarity	1	48	126.41
	2	48	118.32
	3	48	128.38
	4	48	138.06
	5	48	91.33
	Total	240	
Document Camera1-Meaningfulness	1	48	124.93
	2	48	113.00
	3	48	121.33
	4	48	135.46
	5	48	107.78
	Total	240	
Document Camera1-Simplicity	1	48	128.14
	2	48	114.74
	3	48	130.18
	4	48	129.27
	5	48	100.18
	Total	240	
Document Camera2-Clarity	1	48	134.35
	2	48	121.99
	3	48	99.63
	4	48	123.40
	5	48	123.14
	Total	240	
Document Camera2-Concreteness	1	48	141.64
	2	48	130.28
	3	48	113.52
	4	48	121.75
	5	48	95.31
	Total	240	
Document Camera2-Familiarity	1	48	131.23
	2	48	120.22
	3	48	110.67
	4	48	122.28
	5	48	118.10
	Total	240	
Document Camera2-Meaningfulness	1	48	129.57
	2	48	126.80
	3	48	102.78
	4	48	121.27
	5	48	122.07
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Document Camera2-Simplicity	1	48	137.34
	2	48	135.52
	3	48	111.36
	4	48	118.45
	5	48	99.82
	Total	240	
Document Camera3-Clarity	1	48	119.42
	2	48	127.14
	3	48	115.58
	4	48	124.08
	5	48	116.28
	Total	240	
Document Camera3-Concreteness	1	48	125.45
	2	48	124.20
	3	48	116.46
	4	48	134.52
	5	48	101.88
	Total	240	
Document Camera3-Familiarity	1	48	122.16
	2	48	124.06
	3	48	122.11
	4	48	129.63
	5	48	104.54
	Total	240	
Document Camera3-Meaningfulness	1	48	122.74
	2	48	118.26
	3	48	117.50
	4	48	133.46
	5	48	110.54
	Total	240	
Document Camera3-Simplicity	1	48	114.19
	2	48	134.56
	3	48	121.70
	4	48	127.38
	5	48	104.68
	Total	240	
Handsfree1-Clarity	1	48	147.47
	2	48	104.07
	3	48	104.38
	4	48	114.64
	5	48	131.95
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Handsfree1-Concreteness	1	48	149.95
	2	48	110.80
	3	48	102.48
	4	48	109.41
	5	48	129.86
	Total	240	
Handsfree1-Familiarity	1	48	145.76
	2	48	110.58
	3	48	101.55
	4	48	112.71
	5	48	131.90
	Total	240	
Handsfree1-Meaningfulness	1	48	149.27
	2	48	106.03
	3	48	100.33
	4	48	109.00
	5	48	137.86
	Total	240	
Handsfree1-Simplicity	1	48	153.76
	2	48	112.67
	3	48	98.77
	4	48	108.42
	5	48	128.89
	Total	240	
Handsfree2-Clarity	1	48	144.47
	2	48	110.84
	3	48	112.54
	4	48	120.89
	5	48	113.76
	Total	240	
Handsfree2-Concreteness	1	48	139.51
	2	48	120.42
	3	48	115.89
	4	48	115.23
	5	48	111.46
	Total	240	
Handsfree2-Familiarity	1	48	140.99
	2	48	119.80
	3	48	110.84
	4	48	118.30
	5	48	112.56
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Handsfree2-Meaningfulness	1	48	137.57
	2	48	118.76
	3	48	109.31
	4	48	109.16
	5	48	127.70
	Total	240	
Handsfree2-Simplicity	1	48	144.10
	2	48	129.88
	3	48	102.78
	4	48	110.60
	5	48	115.14
	Total	240	
Handsfree3-Clarity	1	48	149.11
	2	48	107.68
	3	48	113.11
	4	48	117.77
	5	48	114.82
	Total	240	
Handsfree3-Concreteness	1	48	145.04
	2	48	109.57
	3	48	110.66
	4	48	121.49
	5	48	115.74
	Total	240	
Handsfree3-Familiar	1	48	146.09
	2	48	116.97
	3	48	115.24
	4	48	118.55
	5	48	105.65
	Total	240	
Handsfree3-Meaningfulness	1	48	146.52
	2	48	111.35
	3	48	114.79
	4	48	113.43
	5	48	116.41
	Total	240	
Handsfree3-Familiarity	1	48	153.93
	2	48	116.89
	3	48	107.55
	4	48	115.19
	5	48	108.95
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Microphone1-Clarity	1	48	125.18
	2	48	125.31
	3	48	119.71
	4	48	121.52
	5	48	110.78
	Total	240	
Microphone1-Concreteness	1	48	123.63
	2	48	133.47
	3	48	132.39
	4	48	127.63
	5	48	85.40
	Total	240	
Microphone1-Familiarity	1	48	127.92
	2	48	127.36
	3	48	126.51
	4	48	123.60
	5	48	97.10
	Total	240	
Microphone1-Meaningfulness	1	48	122.85
	2	48	130.36
	3	48	124.27
	4	48	129.35
	5	48	95.66
	Total	240	
Microphone1-Simplicity	1	48	126.70
	2	48	127.98
	3	48	113.31
	4	48	117.45
	5	48	117.06
	Total	240	
Microphone2-Clarity	1	48	136.69
	2	48	115.53
	3	48	107.09
	4	48	103.08
	5	48	140.10
	Total	240	
Microphone2-Concreteness	1	48	132.96
	2	48	115.28
	3	48	113.18
	4	48	106.53
	5	48	134.55
