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Title: Influence of Culture and Personality on Determinants of Cognitive
                    Processes Under Conditions of Uncertainty

Authors: Janet L. Sutton, Ph.D.
                    Army Research Laboratory
                    Human Research & Engineering Directorate
                    Bldg. 3040, Room 220, Ft. Sill, OK 73503-5600
                    Office:(580) 442-3354   Fax: (580) 442-7139
                    E-mail: janet.sutton@us.army.mil

                    Keryl A. Cosenzo, Ph.D.
                    Army Research Laboratory
                    Human Research & Engineering Directorate
                    Bldg. 459, Aberdeen Proving Ground, MD
                    Office:(410) 278-2946   Fax: (580) 278-9694
                    E-mail: keryl.cosenzo@us.army.mil

                    Linda G. Pierce, Ph.D.
                    Army Research Laboratory
                    Human Research & Engineering Directorate
                    Bldg. 459, Aberdeen Proving Ground, MD
                    Office:(410) 278-5846   Fax: (410) 278-5858
                    E-mail: linda.pierce@us.army.mil

Influence of Culture and Personality on Determinants of Cognitive Processes under Conditions of Uncertainty

Janet L. Sutton, Ph.D.
Army Research Laboratory
Human Research & Engineering Directorate
Bldg. 3040, Room 220, Ft. Sill, OK 73503-5600
E-mail: janet.sutton@us.army.mil

Keryl A. Cosenzo, Ph.D.
Army Research Laboratory
Human Research & Engineering Directorate
Bldg. 459, Aberdeen Proving Ground, MD
E-mail: keryl.cosenzo@us.army.mil

Linda G. Pierce, Ph.D.
Army Research Laboratory
Human Research & Engineering Directorate
Bldg. 459, Aberdeen Proving Ground, MD
E-mail: linda.pierce@us.army.mil

Abstract

Staff officers (n = 44) performing Support and Stability Operations (SASO) at Stabilization Force (SFOR) in Bosnia-Herzegovina (BiH) were surveyed to determine the contribution of culture and personality to cognitive readiness and response to uncertainty. Administered were two cognitive structuring questionnaires (Need for Cognitive Structure and Ability to Achieve Cognitive Structure, Bar-Tal, 1994), one uncertainty response questionnaire (Uncertainty Response Scale, Greco & Roger, 2001), and one personality questionnaire (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). The unit of analysis was culture group (English, Romance, and Germanic) as determined by language roots and first language preference of participants. Results indicated the English group had a greater preference for using abstract mental representations (i.e. cognitive schemas, scripts, stereotypes) to make decisions in uncertain situations than did the Romance group. Further, those in the English group had a greater preference for uncertainty, novelty and change than individuals in the Romance group. There were significant differences in personality characteristics of the cultural groups and these differences were related to their responses to uncertainty. The findings provide evidence that relationship between cognitive structuring, response to uncertainty, and personality varies by culture group.

Introduction

Diversity, a hallmark of future operations, is a driving factor in transformation of the U.S. military. Operational diversity means that our service members might be fighting a lethal battle, conducting peacekeeping operations, and providing humanitarian assistance simultaneously within a three-block area (Krulak, 1997). Operational diversity will be complicated by team

diversity with future military operations regularly consisting of teamwork in a Joint, Interagency, or Multinational (JIM) environment. Specifically, increased complexity of operations and political military requirements make it unlikely that any military service will operate alone or independent of the international community. Developing an awareness of the impact of culture on teamwork will be key to effective multicultural teamwork. Barriers to effective teamwork can be avoided or overcome when steps are taken to understand one's own and others' cognitive biases and to adapt, as necessary, to ensure successful team performance. The increase in asymmetric threats, missions that range from warfighting to peacekeeping, and advances in technology, especially information technology, can result in increased uncertainty (i.e., a sense of doubt that blocks or delays action). Uncertainty is an inevitable component of any military operation. One can try to reduce the unknown and increase predictability by gathering and verifying information, but the unknown cannot be completely eliminated. Absolute certainty is not possible and decisions will be made based on incomplete, inaccurate, and contradictory information.

How people use information to make decisions when faced with the uncertainty inherent in peacekeeping operations was found to significantly impact the ability to adapt at Stabilization Force (SFOR) in Bosnia-Herzegovina (BiH) (Sutton & Pierce, 2003), where multicultural teams performed command and control (C^2) functions. Specifically, uncertainty affected decision-making in situation assessment (e.g., information exchange regarding team tasks, goals, and mission), coordination (e.g., response sequencing, time and position coordination of responses), assigning of roles, tasks, and responsibilities (e.g., load balancing, matching member resources to task requirements), and support (e.g., adjustments of team and member activities in response to errors and omissions and general activity monitoring). Some individuals were comfortable making decisions with uncertain or ambiguous information, while others expressed that they were stressed by uncertainty when having to make decisions. Considerable psychological research has focused on need for certainty (Budner, 1962; Frenkel-Brunswik, 1949; Kagan, 1972; Rokeach, 1960; Sorrentino & Short, 1986). While different names have been associated with this trait (e.g., intolerance of ambiguity), the defining characteristics have remained stable over time. High need for certainty implies "a preference for familiarity, symmetry, definiteness, and regularity" (Bar-Tal, 1994, p. 45). Not only are there individual differences in need for certainty but there are cultural differences as well. For example, Hofstede identified Uncertainty Avoidance as a culturally based construct in his 1980 seminal research.

Uncertainty in decision making may be a result of incomplete information, inadequate understanding of the information available, lack of understanding of the possible choices or consequences of each choice, or undifferentiated alternatives. For example, individuals may want to accept and reject a particular alternative at the same time resulting in conflict (Janis, 1982), which leads to uncertainty as to which alternative is the right choice (Kruglanski, 1989). Research has shown that there are individual differences in how decisions are made in uncertain situations (i.e., conflicted decision making) (Bar-Tal, Y., Raviv, A., & Spitzer, A., 1999). Janis and Mann (1977) suggested that situational conditions determine how individuals cope with decision conflict: (1) risk awareness of the consequence for the selected alternative, (2) the possibility of finding a better alternative, and (3) the assumption that adequate time to make the decision is available. This explanation does not, however, take into account the psychological impact to the decision maker of the process of decision making according to Bar-Tal (1994). He

suggests that the degree to which individuals are stressed by conflicted decision making and strive for a sense of certainty, depends on their Need for Cognitive Structure (NCS).

