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**Aviation Maintenance in Multicultural Settings:**

*The Challenges of Cultural Tolerance and of Employees'*

*Maintenance Resource Management/Human Factors*

*(MRM/HF) Awareness*

Supervisors:

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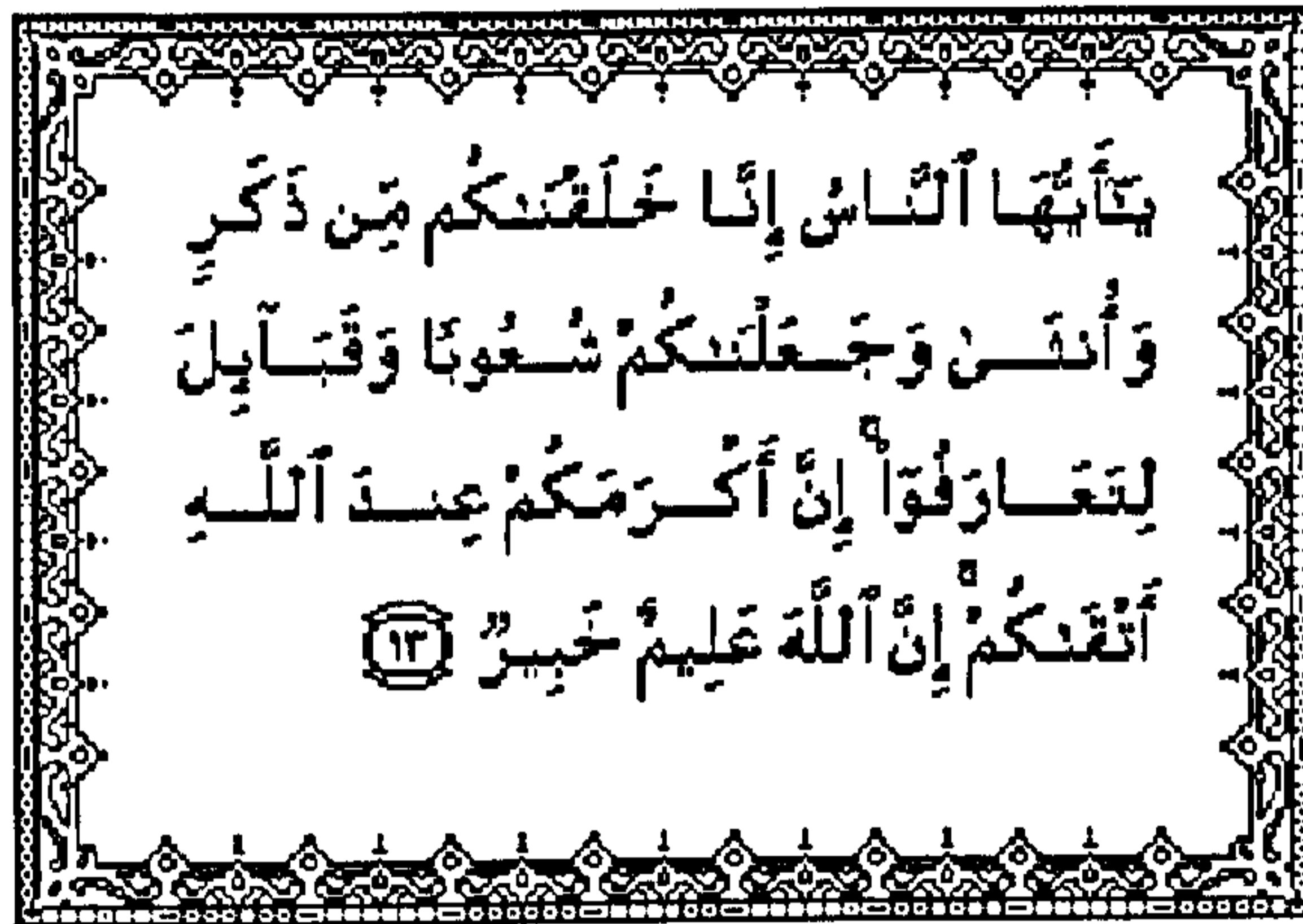
Professor Helen Muir

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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctorate of Philosophy



*In the name of God,  
the most merciful and compassionate*



*“O mankind! We created you from a single (pair) of a male and a female, and made you into nations and tribes, that ye may know each other (not that ye may despise each other).” The Holy Qurán (49:13)*

## DEDICATION

It is with affection, heartfelt appreciation and loyalty that I dedicate this thesis to HRH Prince Sultan bin Abdul Aziz Al-Saud, Second Deputy Prime Minister, Minister of Defense and Aviation and Inspector General, and Chairman of the Board of Saudi Arabian Airlines.

In the words of the Prince “in the light of Islamic values, principles, and culture, the leadership of the nation has always placed importance in human factors in the development of society and civilization, and in respect for all people. Even in this age of automation and machines, man is as important as he was when things were carried out manually”.

It is therefore fitting that this research should be dedicated to HRH Prince Sultan bin Abdul Aziz Al Saud, whose wisdom, humanity and vision has empowered so many of his people to fulfill their true potential, and whose unstinting trust and support has enabled me to undertake the research presented here. This thesis is an expression of my profound gratitude, appreciation and greatest honor, and reflects the continuing presence and influence of the Prince, without whom this work could not have been undertaken.

Ali Al-Harabi

## ACKNOWLEDGMENTS

*No man is an Island, entire of itself;  
every man is a piece of the continent, a part of the main....*

So wrote the Dean of St. Paul's Cathedral in the seventeenth century.

I wish to give praise to Almighty God for with his Mercy, I have been given the life, sustenance, strength and the time to complete this research work.

I would like to extend my heartiest thanks and sincere appreciation to my supervisors, Mr. John Snow and Professor Helen Muir for their supervision, advice, and continuous support and motivation. Also, many thanks go to Dr. Fariba Alamdari for her endless encouragement and belief in my work, and to Dr. Tony Lawrence for his consultative statistical role. I must mention the help and guidance given by Heather Woodfield, and her fellow librarians at Cranfield. I extend my grateful thanks also to those who have played a part in contributing to this thesis, known and unknown, friends and colleagues, gentle critics and able lecturers, members of academic and non-academic staff of the Air Transport Group at the College of Aeronautics – too many to acknowledge individually; to those of you who participated in this study from airlines throughout the world, who have added insight to my own thoughts through their honest responses; to the sharp-eyed proof-readers who shaped and polished my work; thank you all.

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No PhD candidate is an island, entire of itself. Every researcher has had many guide his pen and many minds illuminate his thoughts. All of you have been helpful; all of you have been “a piece of the continent, part of the main”. I am deeply indebted to each and all of you.

## ABSTRACT

This thesis deals with two major issues, the first is the multicultural nature of many Aircraft Maintenance Technicians (AMTs) teams and the way in which cross-cultural communication and/or barriers to communication might affect teams' performance; and the second is the practice of Maintenance Resource Management/Human Factors (MRM/HF) in developing countries.

Using the questionnaire method, this research examines the opinions of AMTs and maintenance supervisors from eight maintenance organisations regarding their attitudes to colleagues from other nations and cultures, and how this might affect their performance in the workplace. It also seeks to probe the respondents' attitudes to, for example, stress, responsibility, attitude to authority and handling conflict, considering these opinions alongside the national and cultural backgrounds of the participants. In order to do this, the respondents themselves were organised into different "culture groups" with the national characteristics of the groups being defined according to Hofstede's ideas of individualistic and collectivistic societies.

The thesis begins from the premise that most AMTs demonstrate greater individualistic tendencies than airline pilots, and while their individualism may be partly traceable to the signatory authority of A&P, other factors, such as education, training and working/socialising with Westerners, are also important influences.

This study aims to show that a large contingent of AMTs and maintenance supervisors from collectivistic cultures share many of the attitudes and work goals of individualists. For example, this study will show that AMTs and maintenance supervisors from most collectivistic cultures lean towards a preference for a command style that is closer to the egalitarian pole than to the hierarchical one; tend to reject the idea of blind obedience to supervisors; tend to believe that technical merit, not social status or good connections, makes for successful managers; lean towards the acceptance of only a modicum of rules to deal with the issue of uncertainty in the workplace; tend to favour work goals that pertain to their personal needs and career aspirations, etc.

The study also sheds light on AMTs and maintenance supervisors' belief systems, inter-ethnic stereotypes and feuds in the workplace, and on that basis, constructs profiles of the eight aviation maintenance organisations previously mentioned. This also addresses the question of whether these companies have met the cultural diversity and MRM-awareness challenges.

The analysis specifically provides answers to the fundamental questions of this study, such as whether AMTs and maintenance supervisors from some collectivistic cultural groups do, in fact, have attitudes and work goals that are similar to those of AMTs and maintenance supervisors from individualistic cultural groups; whether AMTs, as a professional group, are actually more individualistic than are airline pilots from the same countries in attitudes and work goals; to what extent AMTs' work-related attitudes and values are universal, or are influenced by their national cultures; whether placing AMTs from different national cultures in the same work teams has deleterious effects on the functioning of an aviation organisation; whether multicultural teams face insurmountable problems as functioning units because of stereotypes, discrimination, and other ills; whether the management of aviation maintenance organisations has been meeting the challenges of cultural diversity effectively, i.e. whether management has minimised cultural diversity as a potential performance barrier, and has, instead, begun to mine value-added potential of cultural diversity; and whether aviation maintenance organisations have met the MRM-awareness challenge.

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## GLOSSARY OF TERMS

<b>A&amp;P</b>	US-Certified Airframe and Power plant license.
<b>AC</b>	Avoiding of Conflict.
<b>AME</b>	British-style Aircraft Maintenance Engineer.
<b>AMTs</b>	Aircraft Maintenance Technicians. The term “AMTs” applies both to mechanics and inspectors.
<b>CC</b>	Communication & Coordination.
<b>CMAQ</b>	Cockpit Management Attitude Questionnaire.
<b>Confucius</b>	Is the Latinised translation of Kong Fu Ze, who lived in China in 500BC.
<b>CR</b>	Command Responsibility.
<b>Developing Countries</b>	Countries from the south that are ecumenically under develop.
<b>FAA</b>	Federal Aviation Authority.
<b>FMAQ</b>	Flight Management attitude Questionnaire.
<b>FMC</b>	Flight Management Computer.
<b>HF</b>	Human Factors.
<b>Ind</b>	Individualism. One of Hofstade dimensions.
<b>MAS</b>	Masculinity. Hofstede’s dimensions of cultures include Power Distance (PD), Individualism-Collectivism, Uncertainty Avoidance (UA), and Masculinity-Femininity.
<b>MRM</b>	Maintenance Resource Management.

<b>MRM/HF</b>	Maintenance Resource Management/Human Factors.
<b>MRM/TOQ</b>	Maintenance Resource Management/Technical Operation Questionnaire.
<b>nd</b>	The “nd” (not defined) term is used every time a respondent only mentioned his ethnicity without identifying his religion, for example. This remark applies to all of the other ethnic groups who chose not to specify such details such as religion, or sub-ethnicity.
<b>OC</b>	Organizational Climate.
<b>PD</b>	Power Distance. One of Hofstade dimensions.
<b>PDI</b>	Power Distance Index.
<b>UA</b>	Uncertainty Avoidance. One of Hofstade dimensions.

# Chapter One

## 1.0. Background

Although a great deal of empirical research on Maintenance Resource Management/Human Factors (MRM/HF) practices has been conducted in, and pertaining to, the industrialised Western countries (Marx and Graeber, 1994; Taylor, Robertson and Rosenbaum, 1993; Drury, Levine and Reynolds, 1995; Cunningham, 1996; Johnson, 1998); little of significance has been written on MRM practices in the developing countries, or on the specific subject of multicultural Aircraft Maintenance Technicians (AMTs) teams. This is an unfortunate oversight, given that the developing countries are part of the “global village”, and that multicultural AMT teams, i.e. teams comprised of members of different national cultures, are more prevalent now in aviation maintenance than they have been in the past.<sup>1</sup>

This reality raises important questions for the field of study of HF in aviation maintenance, such as: 1) Whether MRM/HF training, as taught and practised now, is as valid in multicultural as it is in mono-cultural environments.<sup>2</sup> 2) Whether multicultural AMT teams are more error-prone

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<sup>1</sup> In view of the fact that the world has been moving toward greater integration as a result of economic, technological and other forces, one might expect an increase in multicultural teams in the aviation maintenance field. It is important to mention here that some have argued, regarding the greater integration of the world, that this integration has been leading to a homogenisation of culture - the materialisation of the “global village”, or the “shrinking planet”. An accompanying speculation has been the heralding of a “culture-free cockpit”. Research on this subject does not substantiate this claim, and no similar claim has been made with respect to aviation maintenance.

<sup>2</sup> This raises the question of the validity of billing MRM as a “one size fits all” solution. Effective MRM efforts require locally compatible strategies.

than are mono-cultural teams. 3) Whether multicultural settings create specific stressors which affect job performance. 4) Whether the ethnocentric assumptions of members of some cultures regarding their alleged superior maintenance skills tend to crop up in the workplace, and, as a result, undermine AMT teams' cohesiveness and mar the work atmosphere. 5) Whether differences regarding language (native English speakers versus non-native English speakers), religion, culture (individualism versus collectivism), history, level of economic development, etc., all of which are inherent in multicultural work settings, would impact negatively on job performance in the aviation maintenance field and, in the end, could impact on aircraft safety.

Research has shown, for example, that cultural differences between countries suggest that those approaches to Crew Resource Management (CRM) training, which work well in some cultures, may not be positively received in others (Helmreich, Merritt and Sherman, 1996). In the end, CRM training can be effective only if it is adapted to local conditions (i.e. national culture, social history and level of technological development);<sup>3</sup> and that, though the symptoms of certain aircraft safety deficiencies may appear similar on the surface, underlying cultural factors may dictate radically different solutions - e.g. safety deficiencies which could be addressed by HF training in North America and Western Europe, may not be effectively addressed at all by such training in other regions of the world (Maurino, 1994), including the Middle East and Africa.

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<sup>3</sup> This specifically means retaining the core material (the universal aspect) of the training but subjecting it to local interpretation (Merritt and Helmreich, 1996). In short, CRM training programmes have to be congruent with the indigenous culture. There is a need for culture-specific training because attempts at exporting US-designed CRM courses as such to other cultures have rarely been successful, and have sometimes been complete failures (Helmreich, Merritt and Sherman, 1996; Anca and Carmens, 1997).



These findings stem from research on HF, the cockpit, and national cultures,<sup>4</sup> conducted primarily at the NASA/University of Texas/FAA Aerospace Crew Research Project of the University of Texas at Austin (henceforth Aerospace Crew Research Project). Two members of this project, Robert L. Helmreich and Ashleigh C. Merritt (1996), explained that their group had, over the course of the research, become sensitised to cultural issues when they discovered differences in attitudes toward cockpit management between US pilots and their counterparts from different nations who had completed an earlier questionnaire, called the Cockpit Management Attitudes Questionnaire (CMAQ). Helmreich and Merritt (1996: 1) noted that many of the cultural differences that the questionnaire had yielded

“were greater than those [they] had found between organizations within the U.S. Since the areas of differences were related to CRM practices and training, [they] decided to develop a more comprehensive instrument to explore cultural differences and to incorporate the measures that [a noted Dutch anthropologist, Geert] Hofstede had employed in his [seminal work on national culture, which was conducted with employees of a Multinational Corporation (IBM) in fifty countries at two points in time: around 1968 and around 1972]. The resulting instrument, the Flight Management Attitudes Questionnaire (FMAQ) ... has been completed [as of 1996] by more than 10,000 pilots from twenty nations in Europe, Asia, North and South America, the Pacific Rim, North Africa and the Middle East”.

The methodology, techniques and especially the findings generated by the Aerospace Crew Research Project, to be detailed later, can be useful in an investigation of HF in aviation maintenance in multicultural work settings/environments. Indeed, the methodology and research techniques

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<sup>4</sup> Culture has been defined as “ ‘a mental software’ - a usually unconscious conditioning which leaves individuals considerable freedom to think, feel, and act but within the constraints of what his or her social environment offers in terms of possible thoughts, feelings, and action” (Hofstede, 1991: 235). Culture has also been defined simply as a relatively organised system of shared meaning (Smith and Bond, 1994). Hofstede insisted that culture be distinguished from human nature, on the one side, and from an individual’s personality, on the other. However, he acknowledges that social scientists have yet to agree as to where the borders between culture and human nature, and between culture and individual personality, actually lie.

used by this institution's researchers (i.e. Helmreich and Merritt) could be adapted, minus the Western-centrism underpinning them,<sup>5</sup> to the subject at hand; namely aviation maintenance in multicultural work settings. In addition, the Aerospace Crew Research Project's findings are useful for comparing the attitudes of pilots with those of AMTs, among other members of the civil aviation community. There is a need for such comparative research on the subject of aviation safety because existing research on this topic has hitherto focused on such professional groups as pilots, AMTs and air traffic controllers, acting in isolation from one another.<sup>6</sup> In reality, aviation safety presupposes interdependence among all of the occupation groups working in the civil aviation field. The research to be undertaken in this study will make a significant contribution to the broader quest for aviation safety. However, in the end, aviation safety can be achieved only through the collaborative work of practitioners in all the fields of civil aviation, and of specialists in human factors, in applied social and organisational psychology, and in sociology.

### *1.1. Statement of the Problem*

The main purpose of this study is to identify the problems arising from the practice of aviation maintenance in multicultural work settings, i.e. whether aircraft maintenance organisations are prepared for the challenges posed by putting AMTs from different national cultures in the same workplace; whether multicultural AMT teams are more error-prone than

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<sup>5</sup> It is important to mention here that Helmreich and Merritt (1996) emphasise that the FMAQ suffers from being developed by researchers whose background, biases, and experience are Western. Hofstede (1991) also notes that all Western scholars, himself included, have been guilty of such a Western bias.

<sup>6</sup> While this endeavour is beyond the scope of this research, Chapters Four, Five, Six and Seven will highlight some of the similarities and differences between AMTs on the one hand and pilots on the other, regarding their attitudes towards their jobs, and how those attitudes are shaped by national culture.

mono-cultural teams;<sup>7</sup> whether the ethnocentric assumptions of some members of certain national cultures regarding their alleged superior maintenance skills tend to mar the work atmosphere for multicultural AMT teams; and whether differences in language, religion, and/or culture among members of multicultural AMT teams tend to impact negatively upon job performance, and therefore, upon aircraft safety as well. One of the ultimate objectives of this study is to chart the interplays and potential conflicts between national cultures that might manifest themselves in multicultural AMT teams.<sup>8</sup>

As emphasised before, these issues have not been subject to extensive scrutiny. Compounding this problem has been the fact that general research on HF in aviation maintenance has suffered from several shortcomings, including the fact that AMTs, in comparison with cockpit crews, have not been the subject of much HF research. There are several possible reasons for this state of affairs, chief among them being the often-quoted fact that the majority of aircraft accidents are attributable to pilot error (Boeing, 1993). But as is now evident, pilots are not the only humans within the aviation system who err, and who compromise aviation safety (Marx and Graeber, 1994). In fact, maintenance and inspections personnel have been found to play a role in 12% of major aircraft accidents (Sears, 1986 cited in Marx and Graeber, 1994).<sup>9</sup> Marx (1997), though, assessed the contribution of maintenance error to air carriers' accidents at 15%, and the cost of these

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<sup>7</sup> The term "mono-cultural teams" essentially refers to teams whose members are from the same national culture. Generally, the term "mono-cultural teams" is a misleading one because such teams are still a blend of national, regional, and organisational sub-cultures.

<sup>8</sup> Another objective of this study is to propose a programme for addressing the problems arising in situations where members of multicultural AMT teams work together.

<sup>9</sup> Marx and Graeber (1994) emphasise that many, if not the majority, of these accidents involve human error. They explain that, in some cases, the maintenance or inspection error itself was the primary cause of the accident, whereas in other cases, the maintenance or inspection failing was just one link in a chain of events culminating in the accident itself.

accidents at more than \$2 billion dollars per year for the US aviation industry alone.

However, the field of aviation maintenance poses several challenges to researchers. Firstly, identification of maintenance errors is a more complicated task than is identification of pilot errors, because in contrast to the “real-time” nature of pilot errors, maintenance errors are often not identified at the time they occur. Indeed, the consensus in the field is that AMTs who are responsible for mishaps may never know about them, and that, in general, detection of maintenance errors may occur days, months, or even years after they have been made. Secondly, the reasons behind maintenance errors are rarely as clear as those behind errors in the flight operating environment. This is because the aircraft maintenance environment does not have a counterpart to either the cockpit voice recorder or to the flight data recorder of the flight operations environment for capturing the details of errors (Marx and Graeber, 1994). Thirdly, human error in maintenance does not always directly or immediately cause the aircraft to be unsafe. Still, an aircraft being dispatched with a maintenance-induced defect remains a cause for concern (Marx and Graeber, 1994).

The differences between the aircraft maintenance environment and the flight operating environment notwithstanding, AMTs and cockpit crews face similar challenges, and their attitudes and values are shaped by similar factors, such as national culture. While there is a vast database on the influence of national culture on cockpit crews’ attitudes, there is little meaningful accumulated knowledge on the influence of national culture on AMTs’ attitudes. This reality has made it necessary to derive hypotheses on the latter subject partially from the impressive data accumulated by the Aerospace Crew Research Project on cockpit crews, partially from the general research on

individualism and collectivism, and partially from direct observation of the dynamics of some multicultural AMT teams at work.<sup>10</sup>

The most revealing findings, on the issue of national culture and cockpit crews that researchers affiliated to the Aerospace Crew Research Project generated, pertained to the cockpit crews' attitudes regarding such issues as "Communication and Teamwork", "Stress", "Organizational Climate", "Command Interactions/Structure", and "Automation".<sup>11</sup> The fundamental question that researchers at the Aerospace Crew Research Project had set out to answer was as follows: To what extent, and in what areas, are pilots' work-related attitudes universal, i.e. part of a professional pilot standard, and to what extent are they influenced by national culture? (Merritt, 1996, and Helmreich, Merritt and Sherman 1996).

The general finding was that, while the areas of "Communication and Teamwork", "Attitudes towards Stress" and "Organizational Climate" engendered relatively universal responses among pilots, the really strong cross-cultural differences were observed in the areas of "Command Interactions/Structure", and "Tolerance for Rules, Routines and Set Procedures" (Merritt, 1995, Sherman and Helmreich, 1995, Helmreich, Merritt and Sherman 1996, and Merritt, 1996). Specifically, regarding the "Communication and Teamwork" scale, pilots' scores were generally positive across all samples, with the lowest group still registering a mean score of 3.9 on a 5-point scale. Respondents from Taiwan, the Philippines, and Switzerland registered the highest scores on the "Communication and

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<sup>10</sup> However, one caveat here is that the Aerospace Crew Research Project is actually of limited assistance in the area of hypothesis derivation regarding multicultural AMT teams because the project's research has so far focused primarily on mono-cultural cockpit crews within the US and international airlines.

<sup>11</sup> Sherman and Helmreich (1995) clarified that the items of the "Attitudes toward Automation" scale, however, are experimental.

Teamwork” scale, while those from Anglo countries, such as the US, Britain, Ireland, Australia, and former British Hong Kong, tended to fall within the lower half of the ranges of scores (Merritt, 1996).<sup>12</sup>

Merritt (1996) also found that the item in the FMAQ’s “Communication and Teamwork” scale<sup>13</sup> which clearly separated the respondents from the Anglo countries from those of the other countries surveyed was item No. 13, which stated that “A debriefing and critique of procedures and decisions after each flight is an important part of developing and maintaining effective crew co-ordination”. The differences over this item, between pilots belonging to these two diverse groups of countries, can be understood from the vantage point of one of Geert Hofstede’s dimensions of national culture, namely, Power Distance (PD), which deals with the nature of relationships between subordinates and superiors.<sup>14</sup> Indeed, in high PD Asian countries, a captain-initiated and a captain-led post-flight debriefing and critique of procedures and decisions would be considered the captain’s prerogative, while in low PD Anglo countries, both the captain and the first

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<sup>12</sup> A clarification is in order here: although there was an almost universal endorsement by pilots of the importance of communication and teamwork, as the surveys show, the specific expression of this endorsement varied cross-culturally. This was also true in the case of other scales which similarly engendered almost universal endorsement by pilots.

<sup>13</sup> The “Communication and Teamwork” scale contains ten items, six of which came from the original “Communication and Coordination” scale of the CMAQ. The ten items, as numbered in the Aerospace Crew Research Project were: No. 3, “Captains should encourage crewmember questions during normal flight operations and in emergency”; No. 6, “Pilots should be aware of and sensitive to the personal problems of other crewmembers”; No. 8, “I expect to be consulted on matters that affect the performance of my duties”; No. 10, “I let other crewmembers know when my workload is becoming (or about to become) excessive”; No. 13, “A debriefing and critique of procedures and decisions after each flight is an important part of developing and maintaining effective crew coordination”; No. 22, “Crewmembers share responsibility for prioritizing activities in high workload situations”; No. 24, “If I perceive a problem with the flight, I will speak up, regardless of who might be affected”; No. 32, “To resolve conflicts, crewmembers should openly discuss their differences with each other”; No. 39, “Crewmembers should feel obliged to mention their own psychological stress or physical problems to other flightcrew personnel before or during a flight”; and No. 43, “Effective crew coordination requires crewmembers to take into account the personality of other crewmembers”.

<sup>14</sup> PD, and Individualism/Collectivism, are two of Hofstede’s dimensions which are particularly relevant to the manner in which teams function. Hofstede’s (1980) dimensions will be discussed in detail later.

officer might feel uncomfortable with such open performance appraisals (Merritt, 1996).<sup>15</sup>

Another almost universal outlook among pilots was noted in relation to “Attitudes Towards Stress” but, unlike the scores for “Communication and Teamwork” which reflected a positive, safety-enhancing standard, scores for “Attitudes Towards Stress” were more ambivalent and reflected unrealistic, safety-threatening performance norms among pilots. Indeed, the “Attitudes Towards Stress” scale showed that pilots, across national cultures, tended to reflect a universal desire to minimise or deny the negative effects of stress upon their performance. Only pilots from four countries (i.e. Switzerland, Ireland, Japan, and former British Hong Kong), out of the fifteen surveyed, showed awareness of the difference between the realistic and the unrealistic outlooks - all the other pilots, by contrast, did not, and in fact leaned towards the unrealistic attitude.<sup>16</sup> Specifically, the Filipino pilots were the most adamant that their decision-making ability was not impaired by stress, while their Swiss and British counterparts had the most realistic attitudes towards stress. Pilots were generally willing to acknowledge the negative impact of fatigue, but they were considerably less likely to acknowledge that environmental stressors, such as time pressure, poor weather and abnormal conditions, could impact on their judgement and decision-making abilities

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<sup>15</sup> Other noteworthy findings concerning the “Communication and Teamwork” scale were that Japanese and Korean pilots registered low scores on assertion, as represented by item No. 24; registered the highest scores for item No. 25; were the least likely to agree to item No. 6; and were the least likely “to let other crewmembers know when [their] workload is becoming (or about to become) excessive” (item No. 10). For Merritt, these results suggested a greater tendency towards formality among Japanese and Korean pilots, deriving in part from greater self- and other-face concerns. Brazilian pilots, for their part, registered the lowest scores on items Nos. 3 and 43, which suggested that they did not consider crew-based communication and teamwork as important as did pilots from other national groups.