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Microphone2-Familiarity	1	48	134.23
	2	48	114.47
	3	48	108.33
	4	48	111.82
	5	48	133.65
	Total	240	
Microphone2-Meaningfulness	1	48	134.17
	2	48	120.08
	3	48	105.43
	4	48	107.82
	5	48	135.00
	Total	240	
Microphone2-Simplicity	1	48	135.15
	2	48	127.36
	3	48	99.05
	4	48	105.53
	5	48	135.41
	Total	240	
Microphone3-Clarity	1	48	131.14
	2	48	139.36
	3	48	105.98
	4	48	121.74
	5	48	104.28
	Total	240	
Microphone3-Concreteness	1	48	127.44
	2	48	148.23
	3	48	120.08
	4	48	124.74
	5	48	82.01
	Total	240	
Microphone3-Familiarity	1	48	125.74
	2	48	142.40
	3	48	114.83
	4	48	122.51
	5	48	97.02
	Total	240	
Microphone3-Meaningfulness	1	48	118.05
	2	48	142.91
	3	48	118.69
	4	48	121.00
	5	48	101.85
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Microphone3-Simplicity	1	48	122.65
	2	48	141.86
	3	48	107.85
	4	48	118.38
	5	48	111.76
	Total	240	
Selfview1-Clarity	1	48	116.25
	2	48	120.82
	3	48	128.95
	4	48	125.72
	5	48	110.76
	Total	240	
Selfview1-Concreteness	1	48	116.00
	2	48	126.38
	3	48	130.56
	4	48	134.26
	5	48	95.30
	Total	240	
Selfview1-Familiarity	1	48	111.93
	2	48	121.91
	3	48	133.73
	4	48	136.11
	5	48	98.82
	Total	240	
Selfview1-Meaningfulness	1	48	116.65
	2	48	125.06
	3	48	124.17
	4	48	126.83
	5	48	109.79
	Total	240	
Selfview1-Simplicity	1	48	127.27
	2	48	126.06
	3	48	125.50
	4	48	125.53
	5	48	98.14
	Total	240	
Selfview2-Clarity	1	48	120.86
	2	48	117.04
	3	48	111.64
	4	48	120.73
	5	48	132.23
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Selfview2-Concreteness	1	48	120.64
	2	48	113.21
	3	48	111.36
	4	48	122.99
	5	48	134.30
	Total	240	
Selfview2-Familiarity	1	48	126.02
	2	48	115.27
	3	48	114.94
	4	48	119.74
	5	48	126.53
	Total	240	
Selfview2-Meaningfulness	1	48	116.40
	2	48	110.36
	3	48	113.30
	4	48	124.98
	5	48	137.46
	Total	240	
Selfview2-Simplicity	1	48	135.06
	2	48	121.21
	3	48	104.28
	4	48	120.34
	5	48	121.60
	Total	240	
Selfview3-Clarity	1	48	117.36
	2	48	124.86
	3	48	118.54
	4	48	121.64
	5	48	120.09
	Total	240	
Selfview3-Concreteness	1	48	126.85
	2	48	125.43
	3	48	127.77
	4	48	127.89
	5	48	94.56
	Total	240	
Selfview3-Familiarity	1	48	116.97
	2	48	127.13
	3	48	124.28
	4	48	124.17
	5	48	109.96
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Selfview3-Meaningfulness	1	48	123.25
	2	48	129.77
	3	48	120.78
	4	48	126.19
	5	48	102.51
	Total	240	
Selfview3-Simplicity	1	48	123.10
	2	48	124.10
	3	48	125.32
	4	48	123.67
	5	48	106.30
	Total	240	
Still Picture1-Clarity	1	48	126.24
	2	48	120.70
	3	48	130.80
	4	48	108.52
	5	48	116.24
	Total	240	
Still Picture1-Concreteness	1	48	132.13
	2	48	130.31
	3	48	142.77
	4	48	108.56
	5	48	88.73
	Total	240	
Still Picture1-Familiarity	1	48	127.30
	2	48	130.00
	3	48	135.79
	4	48	106.54
	5	48	102.86
	Total	240	
Still Picture1-Meaningfulness	1	48	125.56
	2	48	123.09
	3	48	131.41
	4	48	105.23
	5	48	117.21
	Total	240	
Still Picture1-Simplicity	1	48	134.84
	2	48	130.58
	3	48	128.79
	4	48	103.73
	5	48	104.55
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Still Picture2-Clarity	1	48	118.43
	2	48	115.51
	3	48	93.45
	4	48	117.09
	5	48	158.02
	Total	240	
Still Picture2-Concreteness	1	48	120.63
	2	48	122.18
	3	48	100.89
	4	48	112.99
	5	48	145.82
	Total	240	
Still Picture2-Familiarity	1	48	116.85
	2	48	127.74
	3	48	98.64
	4	48	114.55
	5	48	144.72
	Total	240	
Still Picture2-Meaningfulness	1	48	113.21
	2	48	119.10
	3	48	98.13
	4	48	118.78
	5	48	153.28
	Total	240	
Still Picture2-Familiarity	1	48	127.22
	2	48	126.96
	3	48	95.05
	4	48	112.75
	5	48	140.52
	Total	240	
Still Picture3-Clarity	1	48	132.08
	2	48	119.44
	3	48	122.40
	4	48	110.84
	5	48	117.74
	Total	240	
Still Picture3-Concreteness	1	48	140.51
	2	48	121.23
	3	48	120.81
	4	48	118.76
	5	48	101.19
	Total	240	