NCS is characterized by the desire for information that has only one clear, definite interpretation. It is the need for explicit, unequivocal, certain, and clear information on which to base a decision. Individuals with a high-NCS seek to use their existing knowledge structures as a framework for making decisions when faced with ambiguity, doubt, or confusion. Knowledge structures (i.e., cognitive schemas) are constructed from one's experiences. They are hierarchically organized blocks of information and reside in long-term memory (Brewer & Nakamura, 1994). Because pre-existing cognitive schemas are blocks of information, they are automatically processed and require smaller amount of attentional energy than does the controlled processing of other information. Schemas can take many forms such as categories, scripts, scenes, plans, stories, heuristics, and implicit theories (Medin, 1989). Categorization involves grouping distinct stimuli such that non-equivalent stimuli are treated as equivalent during encoding which results in equivalent treatment of distinct stimuli during knowledge acquisition, judgment, and prediction. Scripts are schemas that organize events sequentially and specify appropriate behavior, including decision making behavior, for a given situation (Schank & Abelson, 1977). Low-NCS individuals do not need to access knowledge structures to reduce uncertainty.

There are differences in ability to effectively organize information to fit existing knowledge structures or to process information that is inconsistent with existing structures. Bar-Tal (1994) identified this ability as Ability to Achieve Cognitive Structure (AACS). AACS also reflects differences in ability to avoid consideration of information that is inconsistent with existing knowledge structures. In other words, high-NCS individuals may require cognitive structure to achieve a comfortable degree of certainty for un-conflicted decision making (Budner, 1962), but they may not be able to achieve that structure. Bar-Tal (1993) found that NCS and AACS are orthogonal. In a study involving information about their health, high-NCS – low-AACS participants were least satisfied when presented with insufficient information. Another finding was that high-NCS – high-AACS participants tended to achieve certainty through stereotypical (i.e., oversimplified) thinking. The process of cognitive structuring facilitates certainty by filtering out inconsistent or irrelevant information (Fiske & Linville, 1980). Bar-Tal proposed that decisional conflict could be explained by different response patterns associated with NCS and AACS. Levels of NCS and AACS affect how an individual perceives a situation and how much time is spent making a decision. High-NCS – low-AACS individuals will experience the greatest difficulty in decision making when faced with uncertainty. High-NCS – high-AACS individuals will experience the least difficulty. Hancock and Mortimer (2002) suggest that in stressful conditions (e.g., decision making when consequences of the decision are unknown), individuals are likely to make decisions based on past experiences and ignore contrary information relative to non-stressful conditions, which can have disastrous consequences. Bar-Tal, Raviv, and Spitzer (1999) suggested that in general, individuals tend to use information processing strategies that are in accordance with their level of NCS and AACS.

Given that there are cultural differences in need for certainty and individual differences in NCS and AACS, could there be differences in how individuals from different cultures cope with uncertainty in decision making, and, if so, how do they achieve a sufficient level of certainty to

feel comfortable making decisions? We used Bar-Tal's (1994) NCS scale and AACS scale to assess the cognitive processes used by individuals from several nationalities to make decisions. To assess response tendencies to uncertainty we used the Uncertainty Response Scale (URS; Greco & Roger, 2001). The URS is a relatively new instrument for measuring styles of coping with uncertainty. The battery of scales used by Greco and Roger to validate the instrument included the: Tolerance of Ambiguity Scale (TOA; Kirton, 1981); Neuroticism (N) and Extraversion (E) scales from the Eysenck Personality inventory (EPI; Eysenck & Eysenck, 1964); Rosenberg Self-Esteem Scale (Rosenberg, 1965); Detachment (Det) scale for the Coping Styles Questionnaire (CSQ; Roger & Najarian, 1993); and Rumination (R) scale from the Emotion Control Questionnaire (ECQ; Roger & Najarian, 1989). Three styles were identified as reflecting cognitive process and behavioral tendencies. One style was identified as maladaptive style and labeled Emotional Uncertainty (EU). Individuals with the EU coping style react to uncertainty with sadness and anxiety. EU is related to neuroticism ($r = .56$, $p < .01$), emotional rumination ($r = .38$, $p < .01$), low self-esteem (self-esteem; $r = -.45$, $p < .01$), and inability or unwillingness to detach from stressful situations (detachment, $r = -.49$, $p < .01$). A second style, Cognitive Uncertainty (CU), is related to an index of neuroticism labeled social insensitivity (sensitivity; $r = -.21$, $p < .01$), caution (impulsivity; $r = .25$, $p < .01$), and an intolerance for ambiguity ($r = .37$, $p < .01$). The third style, Desire for Change (DC), is correlated to impulsivity ($r = .37$, $p < .01$) and sociability ($r = .23$, $p < .01$). The relationships identified between subscales of the URS and certain personality variables indicated that personality moderates an individual's response to uncertainty to some degree. We used the Zuckerman-Kuhlman Personality Questionnaire, Form III (ZKPQ-III; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993) to examine this premise.

Method

Due to the lack of opportunity for experimental manipulation, the investigation included a limited experimental design. The independent variable was culture group (English, Romance, and Germanic). The dependent variables were cognitive structuring (NCS and AACS), uncertainty response (URS), and personality variables (ZKPQ-III). It was a difficult data gathering effort with a unique and hard to access sample of military officers performing command and control functions in a multicultural staff environment.

Participants

Forty-four (24 Majors and 20 Captains) staff officers recruited from staffs performing command and control functions in BiH at SFOR headquarters in Sarajevo (3) and brigade headquarters in Tuzla MNB(N) (22), Banja Luka MNB(NW) (11), and Mostar MNB(SE) (8) participated in the investigation. Participation was voluntary and no undue command or supervisory pressure was used to influence participants' consent in accordance with an approved protocol through the ARL Human Use Committee (HUC). The sample consisted of 24 native English speakers and 21 participants who claimed English as a second language. Participants' countries of primary residence were Canada (3), Spain (5), Germany (4), France (2), Holland (1), Italy (2), Netherlands (3), New Zealand (1), and the United States (23). Fourteen participants (31%) had previous NATO experience.

Materials

All instruments were completed on an individual basis and are found in Appendix A.

Demographics. The Demographics Questionnaire is a one-page questionnaire, developed by ARL HRED, that requests information regarding name, title (e.g., Major), SFOR rank (e.g., OF3), branch of service (e.g., Army), work location (e.g., MND(N)), time in position (e.g., 8 weeks), location of previous NATO experience, native language (e.g., English), gender (e.g., male), nationality by birth (e.g., Italian), and country of permanent residence (e.g., USA).