<sup>16</sup> The items of the “Attitude toward Stress” scale were No. 4, “Even when fatigued, I perform effectively during critical times in a flight”; No. 12, “My decision-making ability is as good in emergencies as in routine flying conditions”; No. 31, “My performance is not adversely affected by working with an inexperienced or less capable crewmember”; and No. 36, “A true professional crewmember can leave personal problems behind when flying”. The other items in the “Attitudes towards Stress” scale were No. 19, “I am more likely to make judgement errors in an emergency”; No. 29, “I am less effective when stressed or fatigued”; No. 42, “Personal problems can adversely affect my performance”; and No. 47, “How often do you feel nervous or tense at work? (always to never)”.

(Helmreich, Merritt, and Sherman, 1996). The Filipino pilots' reluctance to acknowledge the heightened possibility of errors in emergency situations is a dangerous one in that it does not prepare them, or other pilots who think similarly, to recognise the hazards of hasty information gathering and decision-making in emergency situations, or to employ successful countermeasures to combat the deleterious effects of these practices (Merritt, 1996).

These findings underscore the fact that pilots in general endorsed an unrealistic image of the professional aviator. Indeed,

“[a] strong belief persists throughout the pilot profession that the truly professional aviator is never anxious, and never overloaded. From this perspective, showing some sign of being under stress is perceived as a weakness (a failure to meet professional standards) rather than a predictable, universal reaction to certain environmental conditions” (Helmreich, Merritt and Sherman, 1996: 14).

The inescapable conclusion stemming from the findings regarding the “Attitudes Towards Stress” scale is that as long as pilots cherish this image of invulnerability, human error will be rampant, and “effective human-error management in the cockpit will be difficult to achieve because warning signs of degraded performance might go unheeded, thereby increasing the likelihood of error” (Helmreich, Merritt and Sherman, 1996: 14; also Merritt, 1996).

In contrast to the first two scales, which differentiated between pilots from different countries, the “Organizational Climate” scale differentiated between airlines. Specifically, the “Organizational Climate” scale of the FMAQ contained three items: No. 21, “Working for this organization is like being part of a large family”; No. 35, “I am proud to work for this



organization”; and No. 45, “I like my job”.<sup>17</sup> Pilot responses were averaged on these three items, and then averaged for the airline. The final number represents, in a way, the temperature or health of the organisation, with high numbers indicating a positive organisational climate, and low numbers indicating pilots’ dissatisfaction with the company, and a negative organisational climate. The “Organizational Climate” scale shows that almost all pilots surveyed liked their job, but there was sizeable variability on the issues of pride in the company (from 3.0 to 4.9), and on perceptions of the company as a large family (from 1.8 to 4.6) (Merritt, 1996).<sup>18</sup>

It is important to clarify here that organisational climate is not synonymous with organisational culture, rather, the term “climate” refers to the pilots’ appraisal of the company’s culture (Westrum, 1996). Simply put, this means that if the organisational culture is in harmony with the individual pilot’s values, then the pilot will feel proud to work for the airline, will enjoy his job, and will feel comfortable in describing the airline/company as a large family. On the other hand, if there is a conflict between the organisation’s culture and pilots’ own values, morale in the organisation will be affected (Merritt and Helmreich, 1995). In the end, when the organisational culture is strong and positive, pilots will more readily accept new concepts, such as CRM, and the training programmes which go with it. In such a context, organisational culture can be made into a tool both for uniting the diverse

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<sup>17</sup> It is important to mention here that three items related to passengers were removed from the analysis because they were not working as intended, from the perspective of researchers at the Aerospace Crew Research Project, and, furthermore, had weak effect sizes. These items were No. 16, “Passengers are never too demanding”; No. 28, “I am the passengers’ servant”; and No. 34, “I become impatient with passengers who expect a lot”.

<sup>18</sup> Merritt (1996) mentioned that in the early data returns, item No. 21 separated the Anglo airlines from the other airlines, a fact attributed to closer, more personal links to the company on the part of employees from more collectivist countries. But then the Aerospace Crew Research Project received data from an American airline company, known for its phenomenally positive organisational culture, which showed pilots there as having a mean score of 4.2 on item No. 21. (Only the Philippines airline had a higher mean score than this American airline). The main difference between these two airlines was that the American airline owed its strong organisational climate to its charismatic CEO, while the Filipino one owed its strong organisational climate to a collectivistic sense of pride, which has persisted throughout the years despite changes in management and ownership.

national cultures present in the company, and for promoting superordinate values such as safety (Merritt, 1996).

In the Aerospace Crew Research Project, the “Command Interactions/Structure” scale proved to be the strongest discriminator among national cultures. This scale of the FMAQ contained thirteen items, eight of which came from the original “Command Responsibility” scale of the CMAQ.<sup>19</sup> To use Hofstede’s (1980 and 1991) terminology, low scores on the “Command Interactions/Structure” scale reflect low PD and Individualism, while high scores reflect high PD and Collectivism. Analysis of the “Command Interactions/Structure” scale revealed that pilots from the Anglo countries and Switzerland registered the lowest scores, while the Filipino, Brazilian and Taiwanese pilots had the highest scores.<sup>20</sup> Merritt (1996) emphasised that, upon closer investigation, the command styles endorsed by the pilots of Taiwan, Brazil and the Philippines could be distinguished by the relative priority given to rules and precision (Taiwan), rank and predictable routine (Brazil), and honoured relational hierarchies (the Philippines).

The different scores on the “Command Interactions/Structure” scale indicate that pilots from diverse countries varied dramatically in their

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<sup>19</sup> These were No. 1, “The captain should take physical control and fly the aircraft in emergency and non-standard situations”; No. 7, “The organization’s rules should not be broken in front of my other crewmembers”; No. 9, “Senior staff deserve extra benefits and privileges”; No. 11, “Captains who encourage suggestions from crewmembers are weak leaders”; No. 15, “Junior crewmembers should not question the captain’s or senior crewmembers’ decision”; No. 17, “It is better to agree with other crewmembers than to voice a different opinion”; No. 23, “Successful flight deck management is primarily a function of the captain’s flying proficiency”; No. 25, “I am ashamed when I make a mistake in front of my other crewmembers”; No. 26, “In abnormal situations I rely on my superiors to tell me what to do”; No. 27, “Crewmembers should not question the decisions and actions of the captain except when they threaten the safety of the flight”; No. 37, “There are no circumstances (except total incapacitation) where the first officer should assume command of the aircraft”; No. 38, “Written procedures are necessary for all in-flight situations”; No. 44, “Uncertain decisions often require quick decision-making”; and No. 46, “How often are subordinates afraid to express disagreement with their supervisors? (Very frequently to very seldom)”.

<sup>20</sup> Merritt’s (1996) findings were that pilots’ scores for the 8 item scale mentioned before ranged from 1.7 to 3.1.

preference for an egalitarian versus a hierarchical command style. All Anglo cultures, for example, subscribe to the norms of egalitarianism, which holds that “all men are created equal”. Such a belief system predisposes pilots to reject authoritarian captains and to accept the elevated positions of captains in relation to their crews as a temporary reality dictated by the job. In general, Anglo pilots registered a preference for superiors who consulted them before making decisions, and who treated them as equals. Anglo pilots’ other characteristics were that they

“prefer direct, succinct, and emotion-free communication and they believe every individual has the right to logically question anything and anyone. Individuals [in Anglo cultures] who are ignorant or unsure [as to the procedure to follow to tackle problems encountered] are expected to seek out the necessary information, just as individuals who disagree are expected to raise a challenge. In other words, the Anglo cultures endorse the rights, responsibilities and accountability of [the autonomous] individual..”. (Merritt and Helmreich, 1995: 3).

Those who adhere to a clear dichotomy between “egalitarian/individualistic” and “nonegalitarian/collectivist” societies stress that the above-mentioned values characterising Anglo cultures are not worldwide in scope. Indeed, adherents to this dichotomy emphasise that many of the world’s cultures

“proceed from an understanding that people are not created equal - that relational hierarchies dictate (often from birth) one’s place in the family, the clan, the work organization and/or the society. It is each person’s responsibility to understand and accept his or her place within the natural order. Communication is influenced by these hierarchical relationships - indirect, elaborate communication may be necessary in order to honour relationships and maintain group harmony. The relationship between captain and crew is for many non-individualistic

cultures a highly respected legitimate difference between superior and subordinate” (Merritt and Helmreich, 1996: 3).<sup>21</sup>

As in the case of “Command Interactions/Structure”, national culture influences “Attitudes Toward Automation”. The “Attitudes toward Automation” scale of the FMAQ had fifteen items, two of which were taken from Wiener’s (1989) survey of pilots of US automated aircraft. The data accumulated by the Aerospace Crew Research Project on the “Attitudes Toward Automation” scale showed that the item which engendered the greatest consensus (i.e. among 80% or more of pilots) across and within airline companies was No. 11, “I make sure the other pilots acknowledge programming changes I make in the FMC”. Other items which engendered sizeable consensus (i.e. among 50% or more of pilots) across and within airline companies were No. 5, “Under abnormal conditions, I can rapidly access the information I need in the FMC”, and No. 8, “I feel free to select the level of automation at any given time”. One item, No. 2, engendered the reverse pattern, namely, that 50% or fewer of the pilots in every national group agreed with the statement that “There are modes and features of the FMC that I do not fully understand”. The main conclusion to be drawn from items Nos. 5, 8, and 11 in the “Attitudes Toward Automation” scale was that the majority of pilots, regardless of national origins, were inclined to say that they knew both how to use the automation system effectively and how to

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<sup>21</sup> According to Merritt and Helmreich (1996), further evidence of cultural values and of their influence is encapsulated in the “Information Sharing” scale of the CMAQ, a scale not included in subsequent research, but whose components were incorporated in the “Communication and Teamwork” scale. The main characteristic of the “Information Sharing” scale is that high scores would indicate endorsement of pre-flight briefings and debriefings; a belief that plans should be verbalised; the expectation of consultation when it is relevant to one’s performance; and a belief that the cockpit and the cabin should be co-ordinated. Merritt and Helmreich’s (1996) finding is that Anglo pilots show a relatively strong endorsement of the “Information Sharing” scale, but that non-Anglo pilots’ support of the above-mentioned dimensions of this scale is even stronger. Merritt and Helmreich (1996) explain that in collectivist cultures, to which the Asian and Latin American pilots belong, it is not automatic for people to speak their mind, and as a result, greater emphasis is placed on captain-initiated, top-down communications and coordination, while in individualistic cultures, to which the Anglo pilots belong, information-sharing is important but there is an accompanying belief that people have a responsibility to speak up if they are unsure.

include the other pilots in automation decisions and activities (Sherman, Helmreich, and Merritt, 1997).<sup>22</sup>

The items of the “Attitudes Toward Automation” scale which engendered the least consensus among pilots of diverse national backgrounds were No. 14, “I look forward to more automation - the more the better”, and No. 15, “I prefer flying automated aircraft”.<sup>23</sup> The findings on these two items, to the effect that between 5 and 74%, and between 34 and 100% of the pilots surveyed agreed with items Nos. 14 and 15 respectively, suggest that pilots in some national groups were considerably less enthusiastic about automation than others, with some saying, in effect, “enough already” to the level of automation, while others seemed quite receptive to the idea of adding more automation to the cockpit (Sherman, Helmreich and Merritt, 1997).

Sherman, Helmreich and Merritt (1997) found that when the endorsement levels for the items of the “Attitudes Toward Automation” scale were correlated at the national levels (15 items x 12 nations’ automated aircraft pilots) a clear picture emerged:

“[Pilots from] national groups who said they preferred flying automated aircraft also said they were looking forward to more automation ( $r = .80$ ), they were not concerned about losing [their] flying skills ( $r = -.84$ ), they believed they could rapidly access the FMC in abnormal conditions ( $r = .91$ ), they did not think there were modes and features of the FMC that they didn’t fully understand ( $r = -.81$ ), and they believed they should always use the automation tools provided ( $r = .84$ )”.

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<sup>22</sup> It is important to mention here that this lesson, and subsequent ones, drawn from research at the Aerospace Crew Research Project concerning the “Attitudes toward Automation” scale, have limited validity for aviation maintenance. This is the case because in aviation maintenance there is no equivalent to the Flight Management Computer (FMC).

<sup>23</sup> The other items making up the “Attitudes toward Automation” scale were No. 1, “I am concerned that the use of automation will cause me to ...”; No. 3, “When workload increases, it is better to avoid reprogramming the FMC”; No. 6, “In order to maintain safety, pilots should avoid disengaging automated systems”; No. 7, “I regularly maintain flying proficiency by disengaging automatic”; No. 9, “My company expects me to always use automation”; No. 10, “The effective crew member always uses automation”; No. 12, “Automated cockpits require more verbal communication”; and No. 13, “Automated cockpits require more cross-checking of crewmember actions”.

This pattern suggests that pilots' preference for automation is usually accompanied by greater confidence in their skills regarding the use of automation, and by a heavier reliance on automation systems. Conversely, this pattern suggests that pilots' wariness about automation is usually accompanied by concern about retaining their flying skills and by less reliance on automation systems (Sherman, Helmreich and Merritt, 1997).

The other noteworthy pattern of correlation observed by Sherman, Helmreich and Merritt (1997) involves item No. 9 of the "Attitudes Toward Automation" scale, which states that "My company expects me to always use the automation". The pilots who positively endorsed this item also stated that they were reluctant to disengage the automation system both because they believed that the system contributed to the maintenance of safety ( $r=.85$ ), and because they did not see such a move as necessary for the preservation of their flying proficiency ( $r=-.80$ ).<sup>24</sup> This means that, amongst pilots believing that automation use was expected of them, there was a tendency towards reluctance to disengage the automation system (Sherman, Helmreich and Merritt, 1997).

Sherman, Helmreich and Merritt (1997) stress that the above findings on automation attitudes, like those on "Communication and Teamwork" and on "Command Interactions/Structure", were significantly related to dimensions of national culture as defined by Hofstede (1980 and 1991). Indeed, the willingness to interact with the FMC, and to use it as a discretionary tool, is a pattern consistent of individualistic, or low PD, national cultures. Pilots from such cultures, i.e. the cultures of such Westernised countries as the US, Ireland, the UK and Australia, may feel more comfortable "asserting themselves" in their interactions with the FMC,

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<sup>24</sup> Sherman, Helmreich and Merritt (1997: 15) stressed that "some pilots' utilization of the FMC may reflect a battle of wills (if a computer can be thought to have a will), rather than an assertive interaction between man and technology ('no machine is going to tell me what to do!')". Individualists would fit this mode.

while pilots from hierarchical, or high PD, national cultures, such as those of Asia among others, might be more inclined to accept uncritically the FMC's authority. Helmreich and Merritt (1998) have suggested that the computer may be anthropomorphised in some cultures as a high status, electronic crewmember which must not be questioned under any circumstances (Helmreich, Merritt and Wilhelm, 1998).

Sherman, Helmreich and Merritt (1997) also stressed that some hierarchical cultures, such as those of Brazil and Taiwan, show a strong preference for rules and sets of procedures, eschewing the unfamiliar and non-routine. Pilots from such cultures would, in all likelihood, prefer the set regiment of automation, employing it faithfully, or even inflexibly.<sup>25</sup>

Research into the effects of CRM training has shown that attitudes about the conduct of flight are amenable to change through training (Helmreich and Wilhelm, 1991). Attitudes towards automation can also be made amenable to change in this manner. But attitudes which are related to strong cultural norms (e.g. those which emphasise retaining group harmony at any cost, and do not question decisions of superiors) are difficult to modify because they are rooted in strong value systems (Sherman, Helmreich and Merritt, 1997). Those who have been exporting CRM training to many countries have generally been oblivious to this fact, since this training can promote attitudes and behaviours which are incongruent with the national cultures of the importing countries, such as advocating assertive questioning of captains' decisions by first officers (Helmreich, Merritt and Sherman, 1996).

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<sup>25</sup> On a related issue, Meshkati (1996) states that peoples' perceptions of technologies and of risk depended upon the information to which they had been exposed and chose to believe. He stresses that these perceptions also depended upon religious and ideological values, social experiences, and political and historical developments within peoples' different societies. The perception of the risk that a given technology might present was also a function of whether or not that technology would raise that society's standard of living, create jobs, or enhance national prestige and independence.

It is important to note that Helmreich and Merritt (1996), and Sherman, Helmreich and Merritt (1997) reject the simplistic deeming of some cultures, usually the Western ones, as superior,<sup>26</sup> and, therefore, more conducive to aviation safety. Their position was that every national culture, whether individualist or collectivist, has attributes which can contribute to, or detract from, aviation safety. Sherman, Helmreich and Merritt (1997) illustrated this point by stressing that adherence to rules and procedures (a characteristic of collectivist societies) is surely desirable for aviation safety, as, on the other hand, is the flexibility to deviate from those rules when circumstances dictate (a characteristic of individualistic societies). It is more relevant to pilots than AMTs. Another attribute that contributes to aviation safety is a person's realistic perception of his or her abilities, a characteristic that Triandis (1995) associates with collectivists.<sup>27</sup> However, as Erez and Earley (1993) emphasise, collectivism also has its negative effects on organisations, and one detrimental facet of behaviour among collectivists is their tendency to keep important information to themselves instead of sharing it with those members of their organisations who are considered part of an out-group. For collectivists, information is power<sup>28</sup> and they tend to exploit those whom they consider out-group members even more than do individualists. In general, as Helmreich and Merritt (1996) have noted, from a

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<sup>26</sup> This position is in line with that of Geert Hofstede (1991) who concurs with Claude Lévi-Strauss on the need for "cultural relativism", as follows:

"Cultural relativism affirms that one culture has no absolute criteria for judging the activities of another culture as 'low' or 'noble.' However, every culture can and should apply such judgement to its own activities, because its members are actors as well as observers" (Lévi-Strauss and Eribon, 1988: 229, quoted in Hofstede, 1991: 7).

<sup>27</sup> Triandis (1995) mentions that individualists, by contrast, have flattering self-perceptions.

<sup>28</sup> Triandis (1995) states with respect to individualism and collectivism in general that collectivism has definite advantages for social relationships, or inter-personal situations which include small groups and co-workers, or in which people are dealing with face-to-face situations involving long-term interaction. For Triandis (1995), individualism, by contrast, has major advantages for situations where the individual is dealing with large entities, such as the state, and in structures where achievement within the world economy is a central priority. However, Triandis (1995) believes that some form of balance between individualism and collectivism is optimal, since neither, in the extreme, is desirable.



CRM perspective, an optimal cockpit would have a strong group or team orientation (collectivist) and a relatively flat authority gradient which allows for easy communication from subordinates to superiors (low power distance).

As is now obvious, researchers at the Aerospace Crew Research Project relied upon Hofstede's four dimensional model of culture and found this model to be a useful starting point in the analysis of the effects of national culture on flightdeck behaviour. These researchers specifically found that three of Hofstede's dimensions of culture were reproducible in the aviation environment, and were conceptually relevant in the cockpit (Helmreich, Merritt and Wilhelm, 1998).

## *1.2. Hofstede's Dimensions of Culture*

Hofstede's (1980 and 1991) dimensions of cultures include Power Distance (PD), Individualism-Collectivism, Uncertainty Avoidance (UA), and Masculinity-Femininity. However, researchers at the Aerospace Crew Research Project found that in their studies, Hofstede's Masculinity-Femininity dimension showed only moderate replicability.<sup>29</sup>

The first dimension, PD, has been conceptualised by Hofstede (1980 and 1991) in terms of the amount of respect and deference between those in superior and subordinate positions. The second, Individualism-Collectivism, has to do with whether one's identity is defined by personal choices and achievements or by the character of the collective groups with which one is permanently affiliated. Specifically, Triandis (1995: 2) defines individualism as "a social pattern that consists of loosely linked individuals who view themselves as independent of collectives; are primarily motivated by their own

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<sup>29</sup> Merritt (1997) attributes this to the poor conceptual relevance of Masculinity-Femininity in the aviation context.

preferences, needs, rights, and the contracts they have established with others; give priority to their personal goals over the goals of others; and emphasise rational analyses of the advantages and disadvantages of associating with others”. Triandis also defines collectivism as “a social pattern consisting of closely linked individuals who see themselves parts of one or more collectives (family, co-workers, tribe, nation); are primarily motivated by the norms of, and duties imposed by, those collectives; are willing to give priorities to the goals of those collectives over their own personal goals, and emphasise their connectedness to members of those collectives”.

Triandis insists that the individualist and collectivist patterns operate across cultures, and within societies, as well as within each individual proper, adding that:

“[t]here is a constant struggle between the collectivist and individualist elements within each individual. It is useful to think of culture as a ‘tool kit’ that contains elements that are individualistic or collectivist, which define a situation as *interpersonal* or *intergroup*. People sample elements from this tool kit to construct the meaning of situations, which determines their behaviour”. (p. xiv) (Italics in the text).<sup>30</sup>

An understanding of the traits of individualists and collectivists allows one both to understand the effects of individualism and collectivism on professional activities, and to develop strategies to take advantage of the positive attributes of each (or, conversely, to minimise the negative attributes of each) in the workplace. Such strategies will have to take into account the fact that individualists mostly value in-group heterogeneity, and collectivists in-group homogeneity, and that individualists and collectivists have different

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<sup>30</sup> Triandis (1995: xiv) resorts to circuitous reasoning to identify individualism and collectivism, viz, “In cultures where most relationships are seen as *interpersonal* we have individualism; in cultures where most situations are defined as *intergroup* we have collectivism”.

conceptions of “face” (or *wajh* in Arabic) and differ as to conflict style, and to attitudes towards such behaviour as “social loafing”.

Ting-Toomey (1993 and 1994) has found that individualists are mainly concerned with saving their own face (self-face concern), while collectivists are primarily concerned with saving the face of in-group members (other-face concern). More important, self-face maintenance is associated with a dominating conflict style, while other-face maintenance, a characteristic of collectivists, is associated with the avoiding, integrating, and compromising styles of conflict management. Finally, Earley (1989) demonstrates that “social loafing”, which has been defined as doing less than one is capable of doing when one’s performance is not observed, is less likely among collectivists working with in-group members than among individualists. Wagner (1995) also shows that individualists were more likely to avoid responsibility, and to let others do a greater share of the work, i.e. to engage in free riding, than were collectivists.<sup>31</sup>

Uncertainty Avoidance (UA) was the third of Hofstede’s dimensions of culture that researchers at the Aerospace Crew Research Project found to be conceptually relevant in the cockpit. Hofstede (1991: 113) defines UA as “the extent to which the members of a culture feel threatened by uncertain or unknown situations”, adding that “such feeling is, among other things, expressed through nervous stress and in need of predictability: a need for written and unwritten rules”. According to Hofstede, the need for rules in strong UA societies is emotional, and stems from peoples’ having been programmed since early childhood to feel comfortable in structured

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<sup>31</sup> All of the characteristics of individualism and collectivism mentioned above, therefore, hint at which managerial style will be more effective for which cultural trait. A managerial style which encourages open criticism on the job, for example, will be more acceptable in individualistic cultures, where, as was mentioned before, face-saving is not too important, than in collectivist cultures, where face-saving is important (Hofstede, 1991). (Conversely, a management style which encourages subtle, indirect ways of communicating feedback about a poorly executed task will be more acceptable in collectivist cultures). The other important conclusion to be drawn from the dimension of Individualism-Collectivism is that concepts relating to teamwork and group harmony are highly congruent with a collectivist orientation and less so with the most individualistic one (Helmreich, Merritt and Wilhelm, 1998).

environments, while in countries with weak UA, there is an emotional aversion to formal rules.

Hofstede further indicates that in the latter countries, rules are only established in cases of absolute necessity, and that people in those countries believe that many problems can be solved without formal rules.<sup>32</sup> However, researchers at the Aerospace Crew Research Project found that Hofstede's UA was only replicated when it was redefined to centre on the attitude that written procedures were needed for all situations, and that an organisation's rules should never be broken, even when it might be in the organisation's best interest to do so.<sup>33</sup>

Hofstede (1991: 82-83) defines Masculinity and Femininity as follows: Masculinity "pertains to societies in which gender roles are clearly distinct (i.e. men are supposed to be assertive, tough, and focused on material success whereas women are supposed to be more modest, tender, and concerned with the quality of life)". Femininity, "pertains to societies in which social gender roles overlap (i.e. both men and women are supposed to be modest, tender, and concerned with the quality of life)". Hofstede emphasises that his decision to label the second "work goal" dimension "Masculinity/Femininity" stemmed from the fact that this work goal had been the only one on which men and women among the IBM employees he had surveyed consistently scored differently, with the exception of those from countries at the extreme feminine pole.

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<sup>32</sup> Simply put, high UA cultures prefer rules and set procedures to contain uncertainty, while low UA cultures prefer flexibility in dealing with uncertainty.

<sup>33</sup> Helmreich, Merritt and Wilhelm (1998) found that scores on both the PD and the UA scales showed highly significant differences among pilots when contrasted. Countries such as Morocco, the Philippines, Taiwan and Brazil have the highest scores indicating the highest acceptance of unequally distributed power. At the other end of the power continuum are countries such as Ireland, Denmark, the US, the UK and Norway. It is important to clarify here that higher scores on the scales of UA reflect high PD and acceptance of a more autocratic style of leadership, while low scores regarding UA reflect low PD, and acceptance of a more consultative style of leadership.

### 1.3. Multicultural Settings

The purpose of this discussion is to highlight the concepts applicable to the study of aviation maintenance in multicultural settings/environments. This study postulates that members of multicultural AMT teams will differ in their attitudes toward a host of issues, including “Command Interactions” and tolerance for rules, routines and set procedures, and that these differences are likely to engender confusion, misunderstanding, and even outright hostility in the workplace. However, in contrast to the case of the Aerospace Crew Research Project’s studies, where differences were measured across cultures, differences in multicultural AMT teams are likely to be found within these units themselves, i.e. among the members.