Ranks			
	Subject's Country	N	Mean Rank
Still Picture3-Familiarity	1	48	128.84
	2	48	121.02
	3	48	126.23
	4	48	116.75
	5	48	109.66
	Total	240	
Still Picture3-Meaningful	1	48	125.42
	2	48	117.66
	3	48	123.02
	4	48	111.04
	5	48	125.36
	Total	240	
Still Picture3-Simplicity	1	48	138.15
	2	48	124.27
	3	48	114.60
	4	48	116.95
	5	48	108.53
	Total	240	
Videophone1-Clarity	1	48	125.22
	2	48	113.76
	3	48	122.99
	4	48	125.29
	5	48	115.24
	Total	240	
Videophone1-Concreteness	1	48	119.85
	2	48	126.94
	3	48	131.46
	4	48	135.90
	5	48	88.35
	Total	240	
Videophone1-Familiarity	1	48	124.47
	2	48	122.88
	3	48	126.54
	4	48	125.27
	5	48	103.34
	Total	240	
Videophone1-Meaningfulness	1	48	112.21
	2	48	122.72
	3	48	120.14
	4	48	123.49
	5	48	123.95
	Total	240	

Ranks

	Subject's Country	N	Mean Rank
Videophone1-Simplicity	1	48	131.07
	2	48	115.76
	3	48	117.56
	4	48	121.28
	5	48	116.82
	Total	240	
Videophone2-Clarity	1	48	130.67
	2	48	124.00
	3	48	100.73
	4	48	107.64
	5	48	139.47
	Total	240	
Videophone2-Concreteness	1	48	139.99
	2	48	122.20
	3	48	101.50
	4	48	114.06
	5	48	124.75
	Total	240	
Videophone2-Familiarity	1	48	134.13
	2	48	124.22
	3	48	103.32
	4	48	105.18
	5	48	135.66
	Total	240	
Videophone2-Meaningfulness	1	48	130.69
	2	48	130.22
	3	48	104.66
	4	48	111.66
	5	48	125.28
	Total	240	
Videophone2-Simplicity	1	48	145.56
	2	48	131.79
	3	48	90.61
	4	48	103.10
	5	48	131.43
	Total	240	
Videophone3-Clarity	1	48	135.28
	2	48	113.94
	3	48	107.39
	4	48	121.72
	5	48	124.18
	Total	240	

Ranks

	Subject's Country	N	Mean Rank
Videophone3-Concrete	1	48	137.44
	2	48	122.98
	3	48	123.34
	4	48	129.48
	5	48	89.26
	Total	240	
Videophone3-Familiarity	1	48	140.03
	2	48	114.13
	3	48	117.70
	4	48	126.56
	5	48	104.08
	Total	240	
Videophone3-Meaningfulness	1	48	128.52
	2	48	113.07
	3	48	118.39
	4	48	124.97
	5	48	117.55
	Total	240	
Videophone3-Simplicity	1	48	131.03
	2	48	115.20
	3	48	116.67
	4	48	129.23
	5	48	110.38
	Total	240	