Zuckerman-Kuhlman Personality Questionnaire. The Zuckerman-Kuhlman Personality Questionnaire, Form III (ZKPQ-III; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993) identifies five components of personality in five subscales: Activity-Energy, Aggression-Hostility, Sociability, Neuroticism-Anxiety, and Impulsive Risk Taking. This five-factor model is recommended for research involving personality correlates because it provides maximal specificity at no loss in reproducibility across gender and populations. Activity-Energy assesses an individual's need for activity, preference for hard or challenging work, and an active busy life. Aggression-Hostility assesses an individual's readiness to express verbal aggression, have a quick temper and impatience with others. Sociability assesses an individual's preference for being with others as opposed to being alone and pursuing solitary activities. Neuroticism-Anxiety assesses an individual's degree of tension, worry, obsessive indecision, lack of self-confidence and sensitivity to criticism. Impulsive Risk Tasking assesses an individual's tendency to act impulsively without thinking and willingness to take risks for the sake of excitement or novel experience. Participants respond to a series of statements that might be used to describe themselves by marking each statement as either True (T), if they agree with the statement or if it describes them, or False (F), if they disagree with the statement or if it does not describe them. A true response has a value of one and a false response has a value of zero. Several items in the ZKPQ-III are reverse scored such that a true response has a value of zero and a false response has a value of one. Scores for subscales are determined by totaling the number of true responses or reverse score false responses given to statements associated with each subscale. The ZKPQ-III has satisfactory internal consistency reliability and test-retest reliability (Aluja, Garcia, & Garcia, 2004; Zuckerman, et al., 1993). The alpha coefficients for the five personality scales range from .72 to .86.

The Need For Cognitive Structure Scale. The Need for Cognitive Structure Scale (NCS; Bar-Tal, 1994) is a 20-item scale that assesses the extent of an individual's preference for using cognitive structuring to achieve certainty. Participants rate the degree to which they disagree or agree with statements using a 5-point scale: 1 = *Strongly Disagree*; 5 = *Strongly Agree*. Responses are totaled to create an overall need for cognitive structure score. Higher scores indicate a greater need for cognitive structure. The NCS has both satisfactory internal consistency and test-retest reliability as demonstrated in past research (Bar-Tal, 1993, 1994) with Chronbach alpha for the NCS of .82 and test-retest reliability (interval of 5 weeks between the measurements) of .85.

The Ability to Achieve Cognitive Structure Scale. The Ability to Achieve Cognitive Structure Scale (AACS; Bar-Tal, 1994) is a 24-item scale that assesses the extent to which individuals are able to apply information processes that are consistent with their need for cognitive

structure. Participants rate the degree to which they disagree or agree with statements using a 5-point scale: 1 = *Strongly Disagree*; 5 = *Strongly Agree*. Responses are totaled to create an overall ability to achieve cognitive structure score. Higher scores indicate a greater ability to apply information processes that are consistent with an individual's level of NCS. The AACS has both satisfactory internal consistency and test-retest reliability as demonstrated in past research (Bar-Tal, 1993, 1994) with Chronbach alpha for the AACS of .67 and test-retest reliability (interval of 5 weeks between the measurements) of .86.

Uncertainty Response Scale. The Uncertainty Response Scale (URS; Greco & Roger, 2001) is a 48-item scale that was designed to predict individual differences in coping with uncertainty. The URS is comprised of three factors, Emotional Uncertainty (EU), Desire for Change (DC), and Cognitive Uncertainty (CU). EU is the degree to which an individual responds to uncertainty with anxiety and sadness. DC is the degree to which an individual enjoys novelty, uncertainty and change. CU is the degree to which an individual prefers order, planning and structure in an uncertain environment. Participants rate statements on the degree to which the statement relates to them using a 5-point scale: 1 = Never; 5 = Always. Scores for subscales are determined by totaling the point value of statements associated with each subscale. Higher scores indicate greater tendency toward maladaptive responses to uncertainty (EU), greater enjoyment of the unknown (DC), and greater preference for control under uncertain conditions (CU). The URS has both satisfactory internal consistency reliability and test-retest reliability (Greco & Roger, 2001). Coefficient alpha for the EU, DC and CU subscales were 0.89, 0.90 and 0.85, respectively. Test-retest reliability estimates for the EU, DC and CU subscales were 0.79, 0.86 and 0.80, respectively.

Procedure

Survey data were collected from the following locations in the listed order: MNB(N), MNB(NW), MNB(SE), and HQ SFOR. One room was used at each location for participants to meet together at the same time. Data collection sessions required approximately one hour at each site. At the start of the session, the researcher informed those present that each person would be participating individually. Participants read and signed the volunteer affidavit and completed the Demographics Questionnaire, which were then collected by the researcher. Participants were ensured that their name and SFOR identification would not be associated with their responses to survey items in any way. The researcher instructed participants that they were free to leave once they completed all items of all surveys in the packet. After instructing participants not to start responding to survey items until told to do so, the researcher handed a survey packet to each participant. The researcher then read the printed instructions on the survey forms to the assembled group of participants and answered questions of understanding. When there were no more questions, participants were told to begin. The researcher remained in the room and answered questions of understanding as necessary. Participants completed four survey instruments: (1) Zuckerman-Kuhlman Personality Questionnaire, Form III (ZKPQ-III; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993), (2) Need For Cognitive Structure Scale (Bar-Tal, 1994), (3) Ability to Achieve Cognitive Structure Scale (Bar-Tal, 1994), and (4) Uncertainty Response Scale (Greco & Rogers, 2001).

Results

To assess the contribution of culture on cognitive structuring and response to uncertainty, participants were partitioned into culture groups based on their country of primary residence and the language spoken in that region. The English group consisted of participants from the United States, Canada, Ontario Province, and New Zealand. The Canadians in this group indicated that English was their first language. The Romance group consisted of participants from Spain, France, and Italy. The Germanic group consisted of participants from The Netherlands, Holland, and Germany. There were 28 participants in the English group, 8 in the Romance group and 8 in the Germanic group.