The singular characteristic of multicultural environments is that they engender inter-cultural encounters between members of the culture of the host country and foreigners, members of a broad category which includes visitors, people on temporary assignments to foreign cultural environments, sojourners,<sup>34</sup> and recently arrived immigrants, in such areas as the workplace. These encounters produce specific reactions on the part of both the foreigners and of members of the host country, reactions which have specific consequences for the workplace.

Psychologists, for example, have found that exposure to another culture leads initially to culture shock, which is simply an irrational gut feeling, whose symptoms include “excessive anger over delays and minor frustrations;

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<sup>34</sup> Sojourners, unlike immigrants, do not plan to settle permanently in the country where they are working (Zeng and Berry, 1991; Henderson, 1994). In the countries of the Arabian Peninsula, the people working there are made into *de facto* sojourners, since the governments of these Arab Gulf states have strict immigration policies.

a fixed idea that people are taking advantage of, or cheating, one; reluctance to learn the language of the host country; a feeling of hopelessness; and a strong desire to associate with persons of one's nationality" (Brislin and Pedersen, 1976: 13. See also Mirsky, 1997).<sup>35</sup> In an effort to alleviate some of these symptoms, foreigners may make efforts to learn more about aspects of the new culture, such as its symbols and rituals (e.g. how to greet people, and when to bring presents, and which ones). However

"it is unlikely that [these foreigners] can recognize, let alone feel, the underlying values [behind the symbols, rituals, etc. of the host culture]. In a way, the visitor in a foreign culture returns to the mental state of an infant, in which he has to learn the simplest things over again. This usually leads to feelings of distress, of helplessness, and of hostility towards the new environment. Expatriates and migrants have more need for medical help shortly after their displacement than before or after" (Hofstede, 1991: 209).

Culture shock represents phase two of the acculturation curve which psychologists have said that people on temporary assignments to foreign cultural environments experience. Phase one is generally a short period of euphoria stemming from the excitement of living in a new land and discovering its mysteries. Phase three is the acculturation period proper, which sets in when the foreigner has slowly learned to function in the new environment, has adopted some of the host culture's values and has become integrated into the host country's social networks. Phase four is the stable

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<sup>35</sup> At the root of the shock is the fact that the one coming in contact with a new culture is having his/her main assumptions questioned. These assumptions are that "everyone else is like us" and that "we behave like everyone else". These assumptions are learned:

"It is the product of our conditioning, of our coming into contact with the world around us. The difficulty, of course, is that the world of human interaction is partly shaped by culture and to that extent is not the same from country to country. What our world teaches us about how people behave is not the same as what the world of the Thais [for example] teach them. Yet each learn our respective lessons well" (Storti, 1990: 52-53).

In other words, "what we know to be true (or right or best) is not always what drives our activities. What the conscious intellect knows (in this case, that other people are not like us) is no match for what a lifetime of conditioning has taught us" (Storti, 1990: 52-53).

state of mind that the foreigner in question is reported to eventually reach.<sup>36</sup> This state of mind can take two forms: a negative one (in comparison to the foreigner's emotional state in his own country of origin) if he/she continues to feel alienated; and a positive one, if his/her emotional state is as good as, or better than, it was in the country of origin (Hofstede, 1991).<sup>37</sup>

Members of the host culture receiving visitors/sojourners/people on temporary assignments/immigrants from a foreign culture also tend to go through a psychological reaction cycle (Bourhis 1997), the first phase of which is that of curiosity. If the visitors/sojourners elect to stay and function in the host country, a second phase, called ethnocentrism, sets in for members of the host culture. Ethnocentrism means that members of the host culture will evaluate those visitors/sojourners/immigrants by the standards of their own culture, but that this evaluation will usually be unfavourable to the foreigners (Hofstede, 1991). If the foreigners are only infrequent visitors, members of the host culture will probably stick to their ethnocentrism, i.e. the belief that they are the centre of the universe and that their culture is superior to all others (Henderson, 1994). However, if regularly exposed to foreigners, especially in the workplace, members of the host culture may move to the last phase of the psychological reaction cycle, namely, polycentrism, which is characterised by the recognition that different kinds of people should be

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<sup>36</sup> John and Roberts (1996) also see four typical stages of adaptation in an individual's adjustment to another culture, though they also emphasise that a step might be skipped under special circumstances. The first stage is either the "Honeymoon" or the "Nightmare" phase, depending on whether the individual in question "really loves" the new group he comes into contact with, or encounters great difficulty in his new environment and responds with fear. The second stage is the "Hostile or Aggressive" phase, during which the individual encounters genuine difficulties and is expected to deal with them. The third phase is the "Gets around by himself" phase, during which the individual begins to learn a bit of the new language, and learns to joke about his difficulties in the new culture. The last stage is one of "No feeling of anxiety", during which the individual feels comfortable in his new environment.

<sup>37</sup> The latter situation corresponds to the foreigner's becoming a bicultural person or "going native". Storti (1990: 81) explains that

"Going native is the syndrome wherein the expatriate throws over his own culture in a fit of enthusiasm for the local one, embracing its strictures with an eagerness that is often perplexing to the true natives. ... Going native is as inappropriate and unhealthy a response to the overseas experience as disappearing into the expatriate subculture. It is as illogical to prefer everything about the native culture as it is to prefer everything about one's own. And both reactions are nurtured by the same factors: an ignorance of the local culture and an ever deeper indulgence in self-deception".

evaluated by different standards, and the ability to understand the foreign visitors/expatriates according to their own standards (Hofstede, 1991).<sup>38</sup>

Intercultural encounters also take place among groups, and these encounters provoke group feelings. Hofstede indicates that, contrary to the popular belief that intercultural encounters among groups automatically foster mutual understanding, in reality they confirm each group in its own identity.<sup>39</sup> For example, in collectivist societies, in which people remain members of tight in-groups that provide them with protection in exchange for loyalty throughout their lives, groups from different cultural backgrounds are treated as out-groups to an even greater extent than are local out-groups. For this reason, integration across cultural dividing lines in collectivist societies is more difficult to achieve than in individualist societies (Hofstede, 1991).

Inter-cultural encounters usually lead to cultural misunderstandings because the players in these encounters generally adhere to different mores, folkways,<sup>40</sup> and traditions, and usually speak different languages. Clearly, without knowing the language of the host country, foreigners usually miss the host culture's subtleties in such areas as humour, and, as a result, may be forced to remain relative outsiders, or to be in a cultural limbo (Hofstede, 1991 and Henderson, 1994). Cultural misunderstandings also stem from visitors' failure to understand the host country's traditions and way of life. An example of this is the phenomenon called IBM, which stands for the Arabic words *Inshallah* ("If God will"), *Bukra* ("tomorrow"), and *Mumkin*

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<sup>38</sup> Hofstede believes that polycentrism is a mild form of bi- or multi-culturality.

<sup>39</sup> Hofstede, for example, mentioned that members of the "other" group are not really perceived as individuals but, rather, in a stereotypical fashion. Examples of such stereotypes include the notion that all Chinese look alike, that all Scots are stingy, and that people from developing countries are uncivilised and of lower intelligence (on the latter, see Henderson, 1994).

<sup>40</sup> The word "mores" is taken from the Latin root word *moralis*, for moral and immoral. Mores fix the customs of the group. Folkways, on the other hand, are the correct ways of behaviour, and they usually relate to etiquette and dress or manners in general (John and Roberts, 1996).



(“possibly”), that Nimmer (1985) says influences the way many Arabs think and behave.<sup>41</sup>

This discussion of inter-cultural encounters, therefore, raises the possibility that multicultural AMT teams might have deleterious effects on safety in aviation maintenance. This is a possibility because, like most inter-cultural encounters, multicultural AMT teams consist of people who speak different languages, who may have different work ethics, standards, and values, harbour different stereotypes; and who have different expectations, etc. These differences, if not properly managed,<sup>42</sup> can engender confusion, misunderstanding, and even outright hostility in the workplace. One can easily imagine several situations in the workplace (in this case in aviation maintenance) capable of engendering the adverse feelings mentioned above, and thereby compromising safety. Among these potentially deleterious situations are those in which:

- 1) Supervisors and AMTs from individualistic cultures working in collectivist countries openly criticise the performance of AMTs from the host countries, thus causing them to lose face (or *wajh*). (Such an action would undermine the host societies’ harmony norm).

- 2) Supervisors and AMTs who are assertive and direct in their communication style (individualist, low PD cultures), interact with supervisors and AMTs who favour a more indirect communication style premised on greater concern for harmony and face-saving (collectivist, high PD cultures).

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<sup>41</sup> Nimmer (1985) mentions that *Bukra* did not carry the same sense of urgency as the Spanish word *Mañana*, and that things proceeded even more slowly in Arab societies than he had anticipated. Nimmer (1985: 10) indicates with respect to *Inshallah* that:

“No plans for future action in the Middle East are ever expressed without *Inshallah*, so the occurrence or implementation of any project will be according to the will of God, NOT the person, agency, group, or directorate assigned its responsibility. While this certainly speaks well for the great faith held by the adherents of Islam, it can be totally devastating to the models traditionally used for determining accountability and conducting program evaluations!”.

<sup>42</sup> One of the assumptions of this study is that these differences are rarely well-managed, especially in developing countries.

3) Supervisors and AMTs of the host collectivist cultures treat AMTs from other collectivist cultures and from individualist cultures alike, as out-groups. Situations of this nature usually pit two norms against each other, i.e. the norm that personal relationships should prevail over the task at hand (adhered to by collectivists) against the norm that the task at hand should prevail over any and all personal relationships (the position of individualists).

4) Supervisors and crew chiefs from individualist cultures expect to be informed of mistakes made or observed in the workplace, and also expect AMTs to engage in self-criticism (an expectation unlikely to be met by AMTs from collectivist cultures, who are more likely both to shy away from such practices and to cover up the mistakes they have made).

5) AMTs who could have more realistic perceptions of their abilities (collectivist cultures), interact with AMTs who, generally, may not (individualist cultures).

6) Supervisors and AMTs who believe that information concerning the task at hand should be shared by all supervisors and AMTs (individualist cultures), interact with supervisors and AMTs who are inclined to keep this kind of information to themselves (collectivist cultures).

7) Supervisors and AMTs who believe both that written procedures are needed for all non air safety-related situations, and that an organisation's rules should never be broken, even when it might be in the organisation's best interest to do so (high UA cultures), interact with supervisors and AMTs who disagree with this position, and, instead, believe in flexibility in dealing with emergency situations (low UA cultures).

8) Supervisors and AMTs who are fatalists (high UA cultures), interact with supervisors and AMTs who, generally, are not (low UA cultures).

9) Supervisors expect subordinates to treat them as father figures/benevolent dictators, and to do personal favours for them, such as

carrying their tool boxes, and doing their shopping for them (collectivist, high PD cultures), interact with AMTs who expect to be treated as equals (and in a dignified manner) by their superiors and fellow AMTs alike (individualist, low PD cultures).

10) Supervisors from a host culture evaluate AMTs from other national cultures according to standards that are different from those that they would use in evaluating AMTs from their own culture, while the AMTs from the other cultures expect to be evaluated according to those standards applied to the AMTs from the host culture.

11) Supervisors and AMTs who believe that conflicts in the workplace should be resolved by a good fight (masculine cultures), interact with supervisors and AMTs who abhor such methods and, instead, favour resolving conflicts through compromise and negotiations (feminine cultures).

12) AMTs from feminine cultures have supervisors from masculine cultures whose *modus operandi* is assertiveness, decisiveness and aggressiveness. And, inversely, situations where AMTs from masculine cultures have supervisors from feminine cultures who favour intuitiveness, and consensus in their approach to work.<sup>43</sup>

One can construct scenarios encompassing several of the situations mentioned above, scenarios which would reflect “real life” conditions of aviation maintenance. The assumption here is that the scenarios which

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<sup>43</sup> One can also envision situations where

“12) Supervisors and AMTs who believe in persistence (perseverance) and a sense of shame, among other sentiments (long term orientation) interact with supervisors and AMTs who, instead, believe in personal steadiness and stability, protection of face, and respect for tradition, among other sentiments (short term orientation). These two orientations comprise the dimension of culture called “Confucian Dynamism”, a term coined by Michael Harris Bond of the Chinese Culture Connection (1987). However, it is not clear whether this dimension of culture covers issues which are relevant for aviation maintenance as much as it does issues relevant to economic development”.

include many of the above-mentioned dysfunctionalities will be the ones where the likelihood of compromised safety will be the greatest.<sup>44</sup>

### 1.4. Review of the Literature

The literature on HF<sup>45</sup> in aviation maintenance contains a wealth of information on such issues as training (e.g. Johnson, 1990a, HRS and A, Inc., 1995 and Gramopadhye, Drury, Sharit, 1994; Evans, 2000; Eiff and Lopp, 2000);<sup>46</sup> team and teamwork (e.g. Kraus, Gramopadhye and Blackmon, 1996, and Gramopadhye, et al, 1995); inspection (e.g. Drury, 1990; Drury and Prabhu, 1996); and human error (e.g. Drury and Rangel, 1996; Drury and Latorella 1991; Howell, 1996; Mancuso, 2000),<sup>47</sup> but is poor on multicultural AMT teams, which is the object of this study. Indeed, none of the 394 studies

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<sup>44</sup> Inversely, the scenarios which include fewer of the dysfunctionalities mentioned above will be the ones where the likelihood of compromised safety will be smaller.

<sup>45</sup> Prior to the 1970s, the aviation industry paid little attention to the training either of pilots or of aircraft engineers in the fields of HF. HF, barely defined, was believed to have little to do with safety skills on the part of pilots or aircraft maintenance personnel. A safe flight was thought to be the outcome of the pilot's knowledge of, and experience with the aircraft, and of sound technical training for aircraft maintenance personnel. But ultimately the aviation industry's management came to realise that factors having to do with human interaction and psychology, such as communication, attitudes towards work, attitudes towards stress and uncertainty, and the different norms and values upheld by various ethnic and cultural groups would intervene in the process of how a pilot or a maintenance engineer absorbed technical knowledge, and how he would go about applying it (Johnson, 1990a).

<sup>46</sup> Evans (2000), for example, points to many practices in the training of aviation maintenance engineers that preclude standardisation. These practices include aviation companies' increased preference for extending contracts to outside maintenance engineers, instead of training them in-house, and the fact that maintenance engineers must often extend their authorisations on the job. Another shortcoming in training that Evans discusses is the short time period allocated to training courses. Eiff and Lopp (2000), discuss research conducted by Purdue University across the aviation industry regarding the training of employees. They, like Evans, allude to lack of standardisation both in the course curriculum and on the job. The studies that Purdue University conducted, which Eiff and Lopp reviewed, led these authors to conclude that unstandardised and unstructured training for aviation employees was an impediment for the building of safety culture in aviation organisations.

<sup>47</sup> Both Howell (1996) and Mancuso (2000) laud the aviation industry's departure from the tendency merely to allocate individual blame at the discovery of human error, and its move towards a more systemic analysis of the root causes of human errors which go beyond individual fault. Westrum (1996) concurs with these two authors that accidents are symptoms of failures in what he calls the architecture of the system and its underlying processes, such as allocation of resources, planning, budgeting, financing, and the establishment of goals.

comprising the Human Factors in Aviation Maintenance and Inspection's *Bibliography of Publications 1989-1997* deals with multicultural AMT teams.<sup>48</sup>

However, since 1999, Taylor (1999a, 1999b); Patankar (1999); and Taylor and Patankar (1999) conducted research on the impact of national culture on attitudes towards the job and work goals among aviation maintenance personnel. These authors found that AMTs, as a professional group, tended to be more individualistic than were the pilots surveyed in Merritt and Helmreich's (1996) international sample.

In a comparative study of US and Indian airline mechanics, Patankar (1999) posited that higher individualism was related to aircraft mechanics' return-to-service authority. He asserts that such authority was more widespread among US mechanics, who were holders of the A&P Certificate, (which permits a multitude of individual A&Ps to sign for the airworthiness of a multitude of individual repairs to a single aircraft), than among Indian mechanics. Patankar (1999) reports finding substantial differences in the proportion of mechanics with return-to-service authority between a company employing US-Certified A&P mechanics and one operating under the British-style AME licensing system. In the former company 90% were A&Ps, while in the latter the AME mechanics (hired in smaller numbers) were assisted by unlicensed mechanics (i.e. apprentices and mechanic assistants), who worked as a team under the direction of the AME mechanics. In the latter company, the ratio was one AME mechanic to nine apprentices or mechanic assistants.

Taylor's and Patankar's insights are important in understanding the workplace dynamics of aviation maintenance organisations, but their studies suffer from key shortcomings, which will be discussed in Chapter Seven. In general, although Taylor's and Patankar's studies do treat the issue of national

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<sup>48</sup> Most research topics in the 1998-2001 period pertaining to aviation maintenance continued to focus on training, inspection, human errors, team-building, etc.

culture as it affects the work attitudes and values of AMTs, these studies fail to deal with the specific dynamics of multicultural teams, i.e. situations in which AMTs from different national cultures interact within the same workplace, and deal with each others' specific idiosyncracies, preferences, belief systems, and stereotypes.

Regarding the multicultural teams of a single aviation company, Tazerout (1996: 2) mentions that "in [the] Emirates [Airlines] a whole scenario of diverse culture and ethnic origins at work can be found in any daily operation. In a flight we could encounter two nationalities in the cockpit, 13 different ones in the cabin crew, up to 10 different nationalities in ground support, engineering, [re]fueling, etc. and at least 10 different nationalities in any single passenger load. You can therefore see that communication between all of these people may offer a human factor specialist the ideal environment to study and apply the various techniques and principles as published by all known gurus".

Tazerout further indicates that in order to minimise the degree to which human errors occur because of communication factors, Emirates Airlines has developed a meticulous approach towards personnel selection. This approach, we are told, relies on psychometric tests which examine prospective employees' attitudes towards work in general, towards people of other cultures, and towards corporate culture and the airline's goals.

Notwithstanding its failure to shed sufficient light on the issue of multicultural AMT teams, the literature on HF in aviation maintenance shows that, though the focus on HF in the performance of aircraft maintenance is a recent phenomenon, there has lately been a fast-growing awareness of HF in aviation maintenance. This heightened awareness has stemmed from the deepening of investigations into the causes of aircraft accidents and from an assessment of trends in the commercial aircraft industry (e.g. ageing aircraft

fleets, increased aircraft utilisation, and the increased use of complex technology and equipment) (Mitchell, Bright and Rickman, 1996).

### ***1.5. Organisation of the Study***

This study is organised into seven chapters. Chapter One is the introduction. Chapter Two outlines the study's questionnaire, the influences behind it, and the aims behind the items of the questionnaire. Chapter Three presents the study's methodology and the general analytic strategy, which involves a trade-off between an ideal methodology, and a methodology which serves the goals of maximising the use of the collected data, and minimising item bias and cultural response sets.

Chapter Three will also present a more detailed outline for Chapters Four and Five, which initiate the data analysis portion of the study, i.e. the examination of the findings on the attitudinal and the work goal items. Chapter Three will further provide a detailed outline of Chapter Six, which examines the inner workings of the eight maintenance organisations in such areas as cultural tolerance, stereotyping, group harmony, etc., and outlines the profiles of the different companies. Finally, Chapter Three will also briefly describe what Chapter Seven, the conclusion, will be about.

## Chapter Two

This chapter presents the study's questionnaire (see Appendix A), the influences behind it, and the analytical aims behind the items making up the questionnaire. This questionnaire is a modified version of the Maintenance Resource Management/Technical Operations Questionnaire (MRM/TOQ), and of the Flight Management Attitudes Questionnaire (FMAQ). The MRM/TOQ questionnaire, which is an adaptation of the Cockpit Management Attitudes Questionnaire (CMAQ), specifically asks AMTs and maintenance supervisors their degree of agreement with a series of statements on a five-point scale.<sup>49</sup>

The items of the questionnaires were framed to tap into questions related to the dimensions developed by Hofstede (1980), namely Individualism-Collectivism, Masculinity-Femininity, Power Distance (PD), and Uncertainty Avoidance (UA). This questionnaire also incorporated items which were written to tap into issues related to dimensions rarely incorporated into questionnaires designed by Western scholars, such as fatalism, a characteristic of many collectivistic societies. The wording of the items of this questionnaire was crafted with care, to make it "understandable" to Westerners and non-Westerners alike. The objective was to avoid instances of inadequate item formulation (e.g. complex

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<sup>49</sup> This questionnaire was designed to measure attitudes, opinions, and perceptions about behaviours and skills that a follow-up training programme was intended to influence - thus meeting the goal of its developers, namely, to establish a pre-training baseline for ascertaining post-training results.



wording), inadequate translation and incidental inappropriateness of item content (e.g. references that respondents could not relate to culturally).<sup>50</sup>

## *2.0. The MRM/TOQ and FMAQ as Influences in the Design of the Questionnaire*

The basic Maintenance Resource Management/Technical Operations Questionnaire (MRM/TOQ) contains twenty-six multiple response questions, twenty of which are from the original Cockpit Management Attitudes Questionnaire (CMAQ) and pertain to attitudes, the remaining six being new (Taylor, 1998b). The five questions removed from the original CMAQ lacked either predictive validity, as emphasised by Helmreich et al. (1989), or relevance to the work of technical operations personnel. The six new questions measured the respondents' perception of behaviour dealing with attainment of goals in the technical operations division.

The justification for MRM/TOQ's elimination of some items from CMAQ and its addition of new ones is that the work of technical operations is seen as being different from that of flight crews, both because of the typically longer time required for technical operations' goal attainment, and because of the relatively greater variety of goals in technical operations (Taylor, 1998b). In addition to the twenty "attitude" items and the six "goal-attainment" items, some questions about the respondents' background (job title, department, age, education, experience, gender, etc.) are included in the MRM/TOQ.

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<sup>50</sup> These could produce item bias. For more detail see Chapter 3.

MRM/TOQ covers five factors.<sup>51</sup> The first one is called “Communication & Co-ordination” and contains seven items. These are No. 4, “Good communication and co-ordination are important for safety”; No. 12, “Debriefing/critique is important for communication”; No. 14, “Training is a most important management responsibility”; No. 15, “Co-ordination is more important in emergencies”; No. 16, “Pre-assignment briefing is important”; No. 17, “Co-ordination requires taking other personalities into account”; and No. 18, “Manager responsibility is co-ordination between groups”.<sup>52</sup>

The MRM/TOQ’s second factor is called “Command Responsibility”, and consists of four items. These are No. 6, “Managers should take charge in emergencies”; No. 8, “We should not question superiors’ actions”; No. 11, “Subordinates should not take control” and No. 13, “Technical proficiency causes successful management”.<sup>53</sup>

The MRM/TOQ’s third factor is called “Avoiding Conflict” and contains the following three items: No. 1, “We should avoid disagreeing with each other”; No. 2, “It is important to avoid negative comments about others” and No. 3, “Casual conversation improves co-ordination”.<sup>54</sup>

The MRM/TOQ’s fourth factor, “Recognition of Stressor Effects”, has six items. These are No. 5, “We should be sensitive to others’

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<sup>51</sup> MRM/TOQ has one version for management and support staff, and another for AMTs. For purposes of clarity, the second version will be presented in the main text, while the distinctive components of the first version are indicated in the footnotes.

<sup>52</sup> Factor I, “Communication & Co-ordination” of the MRM/TOQ’s version for management and support staff has only four items, three of which it shares with the version for AMTs, namely, items Nos. 12, 16 and 18, and the remaining item, No. 10, states that “Managers should encourage questions”.

<sup>53</sup> The MRM/TOQ’s versions for management and support staff, and for the AMTs are similar concerning “Command Responsibility”, although item No. 8 for the management and support staff’s version reads as follows: “Subordinates should not question managers’ decisions”.

<sup>54</sup> The MRM/TOQ’s version for management and support staff has only two items under the “Avoiding Conflict” factor. These are Nos. 1 and 2.

problems”; No. 7, “Managers should inform us of plans and actions”; No. 9, “I perform effectively even when fatigued”; No. 10, “Managers should encourage questions”; No. 19, “Managers can leave personal problems behind” and No. 20, “My decision making is good in abnormal situations”.<sup>55</sup>

The MRM/TOQ’s fifth and final factor is “Goal attainment with others”. This factor contains six items: No. 21, “I am informed of the goals of this organisation”; No. 22, “We understand and agree on work goals”; No. 23, “My crew receives feedback on our performance”; No. 24, “My subordinates can voice concerns about goals”; No. 25, “Other groups plan and co-ordinate with us” and No. 26, “Other groups act as if they share our goals”.<sup>56</sup>

The MRM/TOQ’s main strength is that it has been formulated with Technical Operations AMTs, and Technical Operations management and support staff in mind. However, the MRM/TOQ has several fundamental weaknesses. Firstly, in contrast to the FMAQ, the MRM/TOQ is not particularly detailed in its exploration of AMTs’ work goals and their attitudes in such areas as “Communication and Co-ordination” and “Command Responsibility”. Secondly, the MRM/TOQ altogether fails to explore AMTs’ attitudes towards the organisations for which they work (i.e. the “Organisational Climate” of the FMAQ). Thirdly, the MRM/TOQ, like the FMAQ, is contaminated by a Western bias. And finally, the

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<sup>55</sup> Factor V of the MRM/TOQ’s version for management and support staff corresponds to factor IV of the version for AMTs, and has seven items. Four of these, namely Nos. 7, 9, 19 and 20, are shared with the version for AMTs. The version for management and support staff, though, has one factor which is not included in the version for AMTs. This is Factor IV, labelled “Support of Others”, which has three items, namely Nos. 5, 14 and 17. However, these items are also included in the first factor of the MRM/TOQ’s version for AMTs (“Communication and Co-ordination”) as items Nos. 14 and 17, and in the second factor of the MRM/TOQ (“Avoiding Conflict”) as item No. 3.

<sup>56</sup> This final factor has been labelled Factor A. However, in the version for management and support staff, there is not only Factor A, titled “Goal Attainment with my Group” which has four items (Nos. 21, 22, 23 and 24), but also Factor B, labelled “Goal Attainment with Other Groups”, which has two items. Only item No. 23 is written differently, in that the word “subordinates” was substituted for “crew”.

MRM/TOQ, like the FMAQ, has not been designed to probe AMTs' attitudes towards working with members of other national cultures.