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Camera1-Clarity	2.639	4	.620
Camera1-Concreteness	18.003	4	.001
Camera1-Familiarity	9.996	4	.040
Camera1-Meaningfulness	8.712	4	.069
Camera1-Simplicity	6.583	4	.160
Camera2-Clarity	9.610	4	.048
Camera2-Concreteness	24.774	4	.000
Camera2-Familiarity	12.914	4	.012
Camera2-Meaningfulness	15.531	4	.004
Camera2-Simplicity	21.139	4	.000
Camera3-Clarity	3.768	4	.438
Camera3-Concreteness	21.553	4	.000
Camera3-Familiarity	4.033	4	.402
Camera3-Meaningfulness	5.882	4	.208
Camera3-Simplicity	4.008	4	.405
Document Camera1-Meaningfulness	4.845	4	.304
Document Camera1-Simplicity	7.274	4	.122
Document Camera2-Clarity	6.728	4	.151
Document Camera2-Concreteness	12.748	4	.013
Document Camera2-Familiarity	2.285	4	.684
Document Camera2-Meaningfulness	4.617	4	.329
Document Camera2-Simplicity	10.760	4	.029
Document Camera3-Clarity	1.040	4	.904
Document Camera3-Concreteness	6.249	4	.181
Document Camera3-Familiarity	3.659	4	.454
Document Camera3-Meaningfulness	3.000	4	.558
Document Camera3-Simplicity	5.634	4	.228

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Handsfree1-Clarity	14.634	4	.006
Handsfree1-Concreteness	15.255	4	.004
Handsfree1-Familiarity	13.155	4	.011
Handsfree1-Meaningfulness	19.218	4	.001
Handsfree1-Simplicity	19.031	4	.001
Handsfree2-Clarity	7.992	4	.092
Handsfree2-Concreteness	5.020	4	.285
Handsfree2-Familiarity	5.964	4	.202
Handsfree2-Meaningfulness	6.186	4	.186
Handsfree2-Simplicity	11.180	4	.025
Handsfree3-Clarity	11.241	4	.024
Handsfree3-Concreteness	8.646	4	.071
Handsfree3-Familiar	9.417	4	.051
Handsfree3-Meaningfulness	8.843	4	.065
Handsfree3-Familiarity	14.981	4	.005
Microphone1-Clarity	1.778	4	.776
Microphone1-Concreteness	18.440	4	.001
Microphone1-Familiarity	8.441	4	.077
Microphone1-Meaningfulness	9.796	4	.044
Microphone1-Simplicity	2.071	4	.723
Microphone2-Clarity	12.968	4	.011
Microphone2-Concreteness	6.918	4	.140
Microphone2-Familiarity	7.094	4	.131
Microphone2-Meaningfulness	8.647	4	.071
Microphone2-Simplicity	12.489	4	.014
Microphone3-Clarity	12.354	4	.015
Microphone3-Concreteness	27.365	4	.000
Microphone3-Familiarity	14.402	4	.006
Microphone3-Meaningfulness	10.648	4	.031
Microphone3-Simplicity	9.865	4	.043

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Selfview1-Clarity	2.220	4	.695
Selfview1-Concreteness	10.081	4	.039
Selfview1-Familiarity	9.919	4	.042
Selfview1-Meaningfulness	2.115	4	.715
Selfview1-Simplicity	6.516	4	.164
Selfview2-Clarity	2.469	4	.650
Selfview2-Concreteness	3.630	4	.458
Selfview2-Familiarity	1.371	4	.849
Selfview2-Meaningfulness	5.035	4	.284
Selfview2-Simplicity	4.925	4	.295
Selfview3-Clarity	.364	4	.985
Selfview3-Concreteness	8.897	4	.064
Selfview3-Familiarity	2.017	4	.733
Selfview3-Meaningfulness	4.751	4	.314
Selfview3-Simplicity	2.670	4	.615
Still Picture1-Clarity	3.100	4	.541
Still Picture1-Concreteness	19.465	4	.001
Still Picture1-Familiarity	9.043	4	.060
Still Picture1-Meaningfulness	4.133	4	.388
Still Picture1-Simplicity	9.532	4	.049
Still Picture2-Clarity	22.587	4	.000
Still Picture2-Concreteness	11.121	4	.025
Still Picture2-Familiarity	11.972	4	.018
Still Picture2-Meaningfulness	16.677	4	.002
Still Picture2-Familiarity	12.226	4	.016
Still Picture3-Clarity	2.451	4	.653
Still Picture3-Concreteness	7.962	4	.093
Still Picture3-Familiarity	2.416	4	.660
Still Picture3-Meaningful	1.556	4	.817
Still Picture3-Simplicity	5.364	4	.252

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Test Statistics^{a,b}

	Chi-Square	df	Asymp. Sig.
Videophone1-Clarity	1.621	4	.805
Videophone1-Concreteness	16.813	4	.002
Videophone1-Familiarity	4.363	4	.359
Videophone1-Meaningfulness	1.214	4	.876
Videophone1-Simplicity	1.997	4	.736
Videophone2-Clarity	10.642	4	.031
Videophone2-Concreteness	8.283	4	.082
Videophone2-Familiarity	9.891	4	.042
Videophone2-Meaningfulness	5.667	4	.225
Videophone2-Simplicity	21.070	4	.000
Videophone3-Clarity	5.255	4	.262
Videophone3-Concrete	15.330	4	.004
Videophone3-Familiarity	8.173	4	.085
Videophone3-Meaningfulness	1.837	4	.766
Videophone3-Simplicity	3.947	4	.413