Primary Analyses

Figure 1 is a graph of the mean (standard error of the mean) cognitive structuring scores for culture groups. Results for the cognitive structuring measures, NCS and AACS, showed that participants in the English group had a greater preference for using abstract mental representations (i.e. cognitive schemas, scripts, stereotypes) to make decisions in uncertain situations than did those in the Romance group. A MANOVA of the data revealed a significant effect of culture group on cognitive structuring as measured by the NCS and AACS scales, Wilkes λ $(4,72) = 2.57$, $p = .04$. To determine whether the need for cognitive structure or the ability to achieve cognitive structure, or both, contributed to the significant main effect, ANOVAs were run. ANOVAs of the NCS and AACS showed a significant effect of culture for NCS, $F (2, 37) = 4.55$, $p < .001$, but not AACS, $p > .10$. Post hoc analyses were conducted comparing culture groups on the NCS scale. Sheffe's test revealed that the English group had a higher need for cognitive structure (x = 2.94) than the Romance group (x = 2.02), $p = .03$. There were no significant differences between English and Germanic or Germanic and Romance groups for the NCS or AACS, $p's > .10$.
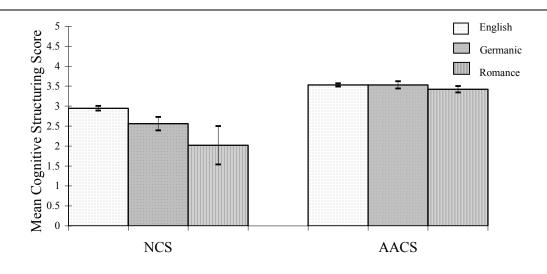

Figure 1:   Mean Cognitive Structuring Scores for Culture Groups

Figure 2 is a graph of mean (standard error of the mean) scores on the subscales of the URS for cultural groups. Results for Uncertainty Response Scale showed that the participants in the English group had a greater preference for uncertainty, novelty and change than did those in the Romance group. A MANOVA of the data revealed a significant effect of culture group on response to uncertainty as measured by the URS scale, Wilkes λ (6,78) = 2.34, p = .03. To determine which subscale of the URS contributed to the significant main effect, ANOVAs were run. ANOVAs of the URS subscales showed a significant effect of culture group for DC, F (2, 41) = 6.62, p < .001. Post hoc analyses were conducted comparing culture groups on the DC subscale. Sheffe's test revealed that the English group had a higher DC score (x = 61.14) than the Romance group (x = 39.75), p < .05. There were no differences between cultural groups on EU or CU, p > .10.

Figure 2:   **Mean Uncertainty Responses Scores for Culture Groups**

A MANOVA of the data revealed a significant effect of culture group on personality as measured by the ZKPQ-III, Wilkes λ (12,66) = 2.14, p = .02. To determine which subscale of the ZKPQ III contributed to the significant main effect ANOVA's were run. ANOVA's of the ZKPQ-III subscales showed a significant effect of culture group for impulsivity and energy, F (2, 38) = 6.53, p < .001 and F (2,38) = 3.34, p = .04, respectively. Post hoc analyses were conducted comparing culture groups on the impulsivity and energy subscales of the ZKPQ-III. Sheffe's test revealed that the English group had higher impulsivity scores (x = 10.81) than the Germanic group (x = 7.00), p = .04 or Romance group (x = 7.00), p = .02. Further, the Germanic group had

higher energy scores (x = 10.62) than the Romance group (x =6.33), *p* < .05. There were no significant differences between cultural groups for neuroticism, aggressiveness, or sociability. Results for the personality measure, ZKPQ-III, showed significant differences between cultural groups.

Secondary Analyses

Correlations between the need for cognitive structure, ability to achieve cognitive structure, response to uncertainty, and personality variables are presented in Tables 1 – 4 where it is shown that the relationship between these variables varies by culture group.

Table 1   Overall Correlations Between CognitiveVariables and Personality (N = 42)

Measure	NCS	AACS	EU	DC	CU	Impulsivity	Neuroticism	Aggressiveness	Energy	Sociability
NCS	--	.052	.457**	.520**	.476**	.061	.021	.004	.057	-.125
AACS		--	-.205	.286	.171	-.107	-.461**	-.055	.105	.311*
EU			--	.564**	.623**	.130	.293	.427**	.119	-.207
DC				--	.744**	.399**	-.298	.034	.264	.111
CU					--	-.085	-.238	.163	.345*	.109
Impulsivity						--	.274	.243	.121	.037
Neuroticism							--	.205	.060	.025
Aggressiveness								--	.074	-.047
Energy									--	.288
Sociability										--

Note: NCS – Need for Cognitive Structure, AACS – Ability to Achieve Cognitive Structure, EU- Emotional Uncertainty, DC – Desire for Change, CU- Cognitive Uncertainty. *p* < .05*, *p* < .01**

Significant positive correlations revealed for the English group (n = 27) were: ability to achieve cognitive structure with sociability, emotional uncertainty with neuroticism, desire for change with cognitive uncertainty and impulsivity, and cognitive uncertainty with energy.

Table 2   Correlations Between Cognitive Variables and Personality for English Group (N =27). *p* < .05*, *p* < .01**

Measure	NCS	AACS	EU	DC	CU	Impulsivity	Neuroticism	Aggressiveness	Energy	Sociability
NCS	--	.045	-.103	.009	.202	-.044	.275	-.127	.245	-.090
AACS		--	-.367	.233	.202	-.172	-.354	.105	.125	.435*
EU			--	-.123	.084	.372	.420*	.266	.019	-.270
DC				--	.372*	.527**	-.151	-.117	.226	.069
CU					--	-.035	-.194	.071	.404*	.231
Impulsivity						--	.323	.230	.117	.026
Neuroticism							--	.123	.020	.032
Aggressiveness								--	.155	.068
Energy									--	.003
Sociability										--

Significant positive correlations revealed for the Romance group (n = 6) were: need for cognitive structure with emotional uncertainty, emotional uncertainty with desire for change and cognitive uncertainty, and desire for change with cognitive uncertainty. In the Romance group, need for cognitive structure was significantly negatively correlated with neuroticism.

Table 3   Correlations Between Cognitive Variables and Personality for Romance Group (N = 6). $p < .05*, p < .01**$

Measure	NCS	AACS	EU	DC	CU	Impulsivity	Neuroticism	Aggressiveness	Energy	Sociability
NCS	--	.228	.751*	.666	.681	-.4.06	-.949**	.019	-.060	.000
AACS		--	.689	.551	.604	-.519	.223	.472	.179	-.107
EU			--	.903**	.908**	.456	-.495	.319	.301	-.079
DC				--	.996**	-.172	-.701	-.071	.168	.547
CU					--	-.114	-.592	.269	.254	.542
Impulsivity						--	.151	.411	.186	.385
Neuroticism							--	.062	-.014	-.174
Aggressiveness								--	.210	.079
Energy									--	.804
Sociability										--

Significant positive correlations revealed for the Germanic group (n = 8) were: emotional uncertainty with cognitive uncertainty, desire for change with cognitive uncertainty, and emotional uncertainty with aggressiveness. In the Germanic group, ability to achieve cognitive structure was negatively correlated with neuroticism. .