Several measures were taken to remedy these deficiencies. Firstly, the questionnaire developed for the purpose of this study was made as detailed as possible. That is to say that, in addition to incorporating those FMAQ items which the MRM/TOQ ignored despite their relevance to aviation maintenance, the questionnaire includes new items. Secondly, and more importantly, these items were framed from a non-Western perspective. This is an instance of cultural translation of items which were initially written with Westerners in mind, i.e. the items were framed in such a way as to be culturally understandable and meaningful to non-Westerners as well.<sup>57</sup> But the third and most important measure was the formulation of a section of the questionnaire which probes the AMTs' attitudes towards working with members of other national cultures.<sup>58</sup>

### ***2.1. The Questionnaire's Items, and the Aims behind the Framing of the Items***

This questionnaire's "Communication and Co-ordination" factor has ten items, six of which were taken from the MRM/TOQ (discussed before) and four from the FMAQ. The FMAQ items (or variants thereof) are: CC-Ind4, "I expect to be consulted on matters that affect the performance of my duties"; CC-Ind17, "If I perceive a problem with the task at hand, I will speak up regardless of who might be affected"; CC-Ind6, "To resolve

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<sup>57</sup> This investigator experimented with two informal pilot surveys, one whose items were more collectivistic in orientation, and another whose items were more individualistic. The findings, even though some respondents misinterpreted certain items, made this investigator improve the questionnaire in order to make its wording simple and clear, and not culture-bound (i.e. meaningful only to Westerners) using own cultural exposure as input.

<sup>58</sup> Formulating that section in the questionnaire was important because neither the MRM/TOQ nor the FMAQ has such a section.

conflicts, team members should openly discuss their differences with each other”; and CC-Ind1, “Team members should feel obliged to mention their own psychological stress or physical problems to each other before, or during the performance of the assigned task”.

These items, along with one item borrowed from the MRM/TOQ, namely, CC-Ind3, “Coordination requires taking other people’s personalities into account”, were framed to tap into issues related to Individualism-Collectivism.<sup>59</sup> The item which states that “Debriefing/Critique is important for communication” (CC-Critique1), was devised to tap into an issue related to Power Distance, while the item which states that “Pre-Assignment briefing is important” (CC-Pre-Assign Brief) was framed to tap into issues related to Uncertainty Avoidance (UA). The remaining three items, namely, CC-Coord1, “Co-ordination is especially important in emergency situations”; CC-Coord2; “Co-ordination among groups is a managerial responsibility”; and CC-Manag, “Training is a particularly important management responsibility”, were also devised to tap into issues related to the Individualism-Collectivism dimension.<sup>60</sup>

This questionnaire’s “Command Responsibility” factor, contains twelve items. Four of these are from the MRM/TOQ, seven are from the FMAQ, and the last item is new. The FMAQ’s items (or variants thereof) are: CR-Ind19, “It is better to agree with team members than to voice a different opinion”; CR-PD6, “Junior team members should not question the supervisors’ or senior team members’ decision”; CR-PD2, “In abnormal

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<sup>59</sup> The Individualism-Collectivism dimension refers to the cultural disposition to understand people primarily in terms of satisfying personal aspirations on the one hand, or attending to group needs on the other. Individualists tend towards interpretive strategies that emphasise their own idiosyncratic values, attitudes and preferences, and thus consider self-interest as a critical criterion for making sense of events. By contrast, collectivists rely more on shared social norms and traditions as a foundation to understand operative dynamics. Collectivists use group welfare as a principal point of reference, and sacrifice self-interest for the sake of the group (Hui and Triandis, 1986; Wagner and Moch, 1986; Triandis, 1995).

<sup>60</sup> These three items were also borrowed from the MRM/TOQ.

situations, I rely on my superiors to tell me what to do”; CR-Ind15, “I am ashamed when I make a mistake in front of my fellow team members”; CR-UA3, “The organization’s rules should not be broken, even in situations where the employees think it is in the organization’s best interests to do so”; CR-PD5, “Supervisors who encourage suggestions from team members are weak leaders”; CR-PD3, “Senior staff members deserve extra benefits”; CR-PD4, “We should not question superiors’ actions”; CR-Ind7, “Technical proficiency makes for successful management”; CR-Ind9, “Subordinates should not take control under any circumstances”; and CR-Ind21 “Managers should take charge in emergencies”. The new item is CR-Ind13, “High social status and good connections make for successful managers”.<sup>61</sup>

Five of the items of the “Command Responsibility” (CR) factor were framed to tap into issues related to Power Distance (PD),<sup>62</sup> while six of the remaining items of this same factor were devised to tap into issues related to Individualism-Collectivism. The last item of the CR factor, was framed to tap into issues related to Uncertainty Avoidance (UA), and it states that “The organization’s rules should not be broken, even in situations where the employees think it is in the organization’s best interests to do so”.

The questionnaire’s “Avoiding Conflict” (AC) factor, has six items. Three of these were taken from the MRM/TOQ,<sup>63</sup> while the remaining three are new. The new items are AC-Workplace, “We should seek to understand each other better in the workplace”; AC-Ind11, “Conflict in the workplace is natural and unavoidable”; and AC-Ind14, “Conflict avoidance

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<sup>61</sup> This last item reflects the opposite thrust to that of the MRM/TOQ’s item No. 13. The items are contained in two different factors, and the aim here is to see how the respondents deal with this contradiction.

<sup>62</sup> These are CR-PD2, CR-PD3, CR-PD4, CR-PD5 and CR-PD6.

<sup>63</sup> These three items are: AC-Ind8, “Team members should avoid disagreeing with others, because conflicts create tension and reduce effectiveness in the workplace”; AC-Ind2, “It is important to avoid negative comments about others”; and AC-Conversation, “Casual conversation improves co-ordination among team members”.

has its roots outside the workplace (i.e. good relationships among team members outside the workplace will reduce the likelihood of conflict at work)”).

The six items contained in the AC factor were devised to tap into issues related to Individualism-Collectivism. The three new items of the AC factor complement the items of the MRM/TOQ, and delve into varying, if not contradictory, views of the roots of conflict. One view is that of individualists, while the other is that of collectivists. The purpose was to see which one appears more compelling to the respondents.<sup>64</sup>

The questionnaire’s “Recognition of Stressor Effects” (RSE) factor contains eleven items. Six of these items are from the MRM/TOQ,<sup>65</sup> three others are from the FMAQ, and the last two items are new. The three FMAQ items are RSE-Stress, “I am less effective when under stress or fatigued”; RSE-Ind20, “My performance is not adversely affected by working with an inexperienced or less capable crew member” and RSE-Personal, “Personal problems can adversely affect my performance”. The new items are: RSE-Empathize “Team members should be able to empathize with one another’s predicaments”, and RSE-Ind18, “If I get stressed, I get stressed. I have no control over it”.

Ten of the eleven items of the RSE factor were formulated to tap into issues related to Individualism-Collectivism. The last item, namely, RSE-Plans, was initially framed to tap into issues related to UA. That was problematic, however, because, as the researchers at the Aerospace Crew Research Project had found, Hofstede’s (1980) UA was only replicated when

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<sup>64</sup> Two of the items are very detailed in content, because their counterparts in the MRM/TOQ were not self-explanatory.

<sup>65</sup> The MRM/TOQ items are: RSE-Ind5, “Managers should encourage questions from team members”; RSE-Ind12, “We should be sensitive to other people’s problems”; RSE-Ind16, “Managers can come to work without bringing their personal problems with them”; RSE-Abnormal, “My decision-making is good in abnormal situations”; RSE-Fatigue, “I perform effectively even when fatigued”; and RSE-Plans, “Managers should inform us of plans of action”.

it was defined to centre on the attitude that written procedures were needed for all situations, and that an organisation's rules should never be broken, even if it might be in the organisation's best interest to do so.

The questionnaire's "Organizational climate" (OC) factor contains four items. Three of these were taken from the FMAQ and the last one is new.<sup>66</sup> The FMAQ items (or variants thereof) are: OC-Fam, "Working for this organization is like being part of a large family"; OC-Organiz, "I am proud to work for this organization" and OC-Job, "I like my job". The new item is: OC-Ind10, "Fate placed me in this organization, and I am grateful for that". The item was framed to tap into an issue related to fatalism, a characteristic of some collectivistic cultures. The majority of the respondents did not agree with this item, and this shows that the wording of OC-Ind10 is self-evident for individualists and collectivists alike. This reality therefore obviates the need to re-phrase this item for future questionnaires.

Three of the four items of the OC factor were framed to tap into issues related to Individualism/Collectivism. The final item of the OC factor, namely OC-Ind10, was written to tap into issues related to fatalism, a characteristic which might be more prevalent in collectivistic societies. The incorporation of this item into this questionnaire is one means of making it more pertinent to non-Western respondents.

The questionnaire's "Work Goals" factor contains sixteen items. Six of these were derived from the MRM/TOQ, eight from the FMAQ, and the last two are new.<sup>67</sup> The MRM/TOQ's and FMAQ's work goals (or variants

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<sup>66</sup> It is important to mention here that this factor will differentiate between airlines, rather than between AMTs and maintenance supervisors belonging to ethnic and cultural groups.

<sup>67</sup> Concerning the "Work Goals" factor, the respondents were to evaluate the items using a 1 to 5 Likert scale: 1="Of No Importance"; 2="Of Little Importance"; 3="Of Moderate Importance"; 4="Very Important"; and 5="Of Utmost importance". Concerning the five factors pertaining to attitudes, the respondents were to evaluate the items according to a 1 to 5 Likert scale: 1="Disagree Strongly"; 2="Disagree Slightly"; 3="Neutral"; 4="Agree Slightly"; and 5="Agree Strongly".



thereof) are: Goal 1-Ind33, “Receiving feedback on performance”; Goal 2-Ind34, “Understanding and agreeing on work goals”; Goal 3-Ind35, “Being informed of the organization’s goals”; Goal 4-Ind22, “Having other groups act as if they share my own group’s goals”; Goal 5-Ind23, “Having other groups plan and co-ordinate their activities with my group”; Goal 6-Ind24, “Having subordinates voice concerns about the organization’s goals”; Goal 7-MAS1, “Working with crew members who maintain good interpersonal relationships with each other”; Goal 8-MAS2, “Working with an organization which offers opportunities for advancement, and high earnings”; Goal 9-Ind25, “Working for an organization which offers job security”; Goal 10-Ind26, “Working for an organization where the group’s achievements are valued over individual success”; Goal 11-MAS3, “Working in a place where I can develop a warm relationship with my direct bosses”; Goal 12-Ind28, “Working in a place where I can have considerable freedom to adopt my own approach to the job”; Goal 13-Ind29, “Working for an organization which offers me challenging tasks, from which I can get a personal sense of accomplishment”; and Goal 14-Ind30, “Working for an organization which gives me sufficient time for my personal/family life”. The new items are: Goal 15-Ind31, “Working for an organization which cares about its employees”; and Goal 16-Ind32, “Working for an organization which sets my goals for me”.

Twelve of the items within the “Work Goals” factor were formulated to tap into issues related to Individualism-Collectivism. The remaining four items within this factor, by contrast, were devised to tap into issues related to Masculinity-Femininity. But two of these four were actually framed to tap into issues related to both Individualism-Collectivism and Masculinity

Femininity. These items are Goal 13-Ind29, and Goal 11-MAS3.<sup>68</sup> The Masculinity-Femininity dimension is the only one on which men and women in Hofstede's (1980) study scored differently, except in the case of the Scandinavian countries, which, in Hofstede's study, are registered at the extreme feminine end. Hofstede (1980 and 1991) conceptualised masculinity at the national level as referring to the societies in which the gender roles are clearly distinct, i.e. men were assertive, instrumental, tough, and focused on material success, and women modest, expressive, tender, and concerned with the quality of life. Hofstede conceptualised femininity, on the other hand, as referring to societies in which social gender roles overlap, i.e. both men and women are supposed to be modest, tender, and concerned with the quality of life. The fact that gender roles seem to overlap in feminine countries suggest greater gender flexibility.

The Masculine-Feminine continuum shapes the societal system, and the approach to work, among other things. In masculine societies, there is a reward for the strong as opposed to solidarity with the weak; emphasis on growth as opposed to protection of the environment; and the prioritisation of arms spending, as opposed to aid to the planet's poorest countries.<sup>69</sup> Hofstede (1980) found the correlation between defence spending, expressed as percentage of GNP, and a country's masculinity index to be strong and positive.

Regarding the approach to work, in highly masculine countries, performance and the measure of that performance are of the utmost importance. As Merritt (1996) indicates, perhaps the ultimate expression of

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<sup>68</sup> The other items within the "Work Goals" factor, which were written to tap into issues related to Masculinity-Femininity, are Goal 7-MAS1 and Goal 8-MAS2.

<sup>69</sup> The US and Scandinavian countries are respective representatives of masculine and feminine societies. The US's rejection of the Kyoto accord, which deals with greenhouse effects, is a quintessential manifestation of masculine behaviour. The US, under the present Bush administration, seems to have placed the short-term goal of economic growth ahead of long-term survival (economic and ecological).

this value is found in Japan, where the honourable solution to failed performance (e.g. bankruptcy) is suicide. Merritt (1996) further stresses that in highly masculine societies, assertiveness, and even aggressive behaviour is expected, and little attention is given to work climate. Highly feminine countries, on the other hand, place emphasis on interpersonal relationships and on the welfare of others, and this may make such countries more safety-conscious. Moreover, the emphasis on interpersonal relationships is likely to create a climate that is conducive to increased communication and co-ordination in the workplace. Merritt emphasised that such increased communication and co-ordination may, in turn, produce more realistic expectations regarding human performance, especially under abnormal conditions (e.g. fatigue and stress).

The most challenging part of the questionnaire is the formulation of questions which probe AMTs' and maintenance supervisors' attitudes towards working with, or supervising, members of other national cultures, and which approach this issue in a such a way as to avoid making the AMTs and maintenance supervisors react defensively, given the sensitivity of the subject matter. Research on national cultures in any event requires an indirect and tactful approach.<sup>70</sup>

Such an approach would involve asking respondents to describe how they feel about working with mixed culture crews; asking them to select from several hypothetical situations those which describe their workplace most of the time; asking them to select situations under which they would

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<sup>70</sup> This investigator was obliged from the beginning not to ask respondents about their own national cultures, believing that they would probably avoid giving direct answers on this sensitive subject. This is so because people in this investigator's opinion, especially those from collectivistic societies, often perceive any discussion of their culture as an attack on them, their values, religion, etc. However, this investigator asked respondents to comment on cultures which were similar to theirs. The purpose behind this approach was twofold: firstly, to allow the respondents to comment indirectly on their own cultures, and secondly, to allow respondents to identify which cultures they regarded as similar to theirs.

prefer to work; and asking them to select situations under which they would rather not work.<sup>71</sup>

The aims behind the questions in Section D were to determine whether AMTs and maintenance supervisors were open-minded regarding the issue of working with colleagues from other national cultures; whether they subscribed to dangerous clichés and stereotypes which might threaten group cohesiveness, and especially safety in the workplace;<sup>72</sup> whether there was discrimination in the workplace, and (indirectly) whether the maintenance organisations studied here were managing effectively the ethnic and cultural diversity in the workplace.

Specifically, questions 1 and 2 of Part 1 of Section D, which deal with what a given respondent finds “rewarding” or “frustrating” about working with team members whose national cultures are similar or different from his/her own culture, were aimed at uncovering the preferences of AMTs and maintenance supervisors regarding the people they work with, and at understanding what respondents from a given national culture consider “rewarding” or “frustrating” about working with people from cultures similar to, or different from, their own. The object of this investigation was to determine whether the respondents had preferences for “familiar” cultures (because of the “ease of communication”, the sharing of holidays, etc.), or for “unfamiliar” cultures, and to uncover the reasons for such

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<sup>71</sup> One of the innovations of the questionnaire is that respondents were asked to write their answers in the language with which they felt most comfortable. The reason for this request was that this investigator had noticed that some people who were not comfortable with English, the language of the aviation field, tended to avoid writing comments altogether, confining themselves to short “agree” or “disagree” answers. Another innovation of this questionnaire was that respondents were asked to explain their answers (e.g. if so, why, and if not, why not?).

<sup>72</sup> A postulate for this situation is that the greater the frequency with which dangerous stereotypes occur in the workplace, the greater the likelihood of tense working relations.

preferences.<sup>73</sup> The expectation was that the respondents would reveal their states of mind regarding cross-cultural encounters.

Questions 3 and 4 of Part 1 of Section D complement questions 1 and 2, and deal specifically with “cultural trait preferences”, because these questions were framed to invite respondents to describe the cultural traits they wanted their fellow team members to have, and those that they did not want them to have. These questions, in fact, explore “ground zero” of stereotype-formation. Even though the questions specifically asked the respondents to describe the “cultural, rather than the personal, traits”, that they wanted, or did not want, their colleagues to have, the expectation was that some respondents would label personal traits as cultural traits. The reason for this tendency is that people’s stereotypes are shaped by different factors, such as personal encounters, films, books and legends.

The postulation here was that non-Western respondents would tend to associate Westerners with positive attributes (e.g. “high work ethic”, “intelligence”, “honesty”, “innovativeness”),<sup>74</sup> and that both Westerners and non-Westerners would tend to associate non-Westerners with negative attributes (e.g. “laziness”, “lack of intelligence”, “lack of innovativeness”). The fact that non-Westerners disseminate such stereotypes about non-Western peoples attests to the power of the stereotype-making apparatus of both the formal and informal sort.

The purpose behind questions 3 and 4 is to ascertain the presence or absence of more insidious stereotypes in the workplace, stereotypes which have the potential to create dissent on the job, and to politicise the

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<sup>73</sup> This is to determine whether the respondents preferred predictable (or a comfort zone), or challenging, and possibly culturally-enriching encounters. One hypothesis derived from this question is that respondents who prefer challenging encounters will make better team members, and will be more receptive to new teaching tools, such as MRM.

<sup>74</sup> A related assumption was that such Asian cultural groups as Japanese and Koreans would also be associated with positive attributes, because of the advanced industrial stage reached by their countries.

workplace. The stereotypes that could cause these ills are mainly racial, ethnic, or religious.

Questions 7 and 8 of Part 1 of Section D were aimed at further probing into the respondents' mind sets regarding working with people from other national cultures. These questions specifically ask the respondents to identify people from specific national cultures whom they would or would not want in their crews. The purpose here is to invite the respondents to move from the general (i.e. overall statements about liking or disliking people from various national cultures) to the concrete (i.e. statements about people from various "national cultures" with whom they wanted, or did not want, to work).

Question 6 deals with socialising. Socialising is viewed here as a barometer of the atmosphere existing in different organisations. The assumptions regarding socialising among co-workers are that people who socialise with each other usually respect (and may even come to like) each other, and can relate to each other; and that, conversely, people who do not socialise with each other are unlikely to empathise with each other. The final assumption regarding socialising among co-workers is that it may have a positive effect on morale and productivity in the workplace.

The aim behind exploring the "socialising" question is not only to determine whether or not the respondents socialise with co-workers from other national cultures, but also to investigate why the respondents chose to socialise that way, when they did so. People socialise for different reasons. One of the objectives here is to ascertain if there are people who socialise with co-workers from other national cultures simply because they regard socialising as a natural phenomenon of connecting with fellow human beings, i.e. as a way of reaffirming their humanity. The other objective is to determine if there are also people who socialise with co-workers from other

national cultures because they want to connect with them on a deeper level, i.e. out of a desire to learn more about other cultures, mores, etc. The very interest in someone else's culture is a sign of curiosity and openness.

Such openness would augur well for the functioning of the maintenance organisations concerned, as would the rationale of socialising with co-workers from other national cultures merely on the premise that socialising is a normal connection between fellow human beings.

Question 9 examines another area which has also spawned "myths" and "stereotypes", namely the issue of whether some cultures demonstrate better maintenance skills than others. The aim behind question 9 is to investigate whether AMTs and maintenance supervisors believe that maintenance skills are individual-specific (i.e. that they vary from individual to individual, irrespective of their national culture) or culture-specific (i.e. that those skills are associated with some national cultures, and not with others).<sup>75</sup> The assumption behind this question is that non-Westerners are more likely to believe that Westerners tend to demonstrate better maintenance skills, either simply because they are Westerners, or because of the level of development that their societies have reached.<sup>76</sup>

Questions 10 and 11 are also related, since both delve into the issue of preferences for supervisors. Question 10 aims at assessing the respondents' "cultural openness". The assumption behind Question 10 is that the more the respondents are open to other cultural groups, the more likely they are to accept a supervisor from another national culture. Question 11, deals with the issue of whether some national cultures produce better supervisors than others. The assumption behind this question was

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<sup>75</sup> The findings on this question, that aircraft maintenance organisations would consider reassuring, would be to the effect that maintenance skills are individual-specific.

<sup>76</sup> Another related assumption is that some Westerners themselves tend to believe that their maintenance skills are better than those of non-Westerners.

that non-Westerners are more likely to believe that Westerners make better supervisors because of their countries' technological prowess, educational systems, etc.

Question 12 is an extension of question 9. The aim behind question 12 is to determine whether respondents have had specific experiences with colleagues from other national cultures who believed that their maintenance skills were superior to those of anyone else.<sup>77</sup> The additional aim of this investigation is to ascertain which national cultures are more associated with such claims to superiority, and to assess the reaction of respondents who reported those claims (i.e. did they feel the claims to be justified or not?).

Questions 13 to 17 deal with Maintenance Resource Management. The aim behind these five questions was to assess the respondents' familiarity with MRM/Human Factors, and through the respondents' answers to obtain an estimate of the progress made in this area by the maintenance companies surveyed in this study.<sup>78</sup> Question 15 asks each of the respondents to assess whether the organisation they work for is MRM-conscious. But the determination about the maintenance organisations' MRM consciousness is not arrived at solely on the basis of answers to Question 15, but also on the basis of the respondents' own knowledge about MRM/HF (given by answers to Questions 13 and 14).<sup>79</sup> The main aim behind Questions 16 and 17 is to assess the respondents' predisposition to accept MRM/HF as a valid tool for maintenance operations.

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<sup>77</sup> The assumption was that if a Westerner claimed such superior skills, he was speaking as a member of a national group rather than as an individual.

<sup>78</sup> The fact that we do not have a randomly-drawn sample of the "populations" of these maintenance organisations prevents us from obtaining an accurate measure of the progress made by these organisations in the area of MRM/Human Factors education.

<sup>79</sup> The answers *per se* given by the respondents from the different companies provide clues as to whether or not those companies have actually educated their employees on MRM/HF.



Part 2 of Section D of the questionnaire, was formulated to ascertain whether or not there is a match between the respondents' selection of the characteristics that they wanted their co-workers on the one hand, and their supervisors on the other, to have. The sets of descriptions were devised to give the respondents a choice between individualistic and collectivistic workplace environments.

Finally, the main aim behind the questions in Part 3 of Section D is to determine whether or not there is a match between what the respondents consider to be a description of their actual workplace and what they consider to be a description of their preferred (or ideal) workplace. The objective behind the formulation of Item three of Part 3 is not only to determine what the respondents consider to be a description of the workplace that they would find undesirable, but also to ascertain whether there is a match between the description of their actual workplace and that of the undesirable workplace.

The aim behind the framing of the items of Section D was to gain enough information to outline the "profiles" of the eight maintenance organisations whose employees filled out the questionnaires. The information gleaned from Section D is significant in that it provides an insight into the inner workings of the eight maintenance organisations, in such areas as cultural tolerance, stereotyping, group harmony, loyalty, etc. This information, in fact, helps us determine whether or not AMTs, maintenance supervisors and the maintenance organisations employing them are ready for multicultural workplaces, and the types of challenges, cultural or MRM/HF-related, that the various maintenance organisations surveyed here face.

## *2.2. Conclusion*

The data gathered, in short, are expected to help assess the status of the different companies surveyed in the study in the areas of cultural coexistence, and MRM/HF-awareness. Traditional questionnaires, such as those used by the Aerospace Crew Research Project, would have been of little help in these areas. This is the case because the questionnaires devised by Helmreich and his team do not contain sections that either probe the respondents' attitudes towards working with people from different national cultures, or allow one to assess whether the respondents actually have a grasp of MRM/HFs. The ideal research is one that combines positivistic and naturalistic inquiries. This was the intention of this research. There is a need to combine the two inquiries because each has its limitations. The main limitation of the positivistic research is that numbers are regarded as absolutes (i.e. the fetishism of numbers). But numbers by themselves are actually meaningless. By contrast, the main limitation of the idiographic research is the undervaluing of numbers.

## Chapter Three

**T**his chapter presents the methodology and analytic strategy of this study. However, one caveat regarding analytic strategy and methodology is that frequently, the analytic strategy involves a trade-off between an ideal methodology, and a methodology which serves the goals of maximising the use of the collected data, and of minimising item bias and cultural response set.

The other important issues presented in this chapter are item bias, cultural response sets, level of analysis (in the “methodology” section), and the statistical and analytic tools (in the “general analytic strategy” section). It is important to clarify here that statistical tools, however sophisticated, can never compensate for a flawed methodology. Researchers who use statistical tools geared to “uncover” cultural response biases may think that this procedure alone will compensate for a poorly thought out methodology.

In the final analysis, the researcher should always use the statistical tools which are best suited to the project in hand. The project must always rest upon a refined methodology and clear theoretical assumptions. There is a dialectical relationship between methodology and analysis on the one hand, and analysis and statistical tools on the other. The foundational factor, however, must be methodology.

### *3.0. Sample Selection*

In cross-cultural research, there is a choice between an ideal methodology, and the best methodology given the constraints of the data.<sup>80</sup> Indeed, with cross-cultural research, the investigator is constrained by the number and variety of ethnic and cultural groups included in a given study, and by the number of subjects within each ethnic and cultural group. Very few cross-cultural researchers have enjoyed the luxury that Hofstede (1980), for example, had of testing their hypotheses on truly representative samples.

In this study, data collection was not predetermined, but “opportunistic” in nature. Initially, this investigator contacted a selected group of twenty maintenance organisations, from both developed and developing countries, to enquire of their personnel directors if their companies would be interested in taking part in the study. Personnel directors of these maintenance organisations, should they agree to participate, were asked to provide a list of the licensed Aircraft Maintenance Technicians (AMTs) and maintenance crew chiefs working for their companies. The directors were then informed that the lists were necessary for the random sample technique that the investigator intended to use to derive a representative sample of ethnic and cultural groups for his study. This investigator then planned to glean a sample population of around two thousand individuals from those lists.

However, none of the directors of the maintenance organisations who stated that they wanted to take part in the survey actually sent a list of their personnel. Instead, they asked directly for the questionnaires, in order

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<sup>80</sup> Individual analysts are always at a disadvantage when it comes to data collection, compared with analysts who are part of institutions, because the latter are in a better position to marshal human and financial resources in order to build extensive databases.

to distribute them themselves to the AMTs and maintenance crew chiefs. For almost two years, there was no meaningful feedback from the maintenance companies whose personnel directors had agreed to take part in the survey. The exception was a Middle Eastern company, but unfortunately, the questionnaires collected from its AMTs and maintenance supervisors indicated that the company might not be a multicultural one, and therefore, would be disqualified from this research.