a. Kruskal Wallis Test

b. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country	N	Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Camera1-Clarity	5	240	11119.000	11520.000	571.920	-.701	.483
Camera1-Concreteness	5	240	10122.500	11520.000	582.958	-2.397	.017
Camera1-Familiarity	5	240	10628.500	11520.000	578.265	-1.542	.123
Camera1-Meaningfulness	5	240	10810.500	11520.000	577.150	-1.229	.219
Camera1-Simplicity	5	240	10566.000	11520.000	564.806	-1.689	.091
Camera2-Clarity	5	240	10536.500	11520.000	578.119	-1.701	.089
Camera2-Concreteness	5	240	9524.000	11520.000	587.216	-3.399	.001
Camera2-Familiarity	5	240	9938.000	11520.000	580.871	-2.723	.006
Camera2-Meaningfulness	5	240	10072.000	11520.000	584.904	-2.476	.013
Camera2-Simplicity	5	240	9414.500	11520.000	563.498	-3.736	.000
Camera3-Clarity	5	240	10834.500	11520.000	569.707	-1.203	.229
Camera3-Concreteness	5	240	9408.000	11520.000	583.958	-3.617	.000
Camera3-Familiarity	5	240	10628.000	11520.000	578.394	-1.542	.123
Camera3-Meaningfulness	5	240	10394.500	11520.000	571.747	-1.969	.049
Camera3-Simplicity	5	240	10629.000	11520.000	563.180	-1.582	.114
Document Camera1-Meaningfulness	5	240	11299.000	11520.000	593.079	-.373	.709
Document Camera1-Simplicity	5	240	10733.500	11520.000	585.046	-1.344	.179
Document Camera2-Clarity	5	240	11107.500	11520.000	594.758	-.694	.488
Document Camera2-Concreteness	5	240	9509.500	11520.000	595.847	-3.374	.001
Document Camera2-Familiarity	5	240	11036.000	11520.000	597.031	-.811	.418
Document Camera2-Meaningfulness	5	240	11104.000	11520.000	592.230	-.702	.482
Document Camera2-Simplicity	5	240	9672.000	11520.000	592.638	-3.118	.002
Document Camera3-Clarity	5	240	11344.500	11520.000	595.712	-.295	.768
Document Camera3-Concreteness	5	240	10809.000	11520.000	594.107	-1.197	.231
Document Camera3-Familiarity	5	240	10947.500	11520.000	599.030	-.956	.339
Document Camera3-Meaningfulness	5	240	11351.500	11520.000	593.148	-.284	.776
Document Camera3-Simplicity	5	240	10995.000	11520.000	592.736	-.886	.376

^a. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country	N	Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Handsfree1-Clarity	5	240	11106.000	11520.000	598.816	-.691	.489
Handsfree1-Concreteness	5	240	10752.000	11520.000	601.593	-1.277	.202
Handsfree1-Familiarity	5	240	10994.500	11520.000	600.498	-.875	.382
Handsfree1-Meaningfulness	5	240	11119.500	11520.000	600.326	-.667	.505
Handsfree1-Simplicity	5	240	10456.000	11520.000	599.791	-1.774	.076
Handsfree2-Clarity	5	240	10538.000	11520.000	598.721	-1.640	.101
Handsfree2-Concreteness	5	240	10338.000	11520.000	601.424	-1.965	.049
Handsfree2-Familiarity	5	240	10389.000	11520.000	599.627	-1.886	.059
Handsfree2-Meaningfulness	5	240	10921.000	11520.000	598.197	-1.001	.317
Handsfree2-Simplicity	5	240	10009.000	11520.000	598.495	-2.525	.012
Handsfree3-Clarity	5	240	10381.000	11520.000	594.588	-1.916	.055
Handsfree3-Concreteness	5	240	10616.000	11520.000	599.450	-1.508	.132
Handsfree3-Familiar	5	240	10002.500	11520.000	600.177	-2.528	.011
Handsfree3-Meaningfulness	5	240	10367.000	11520.000	598.987	-1.925	.054
Handsfree3-Familiarity	5	240	9760.500	11520.000	599.527	-2.935	.003
Microphone1-Clarity	5	240	10891.500	11520.000	541.024	-1.162	.245
Microphone1-Concreteness	5	240	9921.500	11520.000	566.070	-2.824	.005
Microphone1-Familiarity	5	240	10248.000	11520.000	551.112	-2.308	.021
Microphone1-Meaningfulness	5	240	10447.500	11520.000	553.106	-1.939	.052
Microphone1-Simplicity	5	240	10942.500	11520.000	545.481	-1.059	.290
Microphone2-Clarity	5	240	11417.500	11520.000	572.911	-.179	.858
Microphone2-Concreteness	5	240	11398.500	11520.000	578.911	-.210	.834
Microphone2-Familiarity	5	240	11441.500	11520.000	568.188	-.138	.890
Microphone2-Meaningfulness	5	240	11302.000	11520.000	578.672	-.377	.706
Microphone2-Simplicity	5	240	11095.500	11520.000	587.293	-.723	.470
Microphone3-Clarity	5	240	10113.000	11520.000	530.920	-2.650	.008
Microphone3-Concreteness	5	240	9242.500	11520.000	558.736	-4.076	.000
Microphone3-Familiarity	5	240	9986.000	11520.000	529.328	-2.898	.004
Microphone3-Meaningfulness	5	240	10433.000	11520.000	545.495	-1.993	.046
Microphone3-Simplicity	5	240	10622.500	11520.000	512.179	-1.752	.080

a. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country	N	Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Selfview1-Clarity	5	240	11416.000	11520.000	592.972	-.175	.861
Selfview1-Concreteness	5	240	10902.000	11520.000	598.918	-1.032	.302
Selfview1-Familiarity	5	240	11330.000	11520.000	598.789	-.317	.751
Selfview1-Meaningfulness	5	240	11284.500	11520.000	596.288	-.395	.693
Selfview1-Simplicity	5	240	10390.500	11520.000	595.877	-1.896	.058
Selfview2-Clarity	5	240	12047.500	11520.000	583.939	.903	.366
Selview2-Concreteness	5	240	12269.500	11520.000	581.993	1.288	.198
Selfview2-Familiarity	5	240	11623.500	11520.000	581.553	.178	.859
Selfview2-Meaningfulness	5	240	12624.500	11520.000	592.397	1.864	.062
Selfview2-Simplicity	5	240	10965.500	11520.000	597.588	-.928	.353
Selfview3-Clarity	5	240	11572.000	11520.000	588.175	.088	.930
Selfview3-Concreteness	5	240	10352.500	11520.000	591.792	-1.973	.049
Selfview3-Familiarity	5	240	11208.500	11520.000	597.527	-.521	.602
Selfview3-Meaningfulness	5	240	10672.500	11520.000	590.734	-1.435	.151
Selfview3-Simplicity	5	240	10884.500	11520.000	593.144	-1.071	.284
Still Picture1-Clarity	5	240	10902.500	11520.000	598.221	-1.032	.302
Still Picture1-Concreteness	5	240	9459.500	11520.000	596.753	-3.453	.001
Still Picture1-Familiarity	5	240	10121.500	11520.000	597.810	-2.339	.019
Still Picture1-Meaningfulness	5	240	10851.000	11520.000	594.003	-1.126	.260
Still Picture1-Simplicity	5	240	9810.500	11520.000	593.968	-2.878	.004
Still Picture2-Clarity	5	240	13009.500	11520.000	596.726	2.496	.013
Still Picture2-Concreteness	5	240	12278.500	11520.000	599.973	1.264	.206
Still Picture2-Familiarity	5	240	12272.500	11520.000	599.302	1.256	.209
Still Picture2-Meaningfulness	5	240	13032.000	11520.000	601.055	2.516	.012
Still Picture2-Familiarity	5	240	11721.500	11520.000	600.549	.336	.737
Still Picture3-Clarity	5	240	10800.000	11520.000	600.646	-1.199	.231
Still Picture3-Concreteness	5	240	9951.500	11520.000	599.991	-2.614	.009
Still Picture3-Familiarity	5	240	10696.500	11520.000	598.144	-1.377	.169
Still Picture3-Meaningful	5	240	11396.000	11520.000	599.756	-.207	.836
Still Picture3-Simplicity	5	240	10230.000	11520.000	595.795	-2.165	.030

a. Grouping Variable: Subject's Country

Jonckheere-Terpstra Test^a

	Number of Levels in Subject's Country	N	Observed J-T Statistic	Mean J-T Statistic	Std. Deviation of J-T Statistic	Std. J-T Statistic	Asymp. Sig. (2-tailed)
Videophone1-Clarity	5	240	11359.500	11520.000	532.257	-.302	.763
Videophone1-Concreteness	5	240	10490.000	11520.000	560.490	-1.838	.066
Videophone1-Familiarity	5	240	10733.500	11520.000	562.973	-1.397	.162
Videophone1-Meaningfulness	5	240	11994.000	11520.000	536.208	.884	.377
Videophone1-Simplicity	5	240	11068.500	11520.000	538.391	-.839	.402
Videophone2-Clarity	5	240	11511.500	11520.000	598.023	-.014	.989
Videophone2-Concreteness	5	240	10742.000	11520.000	598.057	-1.301	.193
Videophone2-Familiarity	5	240	11150.000	11520.000	598.031	-.619	.536
Videophone2-Meaningfulness	5	240	10912.000	11520.000	598.512	-1.016	.310
Videophone2-Simplicity	5	240	10346.000	11520.000	602.120	-1.950	.051
Videophone3-Clarity	5	240	11232.500	11520.000	561.033	-.512	.608
Videophone3-Concrete	5	240	9783.500	11520.000	571.484	-3.039	.002
Videophone3-Familiarity	5	240	10380.500	11520.000	576.379	-1.977	.048
Videophone3-Meaningfulness	5	240	11334.000	11520.000	553.456	-.336	.737
Videophone3-Simplicity	5	240	11000.500	11520.000	557.325	-.932	.351

a. Grouping Variable: Subject's Country

APPENDIX 8

FREQUENCY TABLE OF SEMANTIC SCORES FOR US SUBJECTS (Study IV, US Subjects)