Table 4   Correlations Between Cognitive Variables and Personality for the Germanic Group. (N = 8). $p < .05*, p < .01**$

Measure	NCS	AACS	EU	DC	CU	Impulsivity	Neuroticism	Aggressiveness	Energy	Sociability
NCS	–	-.540	.166	-.125	.100	-.361	.281	.196	-.352	-.451
AACS		–	-.645	.101	-.221	-.76	-.780*	-.621	-.188	.166
EU			–	.643	.798*	.054	.295	.707*	.580	.061
DC				–	.805*	-.026	-.375	.202	.608	.252
CU					–	-.417	-.270	.311	.611	-.033
Impulsivity						–	.554	.241	.074	.361
Neuroticism							–	.397	.046	.094
Aggressiveness								–	-.057	-.131
Energy									–	.390
Sociability										–

Discussion

Cognitive readiness to respond appropriately in uncertain environments is critical to mission success, especially in those instances where information exchange, assignment of roles and responsibilities, coordination, and support behavior are elements of multicultural teamwork (Sutton & Pierce, 2003). Clearly, in our sample, AACS did not vary by culture group. It is likely that AACS is not culturally based, whereas NCS is not only a function of individual differences but, also, of culture. The impact of need for certainty as a factor in NCS is important for understanding cultural diversity in cognition, particularly in military environments where tasks are accomplished through multicultural teamwork. In this investigation, the greatest difference in need for certainty and predictability in decision making was found between the English and Romance groups. The Americans, Canadians, and New Zealanders, as a group, had a higher NCS than the French, Italian, and Spanish, as a group. Given that composition of the English group was heavily skewed toward U.S. participants, one could conclude that, in this sample, Americans have a high need for certainty in decision making and prefer to use knowledge structures to provide that certainty. If the sampled individuals have high-NCS yet lack the ability to provide that structure (i.e., low-AACS), they could regularly experience conflicted decision making resulting in very high stress and effortful processing (Bar-Tal, 1994). Other characteristics of these individuals include high sensitization, hyper-vigilance, and obsessive compulsiveness. In contrast to the American dominated English group, the Romance group had low-NCS. Low-NCS and low-AACS for the individuals in this group would be characterized as having low stress, high use of stereotypes to provide cognitive certainty, and dysfunctional impulsivity. Individuals in both conditions would have low self-efficacy according to Bar-Tal (1994).

There was a significant positive correlation between AACS and sociability, and index of neuroticism, for the English and Romance groups, but AACS was negatively correlated with neuroticism for the Germanic group. AACS is a measure of ability to apply information processes that are consistent with an individual's need for cognitive structure. Individual's in the English and Romance groups expressed a preference to being with others vs. pursuing solitary activities and were also proficient at organizing their information processing to be consistent with their need for cognitive structure. However, individuals in the Germanic group who described themselves as being decisive and having self-confidence were proficient at organizing their information processing to be consistent with their need for cognitive structure. It is possible, that cultural groups may have maladaptive coping strategies to uncertainty, but these strategies are different depending on the cultural group. EU was significantly correlated with neuroticism for those in the English group, but was significantly correlated with Aggression for those with Germanic group. Given that EU is a measure of maladaptive coping, individuals in the English group, primarily Americans, who cope with uncertainty negatively (i.e. with anxiety) will also lack self-confidence, are sensitive to criticism, are indecisive, and can experience tension and worry when faced with uncertainty in decision making. On the other hand, individuals in the Germanic group who cope with uncertainty negatively (i.e. with anxiety) will have a quick temper, be impatient with others, and are more likely to express verbal aggression.

Limitations

The results provided should be interpreted with caution for several reasons. First, the sample consisted only of staff personnel in a peacekeeping mission; thus participants were fairly homogeneous in terms of military function. Perhaps findings would be different if the sample consisted of participants who performed a variety of functions including those actively involved in warfighting activity. Also, the sample consisted only of Majors and Captains who have had limited C^2 experience compared to Lieutenant Colonels, Colonels, and Generals. Need for Cognitive Structure, for example, might have been different if all military ranks had been represented. In addition, the Romance and Germanic culture groups had small numbers, though, in spite of this, there were a number of significant findings. The disproportion in sample size of culture groups, however, remains a limiting factor. Another limitation of the investigation is that the measurement instruments (NCS scale, AACS scale, and URS) are relatively new and generally untested by the scientific community. Finally, there was no experimental manipulation to test specific hypotheses of the effect of culture and personality on cognitive structuring or response to uncertainty.

Future Research

Information gathered from this study can be used in subsequent research endeavors that will contribute to an understanding of the implications of culture for cognitive readiness to respond appropriately in uncertain environments. The relationship between need for cognitive structure and the ability to achieve cognitive structure requires further investigation. It seems logical that individuals who require cognitive structure for decision making would develop mechanisms to provide that structure. The impact of culture on response to uncertainty is another important area for further study. Research is, also, needed to refine the tools used to measure NCS, AACS, and URS. Some of the words used in these scales may have totally different connotations for different cultures. Furthermore, research is needed that examines whether individuals with a high AACS are less stressed by uncertainty than individuals with a low ability to achieve cognitive structure. Including stress assessments in future research would assist in the identification of appropriate countermeasures

Conclusions

Important implications of this investigation remain to be confirmed and addressed in future research. At this time there are no suggested countermeasures to mitigate cognitive uncertainty. However it is important to note that there are individual differences in decision-making in uncertain situations. Furthermore, under stress individuals tend to use information processing strategies that are in accordance with their cognitive preferences. If stress is too high, the individuals' response may be maladaptive and in turn prevent the use of preferred strategies and in turn decrease performance.

The results presented here are important in theoretical terms for at least three reasons. First, the present investigation is the first to our knowledge to show that NCS may vary by culture. Second, this research provides the first direct evidence that personality does not play a strong role in NCS or AACS. Third, culture appears to be a factor in response styles used to cope

with uncertainty. These findings are especially important given the complexity of command and control performance in increasingly uncertain environments. The way ahead is to now design studies that measure the degree to which culture impacts these NCS, AACS, and URS. Follow-up studies should include data on some operational coordinated and collaborative tasks.