In order to move the process forward, this researcher travelled to Australia, Japan, Hong Kong, Malaysia, the United States, Canada, France, Norway, the UAE, Kuwait and Saudi Arabia. In these countries, he met representatives of maintenance organisations associated with major airlines, some of whom had already been contacted, in order to persuade them to take part in the survey. He also asked some of the AMTs and maintenance supervisors in each of the places he visited for input concerning how members of ethnic and cultural groups were dealing with each other in the workplace.

Following these visits, this researcher also decided to post the questionnaire on his web page, and to ask the personnel directors of these maintenance organisations to inform their employees that they could take part in the survey online as well. However, it was some time before the traditional and online approaches began paying dividends. In fact, the last questionnaires from two Western European companies were received as recently as April 6, 2001. The questionnaires from these two companies were important because they made the sample of companies taking part in the survey more global.<sup>81</sup>

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<sup>81</sup> This study had become more representative because now it contained respondents from three Middle Eastern companies, two Western European companies, two North American companies and one Asian company. While this researcher also received questionnaires from three additional companies (a Western European, a North American and an Asian one), the questionnaires from the Western European and North American companies were excluded from analysis because the respondents were too few in number to be representative of those companies. In the case of the Asian company, the questionnaires received indicated that it might not be multicultural.

In the end, survey questionnaires had been sent to a total of 520 AMTs and maintenance supervisors from eight maintenance organisations.<sup>82</sup> Both the collection methods and the samples of respondents were problematic in terms of statistical analysis. Ideally, once the conceptual framework for the project, namely emphasis on the importance of ethnicity and culture in the workplace, had been established, this researcher attempted to gather a representative sample. The method for achieving this objective was to be the distribution of the surveys according to a random sampling technique, a preferable method of survey data collection, which maximises the likelihood that the sample will represent the whole population. Unfortunately, as mentioned before, this plan failed because of the lack of co-operation by the aircraft maintenance organisations whose personnel directors had agreed to take part in the survey. Therefore, the surveys were finally distributed directly to AMTs and maintenance supervisors who had not been targeted randomly. Furthermore some of the data were collected from a self-selected sample, i.e. from AMTs and maintenance supervisors who themselves chose to fill out the questionnaire posted on the web page. The result of these collection techniques is that the degree to which the sample of cases resembles the whole population under study is simply not known.

A second serious problem with the data set has to do with the very small number of respondents from many of the ethnic background categories. A number of these categories had no variance because they contained fewer than two cases, and were therefore eliminated from the statistical analysis. However, many of the remaining categories still

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<sup>82</sup> The return ratio was slightly better than 50%. This number includes those who used the questionnaires posted on the web page.

contained far too few cases for identification of statistically significant differences among the ethnic groups on the dependent variables.<sup>83</sup>

The remaining choices for analysis, given this problem, were firstly, to eliminate from the analysis all groups with a small number of cases; secondly, to collapse small groups into superordinate categories (i.e. the cultural groups) in order to increase the number of cases; or thirdly, to proceed with the analysis as a purely heuristic exercise. In fact, the investigator ended up using a combination of all three strategies in this study.

Before designing the analyses, this researcher needed to place a major restriction upon the data in order to derive meaningful groups. The main restriction here was to derive only culturally homogeneous samples. To that end, this researcher has avoided using “Nationality at Present” (Variable 69) as the main independent variable in this study.<sup>84</sup> The reason for this decision is that the “Nationality at Present” variable does not differentiate between “native” and “foreign born”. This variable also cannot tell us who among the nationals of Western countries are putatively collectivists or individualists. A researcher using this variable, therefore, could make the wrong assumption that all American, Canadian, British, Australian and New Zealander nationals, for instance, are individualists.

An alternative independent variable is “Nationality at Birth” (variable 70).<sup>85</sup> The “Nationality at Birth” can be a better predictor of which nationals are putatively collectivists or individualists. But this variable also has a major drawback in that it fails to indicate which nationals belong to

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<sup>83</sup> This narrowed the options available to this investigator. It prevented, for example, the use of a balanced data set (e.g. ten AMTs and maintenance supervisors from 20 ethnic and cultural groups).

<sup>84</sup> 53 such nationalities are represented in the data collected.

<sup>85</sup> 60 such nationalities are represented in the data collected.

which specific ethnic group. For example, not all Americans are Caucasians, nor all Britons English.<sup>86</sup>

The more reliable independent variables therefore are “Ethnback2” (Variable 76) and “Culture group” (Variable 77).<sup>87</sup> “Ethnback2” is a refined version of the “Ethnic Back” variable (Variable 75), which is aimed at grasping the complex ethnic make-up of a given society.<sup>88</sup> In “Ethnback2”, the “Arab” label, for example, has been broken down into “Arab/Muslims”, “Arab/Christians”, and “Arab/nd”, while the “British” label has been broken down into “English” and “British/Europeans”.<sup>89</sup> The “Filipino/Malays”, “Filipino/Christians” and “Filipino/nd” make up what used to be called the Filipino group, while “Indian/Hindu”, “Indian/Christians” and “Indian/nd” make up what used to be labelled “Indian” in the “Ethnic Back” category.<sup>90</sup> Such examples of refined labelling allow the observation of intra-group variations, when present.

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<sup>86</sup> Merritt (1996) and Helmreich and Merritt (1998) claim that they had resolved this quandary by selecting samples to represent “monocultural groups”. Merritt (1996: 43) means by “monocultural”, airlines “which were owned, managed, and operated by the people of the same national culture, and pilots who were born and raised in that culture”. Merritt (1996) clarified that the only exception to this rule “was the British pilots working in Hong Kong” because “the company for which they work is predominantly British, both in the management and the pilot force”. As will be shown later, the selection of pilots of the same nationality as the country in which the airline is based raises more problems than it resolves, and maybe prevented Merritt, and Helmreich and Merritt from making full use of the excellent database they had at their disposal.

<sup>87</sup> The samples yield 44 “Ethnback2” and 11 “Culture groups”, which are a superordinate categories.

<sup>88</sup> The “Ethnic Back” variable, for instance, considered “Arabs” a cohesive ethnic/cultural group. While Arabs are fair- and dark-skinned, as are Muslims, Christians and Jews, Arabs are linked together not just by faith or appearance, but by language, a shared culture and history, and common aspirations (Berque, 1964; Hourani, 1970; Khoury, 1983; Duri, 1985; Barakat, 1993). The term “Arab” therefore, is viewed as an ethno-cultural designation. The “purest” Arabs lived in the Arabian Peninsula, but many of them migrated to other lands in the wake of the rise of Islam, and its push in all directions, but especially northward and westward during the sixth and seventh centuries. The term “Hispanic”, refers to a broad group which shares several characteristics, such as Catholicism, the Spanish language, and the fusion of European, African, and indigenous roots and cultures. It is important to clarify here that the majority of Caribbean societies are not “Hispanic”, because what they have in common is their African heritage, the English language and Protestantism.

<sup>89</sup> The “nd” (not defined) term is used every time a respondent only mentioned his ethnicity without identifying his religion, for example. This remark applies to all of the other ethnic groups who chose not to specify such details such as religion, or sub-ethnicity.

<sup>90</sup> Regarding religious and ethnic differences within the “Indian” group, one ethnic category was that of the “Indian/Tamils”. But since there was only one Tamil representative in this survey, this grouping was not included in the study.



On the other hand, the “Culture Group” variable, a superordinate category, allows us to look at broader groups.<sup>91</sup> There are eleven such groups identified in this study:

1) The “Anglo culture” group, as an example, comprises “American Caucasians”, “English”, “British/Europeans”, “Irish”, and Australians, Canadians and New Zealanders of English ancestry. The main defining characteristics of this culture group are equality-consciousness, the high value placed on individualism and on competition, the belief that direct confrontation is a natural state of affairs, present- and short-term orientation; and a universalistic orientation (Hofstede, 1980 and 1991; Lewis, 1997; Rolls Royce, 2001).

2) The “Muslim culture” group comprises Muslims from the different countries represented in the sample.<sup>92</sup> The main defining characteristics of this culture group include a fatalistic outlook, egalitarianism, belief that there is an Absolute Truth, saving face (*Wajh*), orientation towards the past (honouring past traditions), the avoidance of direct confrontation, and finally, a particularistic orientation (Naipal, 1981; Mortimer, 1982; Hofstede, 1991; Lewis, 1997; Rolls Royce, 2001).<sup>93</sup>

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<sup>91</sup> This variable is the superordinate complement to the subordinate “Ethnback2” variable.

<sup>92</sup> This includes Muslims living outside Islamic countries. This clarification also applies to members of other cultural groups who live outside these culture groups’ heartlands.

<sup>93</sup> As Mortimer (1982: 398, and 399) states: “If one takes Islam to be what Muslims say and do, one is bound to conclude that there is not one Islam but many Islams, because one finds such enormous variety of Islamic thought and practice”. The point made here is not that one of these interpretations is right and the others wrong, but merely that any interpretation depends first on reconstructing the original context and then on deciding how much of that context is transferable to one’s own situation. But Islamists would disagree with this, insisting that only one interpretation (namely theirs) is right, and that the others are wrong. Within Islam, Hofstede (1991: 133) sees a “clearly visible conflict between more or less uncertainty avoiding factions, the first dogmatic, intolerant, fanatical and fundamentalist (‘There is only one Truth and we have it’), the second pragmatic, tolerant, liberal and open to the modern world”. Hofstede adds that “In recent years the fanatic wings in all three revelation religions have been quite active and vocal. Historically, periods of fanaticism have always alternated with periods of tolerance, so there is some hope that the fanatic excesses will outlive themselves”. Hofstede (1991: 132) also indicates that “With some exceptions, and Khomeini’s action [of inviting all believers to kill Salman Rushdie, the author of *The Satanic Verses*, and his publishers] is one of them, Islam in history has been more tolerant of other religions than Roman Catholic Christianity”.

3) The “Latin culture” group is subdivided into “Latin American culture” and “Latin European culture” groups as follows:

3a) The “Latin American culture” group comprises Latin Americans and “Hispanics” from the US and Canada. The main defining characteristics of this culture group are a low value placed on individualism, inclination towards hierarchy in social relations,<sup>94</sup> the honouring of past traditions along with the simultaneous orientation towards the present,<sup>95</sup> avoidance of direct confrontation, and finally, a particularistic orientation<sup>96</sup> (Hofstede, 1991; Lewis, 1997; Rolls Royce, 2001).

3b) The “Latin European culture” group comprises French, Spanish, Italian and Portuguese. The main defining characteristics of this cultural group are a combination of medium power distances with strong individualism,<sup>97</sup> the honouring of some traditions combined with present-orientation, and finally, discomfort with direct confrontation (Hofstede, 1980 and 1991; Lewis, 1997; Rolls Royce, 2001).

However in this study, these two groups are combined into:

3) The “Latin culture” group. Hofstede (1980) makes a case for such a broad culture group when he argues that Latin Europe and Latin America share the cultural heritage of the Roman Empire, which inheritance, among

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<sup>94</sup> In Latin America, Hofstede (1991) sees a pattern of dependence on powerful leaders, which in Spanish is called *personalismo*. The exception is Costa Rica.

<sup>95</sup> Another societal feature unique to Latin America is the strength of quasi-family ties. This encompasses *compadres* and *comrades*, who are treated as relatives even if they are not.

<sup>96</sup> Hofstede (1991: 104-105) found that Latin American countries differ considerably among themselves on the Masculinity-Femininity scale. He speculates that these “differences reflect the inheritance of the different Indian civilisations prior to the Spanish conquest. Most of Mexico would have inherited the tough Aztec culture, but the southern Mexican peninsula of Yucatan and the adjacent Central American republics would have inherited from the much more sensitive Maya culture. Peru and Northern Chile would reflect the Inca inheritance, resembling the Maya”.

<sup>97</sup> Hofstede (1991: 42) stresses that “Countries in which a Romance language is spoken (Spanish, Portuguese, Italian, French) score medium to high...on the power distance scale”. Hofstede found a “relationship between language area and present-day mental software regarding power distance. The fact that a country belongs to a language area is rooted in history. Romance languages all derive from low Latin, and were adopted in countries once part of the Roman Empire, or, in the case of Latin America, in countries colonised by Spain and Portugal, which themselves were former colonies of Rome”.

other things, features high Power Distance (PD) and Uncertainty Avoidance (UA) scores.

4) The “Germanic culture” group comprises Germans, Austrians and the German-speaking population of Switzerland. The main defining characteristics of this cultural group are overall individualism, combined with certain collectivistic overtones,<sup>98</sup> a lack of discomfort regarding direct confrontation without welcoming it, a present- and short-term orientation, and finally, a universalistic orientation (Hofstede, 1980 and 1991; Triandis, 1988 and 1995; Lewis, 1997; Rolls Royce, 2001).

5) The “Scandinavian culture” group comprises the inhabitants of the Nordic countries (Sweden, Norway, Denmark and Finland). The main defining characteristics of this cultural group are the placement of high value on individualism and equality-consciousness,<sup>99</sup> a co-operative orientation so that direct confrontation is not regarded as a natural state of affairs, as it is in the US and Great Britain, present- and short-term orientation, a universalistic orientation, and finally, the most feminine culture in the world (Hofstede, 1980 and 1991; Lewis, 1997; Rolls Royce, 2001).<sup>100</sup>

6) The “Confucian culture” group comprises Chinese of all geographic regions.<sup>101</sup> The main defining characteristics of this cultural

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<sup>98</sup> This is especially true of Germany. Triandis (1988) notes that certain social movements such as fascism rejected individualism. Triandis (1988) notes that individualists are socialised to be self-sufficient and independent, whereas collectivists are socialised to be conforming and dependent. In situations of economic crisis, such as that which occurred in the 1920s during the Weimar Republic, self-sufficiency was not possible. Consequently, individuals voluntarily submitted to a collectivist dictator.

<sup>99</sup> Hofstede (1991: 42) notes that “one finds that in these Scandinavian countries, initiatives to participate are often taken by subordinates, which US managers find difficult to digest because it represents an infringement of their ‘management prerogatives’”. “Industrial democracy” experiments have been made possible in the Scandinavian countries because Scandinavians score extremely low on the Power Distance Index (PDI).

<sup>100</sup> Hofstede (1991: 85) states that in such Scandinavian countries as Sweden and Norway, “men’s values and women’s values need not be identical in all respects, only they do not differ along a tough-tender dimension. Any country is likely to show cultural differences according to gender. These are again statistical rather than absolute differences”.

<sup>101</sup> Confucius is the Latinised translation of Kong Fu Ze, who lived in China in 500BC.

group are the belief that societal stability is based on unequal relations;<sup>102</sup> emphasis that relationships are based on mutual and complementary obligations; saving face;<sup>103</sup> loyalty;<sup>104</sup> virtuous behaviour, which means not treating others as one would not like to be treated oneself (the negative version of the Golden rule); virtue with regard to one's task in life (the acquisition of skills and education, hard work and perseverance), hierarchical orientation; the placement of low value on individualism; avoidance of direct confrontation, and finally, long-term and particularistic orientation (Chinese Cultural Connection, 1987; Triandis et al, 1990; Hofstede, 1991; Triandis, 1995; Lewis, 1997; Rolls Royce, 2001).

7) The "Buddhist culture" group comprises Buddhists from such Asian countries as Thailand, Vietnam, Sri Lanka, Burma and Cambodia. The main defining characteristics of this cultural group are no concern with an Absolute Truth (belief that certainties are not imposed from the outside world but may also come through meditation),<sup>105</sup> the belief that there is merit in poverty, harmonious orientation and a co-operative outlook towards life, avoidance of direct confrontation, and finally, a particularistic orientation.

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<sup>102</sup> Kong I'u Ze outlines the *wu lun*, or the five basic relationships: ruler-subject, father-son, older brother-younger brother, husband-wife, and senior friend-junior friend. These relationships are said to contain mutual and complementary obligations: the junior partner owes the senior partner respect and obedience; and the senior partner owes the junior one protection and consideration.

<sup>103</sup> Ho (1976: 867) stresses that "Face is lost when the individual, either through his action or that of people closely related to him, fails to meet essential requirements placed upon him by virtue of the social position he occupies". The Chinese also speak of "giving someone face", in the sense of honour or prestige. Basically, "face", as Hofstede (1991: 61) states, "describes the proper relationship with one's social environment, which is as essential to a person (and that person's family) as the front part of his/her head. The importance of face is the consequence of living in a society that is very conscious of social contexts".

<sup>104</sup> The Chinese prescription for loyalty is as follows: "Be loyal to your sovereign, filial to your parents, friendly to your younger brothers, and brotherly to your older brothers" (Triandis, 1995).

<sup>105</sup> It needs to be emphasised here that in the East in general, neither Confucianism, which is a non-religious ethic, nor any major religion is based upon the assumption that there is an Absolute Truth which humanity must embrace for salvation.

8) The “Hindu culture” group comprises Hindus from such Asian countries as India and Nepal. The main defining characteristics of this cultural group are the lack of concern with the existence of an Absolute Truth,<sup>106</sup> placement of low value on individualism, placement of high value on owners and managers of workplaces who are considered omnipotent father figures,<sup>107</sup> a non-egalitarian outlook,<sup>108</sup> avoidance of direct confrontation, and finally, a particularistic orientation (Hofstede, 1980 and 1991; Negandhi and Prasad, 1971; Lewis, 1997; Rolls Royce, 2001).

9) The “Shinto or Japanese culture” group comprises only Japanese. The main defining characteristics of this cultural group are considerable collectivism, despite Japan’s impressive industrialisation; modesty; acceptance, and appreciation of inequality, although a sense of obligation should moderate the use of power, placement of importance on group’s acceptance (achieved through a person’s efforts for and contribution to this group), lack in belief in an Absolute Truth; the coexistence of past- and future-orientation (simultaneous emphasis on the goals and traditions of the past, along with long-term plans of the future); deference, especially to

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<sup>106</sup> Hindus will never ask “Do you believe in God?” Hindus hold that one should believe in God, but that what is more important is one’s adherence to rituals. A Nepalese anthropologist from a Hindu background noted that “Everyone [in the West] talks about believing, believing, believing”. He adds that where he came from “what counts is the ritual, in which only the priest and the head of the family participate. The others watch and make their offerings. Over here [in the West] so much is mandatory” (citation in Hofstede, 1991: 159).

<sup>107</sup> This corresponds to large PD and weak UA, a situation in which those involved would resolve their conflict by referral to the boss. Hofstede (1991) calls this “concentration of power without structuring of activities”. The most remarkable fact about this mechanism is that highly educated Hindus adhere to it. Negandhi and Prasad (1971: 128) quote a senior Indian executive, with a Ph.D. from a prestigious American university as saying that:

“What is most important for me and my department is not what I do or achieve for the company, but whether the Master’s favour is bestowed upon me ... This I have achieved by saying ‘yes’ to everything the Master says or does ... To contradict him is to look for another job ... I left my freedom of thought in Boston”.

<sup>108</sup> The caste system is sanctioned in Hindu theology, in which every person is assigned a rigid role from birth. Since achieving independence in 1947, India has sought to overcome the inequalities of caste by outlawing the relegation of people to the “untouchable” status, and discrimination. A progressive constitution has been passed, and one which mandates affirmative action programmes for “untouchables” (who are now called Dalits in India) in education, and quotas in government jobs and political representation have been instituted. But discrimination against the Dalits still exists in India, and many Dalits themselves adhere to a fatalistic view about discrimination. Indeed, the Dalits subscribe to a code of survival, which has been summed up by this saying: “The upper castes are like an elephant’s foot. If you come in the elephant’s way, the feet will crush you”.

outsiders;<sup>109</sup> the seeking of harmonious interpersonal relationships;<sup>110</sup> regarding silence as strength; avoidance of direct confrontation; and finally, a particularistic orientation (Hofstede, 1980 and 1991; Sakamoto, 1982; Lewis, 1997; Rolls Royce, 2001).

10) The “Korean culture” group comprises mainly South Koreans. The main defining characteristics of this cultural group are considerable collectivism despite South Korea’s industrialisation, acceptance of inequality (moderated by people’s sense of obligation), the coexistence of a past- and future-oriented outlook, avoidance of confrontation, and finally, a particularistic orientation (Hofstede, 1980 and 1991; Kim, 1994; Lewis, 1997; Rolls Royce, 2001).

11) The “Christian Filipino culture” group, which comprises only Christian Filipinos.<sup>111</sup> The main defining characteristics of this cultural group are belief in an Absolute Truth,<sup>112</sup> regarding themselves as part of Western civilisation because they are Catholic, and because the Philippines have “special ties with the US”,<sup>113</sup> placement of low value on individualism, coexistence of a past- and future-oriented outlook, avoidance of direct confrontation, and finally, a particularistic orientation (Hofstede, 1980 and 1991).

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<sup>109</sup> Americans assume equality between individuals, along with mutual independence. Japanese, by contrast, assume hierarchy and mutual dependence. Americans, consequently, feel comfortable saying no, while Japanese do not, since, among Japanese, refusal of a request might break the bond between two individuals. Consequently, while Americans assume individuality, Japanese emphasise group membership (Sakamoto, 1982).

<sup>110</sup> The Japanese have high scores on the UA. Some have speculated that the emotional need for rules in strong UA could be turned into a talent for work that demands precision and punctuality, such as the watchmaking and computer industries (Hofstede, 1991).

<sup>111</sup> The fact that data were available on this group dictated the construction of this cultural group. The assumption of this study is that “Christian Filipinos” are different from “Muslim” or “Malay Filipinos”.

<sup>112</sup> That community is not inclusive of the Malay Filipinos who, as Muslims, also believe in an Absolute Truth. These two communities are treated separately because religious differences and socio-political grievances have set them apart.

<sup>113</sup> Hofstede (1980 and 1991) found that with the exception of the Philippines and Ireland, Eastern Orthodox and Roman Catholic countries scored high on UA. In comparison, Judaic and Muslim countries tended to score in the middle, and Protestant Christian countries tended to score low. Eastern religions scored medium to very low, Japan being the exception.

### *3.1. Item Bias*

The first methodological issue to be addressed here is the item bias. In cross-cultural psychology, item bias refers to every difference in an observed score for which no corresponding difference can be found in the psychological domain to which the scores are generalised (Poortinga and Malpass, 1986; Brislin, 1986; Tanzer, 1991; Poortinga, 1995; Van de Vijver and Poortinga, 1997). Van de Vijver and Poortinga (1997) identify the most common causes of item bias as including inadequate item formulations (e.g. complex wording), poor item translations, and incidental inappropriateness of item content (e.g. references to which the respondents cannot relate).

An example of incidental inappropriateness of item content manifested itself in an examination of the Self-Reporting Questionnaire (SRQ), a psychiatric case-finding instrument developed by the World Health Organisation (WHO) to detect psychiatric patients among visitors to medical clinics.<sup>114</sup> Kortmann (1990) made that discovery while examining the content validity of the answers to the questions of the SRQ in Ethiopia. Kortmann (1990: 386) specifically found the following:

“ ‘Do you feel unhappy?’ a basic question of the diagnosis of depression, was associated for many Ethiopians with feelings of mourning from the loss of someone or someone’s dying. This became evident as witnessed by the often-heard, spontaneous comment accompanying a ‘no’ answer on his question: ‘No, because no-one has died.’ The concept ‘unhappy’ does not appear to exist in the Ethiopian culture unless there is clear cause for it”.

The point here, as conveyed by the shortcoming in the SRQ that Kortmann (1990) discovered, is that when questionnaires are used for respondents of different cultural backgrounds, the study of their cross-

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<sup>114</sup> This questionnaire was designed especially for developing countries.

validity is a necessity. In other words, before researchers can make any statement about the social and psychological processes they have studied, they need to be certain that no item bias has crept into their research.

Because they have been written from a Western perspective, the FMAQ, and the MRM/TOQ may produce item bias. The remedial approaches taken by researchers to counter item bias have been either an imposed *etic* analysis (Berry, 1989) of their studies' concepts and/or instruments, or the devising of a questionnaire with a deliberate non-Western bias, so that its results could be compared with those of the questionnaire which may have a Western bias.<sup>115</sup>

Berry's objective has been to resolve the tension between those who proposed working intensely within a singular culture in order to discover and comprehend indigenous phenomena on the one hand, and those who sought to work extensively across cultures in order to produce generalisations about human behaviour that are valid for the species as a whole on the other. He proposes an integration of the two methods via the adoption of the *emic* and *etic* concepts of Pike (1967), and through the elaboration of a set of concrete research steps rooted in these concepts. These included "starting with initial research on a question in one's own culture (step 1-*emic* A) moving to an attempt to use the same concept or instrument to study the behaviour in another culture (step 2-imposed *etic*), then to the discovery strategy in another culture (step 3-*emic* B), and finally to the act of comparison of *emic* A and *emic* B (step 4). When there is no communality, then comparison is not possible (step 5-1), but with some

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<sup>115</sup> An example here is the Chinese Value Survey (CVS), which incorporated a Chinese culture bias. Another method is to have two versions of a pilot questionnaire, namely a more individualist one, and a more collectivist one. The two versions would be checked with regard to structural equivalence. The difference between the mean scores of these versions of an item gives an indication of the item bias of that item (Van Hemert, et al., 2001).



communality (the derived *etic*) comparison is possible (in step 5-2)” (Berry, 1989: 730).

However attractive Berry’s approach is, an imposed *etic* analysis of the main Western-Designated questionnaires which are used in non-Western countries may not render these questionnaires’ fundamental concepts culturally relevant to the majority of people living in non-Western societies. Profitable alternatives are, for example, the CVS, or non-Western researcher, incorporating non-Western items into their questionnaires (on the CVS, see Chinese Culture Connection, 1987; Hofstede, 1991).<sup>116</sup>

The contribution of non-Westerners to the design of questionnaires should be more extensive. Although steps in that direction have been taken (e.g. the CVS), much resistance remains among Western scholars, to giving a greater role to non-Western collaborators. Kim (1995) explains with respect to East Asia that the theoretical, conceptual and methodological frameworks used in research come to East Asia as a package, and that Euro-American researchers select as co-investigators only those indigenous scholars who are willing to follow guidelines. To many this would mean East Asian scholars who accept Western cultural values and assumptions. Writing about the Middle East, Said (1978) calls such assistants “native informants”. Said (1978: 323-324) indicates that because of the absence of genuinely Arab scholarship on the “Orient” (the Middle East),

“Oriental students (and Oriental professors) still want to come and sit at the feet of American orientalists, and later to repeat to their local audiences the clichés I [Edward Said] have been characterizing as Orientalist dogmas. Such a system of reproduction makes it inevitable that the Oriental scholar will

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<sup>116</sup> Hofstede (1991: 164) stresses that there are three dimensions common to his research and to the CVS, and that these dimensions “refer to the three types of expected social behaviour: towards seniors or juniors, towards the group, and as a function of one’s gender. These represent cultural choices so fundamental to any human society that they are found regardless of whether the questions asked were designed by Eastern or by Western minds. They are truly universal human issues in the sense that all societies share the same problems, but different societies have ‘chosen’ (historically rather than consciously) different answers to these problems”.

use his American training to feel superior to his own people because he is able to 'manage' the Orientalist system; in his relations with his superiors, the European or American Orientalists, he will remain only a 'native informant.' And indeed, this is his role in the West, should he be fortunate enough to remain there after his advanced training. Most elementary courses in Oriental languages are taught by 'native informants' in United States universities today; also, power in the system (in universities, foundations, and the like) is held almost exclusively by non-Orientals, although the numerical ratio of Oriental to non-Oriental resident professionals does not favour the latter so overwhelmingly".<sup>117</sup>

Even though efforts have been made to counter item bias in the design of the questionnaire developed in this study, through avoidance of complex wording and of references to which respondents could not relate, etc.,<sup>118</sup> this bias may still be present. The only remedy for this is to ensure a culture-sensitive analysis of the data gathered.