	1.0	2.0	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Camera1-Clarity			5.3	21.1	5.3	26.3	42.1
Camera1-Concreteness			10.5	5.3	15.8	21.1	47.4
Camera1-Familiarity				15.8	5.3	31.6	47.4
Camera1-Meaningfulness				15.8		42.1	42.1
Camera1-Simplicity			5.3	10.5	15.8	21.1	47.4
Camera2-Clarity		5.3	5.3	10.5	15.8	10.5	52.6
Camera2-Concreteness	5.3			21.1	15.8	10.5	47.4
Camera2-Familiarity			10.5	5.3	21.1	21.1	42.1
Camera2-Meaningfulness			5.3	21.1	10.5	10.5	52.6
Camera2-Simplicity			5.3	5.3	5.3	31.6	52.6
Camera3-Clarity			10.5	5.3	10.5	15.8	57.9
Camera3-Concreteness			5.3	5.3	5.3	21.1	63.2
Camera3-Familiarity					10.5	21.1	68.4
Camera3-Meaningfulness			5.3	5.3	5.3	10.5	73.7
Camera3-Simplicity			5.3	5.3		26.3	63.2

	1.00	2.0	3.00	4.00	5.00	6.00	7.00	
	%	%	%	%	%	%	%	
Document Camera1-Clarity					10.5	15.8	21.1	52.6
Document Camera1-Concreteness					21.1	5.3	26.3	47.4
Document Camera1-Familiarity				10.5	21.1		15.8	52.6
Document Camera1-Meaningfulness					21.1	5.3	31.6	42.1
Document Camera1-Simplicity				5.3	15.8	5.3	15.8	57.9
Document Camera2-Clarity			5.3		5.3	10.5	36.8	42.1
Document Camera2-Concreteness			5.3		5.3	5.3	26.3	57.9
Document Camera2-Familiarity		5.3	5.3	5.3		10.5	21.1	52.6
Document Camera2-Meaningfulness			5.3			15.8	21.1	57.9
Document Camera2-Simplicity			5.3		5.3		36.8	52.6
Document Camera3-Clarity		5.3			15.8	10.5	10.5	57.9
Document Camera3-Concreteness		10.5			15.8		21.1	52.6
Document Camera3-Familiarity		5.3			5.3	15.8	21.1	52.6
Document Camera3-Meaningfulness		5.3			10.5	15.8	15.8	52.6
Document Camera3-Simplicity		5.3			10.5	15.8	15.8	52.6

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Handsfree1-Clarity	36.8	10.5		15.8	15.8		21.1
Handsfree1-Concreteness	21.1	21.1	10.5	21.1		5.3	21.1
Handsfree1-Familiarity	31.6	5.3	15.8	5.3	10.5	5.3	26.3
Handsfree1-Meaningfulness	21.1	21.1	5.3	15.8	5.3	10.5	21.1
Handsfree1-Simplicity	26.3	15.8	5.3	10.5		21.1	21.1
Handsfree2-Clarity	26.3	10.5	21.1	26.3	5.3		10.5
Handsfree2-Concreteness	21.1	10.5	15.8	21.1	10.5	10.5	10.5
Handsfree2-Familiarity	21.1	15.8	10.5	26.3	5.3	5.3	15.8
Handsfree2-Meaningfulness	15.8	15.8	5.3	15.8	21.1	10.5	15.8
Handsfree2-Simplicity	21.1	10.5	5.3	15.8	15.8	5.3	26.3
Handsfree3-Clarity	21.1	21.1	10.5	10.5	10.5	15.8	10.5
Handsfree3-Concreteness	10.5	15.8	10.5	21.1	10.5	21.1	10.5
Handsfree3-Familiar	21.1	10.5	15.8	15.8	10.5	15.8	10.5
Handsfree3-Meaningfulness	10.5	15.8	10.5	15.8		31.6	15.8
Handsfree3-Familiarity	15.8	15.8	10.5	10.5	10.5	21.1	15.8

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Microphone1-Clarity		5.3			10.5	15.8	68.4
Microphone1-Concreteness		5.3		5.3	5.3	21.1	63.2
Microphone1-Familiarity		5.3	5.3			21.1	68.4
Microphone1-Meaningfulness			5.3		5.3	21.1	68.4
Microphone1-Simplicity		5.3			10.5	15.8	68.4
Microphone2-Clarity	68.4		10.5	5.3	10.5	5.3	
Microphone2-Concreteness	52.6	10.5	5.3	10.5	15.8	5.3	
Microphone2-Familiarity	63.2	5.3	15.8	5.3	5.3		5.3
Microphone2-Meaningfulness	68.4	5.3	5.3	10.5	5.3		5.3
Microphone2-Simplicity	63.2	5.3			26.3	5.3	
Microphone3-Clarity		5.3			5.3	26.3	63.2
Microphone3-Concreteness		5.3			5.3	21.1	68.4
Microphone3-Familiarity			5.3			26.3	68.4
Microphone3-Meaningfulness			5.3			26.3	68.4
Microphone3-Simplicity		5.3				31.6	63.2




