References

Aluja, A., Garcia, O., & Garcia, L.F. (2004). Replicability of the three, four and five Zuckerman's personality super-factors: Exploratory and confirmatory factor analysis of the EPQ-RS, ZKPQ and NEO-PI-R. *Personality and Individual Differences, 36*, 1093-1108.

Bar-Tal, Y. (September 1993). *The effect of need and ability to achieve cognitive structure on certainty.* Paper presented at the 10th general meeting of the European Association of Experimental Social Psychologists. Lisbon, Portugal.

Bar-Tal, Y. (1994). The effect on mundane decision-making of the need and ability to achieve cognitive structure. *European Journal of Personality, 8,* 45-53.

Bar-Tal, Y., Kishon-Rabin, & Tabak, N. (1997). The effect of the need and ability to achieve cognitive structuring on cognitive structuring. *Journal of Personality and Social Psychology, 73,* 1158-1176.

Bar-Tal, Y., Raviv, A., & Spitzer, A. (1999). The need and ability to achieve cognitive structuring: Individual differences that moderate the effect of stress on information processing. *Journal of Personality and Social Psychology, 77,* 33-51.

Bar-Tal, Y. & Spitzer, A. (1999). The effect of coping on monitoring, blunting, and the ability to achieve cognitive structure. *The Journal of Psychology, 133,* 395-412.

Brewer, W.F., & Nakamura, G.V. (1994). The nature and functions of schemas. In R.S. Wyer & T.K. Srull (Eds), Handbook of social cognition, (Vol. 1, pp. 119-160). Hillsdale, NJ: Erlbaum.

Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality, 30,* 29-50.

Eysenck, H.J., & Eysenck, S.B.G. (1964). *Manual of the Eysenck Personality Inventory.* London: University of London Press.

Frenkel-Brunswik, E. (1949). Intolerance of ambiguity as an emotional and perceptual personality variable. *Journal of Personality, 18,* 103-143.

Greco, V. & Roger, D. (2001). Coping with uncertainty: the construction and validation of a new measure. *Personality and Individual Differences, 31,* 519-534.

Hancock, P.A., & Mortimer, D.C. (2002). *Decision Errors Under Stress.* White paper in the Multi-Disciplinary University Research Initiative – Operator Performance Under Stress Report: Year One.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values.* Thousand Oaks, CA: Sage.

Janis, I.L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment.* New York: Free Press.

Kagan, J. (1972). Motives and development. *Journal of Personality and Social Psychology, 22*, 51-66.

Kirton, M.J. (1981). A reanalysis of two scales of tolerance of ambiguity. *Journal of Personality Assessment, 45*, 407-414.

Krulak, C. C. (October 10, 1997). *The Three Block War: Fighting in Urban Areas.* Presented at the National Press Club, Washington D.C.

Kruglanski, A.W. (1989). Lay epistemics and human knowledge. New York: Plenum.

Medin, D.L. (1989). Concepts and conceptual structure. *American Psychologist, 4*, 1469-1481.

Neuberg, S. L. & Newson, J. T. (1993). Personal need for structure: Individual differences in the desire for simple structure. *Journal of Personality and Social Psychology, 65,* 113-131.

Roger, D., & Najarian, B. (1989). The construction and validation of a new scale for measuring emotional control. *Personality and Individual Differences, 10*, 845-853.

Rokeach, M. (1960). *The open and closed mind: Investigation into the nature of belief system and personality system.* New York: Basic Books.

Rosenberg, M. (1965). *Society and the adolescent self-image*. New Jersey: Princeton.

Shank, R.C., & Abelson, R.P. (1977). Scripts, plans, goals, and understanding. Hillsdale, N.J.: Erlbaum.

Sorentino, R.M., & Short, J.C. (1986). Uncertainty, motivation, and cognition. In R.M. Sorrentino & E.T. Higgins (Eds.), The handbook of motivation and cognition: Foundation of social behavior (pp. 379—403). New York: Guilford Press.

Sutton, J.L., & Pierce, L.G. (2003). A framework for understanding cultural diversity in cognition and teamwork. *Proceedings of the 8th International Command and Control Research and Technology Symposium.* Retrieved from http://www.dodccrp.org/8thICCRTS/Pres_track1.htm.

Zuckerman, M., Kuhlman, D.M., Joireman, J., Teta, P., & Kraft, M. (1993). A comparison of three structural models for personality: The Big Three, the Big Five, and the Alternate Five. *Journal of Personality and Social Psychology, 65,* 757-768.

Demographics Instrument

Demographics

Please fill in the blanks as indicated below. Complete all information.

PRINT NAME	
TITLE (e.g., MAJ)	
SFOR RANK (e.g., OF3)	
BRANCH OF SERVICE (e.g., Army)	
LOCATION (e.g., MND(N))	
TIME IN POSITION (e.g., 8 weeks)	
PREVIOUS NATO EXPERIENCE	Yes No (circle one)
Where?	
SPEAK MORE THAN ONE LANGUAGE	Yes No (circle one)
Is English your first language?	Yes No (circle one)
GENDER	Male Female (circle one)
NATIONALITY by BIRTH (e.g., Italian)	
COUNTRY OF PERMANENT RESIDENCE (e.g., USA)	

ZKPQ III

DIRECTIONS: On the following pages you will find a series of statements that persons might use to describe themselves. Read each statement and decide whether or not it describes you. Then mark each statement as either True (T) if you agree with the statement or if it describes you, or False (F) if you disagree with the statement or if it does not describe you. <u>Answer every statement</u> even if you are not entirely sure of your answer.