### 3.2. *Cultural Response Sets*

The second methodological issue to be addressed here is cultural response sets, or response bias without the researcher introducing their own bias. The problem of response bias is not new to psychology, but it has made itself strongly felt in cross-cultural research. Not surprisingly, any

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<sup>117</sup> Said (1978: 324-325) expands on the issue of cultural domination, and how it is maintained in the Middle East:

"... There is a vast standardization of taste in the region, symbolized not only by transistors, blue jeans, and Coca-Cola but also by cultural images of the Orient supplied by American mass media and consumed unthinkingly by the mass television audience. The paradox of an Arab regarding himself as an 'Arab' of the sort put out by Hollywood is but the simplest result of what I am referring to. Another result is that the Western market economy and its consumer orientation have produced (and are producing at an accelerated rate) a class of educated people whose intellectual formation is directed to satisfying market needs".

<sup>118</sup> Several items of the questionnaire were specifically framed to tap into issues related to fatalism, which is a uniquely collectivistic predisposition. These issues are not traditionally incorporated into questionnaires designed by Western scholars.

systematic variations observed in item responses were immediately ascribed to culture.

In several studies (Chun, Campbell and Yoo, 1974; Zax and Takahashi, 1967; Stening and Everett, 1984; Lynch, 1984; Hui and Triandis, 1989), a pattern of scoring bias was seen to be connected to particular ethnic groups. A tendency to overuse the mid-range of a scale has been observed in Japanese and Korean students and managers, for example (Chun, Campbell and Yoo, 1974; Zax and Takahashi, 1967; Stening and Everett, 1984). This response bias has been linked with cultural norms of modesty and caution characterising Japanese and Korean societies. By contrast, some Latin Mediterranean cultures appear to overuse the extremes of the scale to demonstrate sincerity and honesty (Hui and Triandis, 1989). Filipinos are also said to give researchers the answer that they believe the researchers want to hear. Lynch (1984) linked the Filipino response style to the Filipino value of *Pakikisama*, or Smooth Interpersonal Relations, and he advised caution in interpreting data from Filipinos.

A great deal has been written about response bias (Chun, Campbell and Yoo, 1974; Triandis, 1977; Hofstede, 1980; Berry, 1980), but there has been little discussion, or agreement about how to counter the scoring bias. The main reason for this deficiency is that it is difficult, indeed nearly impossible, to separate true from biased scores. The main issue in the debate is whether culture should be stripped from the response if a determination is made that the response is fused with culture. The question to be asked here is whether Japanese and Koreans give neutral responses because they are undecided, or because they are modest and cautious, and whether Filipinos give answers to satisfy the researcher or answers that truly reflect their feelings, attitudes, etc.

The responses to this dilemma have varied. Some scholars have suggested that one should work only at the intra-cultural level to avoid the issue of cross-cultural comparisons and metric equivalence, while others have made a case for transforming the data at the individual level, i.e. to standardise each subject's set of scores (Leung and Bond, 1989).<sup>119</sup> Still others have called for transformation of data based on a group level measure. Regarding this approach, Hofstede (1980) used the gross mean score of work goal importance, calculated as the means of all the value items across all people in one country or one group, as an index of acquiescence in his data. Actually, for data which contained no neutral point in the Likert scale, Hofstede used standardised scores, but for data containing a neutral mid-point, he only used partial correlation coefficients to control for acquiescence effects, when such a tendency existed.

Generally, however, transformed data are looked upon with suspicion. The first rule is that the integrity of the data should never be compromised, and transforming the data (no matter what the rationale) does just that, and may be viewed as an attempt by the researcher to make the data fit his assumptions. The second, and related rule, is to leave the data as is, i.e. to avoid stripping culture from the response, because a culturally-stripped response is a distorted response, and instead, to develop a methodology that allows one to mitigate the likely existence of cultural response bias in the sample.

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<sup>119</sup> Leung and Bond (1989), in fact, proposed "individual analysis" as a way to utilise individual scores, rather than just country means, in cultural comparisons. Their method is premised on equal sampling of individuals from each culture, and a double standardisation of the data. Firstly, all the data are to be standardised within the subject, to minimise individual and cultural response biases. Secondly, the items are to be standardised within each culture to remove any differences in position effects at the cultural level. The correlation between any two variables, within any culture, is not affected, though, while the average score for the variables within each of the samples is zero. In the end, when the groups are combined into one data set, the correlations are thus unaffected by inter-culture differences. Finally, factor analyses are conducted on these "decultured" scores to find factors which are equally applicable to all individuals in the analysis, irrespective of their cultural background.

This problem is rendered moot if the researcher is working with limited data, because in that case, he can scrutinise the data when inputting them.<sup>120</sup> However, it may be necessary to use the Leung and Bond (1989) or the Hofstede (1980) transformation techniques when a researcher is working with mountains of data. Even in this case, though, the data should not be transformed to the point where they no longer “real”, i.e. culturally-rich, data.

### 3.3. *Level of Analysis*

The third methodological issue to be addressed here is the level of analysis considered appropriate for the study. The individual level is one of at least two levels of analysis possible in cross-cultural research. The other level of analysis is the culture level. Specifically, in the culture level approach, the national culture is the unit of analysis, and the results obtained are clearly characteristics of cultures, and not of individuals. Hofstede's (1980) study of value is an example of this approach.<sup>121</sup> A drawback of culture level analyses is that they may lead to the “ecological” fallacy, which is the tendency to draw conclusions about individuals based solely on the observation of culture (Robinson, 1950).

For social science research, however, individual human beings are perhaps the most typical units of analysis. Social scientists tend to describe and explain social groups and interactions by aggregating and manipulating

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<sup>120</sup> This is precisely what was done for this study.

<sup>121</sup> As was mentioned before, Hofstede (1980) used the group mean as a valid measure of culture as a unit of analysis. Leung and Bond (1989) and Schwartz (1990) disputed Hofstede's approach, arguing that the group mean was not a valid measure of culture as a unit of analysis. They stressed, instead, that the group mean was simply an amalgam of individual responses. Leung (1989), argued that sociological measures such as suicide rate and GNP are the only true measures that use culture as the unit of analysis. It is important to stress here that Hofstede (1980) used these measures for external validation of his dimensions.

the description of individuals (Babbie, 1995). Actually, any variety of individuals may be the unit of analysis for social science research. Although the norms of generalised understanding in social science suggest that scientific findings are most valuable when they apply to all kinds of people, in reality, social scientists seldom study all kinds of people (Babbie, 1995). At the very least, as Babbie (1995) indicates, these social scientists' studies are typically confined to people living in a single country (though some comparative studies stretch across national boundaries), but usually these studies are even more circumscribed. Examples of circumscribed groups whose members may be units of analysis, at the individual level, might be workers, students, or parents.

This study's premise is that the questionnaire on which it is based will be a useful tool for translating the country-level concepts of Hofstede (1980) to individual-level measures of attitudes and work goals which impact upon performance and safety in aircraft maintenance organisations.

It is important to mention here that the relationship between two variables may be different across the two levels of analysis, but it is easier to interpret the results if their equality can be demonstrated (Van Vijver and Leung, 1997). An example can be found in "sub-system validation", in which "hypotheses are examined both intra-culturally and cross-culturally, so that explanatory variables may be tested at two levels" (Berry and Dasen, 1974: 19).<sup>122</sup>

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<sup>122</sup> The objective here is to establish that the relationship among a set of variables holds both within a culture and across cultures. Leung and Bond (1989) called such relationships strong *etic* relationships.

### ***3.4. General Analytic Strategy***

The strategy of this study relies on quantitative (statistical) and qualitative analyses to shed light on attitudes, values, and work goals of AMTs and maintenance supervisors working in multicultural aircraft maintenance organisations. Statistical analysis of the data generated from the questionnaires is aimed at uncovering perceptions and attitudes of AMTs and maintenance supervisors with regard to the relationship between their ethnic and cultural backgrounds and their workplace in terms of relevant attitudes, values, etc. In particular, it is important to determine firstly if there is attitude/value patterning within these ethnic and cultural groups, and secondly, if there is a significant difference in these patterns between ethnic and cultural groups.

Given these analytical aims, group means is the preferred mode of statistical analysis because it is the most robust measure of central tendency. However, prior to running analysis of variance, some exploratory work was done on the data (e.g. Factor Analysis, and ANOVA) to detect problems in both conceptualisation and the nature of the data itself.

These multi-method probes of the data are designed to build a detailed, richly layered, and ultimately a convergent understanding of the data. In other words, the different analytic approaches are means toward an end, and not an end in themselves.

The aim of this study is to go beyond the traditional aim of uncovering patterns among ethnic and cultural groups, so that it can be determined what the findings actually mean for aircraft maintenance organisations, as far as group harmony, productivity, and safety, etc. are concerned.

An important premise of this study is that “good” statistical tools are never a substitute for a well-thought-out methodology, and that, in the final analysis, the researcher should always use the statistical tools which are best suited to the project at hand.

Although not all of the following may be resolvable, this study tries to address the following questions:

- 1) Are AMTs, as a professional group, more individualistic than pilots in their attitudes, values, and work goals?
- 2) Whether AMTs and maintenance supervisors from most collectivistic culture groups have attitude and aspirations similar to those AMTs and maintenance supervisors from individualistic culture groups?
- 3) To what extent AMTs’ work-related attitudes and values are universal, or influenced by their national cultures?
- 4) Are AMTs generally favourably predisposed to being part of multicultural AMT teams?
- 5) Which of the individualistic or collectivistic AMTs are more favourably predisposed towards being part of multicultural AMT teams?
- 6) Did the aircraft maintenance organisations surveyed here manage cultural diversity effectively?
- 7) Have the aircraft maintenance organisations surveyed here begun to mine the value-added potential of cultural diversity?
- 8) Whether multicultural AMT teams face insurmountable problems as functioning units because of stereotypes, discrimination, and other ills, absent effective measures to remedy these problems?



- 9) Whether placing AMTs from different national cultures in the same work team would have a deleterious effect on the functioning of an aviation maintenance organisation?
- 10) Are multi-cultural AMT teams possibly more error prone than are mono-cultural ones?
- 11) Is it possible to identify a national culture which is superior to others, and therefore, more conducive to aviation safety?
- 12) Is it possible to identify a particular national culture that has a monopoly in producing AMTs with superior maintenance skills? And
- 13) Would the nature of the political/organisational environment in which AMTs function be significant in determining whether the AMTs will maximize their potential or not?
- 14) Were the aircraft maintenance organisation surveyed in this study successful in making their employees familiar with MRM/HF?

Taking all of these considerations into account, the data will be analysed in the following order. Chapters Four and Five, which initiate the data analysis portion of the study, will respectively examine the findings on the attitudinal and work goal items of the questionnaire. Different analytic approaches will be used in these two chapters (e.g. Factor Analysis, ANOVA, analysis of variance) to build a detailed, richly layered, and ultimately a convergent understanding of the data.

Chapter Six will outline the “profiles” of the eight maintenance organisations whose employees filled out the questionnaires. The data from Section B (pertaining to the Organisational Climate factor) and Section D have been used to “create” the “profiles”. The information gleaned from Section D is significant in that it gives an insight into the inner workings of the eight maintenance organisations, in such areas as cultural tolerance, stereotyping, group harmony, loyalty, etc. Different analytic approaches

will also be used in Chapter Six in the analysis of the four items of the OC factor. The data gathered for both sections, and especially from Section D, will help determine whether or not AMTs and the maintenance organisations employing them are ready for multicultural workplaces, and the types of challenges that the various maintenance organisations surveyed here face.

Chapter Seven, as the study's general conclusion, will weave the findings of Chapters Four, Five, and Six into a whole, attempting to answer the fundamental questions of this thesis, such as whether AMTs, as a group, are more individualistic than are airline pilots in attitudes, values and work goals; and to what extent AMTs' and maintenance supervisors' work-related attitudes and values would be universal, or influenced by culture.

Chapter Seven will also examine some of the strategies proposed to make multicultural organisations more able to meet the different challenges facing them, including that of diversity, and will evaluate these strategies in terms of their effectiveness regarding aircraft maintenance organisations.

## Chapter Four

This chapter analyses the results of 39 of the 43-attitudinal items of the questionnaire.<sup>123</sup> The remaining four items are examined in Chapter Six which, among other things, outlines the “profiles” of eight aircraft maintenance organisations whose Aircraft Maintenance Technicians (AMTs) and maintenance supervisors took part in the survey.<sup>124</sup>

The 39 items examined here fall into four scales. These are “Command Responsibility (CR)”, “Communication and Co-ordination (CC)”, “Recognition of Stressor Effects (RSE)”, and “Avoiding Conflict (AC)”.

As mentioned in Chapters One and Three, the presumption to be tested in this study, following Hofstede (1980 and 1991), and Helmreich and Merritt (1998) is that similarities for national groups found for IBM employees and airline pilots will also be evident for airline mechanics. The differences between respondents from different ethnic backgrounds and cultural groups will be particularly evident in Power Distance (PD) and Individualism (Ind) scores. However, in line with Taylor (1999a, 1999b), Pantakar (1999), and Taylor and Pantakar (1999), this study holds that maintenance workers, as a group, tend to be more individualistic than are the pilots measured, for example, by Helmreich and Merritt (1998), who are in turn considerably more individualistic than Hofstede’s (1980) international

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<sup>123</sup> Respondents were asked to indicate their opinions about the statements by writing beside each one the appropriate number from the scale below. The items were scored on a 5-point Likert Scale (1=“Disagree Strongly”; 2=“Disagree Slightly”; 3=“Neutral”; 4=“Agree Slightly”; and 5=“Agree Strongly”). The respondents were told that the “Neutral” position should only be used if they honestly did not hold any opinion on that particular item.

<sup>124</sup> These items are part of the “Organizational Climate scale (OC)”.

sample of IBM employees.<sup>125</sup> Taylor, in fact, has indicated that the individualism of the airline mechanics may stem from the individualistic culture of A&P certificate holders, a professional designation permitting return-to-service authority to every mechanic.

Though it subscribes to the position that the individualism of AMTs may be traceable mainly to the use/abuse of the perceived signatory authority of A&P, this study also maintains that this individualism has been shaped by other factors. Among these are education and training in Western countries, and working with Westerners, whether these are local or expatriates. These two factors are important considerations because while the signatory authority of A&P may cause mechanics to act more like individualists in the execution of a technical task, this authority is unlikely to influence the mechanics' outlook towards factors such as cultural coexistence in the workplace, acceptance of supervisors from other national cultures; recognising the fact that merit, rather than social status and connections, should decide such questions as career advancement and selection of supervisors in the workplace, etc. This outlook is shaped by education, socialisation, and other forces. The factors shaping this outlook may be as important as the signatory authority provided by A&P certificates.<sup>126</sup>

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<sup>125</sup> A caveat is in order here: the safest generalisation to make here is that maintenance mechanics are more individualistic than pilots from the same countries. For example, Saudi AMTs would tend to be more individualistic than Saudi pilots. However Saudi AMTs would not tend to be more individualistic than US pilots.

<sup>126</sup> The individualism of non-A&P holders (as highlighted by this survey) may essentially have stemmed from such factors as education and work socialisation, since that individualism could not be attributed to the A&P certificate.

## 4.0. Sample

As explained in Chapter Three, the questionnaires gathered are characterised by the unevenness of the sample size regarding ethnic and cultural groups. In terms of ethnic groups, the sample varies from one for 22 of the ethnic groups, to 43 for Arab/Muslims.<sup>127</sup> This has narrowed the options available to this researcher. It prevents, for example, the use of a balanced data set (e.g. ten AMTS and supervisors for twenty ethnic groups).<sup>128</sup> While the use of unbalanced data sets for both the ethnic and cultural groups may have impacted up on the quantitative element of research, it should have a less detrimental effect up on qualitative value of the research. The fact that this study uses two levels of analysis (i.e. ethnic background and culture group) allows us to move from the specific to the general, and to observe variations within specific ethnic groups, when such variations are present.

### 4.1. Exploratory Analyses

The first exploratory analysis to be undertaken here is Factor Analysis. Principal components analysis with varimax orthogonal rotation was run on combinations of the survey items to identify patterns of correlation among the item responses. The results would be significant for two main reasons: firstly, the results may uncover unexpected relationships between the items, and secondly, the results would confirm or refute conceptual relationships drawn from the literature on national cultures and used in this study (e.g. Hofstede,

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<sup>127</sup> As was emphasised before, ethnic and cultural groups represented by fewer than two individuals were not included in the analysis. It is important to mention here that only 238 questionnaires were collected altogether.

<sup>128</sup> Eleven cultural groups are represented in this study. The number of respondents from each cultural group varies greatly. The numbers ranged from 68 for the Muslim cultural group, and 34 for the Anglo cultural group (these two groups registered the highest number of respondents), to 3 for the Germanic cultural group. This reality also precluded the use of a balanced data set for the cultural groups.

1991; Triandis, 1995). The expected relationships included attitudes and work goals clustering around Individualism-Collectivism, Power Distance (PD); Masculinity-Femininity, and Uncertainty Avoidance (UA).

An initial factor analysis was run on all questionnaire items in order to determine what relationships were actually present in the data, and the resulting factors and loadings were quite interesting in that they tended to confirm to some extent the cohesion of individualistic versus collectivistic attitudes and work goals.

Once the existence of these expected relationships was established for these data, additional factor runs were performed within the expected thematic item clusters or scales in order to uncover possible underlying dimensions of interest. The results of these exploratory factor analyses are reviewed below.

Principal components analysis with varimax orthogonal rotation was run on all items in the data set in order to identify patterns of correlation. The convention of retaining factors with an eigenvalue greater than one was employed, resulting in nine factors being retained for analysis. The order of factor extraction is important since principal components extract factors in the order of variance explained, beginning with the “largest” factor. Information pertinent to the “size” of these factors includes the “eigenvalues” and the “percentage of variance explained”.

The interpretation of the “meaning” of the factors is based upon the largest variable loadings on that factor. For these analyses, the convention of examining loading greater than .4 was followed. A variable “loading” on a factor is the degree to which a variable is correlated with that factor. The variable loading squared is the amount of variance within a variable “explained” by a factor. The interpretation of the “meaning” of a factor

based upon the loadings is a matter of interpretation by the analyst. Alternative explanations are, of course, possible.

The factor analysis of the “all-run variables/items” resulted in the extraction of nine factors with eigenvalues greater than 1.0. The data were analysed by forced three-, four-, five-, six-, seven-, eight-, and nine-factor solutions. The nine-factor solution resulted in the most interpretable, though not necessarily the most parsimonious, solution. The nine-factor solution resulted in the most interpretable, though not necessarily the most parsimonious, solution. Although the nine factors only accounted for approximately 43% of the variance, this limited amount of variance explained is consistent with previous research using the Rokeach Values Survey (Rokeach, 1973; Howard, Shudo and Umeshima, 1983).

Factor One has an eigenvalue of 6.3 and total variance explained (from the original correlation matrix) of 10.8%. The six high loading variables (loading greater than .4) are given here in order of loading magnitude: CR-PD6, (“Junior team members should not question the superiors’ or senior crew members’ decisions”) .82; CR-PD4, (“We should not question superiors’ actions”) .79; CR-Ind9, (“Subordinates should not take control under any circumstances”) .76; CR-PD3, (“Senior staff deserve extra benefits”) .43; CR-UA3 (“The organisation’s rules should not be broken, even in situations where the employees think it is in the organisation’s best interests to do so”) .42; and AC-Ind8 (“Team members should avoid disagreeing with others, because conflicts create tension and reduce effectiveness in the workplace”) .41.

The interpretation seems to be straightforward, having to do with obedience to authority, and a classic collectivistic attitude toward power and

decision-making.<sup>129</sup> Hofstede's (1980 and 1991) concept of PD captures this reality. Hofstede (1991: 27) states that the Power Distance Index (PDI)<sup>130</sup> scores

“inform us about *dependence* relationships in a country. In small power distance countries there is a limited dependence of subordinates on bosses, and a preference for consultation, that is, *interdependence* between boss and subordinate. The emotional distance between them is small: subordinates will quite readily approach and contradict their bosses. In large power distance countries there is considerable dependence of subordinates on bosses. Subordinates respond by either *preferring* such dependence (in the form of autocratic or paternalistic boss), or rejecting it entirely, which in psychology is known as *counterdependence*: that is dependence, but with a negative sign. Large power distance countries thus show a pattern of polarization between dependence and counterdependence. In these cases, the emotional distance between subordinates and bosses is large: subordinates are unlikely to approach and contradict their bosses directly.

Power distance can therefore be defined as *the extent to which the less powerful members of institutions and organizations within a country express and accept that power is distributed unequally*”. (Italics in the text).

Factor Two, has an eigenvalue of 4.9 and total variance explained of 8.3%. The five high loading variables (loading greater than .4) are given here in order of loading magnitude: OC-Organiz, (“I am proud to work for this organisation”) .79; OC-Fam, (“Working for this organization is like being part of a larger family”) .79; OC-Job, (“I like my job”) .50; Goal 14-Ind30, (“Working for an organization which gives me sufficient time for my personal/family life”) -.45; RSE-Ind16, (“Managers can come to work without

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<sup>129</sup> But CR-UA3 was framed to tap into UA. Hofstede (1991: 111) explains that “Differences among countries on uncertainty avoidance were originally discovered as a by-product of power distance”. But the differences among countries found for UA “were unrelated to power distance differences”. AC-Ind8 was framed to tap into individualism-collectivism.

<sup>130</sup> There is no justification for moving the following quotation to discussion of the CR-PD items. The reason for not moving this to the discussion section is simple: This study did not use the PDI index. The quotation was only used to highlight Hofstede's distinction between “dependence” and “interdependence” relationships.



bringing their personal problems with them”) .42; and RSE-Ind18, (“If I get stressed, I get stressed. I have no control over it”) -.40.

The first two items are to do with social identity, and the last two with attitudes toward stress/personal problems. The first two items indicate the centrality of the organisation for AMTs and maintenance supervisors in terms of social identity. The loadings indicate positive organisational identity. The theme that emerges here could be labelled “Positive social identity and exaggerated conception of self”.

Factor Three has an eigenvalue of 3.7 and total variance explained of 6.3%. The three high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 1-Ind33, (“Receiving feedback on performance”) .79; Goal 2-Ind34, (“Understanding and agreeing on goals”) .73; and Goal 3-Ind35, (“Being informed of this organisation’s goals”) .70.

Receiving feedback on, understanding and agreeing to, and being informed of goals, points to a theme of communication and involvement in the operations of the workplace. The theme that emerges here could be called “Communication and active involvement in the workplace”.

Factor Four, has an eigenvalue of 2.6 and total variance explained of 4.4%. The four high loading variables (loading greater than .4) are given here in order of loading magnitude: CC-Manage, (“Training is a particularly important management responsibility”) .76; CC-Ind6, (“To resolve conflicts, team members should openly discuss their differences with each other”) .73; RSE-Ind5, (“Managers should encourage questions from team members”) .56; and CC-Coord2, (“Co-ordination among groups is a managerial responsibility”) .43.

The common theme expressed here seems to be an emphasis on the centrality of managers in the organisation and on the need for them to involve subordinates in the decision-making.

Factor Five has an eigenvalue of 2.2 and total variance explained of 3.8%. The four high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 4-Ind22, (“Having other groups act as if they share my own group’s goals”) .78; Goal 5-Ind23, (“Having other groups plan and co-ordinate their activities with my group”) .71; Goal 6-Ind24, (“Having subordinates voice concerns about the organization’s goals”) .64; and Goal 7-MAS1, (“Working with team members who maintain interpersonal relationships with each other”) .45.

The high loading items on this factor share a theme of co-operation and co-ordination as a workplace value. The theme that emerges here could be labelled “Co-operation and co-ordination”.

Factor Six has an eigenvalue of 2.1 and total variance explained of 3.6%. The four high loading variables (loading greater than .4) are given here in order of loading magnitude: AC-Ind14, (“Conflict avoidance has its roots outside the job, i.e. good relationships among team members outside the workplace will reduce the likelihood of conflict at work”) .60; RSE-Personal, (“Personal problems can adversely affect my performance”) .55; OC-Ind10, (“Fate placed me in this organization and I am grateful”) .51; AC-Ind11, (“Conflict in the workplace is natural and unavoidable”) .48.

The theme that emerges could be labelled “Conflict in the workplace”.

Factor Seven has an eigenvalue of 1.9 and total variance explained of 3.3%. The four high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 12-Ind28, (“Working in a place where I can have considerable freedom to adopt my own approach to the job”) .73; Goal 11-MAS3, (“Working in a place where I can develop a warm relationship with my direct bosses”) .61; Goal 13-Ind29, (“Working for an organization which offers me challenging tasks to do from which I can get a personal sense

of accomplishment”) .57; and CR-Ind7, (“Technical proficiency makes for successful management”) .55.

The high loading items on this factor share a theme, which could be called “A fulfilling job and warm relationship with my bosses”.

Factor Eight has an eigenvalue of 1.7 and total variance explained of 2.9%. The three high loading variables (loading greater than .4) are given here in order of loading magnitude: RSE-Fatigue, (“I perform effectively even when fatigued”) .82; RSE-Stress, (“I am less effective when under stress or fatigued”) -.65; and CR-Ind13, (“High social status and good connections make successful managers”) .45.

The high loading items on this factor share a theme of fatigue/stress. The theme that emerges here could be labelled “Fatigue/stress does not affect my performance”.

Finally, Factor Nine has an eigenvalue of 1.5 and total variance explained of 2.6%. The two high loading variables (loading greater than .4) are given here in order of loading magnitude: CC-Ind17, (“If I perceive problems with the task at hand, I will speak regardless of who might be affected) .73; and CR-Ind15, (“I am ashamed when I make a mistake in front of my fellow team members”) -.57.