	1.00	2.00	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Selfview1-Clarity			15.8		21.1	15.8	47.4
Selfview1-Concreteness			10.5	15.8	21.1	10.5	42.1
Selfview1-Familiarity	5.3	10.5	15.8			10.5	57.9
Selfview1-Meaningfulness			5.3	15.8	21.1	5.3	52.6
Selfview1-Simplicity			10.5	10.5	5.3	31.6	42.1
Selfview2-Clarity	31.6	15.8	5.3	21.1	15.8		10.5
Selfview2-Concreteness	21.1	15.8	15.8	26.3	5.3	5.3	10.5
Selfview2-Familiarity	21.1	15.8	15.8	21.1	10.5		15.8
Selfview2-Meaningfulness	26.3	5.3	21.1	26.3	5.3		15.8
Selfview2-Simplicity	21.1	15.8	10.5	26.3	10.5	5.3	10.5
Selfview3-Clarity			5.3		21.1	15.8	57.9
Selfview3-Concreteness				10.5	10.5	15.8	63.2
Selfview3-Familiarity		5.3		10.5	15.8	15.8	52.6
Selfview3-Meaningfulness				10.5	10.5	15.8	63.2
Selfview3-Simplicity		5.3		10.5	5.3	31.6	47.4

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Still Picture1-Clarity	10.5	5.3	10.5		15.8	15.8	42.1
Still Picture1-Concreteness				5.3	26.3	26.3	42.1
Still Picture1-Familiarity	5.3	5.3	15.8		10.5	15.8	47.4
Still Picture1-Meaningfulness		5.3		10.5	5.3	15.8	63.2
Still Picture1-Simplicity		5.3	5.3	15.8		26.3	47.4
Still Picture2-Clarity	10.5	5.3	26.3	21.1	5.3	5.3	26.3
Still Picture2-Concreteness	10.5		21.1	36.8	5.3	15.8	10.5
Still Picture2-Familiarity	10.5	5.3	26.3	15.8	10.5	5.3	26.3
Still Picture2-Meaningfulness	10.5	5.3	15.8	36.8		15.8	15.8
Still Picture2-Familiarity	10.5	10.5	21.1	21.1		5.3	31.6
Still Picture3-Clarity	15.8			15.8	5.3	26.3	36.8
Still Picture3-Concreteness	5.3		10.5		10.5	36.8	36.8
Still Picture3-Familiarity		5.3	5.3	5.3	5.3	15.8	63.2
Still Picture3-Meaningful	5.3			10.5	5.3	15.8	63.2
Still Picture3-Simplicity	10.5	5.3			21.1	21.1	42.1

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
	%	%	%	%	%	%	%
Videophone1-Clarity					5.3	15.8	78.9
Videophone1-Concreteness					5.3	26.3	68.4
Videophone1-Familiarity					10.5	10.5	78.9
Videophone1-Meaningfulness		5.3			10.5	21.1	63.2
Videophone1-Simplicity					5.3	21.1	73.7
Videophone2-Clarity	15.8	10.5	15.8	15.8	31.6		10.5
Videophone2-Concreteness	21.1	5.3	5.3	10.5	21.1	21.1	15.8
Videophone2-Familiarity	21.1		21.1	10.5	26.3	15.8	5.3
Videophone2-Meaningfulness	26.3		5.3	5.3	10.5	31.6	21.1
Videophone2-Simplicity	15.8	10.5	5.3	10.5	15.8	31.6	10.5
Videophone3-Clarity		5.3		5.3	5.3	10.5	73.7
Videophone3-Concrete		5.3			5.3	21.1	68.4
Videophone3-Familiarity				10.5		15.8	73.7
Videophone3-Meaningfulness		5.3			5.3	21.1	68.4
Videophone3-Simplicity			10.5	5.3		21.1	63.2

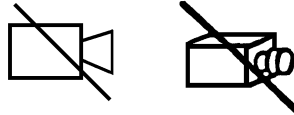
APPENDIX 9

BEST-PERFORMING SYMBOLS BASED ON DIFFERENT TEST PARAMETERS

REFERENTS			
Conference			
Dialpad			
Hold			
Message			
Music On Hold			
Mute			
Notes			
Retrieve			
Ringer Select			
Speakerphone			
Speed Dial			
Transfer Call			
Volume			

REFERENTS

Camera



Document
Camera



Microphone



Still Picture



Videophone