_____ 1. I tend to begin a new job without much advance planning on how I will do it.

_____ 2. I do not worry about unimportant things.

_____ 3. I enjoy seeing someone I don't care for humiliated before other people.

_____ 4. I never met a person that I didn't like.

_____ 5. I do not like to waste time just sitting around and relaxing.

_____ 6. I usually think about what I am going to do before doing it.

_____ 7. I am not very confident about myself or my abilities.

_____ 8. When I get mad, I say ugly things.

_____ 9. I tend to start conversations at parties.

_____ 10. I have always told the truth.

_____ 11. It's natural for me to curse when I am mad.

_____ 12. I do not mind going out alone and usually prefer it to being out in a large group.

_____ 13. I lead a busier life than most people.

_____ 14. I often do things on impulses.

_____ 15. I often feel restless for no apparent reason.

_____ 16. I almost never litter the streets with wrappers.

_____ 17. I would not mind being alone in a place for some days without any human contacts.

_____ 18. I like complicated jobs that require a lot of effort and concentration.

_____ 19. I very seldom spend much time on the details of planning ahead.

_____ 20. I sometimes feel edgy and tense.

_____ 21. I almost never feel like I would like to punch or slap someone.

_____ 22. I spend as much time with my friends as I can.

_____ 23. I do not have a great deal of energy for life's more demanding tasks.

_____ 24. I like to have new and exciting experiences and sensations even if they are a little frightening.

_____ 25. My body often feels all tightened up for no apparent reason.

_____ 26. I always win at games.

_____ 27. I often find myself being "the life of the party."

_____ 28. I like a challenging task much more than a routine one.

_____ 29. Before I begin a complicated job, I make careful plans.

_____ 30. I frequently get emotionally upset.

_____ 31. If someone offends me, I just try not to think about it.

_____ 32. I have never been bored.

_____ 33. I like to be doing things all of the time.

_____ 34. I would like to take off on a trip with no preplanned or definite routes or timetable.

_____ 35. I tend to be oversensitive and easily hurt by thoughtless remarks and actions of others.

_____ 36. In many stores you just cannot get served unless you push yourself in front of other people.

_____ 37. I do not need a large number of casual friends.

_____ 38. I can enjoy myself just lying around and not doing anything active.

_____ 39. I enjoy getting into new situations where you can't predict how things will turn out.

_____ 40. I never get lost, even in unfamiliar places.

_____ 41. I am easily frightened.

_____ 42. If people annoy me I do not hesitate to tell them so.

_____ 43. I tend to be uncomfortable at big parties.

_____ 44. I do not feel the need to be doing things all of the time.

_____ 45. I like doing things just for the thrill of it.

_____ 46. I sometimes feel panicky.

_____ 47. When I am angry with people I do not try to hide it from them.

_____ 48. At parties, I enjoy mingling with many people whether I already know them or not.

_____ 49. I would like a job that provided a maximum of leisure time.

_____ 50. I tend to change interests frequently.

_____ 51. I often think people I meet are better than I am.

_____ 52. I never get annoyed when people cut ahead of me in line.

_____ 53. I tend to start my social weekends on Thursday evenings.

_____ 54. I usually seem to be in a hurry.

_____ 55. I sometimes like to do things that are a little frightening.

_____ 56. Sometimes when emotionally upset I suddenly feel as if my legs are unsteady.

_____ 57. I generally do not use strong words even when I am angry.

_____ 58. I would rather "hang out" with friends rather than work on something by myself.

_____ 59. When on vacation I like to engage in active sports rather than just lie around.

_____ 60. I'll try anything once.

_____ 61. I often feel unsure of myself.

_____ 62. I can easily forgive people who have insulted me or hurt my feelings.

_____ 63. I would not mind being socially isolated in some place for some period of time.

_____ 64. I like to wear myself out with hard work or exercise.

_____ 65. I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement.

_____ 66. I often worry about things that other people think are unimportant.

_____ 67. When people disagree with me I cannot help getting into an argument with them.

_____ 68. Generally, I like to be alone so I can do things I want to do without social distractions.

_____ 69. I never have any trouble understanding anything I read the first time I read it.

_____ 70. I sometimes do "crazy" things just for fun.

_____ 71. I often have trouble trying to make choices.

_____ 72. I have a very strong temper.

_____ 73. I have never lost anything.

_____ 74. I like to be active as soon as I wake up in the morning.

_____ 75. I like to explore a strange city or section of town by myself, even if it means getting lost.

_____ 76. My muscles are so tense that I feel tired much of the time.

_____ 77. I can't help being a little rude to people I do not like.

_____ 78. I am a very sociable person.

_____ 79. I prefer friends who are excitingly unpredictable.

_____ 80. I often feel like crying sometimes without a reason.

_____ 81. No matter how hot or cold it gets, I am always quite comfortable.

_____ 82. I need to feel that I am a vital part of a group.

____ 83. I like to keep busy all the time.

____ 84. I often get so carried away by new and exciting things and ideas that I never think of possible complications.

____ 85. I don't let a lot of trivial things irritate me.

____ 86. I am always patient with others even when they are irritating.

____ 87. I usually prefer to do things alone.

____ 88. I can enjoy routine activities that do not require much concentration or effort.

____ 89. I am an impulsive person.

____ 90. I often feel uncomfortable and ill at ease for no real reason.

____ 91. I often quarrel with others.

____ 92. I probably spend more time than I should socializing with friends.

____ 93. It doesn't bother me if someone takes advantage of me.

____ 94. When I do things, I do them with lots of energy.

____ 95. I like "wild" uninhibited parties.

____ 96. After buying something I often worry about having made the wrong choice.

____ 97. When people shout at me, I shout back.

____ 98. I have more friends than most people do.

____ 99. Other people often urge me to "take it easy."

END OF THIS FORM - THANK YOU

Directions: Choose one rating for each statement.

1. I feel better when everything is in its own place.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

2. People who appear to be uncertain about various things make me feel uneasy.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

3. It is unpleasant for me to enter a situation without knowing what to expect from it.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

4. I don't like to work on a problem that does not have a clear-cut solution.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

5. I prefer things to be predictable and certain.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

6. I always felt that there is a clear difference between what is right and what is wrong.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

7. I cannot enjoy a movie when I am unclear about the director's purpose.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

8. It irritates me to listen to someone who cannot make up his/her mind.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

9. I don't like to dwell on hypothetical situations.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

10. It annoys me when something unexpected disturbs my daily routine.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

11. I get very disturbed when forced to put aside an unfinished task.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

12. I feel uneasy when I am in the company of people whose behavior I can't understand.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

13. I feel more comfortable in a situation when the rules are clear and well defined.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

14. It bothers me when I doubt my beliefs.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

15. I don't like modern paintings in which I don't know what the painter meant.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

16. In order to prepare a good dish it is absolutely essential to follow the recipe exactly.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

17. I hate to change my plans at the last moment.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

18. I think every problem has a clear-cut solution.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

19. If I were a scientist, it would bother me that my work would never be completed (because in science new things come up all the time).

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

20. I can't enjoy my life when I do not have a stable routine.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

END OF THIS FORM - THANK YOU

Ability to Achieve Cognitive Structure (AACS) Scale

Directions: Choose one rating for each statement.