The high loading items on this factor share a theme, which could be called “Speaking up when perceiving a problem, and not being ashamed to make a mistake in front of colleagues”.

After the “all variables/items” run, a different thematic area is covered in this chapter, namely CR, CC, AC and RSE.

The factor analysis of the CR items thematic area resulted in the extraction of three factors with an eigenvalue greater than 1.0. The three-factor solution resulted in the most interpretable and parsimonious factor solution. Moreover, the three-factor solution resulted in no value items

showing factorial complexity. The three-factor solution was also supported by inspection of the scree plot. Finally, the three factors accounted for approximately 51% of the variance.

Factor One has an eigenvalue of 3.2 and total variance explained of 26.7%. There are five items with loadings greater than .4, and these items are given here in order of magnitude: CR-PD6, (“Junior team members should not question the superiors’ or senior crew members’ decisions”) .84; CR-PD4, (“We should not question superiors’ actions”) .78; CR-Ind9 (“Subordinates should not take control under any circumstances”) .76; CR-PD3, (“Senior staff deserve extra benefits”) .53; and CR-UA3, (“The organisation’s rules should not be broken, even in situations where the employees think it is in the organisation’s best interests to do so”) .44.

This factor has the same loading items as Factor One in the “all variables” run. The interpretation of the items making up this factor seems to be straightforward having to do with obedience to authority. The theme that emerges here could be called “Respect for authority, and a need for guidelines”.

Factor Two, has an eigenvalue of 1.5 and total variance explained of 12.8%. There are five items with loadings greater than .4, and these items are given here in order of magnitude: CR-PD2, (“In abnormal situations I rely on my superiors to tell me what to do”) .75; CR-Ind21, (“Managers should take charge in emergencies”) .61; CR-Ind15, (“I am ashamed when I make a mistake in front of my team members”) .56; CR-Ind19, (“It is better to agree with team members than to voice a different opinion”) .52; and CR-UA3 (“The organisation’s rules should not be broken, even in situations where the employees think it is in the organisation’s best interests to do so”) .43.

These items have not been found to be related to the “all variables/items” run, but this factor is interesting nonetheless. There seems

to be a theme emerging here, which could be labelled “Respect for authority and group conformity”.

Finally, Factor Three has an eigenvalue of 1.3 and total variance explained of 10.8%. There are three items with loadings greater than .4, and these items are given here in order of magnitude: CR-Ind13, (“High social status and good connections make successful managers”) .80; CR-PD5, (“Supervisors who encourage suggestions from team members are weak leaders”) .64; and CR-Ind7, (“Technical proficiency makes for successful management”) .59.

These items have not been found to be related to the “all variables” run, but this factor is interesting also. The theme, which emerges here, could be labelled “Successful management and hierarchy”.

The factor analysis for the items encompassed by the CC scale, resulted in the extraction of three factors with eigenvalues greater than 1.0. This three-factor solution also resulted in the most interpretable and parsimonious factor solution, and resulted in no value items showing factorial complexity. The three-factor solution was also supported by inspection of the scree plot. Finally, the three factors accounted for approximately 48% of the variance.

Factor One has an eigenvalue of 2.1 and total variance explained of 21.8%. There are five items with loadings greater than .4, and these items are given here in order of loading magnitude: CC-Ind6, (“To resolve conflicts, team members should openly discuss their differences with each other”) .75; CC-Manage, (“Training is a particularly important management responsibility”) .68; CC-Ind3, (“Coordination requires taking other people’s personalities into account”) .54; CC-Coord2, (“Co-ordination among groups is a managerial responsibility”) .52 and CC-Ind1, (“Team members should feel obliged to mention their own psychological stress or physical problems to each other, before or during the performance of the assigned task”) .51.

Three of these five high loading variables are also high loading variables on Factor Four of the “all variables” run. The theme emerging here could be called “Managerial responsibility and openness in the workplace”.

Factor Two, has an eigenvalue of 1.4 and total variance explained of 14.2%. There are three items with loadings greater than .4, and these items are given here in order of loading magnitude: CC-Critique1, (“Debriefing/Critique is important for communication”) .65; CC-Ind4, (“I expect to be consulted on matters that affect the performance of my duty”) .64; and CC-Coord1, (“Co-ordination is especially important in emergency situations”) .61.

These items have not been found to be highly related in the “all variables” run, but here they seem to point to a theme of “Open communication in the workplace”.

Finally, Factor Three has an eigenvalue of 1.1 and total variance explained of 11.7%. There are three items with loadings greater than .4, and these items are given here in order of loading magnitude: CC-Ind17, (“If I perceive problems with the task at hand, I will speak up regardless of who might be affected”) .73; CC-Pre-Assign Brief, (“Pre-Assignment briefing is important”) .45; and CC-Ind3, (“Co-ordination requires taking other people’s personalities into account”) -.41.

These items have not been found to be highly related in the “all variables” run. The theme, which emerges here, could be labelled “Openness and inclusiveness in the workplace”.

While the factor analysis for the items encompassed by the CC scale resulted in the extraction of three factors with eigenvalues greater than 1.0, the factor analysis for the items falling under the AC scale resulted in the extraction of only two factors with eigenvalues greater than 1.0. The two-factor solution resulted in the most interpretable and parsimonious factor

solution.<sup>131</sup> In addition, the two-factor solution resulted in no value items showing factorial complexity. The two-factor solution was also supported by inspection of the scree plot. The two-factors accounted for approximately 49% of the variance.

Factor One has an eigenvalue of 1.7 and total variance explained of 29.7%. There are three items with loadings greater than .4, and these items are given here in order of loading magnitude: AC-Ind2, (“It is important to avoid negative comments about others”) .74; AC-Workplace, (“We should seek to understand each other better in the workplace”) .61; and AC-Ind8, (“Team members should avoid disagreeing with each other, because conflicts create tension and reduce effectiveness in the workplace”) .48.

These items also have not been found to be highly related in the “all variables” run, but they seem to point to a theme of “Avoidance of conflict”.

Factor Two, has an eigenvalue of 1.1 and total variance explained of 19.1%. There are four items with loadings greater than .4, and these items are given here in order of loading magnitude: AC-Ind11, (“Conflict in the workplace is natural and unavoidable”) .77; AC-Ind14, (“Conflict avoidance has its roots outside the job, i.e. good relationships among team members outside the workplace will reduce the likelihood of conflict at work”) .69; and AC-Ind8, (“Team members should avoid disagreeing with each other, because conflicts create tension and reduce effectiveness in the workplace”) .41; and AC-Conversation, (“Casual conversation improves co-ordination among team members”) .40.

These items have not been found to be highly related in the “all variables” run. However, a theme seems to be emerging here. It could be labelled “Roots of conflict”. There are two broad conceptions of the roots of conflict. There is the individualist concept which considers conflict natural

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<sup>131</sup> It is even more parsimonious than the three-factor solution for the CC scale.

and unavoidable, and the collectivistic conception which considers conflict neither natural nor unavoidable. The collectivists believe that good interpersonal relationships tend to preclude conflicts.

The final factor analysis to be performed here is the one for items encompassed by the RSE scale. That analysis resulted in the extraction of four factors with eigenvalues greater than 1.0. The four-factor solution resulted also in the most interpretable and parsimonious factor solution. Moreover, as in the previous factor solutions, the present four-factor solution also resulted in no value items showing factorial complexity. The four-factor solution was also supported by inspection of the scree plot. Finally, the four factors accounted for 55% of the variation.

Factor One has an eigenvalue of 2.1 and total variance explained of 19.8%. There are four items with loadings greater than .4, and these items are given here in order of loading magnitude: RSE-Ind18, (“If I get stressed, I get stressed. I have no control over it”) .73; RSE-Ind16, (“Managers can come to work without bringing their personal problems with them”) -.66; RSE-Abnormal, (“My decision-making is good in abnormal situations”) -.65; and RSE-Personal, (“Personal problems can affect my performance”) .46.

Two of these four high loading variables are also high loading variables on Factor Two of the “all variables” run. The relationship between the items seems to be pointing to a low sense of urgency. The theme that emerges here could be labelled “(Absence of) fatalism and (Realistic) conception of self”.

Factor Two, has an eigenvalue of 1.5 and total variance explained of 13.6%. There are three items with loadings greater than .4, and these items are given here in order of loading magnitude: RSE-Ind12, (“We should be sensitive to other people’s problems”) .72; RSE-Empathize, (Team members should empathize with one another’s predicaments”) .60; and RSE-Ind5, (“Managers should encourage questions from team members”) .58.



These items have not been found to be highly related in the “all variables” run, but they seem to point to a theme of “Empathy and sensitivity in the workplace”.

Factor Three has an eigenvalue of 1.2 and total variance explained of 11.1%. There are two items with loadings greater than .4, and these items are given here in order of loading magnitude: RSE-Stress, (“I am less effective when under stress or fatigued”) -.79; and RSE-Fatigue, (“I perform effectively even when fatigued”) .77.

These two high loading variables are also high loading variables on Factor Eight of the “all variables” run. The theme that emerges here could be labelled “Fatigue/stress does not impair my performance”.

Finally, Factor Four has an eigenvalue of 1.1 and total variance explained of 10.5%. There are two items with loadings greater than .4, and these items are given here in order of loading magnitude: RSE-Ind20, (“My performance is not adversely affected by working with an inexperienced or less capable team member”) .74; and RSE-Plans, (“Managers should inform us of plans and actions”) -.58.

These items have not been found to be highly related in the “all variables” run, but they seem to point to a theme of “In control”. This is a typically the attitude of individualists.

The second explanatory analysis to be run here is one-way analysis of variance (ANOVA), which is an extension of the two-sample t test. ANOVA was employed here to discover significant differences of means among the cultural groups on the dependent variables, and the Tukey Honest Significant Difference (HSD) test was used to generate post hoc significant statistics. Pairwise multiple comparisons were used to test the significance of each difference of means at an alpha level of .05 (a standard level for social science hypothesis testing). In other words, pairwise multiple comparisons test the

difference between each pair of means, and yield a matrix where asterisks indicate significantly different group means at an alpha level of .05.

The Tukey HSD test uses the STUDENTISED range statistic for pairwise comparisons. All statistical runs were made using SPSS statistical software.

ANOVA was run with culture groups as an independent variable on attitude items as dependent variables. Only differences of means between cultural groups that were significant (or near significant) at an alpha level of .05 will be presented and discussed here in this chapter. It is important to emphasise here that it is not possible to claim a strict inference from these statistics to general population parameters, even for the statistically significant relationships, due to the fact that these data were not collected using a random sampling method.<sup>132</sup> Nevertheless, the results are presented and discussed here for their heuristic value.

Table 4.1 shows all statistically significant differences of means. The analysis of these findings will be undertaken in the “Results” section of this chapter.

Table 4.1 ANOVA Tukey HSD Post Hoc  
Pairwise Comparisons\*

**Item: CR-Ind7**  
*“Technical proficiency makes for successful management”*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	-.867	.265	0.050	-1.735	.000
Scandinav/Filipino	-2.466	.765	0.058	-4.969	.003

<sup>132</sup> The reason was that the companies did not provide a list of their licensed AMTs, maintenance crew chiefs, and supervisors, a prerequisite step for selecting a sample population.

## Item: CR-Ind13

*“High social status and good connections make successful managers”*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	-1.279	.282	0.000	-2.20	-.354
Anglo/Buddhist	-2.405	.645	0.010	-4.51	.297
Buddhist/Filipino	-2.700	.815	0.044	.003	5.365

## Item: CC-Ind17

*“If I perceive problems with the task at hand, I will speak up, regardless of who might be affected”*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	1.000	0.217	0.000	0.289	1.710
Anglo/Japanese	1.970	0.547	0.017	0.182	3.758
Anglo/Hindu	1.470	0.429	0.030	0.006	2.874

## Item: AC-Ind2

*“It is important to avoid negative comments about others”*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Latin/Japanese	2.295	0.655	0.023	0.153	4.437

\*Statistically significant differences of means at alpha level .05.

## 4.2. Results

The first results presented here are those of the “Command Responsibility” scale. To use Hofstede’s (1980 and 1991) formulae, low scores on the CR-PD items of the “Command Responsibility” scale reflect low PD and Individualism, while high scores reflect high PD and collectivism.

### 4.2.1. Command Responsibility (CR)

Specifically, low scores on the CR-PD items would indicate a preference for an egalitarian command style, and high scores a preference for a hierarchical command style.<sup>133</sup> The results on the CR-PD items (CR-PD2, CR-PD3, CR-PD4, CR-PD5 and CR-PD6) of the “Command Responsibility” scale in this survey are generally not in line with the findings of Hofstede regarding IBM employees, and Helmreich and Merritt regarding airline pilots.<sup>134</sup>

The items falling under the “Respect for authority and a need for guidelines” heading, namely, CR-PD6, CR-PD4, CR-Ind9, CR-PD3, and CR-UA3, will be analysed first. Regarding CR-PD6, the important point is not the four clusters of culture groups which can be discerned based on the findings on this item,<sup>135</sup> but the overall low PD for the respondents from the collectivistic cultural groups studied here. It is important to add that the score for Japan is surprisingly low, because Japan has a PDI score of 54, while

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<sup>133</sup> Taylor (1999b: 23) stressed that Hofstede’s (1980) PD dimension is an inverse function of the MRM/TOQ’s CR, i.e. as PD increases, responsibility decreases.

<sup>134</sup> The reasons for this will be expounded later.

<sup>135</sup> The first cluster is made of the “Christian Filipino culture” group (3.3333), the “Confucian culture” group (2.8889), and the “Hindu culture” group (2.8571). The respondents from these culture groups are undecided or moving towards the undecided position on CR-PD6. The second cluster is made up of the “Latin culture” group (2.8182), the “Buddhist culture” group (2.8000), the “Muslim culture” group (2.7206), the “Anglo culture” group (2.5000), the “Scandinavian culture” group (2.4000); and the “Germanic culture” group (2.3333). The respondents from the cultural groups of this cluster range from those moving toward a neutral position on the thrust of CR-PD 6 to those clearly slightly disagreeing with it. The third cluster is made up only of the “Korean culture” group (2.2500), while the fourth and final cluster is made up only of the “Shinto or Japanese culture” group (1.7500). Examination of the results on CR-PD6, from the perspective of the “Ethnback2” variable, points to variations in scores among certain ethnic groups, when present. There were significant variations in scores among the sub-groups making up the Indian group, i.e. “Indian/Christian” (4.6667), “Indian/nd” (3.1250) and “Indian/Hindu” (2.5000). But the variations in scores were not as significant for the members of the Arab group as they are for the Indian group: “Arab/nd” (3.2857), “Arab/Christians” (3.2000) and “Arab/Muslims” (2.8837). There were significant variations in scores between the “Filipino/Christians” (3.3000) on the one hand, and the “Filipino/nd” (2.7500) and “Filipino/Malays” (2.6667) on the other. There were also significant variations in scores between “US/Hispanics” (2.6667) and “US/Caucasians” (2.4000), on the one hand, and “US/nd” (1.6667), on the other.

Finland, Norway, Sweden and Denmark, making up the “Scandinavian culture” group, have 33, 31, 31, and 18 as PDI scores respectively.<sup>136</sup>

The findings on CR-PD6 could have positive ramifications for aircraft maintenance organisations, because they underscore the fact that respondents from most collectivistic cultural groups studied here seem to be unwilling to give supervisors and seniors team members (despite the respect that these respondents may have for them) total freedom to take any decision they want, or to obey them blindly.<sup>137</sup> It is important to stress that blind obedience, a characteristic of some collectivistic cultures, has potential to be a threat to safety in the workplace.<sup>138</sup>

Finally, the findings on the CR-PD6 item suggest that, with few exceptions, respondents from collectivistic cultures show a preference for a style of command that is much closer to egalitarian than it is to the hierarchical. Actually, it is mid-way between the highly egalitarian and the highly hierarchical command styles. This may be an ideal position because it shows a willingness to accept decisions taken by supervisors and crew leaders, on the one hand, and a willingness to voice concern about decisions by superiors if those decisions are seen as dangerous for the workplace, on the other. Such an attitude is likely to foster or increase safety in the workplace.<sup>139</sup>

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<sup>136</sup> Finland, Norway, Sweden and Denmark, making up the “Scandinavian culture” group, have 33, 31, 31 and 18 as PDI scores respectively. Germany, Switzerland and Austria, which make up the “Germanic culture” group, on the other hand, have 35, 34 and 11 as PDI scores respectively.

<sup>137</sup> The findings on CR-PD6 concerning the respondents from individualistic cultural groups would appear to be behaving as expected.

<sup>138</sup> Maybe the word “blind” is too powerful a term, but it was used to show that collectivists rarely question their superiors and tend to obey them blindly.

<sup>139</sup> It is unlikely that an attitude of questioning decisions by superiors who are seen as lacking merit or threatening safety would impact the workplace negatively. The reason is that such questioning would be seen as justified. By contrast, AMI's who are prone to question decisions by superiors, for no apparent reason, are likely to alienate their co-workers and management as well. The result is likely to be an unhealthy work atmosphere, and low morale in the workplace.

The point here is that too much individualism or too much collectivism may pose serious problems for aircraft maintenance organisations.<sup>140</sup>

The findings on CR-PD4 (see Table CR4.01 below) almost mirror those on CR-PD6. In both instances, the highest and lowest scores belong to the “Christian Filipino” and “Shinto or Japanese culture” groups. In fact, four clusters of cultural groups can also be discerned on the basis of findings on CR-PD4.

Table CR4.01

CR-PD4<sup>141</sup>*(Q12. We should not question superiors' actions)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	3.3333	1.2111
	Hindu culture	3.0000	1.4142
2 <sup>nd</sup> cluster	Buddhist culture	2.8000	1.0954
	Latin culture	2.5455	1.0357
	Muslim culture	2.5147	1.2518
	Confucian culture	2.4444	1.0138
3 <sup>rd</sup> cluster	Korean culture	2.2500	1.8930
	Anglo culture	2.1176	1.2972
	Germanic culture	2.0000	1.0000
	Scandinavian culture	1.8000	.4472
4 <sup>th</sup> cluster	Shinto or Japanese	1.5000	.5774

The abnormality observed here is, again, the low score on the CR-PD4 item by the respondents associated with the Japanese culture group.<sup>142</sup>

<sup>140</sup> This contrasts with Taylor's (1999b) position that individualism *per se* is a threat to safety.

<sup>141</sup> The “Ethnback2” variable allows us to see variations, when present, among some ethnic groups, regarding CR-PD4. There were significant variations in scores between “Indian/Christians” (4.3333) on the one hand, and “Indian/nd” (2.8125) and “Indian/Hindu” (2.6667) on the other. There were also significant variations in scores between “Arab/Christian” (3.4000) and “Arab/nd” (3.3571) on the one hand, and “Arab/Muslims” (2.6512) on the other. The variations in scores were also significant between “Filipino/Christians” (3.3333) on the one hand, and “Filipino/nd” (2.6667) and “Filipino/Malays” (2.3333) on the other. There were also significant variations in score between “US/nd” (3.0000) on the one hand, and “US/Caucasians” (2.1000) and “US/Hispanic” (2.0000) on the other.

<sup>142</sup> There are several possible explanations for the findings concerning the Japanese culture group: respondents from this group have the outlook of individualists on the CR-PD4 item; they have a keen sense about consultation; they have a keen sense of safety, and/or a combination of the factors -mentioned above. More importantly, this finding can be attributed to the low N of the Japanese cultural group.

The findings on the CR-PD4 item are likely to have only positive ramifications for aircraft maintenance organisations. The results also suggest a rejection of a unquestioning obedience to superiors (despite the respect that respondents may have for them). The implication is that the AMTs would not sit idly by if they were to realise that the superiors' actions might compromise safety.

As with the findings on CR-PD6, the findings on CR-PD4 indicate that respondents from most collectivistic cultures seem to prefer a style of command that is much closer to egalitarian than it is to hierarchical.

Regarding the CR-Ind9 item (see Table CR4.02 below), the scores point to three cluster groups.

Table CR4.02

## CR-Ind9

*(Q17. Subordinates should not take control under any circumstances.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Germanic culture	4.0000	1.0000
	Christian Filipino	3.6667	1.0328
2 <sup>nd</sup> cluster	Hindu culture	3.0000	1.4142
	Buddhist culture	3.0000	1.2247
	Latin culture	3.0000	1.0954
	Muslim culture	2.9853	1.3100
	Anglo culture	2.8824	1.3431
	Scandinavian culture <sup>143</sup>	2.8000	1.0954
3 <sup>rd</sup> cluster	Korean culture	2.5000	1.9149
	Confucian culture	2.4444	1.0138
	Shinto or Japanese <sup>144</sup>	2.2500	1.2583

<sup>143</sup> The scores of the first three culture groups, making up the third cluster of cultural groups, place them in the higher end of the "disagree slightly" scale.

<sup>144</sup> The "Ethnback2" variable allows us to see variations within groups, when they are present, regarding CR-Ind9. There were significant variations in scores among the sub-groups making up the Indian group: "Indian/Christians" (4.3333), "Indian/nd" (3.6875) and "Hindus" (2.6667). There were also significant variations in scores between "Filipino/Christians" (3.6667) and "Filipino/nd" (3.1667) on the one hand, and "Filipino/Malays" (2.3333) on the other. But there were no meaningful variations in scores among the sub-groups making up the Arab group: "Arab/Christians" (3.6000), "Arab/nd" (3.2143) and "Arab/Muslims" (3.0930). The scores for the US group are also clustered: "US/nd" (2.6667), "US/Caucasians" (2.4000) and "US/Hispanic" (2.3333).

The “Germanic culture” group behaves, regarding the CR-Ind9 item, as the most collectivistic of all the cultures groups surveyed here. Collectivism, according to Hofstede (1991), stands for a society in which people, from birth onwards, are integrated into strong, cohesive in-groups, which continue to protect them throughout their life in exchange for unquestioning loyalty.

With the exception of the “Germanic culture” group, the scores on CR-Ind9 do not point to anything alarming. Ideally lower scores on the CR-Ind9 item for the Germanic culture group would have been preferable. Low scores would indicate AMTs’ willingness to assume responsibility if the situation dictated it. The findings regarding the second and third clusters of culture groups could be so interpreted, and these findings can have only positive ramifications for safety in the workplace. This is the case because among the cultural groups of those clusters are putative collectivists, whom the literature on cross-cultural studies recognises as the least likely to challenge superiors by taking control of a situation when circumstances so dictate (Hofstede, 1980 and 1991; Triandis, 1995).

The literature on cross-cultural studies also posits that collectivists are predisposed to defer to superiors both in normal and emergency situations (Hofstede, 1980). The findings on the CR-Ind9 item generally do not support this assertion.

The CR-PD3 item deals with the issue of seniority and extra benefits. The results on the CR-PD3 item (see table CR4.03 below) suggest that, with the exception of the “Germanic” and “Korean culture” groups, there is a movement towards slightly agreeing with the proposition that senior staff are entitled to extra benefits.<sup>145</sup>

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<sup>145</sup> The theory postulates that putative collectivists would agree to the proposition that senior staff members deserve extra benefits, while putative individualists would not.



Three clusters of culture groups can be discerned from the findings on the CR-PD3 item.

Table CR4.03

CR-PD3<sup>146</sup>*(Q 6. Senior staff deserve extra benefits.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.1667	1.1690
	Confucian culture	3.8889	.9280
	Hindu culture	3.8571	.8997
	Scandinavian culture	3.8000	1.0954
	Muslim culture	3.7647	1.1213
2 <sup>nd</sup> cluster	Latin culture	3.6364	.9244
	Buddhist culture	3.6000	.8944
	Anglo culture	3.5294	1.3977
	Shinto or Japanese	3.5000	1.2910
	Germanic culture	3.3333	.5774
3 <sup>rd</sup> cluster	Korean culture	2.5000	1.9149

The findings on CR-PD3 may have positive ramifications for aviation maintenance organisations, because, though respondents from several cultural groups seem to be moving towards accepting some form of increased benefits for senior staff, they do not seem to have a rigid mind-set regarding such entitlements. This may be good news as far as group harmony is concerned.

The final item falling under the label "Respect for authority and a need for guidelines" is CR-UA3. It is important to stress here that individualists and collectivists deal differently with the overall issue of uncertainty. Researchers at the Aerospace Crew Research Project had found that Hofstede's (1991) UA was only replicated when it was defined to centre on the attitude that written

<sup>146</sup> The "Ethnback2" variable allows us to see variations within groups, when the variations are present, regarding the CR-PD3 item. There were significant variations in scores between "Indian/Christians" (5.0000) on the one hand, and "Indian/nd" (3.6875) and "Hindus" (3.6667) on the other. There were also significant variations in scores between "Filipino/Christians" (4.1667) and "Filipino/nd" (4.1667) on the one hand, and "Filipino/Malays" (3.6667) on the other. But there were no meaningful variations in scores among the sub-groups forming the Arab group: "Arab/Muslims" (3.9767), "Arab/Christians" (3.8000) and "Arab/nd" (3.7143). There were significant variations in scores among the members of the US group: "US/Hispanic" (4.1667), "US/Caucasians" (3.0000) and "US/nd" (2.5000).

procedures were needed for all situations, and that an organisation's rules should never be broken, even when it might be in the organisation's best interest to do so. Hofstede (1991: 113) defined UA "as the extent to which the members of a culture feel threatened by uncertainty situations", adding that "such a feeling is, among other things, expressed through nervous stress and in need of predictability: a need for written and unwritten rules".

Table CR4.04

CR-UA3<sup>147</sup>

*(Q 34. The organization's rules should not be broken, even in situations where the employees think it is in the organization's best interests to do so.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.6000	.5477
2 <sup>nd</sup> cluster	Christian Filipino	4.0000	.6325
	Shinto or Japanese	3.7500	1.2583
	Korean culture <sup>148</sup>	3.7500	1.2583
	Buddhist culture	3.6000	1.6733
	Confucian culture	3.5556	1.3333
3 <sup>rd</sup> cluster	Muslim culture	3.4706	1.1522
	Hindu culture	3.4286	1.2724
	Latin culture	3.3636	1.3618
	Anglo culture	3.2353	1.2567
4 <sup>th</sup> cluster	Germanic culture	2.6667	1.5275

<sup>147</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding the CR-UA3 item. Regarding the Indian group, there were significant variations in scores between "Indian/Christians" (4.6667) and "Indian/nd" (4.2500) on the one hand, and "Hindus" (3.1667) on the other. Regarding the sub-groups making up the Arab group, there were no meaningful variations in score: "Arab/nd" (4.1429), "Arab/Christians" (4.0000) and "Arab/Muslims" (3.7500). But there were also no variations in scores for the sub-groups making up the Filipino group: "Filipino/Christians" (4.0000), "Filipino/Malays" (3.6667) and "Filipino/nd" (3.5833). Regarding the sub-groups making up the US group, there were significant variations in scores between "US/Hispanics" (3.3333) on the one hand, and "US/Caucasians" (2.7000) and "US/nd" (2.6667) on the other.