1. I tend to delay making important decisions until the last possible moment and even then I continue to be troubled by it.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

2. It takes me a long time before I commit myself to interpersonal relationships, because I can never be sure enough of the other persons attitude towards me.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

3. My work is usually carefully planned and well organized.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

4. I have no problem in meeting deadlines.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

5. Even if I make notes of things I have to do, it is hard for me to act upon them.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

6. I've always adopted a very structured way of life.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

7. I tend to hesitate when I have to make an important decision even after thinking a lot about it.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

8. Sometimes I am irritated by my hesitation to make a decision.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

9. I seldom doubt my own beliefs.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

10. Even after I have reached a decision, I continue to think about the pros and cons in order to make sure that I did not make a mistake.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

11. When I find myself involved in a decision, I often do not commit myself to any point of view in case I might be wrong.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

12. Usually, I don't have second thoughts after making a decision.

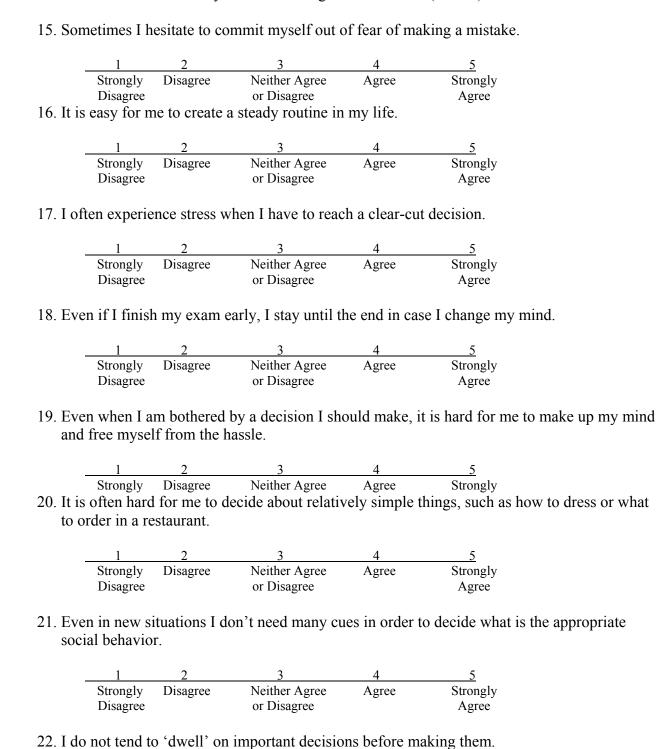| 1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

13. I find myself avoiding new experiences but I am not comfortable with sticking to the known and experienced.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

14. I frequently feel that time just melts away.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

15. Sometimes I hesitate to commit myself out of fear of making a mistake.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

16. It is easy for me to create a steady routine in my life.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

17. I often experience stress when I have to reach a clear-cut decision.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

18. Even if I finish my exam early, I stay until the end in case I change my mind.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

19. Even when I am bothered by a decision I should make, it is hard for me to make up my mind and free myself from the hassle.

1	2	3	4	5
Strongly	Disagree	Neither Agree	Agree	Strongly

20. It is often hard for me to decide about relatively simple things, such as how to dress or what to order in a restaurant.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

21. Even in new situations I don't need many cues in order to decide what is the appropriate social behavior.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

22. I do not tend to 'dwell' on important decisions before making them.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

23. Sometimes it is difficult for me to decide between two possibilities with similar chances of success or failure.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

24. Rarely do I put something somewhere and cannot find it later.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

END OF THIS FORM - THANK YOU

Uncertainty Response (URS) Scale

Directions: Please rate each statement as it relates to you.

1. I tend to give up easily when I don't clearly understand a situation.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

2. When I go shopping, I like to have a list exactly of what I need.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

3. I feel better about myself when I know that I have done all I can to accurately plan my future.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

4. Sudden changes make me feel upset.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

5. When making a decision, I am deterred by the fear of making a mistake.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

6. When uncertain, I act very cautiously until I have more information about the situation.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

7. I like to have things under control.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

8. When the future is uncertain, I generally expect the worst to happen.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

9. Facing uncertainty is a nerve-wracking experience.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

10. I get worried when a situation is uncertain.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

11. Thinking about uncertainty makes me feel depressed.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

12. I find the prospect of change exciting and stimulating.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

13. Uncertainty frightens me.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

14. There is something exciting about being kept in suspense.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

15. The idea of taking a trip to a new country fascinates me.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

16. I like going on holidays with nothing planned in advance.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

17. I think you have to be flexible to work effectively.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

18. Taking chances is part of life.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

19. When I feel uncertain about something, I try to rationally weigh up all the information I have.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

20. Before making any changes, I need to think things over thoroughly.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

21. I prefer to stick to tried and tested ways of doing things.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

22. I like to have my weekends planned in advance.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

23. I feel curious about new experiences.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

24. I like to think of a new experience in terms of a challenge.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

25. A new experience is an occasion to learn something new.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

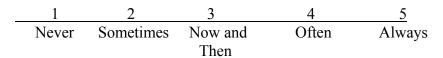26. When I feel a situation is unclear, I try to do my best to resolve it.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

27. I like to know exactly what I'm going to do next.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

28. When facing an uncertain situation, I tend to prepare as much as possible, and then hope for the best.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

29. I feel relieved when an ambiguous situation suddenly becomes clear.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

30. When I feel uncertain, I try to take decisive steps to clarify the situation.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

31. When I can't clearly discern situations, I get apprehensive.

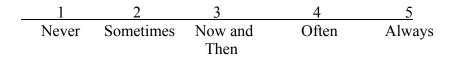| 1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

32. I enjoy finding new ways of working out problems.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

33. When I'm not certain about someone's intentions towards me, I often become upset or angry.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

34. New experiences can be useful.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

35. When uncertain about what to do next, I tend to feel lost.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

36. I feel anxious when things are changing.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

37. New experiences excite me.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

38. I think variety is the spice of life.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

39. I try to have my life and career clearly mapped out.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

40. I think a mid-life career change is an exciting idea.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

41. When a situation is unclear, it makes me feel angry.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

42. I enjoy unexpected events.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

43. I like things to be ordered and in place, both at work and at home.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

44. I really get anxious if I don't know what someone thinks about me.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

45. I easily adapt to novelty.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

46. I am hesitant when it comes to making changes.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

47. I like to plan ahead in detail rather than leaving things to chance.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

48. Before I buy something, I have to view every sample I can find.

1	2	3	4	5
Never	Sometimes	Now and Then	Often	Always

END OF THIS FORM - THANK YO