<sup>148</sup> The scores for the "Christian Filipino", "Shinto or Japanese" and "Korean" culture groups fit the findings of Hofstede (1980: 137): "there is a strong tendency for more Catholic (Roman Catholic and Orthodox) countries to show higher UA values than the more Protestant countries. Catholicism puts a much stronger accent on life after death and the believer's ability to ensure his participation in it". Ancestor worship, as practiced in Japan, can also be seen as a form of religion coping with uncertainty. In general, as Hofstede had stressed, religion and uncertainty avoidance appear to be meaningfully related.

According to Hofstede, the need for rules in strong UA societies is emotional, and stems from people's having been programmed since early childhood to feel comfortable in structured environments, while in countries with very weak UA, people approach formal rules with emotional horror. Hofstede further clarified that in weak UA countries, rules are only established in cases of absolute necessity, and that people in those countries believe that many problems can be solved without formal rules.

However, the findings of this survey point to some unexpected surprises. The most significant finding is the high score for the "Scandinavian culture" group (4.6000). This is a surprising finding because "Protestantism, and especially Calvinism, encourages worldly ways to cope with uncertainty (technology and law), as willed by God rather than by ritual ways" (Hofstede, 1980: 137).<sup>149</sup>

In any event, four cluster groups can be discerned on the CR-UA3 item (see Table CR4.04 above).

The scores for the "Muslim", "Hindu", "Anglo" and "Germanic culture" groups appear to be more or less in line with Hofstede's (1980 and 1991) findings.

The findings on CR-UA3 point only to a limited movement towards acceptance of some reliance on rules to deal with uncertainty in the workplace. Generally, though, a less rigid approach to dealing with uncertainty is probably more desirable for organisations. This means that there are instances when rules should never be broken, but that in general, a less rigid approach to dealing with uncertainty is best for organisations whose work may affect public safety. This middle position seems to be the most

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<sup>149</sup> The only logical explanation for the high score of the "Scandinavian culture" group on the CR-UA3 item may be the small sample size of Scandinavians in the survey.

commonly manifested in this survey, and this would tend to augur well for aviation maintenance organisations.

Table CR4.05

CR-PD2<sup>150</sup>*(Q 4. In abnormal situations, I rely on my superiors to tell me what to do.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Buddhist culture	4.2000	.8367
	Confucian culture <sup>151</sup>	3.7778	1.0929
	Korean culture	3.7500	1.5000
2 <sup>nd</sup> cluster	Hindu culture	3.5714	1.5119
	Christian Filipino	3.5000	1.2247
	Muslim culture	3.3971	1.1479
	Germanic culture	3.3333	1.5275
	Shinto or Japanese	3.0000	1.4142
	Latin culture	3.0000	1.3416
3 <sup>rd</sup> cluster	Anglo culture	2.7941	1.3878

The overall findings on the items comprising the “Respect for authority and a need for guidelines” category point to a rejection of blank obedience to superiors on the part of the respondents from most cultural groups. The findings also indicate a less rigid approach to dealing with uncertainty on the part of the AMTs and maintenance supervisors who took part in the survey.

<sup>150</sup> The “Ethnback2” variable allows to us to observe variations within groups, when present, regarding the CR-PD2 item. There were significant variations in scores among the sub-groups forming the Indian group: “Indian/Christians” (4.6667), “Indian/nd” (3.9375) and “Hindus” (3.3333). But there were no meaningful variations in scores among the sub-groups making up the Filipino group: “Filipino/Malays” (3.6667), “Filipino/Christians” (3.5000) and “Filipino/nd” (3.2500). Regarding the members of the Arab group, there were significant variations in score between “Arab/Christians” (4.0000) on the one hand, and “Arab/nd” (3.7143) and “Arab/Muslims” (3.3721) on the other. The variations in scores were even more significant between “US/Hispanics” (3.3333) and “US/Caucasians” (3.1000) on the one hand, and “US/nd” (2.0000) on the other.

<sup>151</sup> Regarding the “Confucian culture” group, it is important to note that Confucius considered all individuals to be linked to others in a web of interrelatedness, and thus articulated the Five Cardinal Relations as being fundamental to all relationships. Three of these Relations are based on the family (e.g. between father and son, elder and younger, and between husband and wife). The fourth Relation involved the state (e.g. between a king and his subjects). The last relation involved equal status (as among friends). The relationship between parents and children, as well as that between spouses and siblings, is not based on equality, but on a dyadic responsibility and care. Parents demand love, reverence, obedience and respect from their children; and children expect love, wisdom and benevolence from their parents in return (King, 1985). In Confucianism, like a father, an ideal leader is a person who utilises his authority for the welfare and common good of the people, and not for his own selfish interests (Kim, 1994; King and Bond, 1985). This outlook is similar to that of Islam, since the two philosophies believe that if a leader is judged to be tyrannical, he loses the moral basis for his leadership, and his subjects become justified in taking up arms against his rule.

The findings on the different items comprising the “Respect for authority and a need for guidelines” category generally show that respondents from most of the collectivistic cultural groups surveyed here think and behave as individualists from low PD countries.

The next items to be examined here are those within the “Respect for authority and group conformity” category. These are CR-PD2; CR-Ind21; CR-Ind15; CR-Ind19; and CR-UA3.

The findings on CR-PD2 (see Table CR4.05 above) are similar to those for CR-PD4, and CR-PD6. Indeed, the findings on CR-PD2 also highlight the absence of blind obedience to superiors on the part of the respondents.

Three clusters of cultural groups can be discerned on the basis of findings on CR-PD2.

The ramifications of the findings on CR-PD2 may be positive for maintenance organisations because these findings show that the respondents from most collectivistic cultures are similar in attitude to their individualistic counterparts regarding the issue of reliance on supervisors during abnormal situations. Specifically, the respondents from collectivistic and individualistic cultural groups alike seem to be unwilling to preclude the option of taking matters into their own hands should the situation dictate it.

As mentioned before, the literature on cross-cultural studies also posits that collectivists are predisposed to defer to superiors both in normal and emergency situations. The findings on the CR-Ind21 item (see Table CR4.06 below) support this assertion.

There seems to be an agreement among the respondents from five collectivist culture groups about deferring to superiors in emergency situations. The respondents from these collectivistic cultural groups and from one of the individualistic cultural groups (i.e. the “Scandinavian”) seem to

regard such reliance as a normal state of affairs. The assumption of these respondents seems to be that a manager knows what to do in emergencies.

Table CR4.06

CR-Ind21<sup>152</sup>*(Q 40. Managers should take charge in emergencies.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Shinto or Japanese	4.7500	.5000
	Korean culture	4.2500	.9574
2 <sup>nd</sup> cluster	Latin culture	4.1818	.7508
	Confucian culture	4.1111	1.2693
	Muslim culture	4.0441	.9687
	Scandinavian culture	4.0000	.0000
3 <sup>rd</sup> cluster	Hindu culture	3.7143	1.6036
	Germanic culture	3.6667	.5774
	Anglo culture	3.5588	1.1333
4 <sup>th</sup> cluster	Christian Filipino	3.0000	1.5492
	Buddhist culture	2.8000	1.3038

The question, therefore, to be asked here is why the respondents associated with these six cultural groups are of two minds on this issue and the previous one, which states that “In abnormal situations, I rely on my superiors to tell me what to do”. Maybe the appearance of the words “managers” and “emergencies” in item CR-Ind21 swayed the respondents’ views towards deferring to managers in emergency situations.<sup>153</sup>

It is possible that an attitude favouring deference to managers in emergencies may not compromise safety in the workplace. However, an

<sup>152</sup> The “Ethnback2” variable allows us to observe variations within groups, when present, regarding CR-Ind 21. There were significant variations in scores among the sub-groups making up the Indian group: “Indian/Christians” (5.0000), “Indian/nd” (4.2500) and “Hindus” (3.5000). There were also significant variations in scores between “Filipino/nd” (3.8333) on the one hand, and “Filipino/Malays” and “Filipino/Christians” (3.0000) on the other. The scores for the Arab group, though, did not register significant variations: “Arab/nd” (4.4286), “Arab/Muslims” (4.2093) and “Arab/Christians” (4.2000). But there were significant differences in score within the US group: “US/Hispanics” (4.6667), “US/Caucasians” (3.7000) and “US/nd” (2.3333).

<sup>153</sup> Deferring to managers is a good thing. But do managers always know best? This question begs another, namely, that of what would be the appropriate procedure to follow, should the managers not be up to par in emergency situations?

attitude of shame concerning errors made in front of co-workers would certainly compromise safety in the workplace (on shame, see Triandis, 1995; Ting-Toomey, 1993 and 1994). The notion of shame is associated with collectivistic cultures. The findings on the CR-Ind15 item (see Table CR4.07 below), though, do not point to anything alarming on this issue.

Four clusters of cultural groups can be discerned from the findings on the CR-Ind15 item. The first cluster is made up of the “Christian Filipino culture” group; the “Shinto or Japanese culture” group; and the “Korean culture” group. What these three cultural groups have in common is being from Asia, the region of the world where shame is part of the culture. But remarkably, the respondents from these cultural groups did not register a clear espousal of “shame”.

The relatively low scores on the CR-Ind15 item for those culture groups for which “shame” is an important societal value could have only positive ramifications for the workplace in relation to the issue of safety. Putative individualists, as is known, believe that shame has no place in the workplace. Such an outlook is a *sine qua non* for safety in the workplace.

The final item falling under the “Respect for authority and group conformity” heading is CR-Ind19. Before presenting the findings on this item, it is important to mention that members of collectivistic cultures, much more so than members of individualistic cultures, are said to value group conformity (Hofstede, 1991; Triandis, 1995). The findings contradict this assumption however, since they show that respondents from most collectivistic cultural groups reject the thrust of the CR-Ind19 item.

Table CR4.07

CR-Ind15<sup>154</sup>*(Q 29. I am ashamed when I make a mistake in front of my fellow team members.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	3.6667	1.0328
	Shinto or Japanese	3.5000	1.0000
	Korean culture	3.5000	1.7078
2 <sup>nd</sup> cluster	Hindu culture	3.1429	1.2150
	Buddhist culture	3.0000	.7071
	Confucian culture	2.6667	1.3229
	Germanic culture	2.6667	1.5275
3 <sup>rd</sup> cluster	Muslim culture	2.5735	1.0833
	Latin culture	2.4545	1.3685
	Anglo culture	2.3235	1.3421
4 <sup>th</sup> cluster	Scandinavian culture	1.6000	.5477

The findings on CR-Ind19 (see Table CR4.08 below) enable us to discern four cluster groups.

Scores on the CR-Ind19 item suggest that both putative individualists and collectivists reject group conformity in the workplace.<sup>155</sup> Individualistic and collectivistic AMTs and maintenance supervisors alike may regard rigid group conformity as unacceptable for organisations who deal with public flight safety. If this interpretation is correct, then this is a significant finding, as far as safety in the aviation field is concerned.

<sup>154</sup> The "Ethnback2" variable allows the observation of variations within groups, when present, regarding CR-Ind15. There were significant score variations among the sub-groups making up the Filipino group: "Christian Filipinos" (3.6667), "Filipino/Malays" (3.0000) and "Filipino/nd" (2.9167). The variations of scores were even more significant for the sub-groups forming the Indian group: "Indian/nd" (3.2500), and "Hindus" (3.0000) on the one hand, and "Indian/Christians" (1.6667) on the other. Regarding the members of the Arab group, there were some variations in scores between "Arab/nd" (3.0000) on the one hand, and "Arab/Muslims" (2.5581) and "Arab/Christians" (2.4000) on the other. The variations in scores were even more significant concerning the sub-groups making up the US group: "US/Caucasians" (2.9000), "US/Hispanics" (1.3333) and "US/nd" (1.0000).

<sup>155</sup> However, putative individualistic cultural groups (e.g. the "Anglo" and "Scandinavian") rejected group conformity in the workplace even more strongly, and this rejection was in line with the theory on individualism.



Table CR4.08

CR-Ind19<sup>156</sup>*(Q 38. It is better to agree with other team members than to voice a different opinion.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Hindu culture	3.2857	1.3801
	Buddhist culture	3.2000	.8367
2 <sup>nd</sup> cluster	Germanic culture	2.6667	.5774
	Muslim culture <sup>157</sup>	2.6029	1.2476
	Confucian culture	2.5556	1.0138
	Christian Filipino	2.3333	1.0328
	Latin culture	2.2727	1.1037
	Korean culture	2.2500	1.8930
3 <sup>rd</sup> cluster	Shinto or Japanese	2.0000	.8165
	Anglo culture	1.9706	1.1674
4 <sup>th</sup> cluster	Scandinavian culture	1.2000	.4472

The findings on the different items comprising the “Respect for authority and group conformity” category show that respondents from most of the collectivistic cultural groups surveyed here also think and behave as individualists from low PD countries.

The final items of the CR cluster to be analysed here are CR-Ind13, CR-PD5, and CR-Ind7 items which share the theme of “hierarchy and successful management”. It is important to mention here that Table 4.1 ANOVA Tukey Post Hoc Pairwise comparisons show that CR-Ind7 was significantly different for the “Anglo” and “Muslim culture” groups on the one hand, and for the “Scandinavian” and “Christian Filipino culture” groups

<sup>156</sup> The “Ethnback2” variable allows the observation of variations within groups, when variations are present, regarding CR-Ind19. There were significant variations in scores between “Indian/Christians” (3.3333) and “Hindus” (3.0000) on the one hand, and “Indian/nd” (2.5625) on the other. There were no meaningful variations in scores among the sub-groups making up the “Filipino” group: “Filipino/nd” and “Filipino/Christians” (2.3333), and “Filipino/Malays” (2.0000). However, there were significant variations in scores between “Arab/nd” (3.2143) on the one hand, and “Arab/Muslims” (2.6977) and “Arab/Christians” (2.4000) on the other. Regarding the sub-groups making up the US group, the variations in scores were even more significant: “US/Caucasian” (2.2000), “US/Hispanic” (1.3333) and “US/nd” (1.0000).

<sup>157</sup> The scores of the “Germanic” and “Muslim culture” groups place them at the higher end of the “disagree slightly” scale.

on the other. It also showed that CR-Ind13 was significantly different for the “Anglo culture” group versus both the “Muslim” and the “Buddhist culture” groups, and for the “Buddhist culture” group versus the “Christian Filipino culture” group. What is significant at an alpha level of .05, from the perspective of probability theory, is that the observations concerning the culture groups mentioned above on CR-Ind7 and CR-Ind13 should have little to do with chance.<sup>158</sup>

Putative individualists also believe that merit, and not high social status and good connections, make for successful managers (on measurement of achievement-ascription, see Kahl, 1965; Kluckholm and Strodtbeck, 1961; and Trompenaars, 1985). The findings on the CR-Ind13 item (see Table CR4.09 below) support this view. Indeed, with two exceptions, the lowest scores on this item were registered by putative individualists.<sup>159</sup> In general, though, respondents from most collectivistic cultural groups seem to think and behave like putative individualists on the issue of what makes a successful manager.

Four cluster groups can be discerned regarding CR-Ind13 item. The important conclusion here is that the respondents from most of the cultural groups surveyed seem to believe that technical merit, and not high social status and good connections, make for successful management. The exception is the respondents from the “Buddhist culture” group, who tended to associate successful management with high social status and good social connections. However, a company would be alienating its workforce were it to follow the *desiderata* of the members of this cultural group in selecting managers.<sup>160</sup>

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<sup>158</sup> On the other hand, if the level of significance were set at .5, this would mean that the occurrence would happen 50% of the time. This, in turn, would signify that the differences observed could happen by chance.

<sup>159</sup> The exceptions are the “Confucian” and the “Christian Filipino culture” groups.

<sup>160</sup> This policy would also make little sense because managers who are selected on the criteria of social status and connections might also impact negatively on the safety of the workplace. This outcome might be even more likely if a technically unqualified, but socially well-connected, manager were to take charge during emergencies.

**Table CR4.09**

**CR-Ind13<sup>161</sup>**

*(Q 22. High social status and good connections make successful managers.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Buddhist culture <sup>162</sup>	4.2000	.8367
2 <sup>nd</sup> cluster	Muslim culture	3.0735	1.2850
	Korean culture	3.0000	1.8257
	Hindu culture	2.7143	1.1127
3 <sup>rd</sup> cluster	Shinto or Japanese	2.5000	1.2910
	Latin culture	2.4545	1.2136
	Scandinavian culture	2.4000	1.1402
	Confucian culture	2.0000	1.2247
	Germanic culture	2.0000	1.0000
4 <sup>th</sup> cluster	Anglo culture	1.7941	1.2740
	Christian Filipino	1.5000	.8367

The tendency among the respondents from collectivistic cultures towards preference for a command style that is closer to the egalitarian than to the hierarchical pole is more pronounced concerning the CR-PD5 item (see Table CR4.10 below). The three clusters of culture groups, which could be discerned from the findings on this item, convey this preference.

As with the previous items, some culture groups, namely the last four mentioned here, which are associated with collectivistic cultures, registered scores that were even lower than those of the Anglo, Germanic and Scandinavian culture groups, whose scores on the CR-PD item should, theoretically, have been the lowest. The sample size may explain this anomaly.

<sup>161</sup> The "Ethnback2" variable allows the observation of variations within groups, when variations are present, regarding CR-Ind13. There were no meaningful variations in scores among the sub-groups making up the Indian group: "Indian/Christians" (3.3333), "Indian/nd" (3.0000) and "Hindus" (2.8333). The same was true regarding the members of the Arab group: "Arab/nd" (3.0714), "Arab/Muslims" (3.0465) and "Arab/Christians" (2.6000). The variations in scores were significant between "Filipino/Malays" and "Filipino/nd" (2.6667) on the one hand, and "Filipino/Christians" (1.5000) on the other. The variations in scores are equally significant between "US/nd" (2.3333) and "US/Caucasians" (2.1000) on the one hand, and "US/Hispanics" (1.3333) on the other.

<sup>162</sup> The AMTs and maintenance supervisors belonging to this cultural group behaved as expected.

This anomaly notwithstanding, the results point to the significant fact that respondents from both collectivistic and individualistic cultures reject the notion that supervisors who encourage suggestions are weak leaders.

Table CR4.10

CR-PD5<sup>163</sup>*(Q 20. Supervisors who encourage suggestions from team members are weak leaders.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Hindu culture	2.4286	1.5119
	Latin culture	2.3636	1.2863
	Buddhist culture	2.2000	1.6432
	Muslim culture	1.9853	1.1262
2 <sup>nd</sup> cluster	Scandinavian culture	1.8000	.4472
	Anglo culture	1.7059	1.0009
	Germanic culture	1.6667	1.1547
	Confucian culture	1.5556	1.3333
3 <sup>rd</sup> cluster	Korean culture	1.2500	.5000
	Christian Filipino	1.1667	.4082
	Shinto or Japanese	1.0000	.0000

The overall picture emerging from the results about the CR-PD5 item can have only positive ramifications for aircraft maintenance organisations. This is so because, with minor exceptions, respondents from the different cultural groups studied here conveyed the belief that supervisors who encourage suggestions from their subordinates are anything but weak leaders. Safety in the workplace demands that supervisors both encourage suggestions

<sup>163</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding CR-PD5. There were significant variations in scores between "Indian/Christians" (3.3333) on the one hand, and "Hindus" (2.6667) and "Indian/nd" (2.1250) on the other. The variations in scores were even more significant between "Filipino/Malays" (3.3333) on the one hand, and "Filipino/nd" (1.3333) and "Filipino/Christians" (1.0000) on the other. There were also significant variations in scores between "Arab/Christians" (3.0000) on the one hand, and "Arab/Muslims" (1.9070) and "Arab/nd" (1.7857), on the other. Regarding the sub-groups affiliated with the US group, there were significant variations in scores between "US/nd" (2.3333) and "US/Caucasians" (2.3000) on the one hand, and "US/Hispanics" (1.3333) on the other.

from their subordinates, and welcome even unsolicited suggestions that their subordinates might make; and that subordinates see also such behaviour as acceptable and, indeed, commendable.

The last item under the “Hierarchy and successful management” heading, to be analysed here, is CR-Ind 7. The overall findings on CR-Ind7 (see Table CR4.11 below) support the contention that AMTs from collectivistic culture groups are more individualistic than are other members of the cultural groups to which they belong.

Table CR4.11

CR-Ind 7 <sup>164</sup>*(Q 14. Technical proficiency makes for successful management.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.6667	.5164
	Buddhist culture	4.6000	.5477
2 <sup>nd</sup> cluster	Korean culture	4.0000	1.4142
	Muslim culture	3.8676	1.1050
	Hindu culture	3.7143	1.2536
	Confucian culture	3.6667	1.5811
	Shinto or Japanese	3.5000	1.0000
3 <sup>rd</sup> cluster	Germanic culture	3.3333	2.0817
	Latin culture	3.0000	1.5492
	Anglo culture	3.0000	1.4564
4 <sup>th</sup> cluster	Scandinavian culture	2.2000	1.0954

Four clusters of cultural groups can be discerned from the results on the CR-Ind 7 item. The first cluster, which had the highest scores, is made up of the “Christian Filipino culture” group (4.6667), and the “Buddhist culture”

<sup>164</sup> The “Ethnback2” variable allows us to observe variations within groups, when variations are present, regarding CR-Ind7. There were significant variations in scores among the Indian groups: “Indian/Christian” (5.0000), “Indian/nd” (4.3750) and “Hindus” (3.6667). There were also significant variations in scores between “Filipino/Christians” (5.0000) on the one hand, and “Filipino/nd” (3.4167) and “Filipino/Malays” (3.3333) on the other. But there were no meaningful variations in scores among the sub-groups making up the Arab group: “Arab/Muslims” (3.8837), “Arab/nd” (3.7143) and “Arab/Christians” (3.2000). There were, however, significant variations in scores among the members of the US group: “US/Caucasians” (3.7000), “US/Hispanics” (2.6667) and “US/nd” (1.3333).

group (4.6000). These two cultural groups are putatively collectivistic, but the attitudes of respondents belonging to these cultural groups were strongly individualistic. The attitudes of these respondents were even more individualistic on the CR-Ind7 item than were those of the members of the putatively individualistic cultures, namely, the “Germanic culture” group (3.3333); the “Anglo culture” group (3.0000); and the “Scandinavian culture” group (2.2000).<sup>165</sup>

The discrepancy between the survey findings and the theory that Scandinavians are individualists could be attributed to the small sample size for this cultural group. But it is also possible that CR-Ind 7 taps into issues other than those solely related to the Individualism-Collectivism continuum.

The scores of the respondents from the collectivistic culture groups on the CR-Ind7 items were quite remarkable. From the perspective of the literature on Individualism-Collectivism, the highest scores on the CR-Ind7 item should have been registered by the putative individualists, and the lowest scores by the putative collectivists. Putative collectivists would have been expected to regard family and tribal ties, and social status as criteria for successful management, while putative individualists who have settled for technical proficiency and technical merit as the main criteria for successful management would not.<sup>166</sup> Indeed, in a survey of 155 executives from the People’s Republic of China (PRC), the former Hong Kong, and Canada, Vertinsky et al. (1990) found that in the PRC ascribed status and loyalty were considered to be attributes of good managers. By contrast, in Canada and Hong Kong, ascribed status and loyalty were given little currency in the

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<sup>165</sup> The sample sizes may explain what appears to be an anomaly in scores on this item. But too much emphasis on this anomaly would obscure the important point of this finding, which is that respondents from putatively collectivistic cultures are generally more individualistic than are other members of their cultural groups.

<sup>166</sup> The differences between these two broad groups could be viewed through the prism of the achievement versus ascription dichotomy (e.g. Parsons and Shils, 1962; Smith et al., 1996).

assessment of good managers (for similar conclusions, see Ayman and Chemers, 1983; and Ling, 1983). Studying Arab cultures, Al Faleh (1987) found nepotism to play a greater role in career advancement, as well as in selection for a position, than did performance criteria and expertise. Smith and Whitehead (1984), found that Indians were influenced more by class, among other things, than were Americans, who were influenced primarily by ability and effort.

But as was postulated in the beginning of this chapter, maintenance workers, as a professional group, tend to be more individualistic than the airline pilots, as evaluated, for example, by Merritt (1996), and Helmreich and Merritt (1998). The results on the CR-Ind 7 item of the "CR" scale seem only to buttress this claim about the tendency towards individualism among AMTs and maintenance supervisors.

In summary, this study's findings on the items of the "CR" scale regarding AMTs and maintenance supervisors showed that these items were not the significant cultural discriminators that research on airline pilots by Merritt (1996), and Helmreich and Merritt (1998) might have shown.<sup>167</sup>

There are at least four possible explanations for the differences between AMTs and maintenance supervisors, on the one hand, and the airline pilots, on the other. The first explanation is the limited sample size for AMTs and maintenance supervisors in comparison with Merritt's and Helmreich and Merritt's large sample size for airline pilots.<sup>168</sup> The second possible explanation for the differences between AMTs and airline pilots found in this study is that other research, such as that of Taylor, (1999a, 1999b), Pantakar

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<sup>167</sup> The significant findings of this research, as underscored by ANOVA Tukey Post Hoc Pairwise comparisons, was that CR-Ind7 was significantly different for the "Anglo" and "Muslim culture" groups on the one hand, and the "Scandinavian" and "Christian Filipino culture" groups on the other. The study also demonstrated that CR-Ind13 was significantly different for the "Anglo culture" group versus both the "Muslim" and the "Buddhist culture" groups, and for the "Buddhist culture" group versus the "Christian Filipino culture" group.

<sup>168</sup> It is important to mention here that Helmreich and Merritt could obtain larger sample populations because their research was funded by an institution, namely the NASA/University of Texas/FAA Aerospace Crew Research Project.

(1999) and Taylor and Pantakar (1999) revealed similar findings, namely, that AMTs, as a professional group, were more individualistic than airline pilots. The third and most logical explanation is that both Merritt, and Helmreich and Merritt skewed their research by selecting “pilots of the same nationality (with no change from birth) as the country in which the airline was based” without consideration of ethnicity.

Their assumption was that all Americans, British, New Zealanders, Australians, Canadians, etc., irrespective of specific ethnic background, were individualists. This study will attempt to show that this assumption is a simplistic one.<sup>169</sup> As a result, Merritt, and Helmreich’s and Merritt’s findings may not as useful as they could have been.<sup>170</sup> The final possible explanation for the “CR” scale’s failure to be as significant a cultural discriminator as it was for the Merritt, and Helmreich and Merritt studies on airline pilots is that several of the reasons mentioned previously account for the discrepancy in scores between AMTs and maintenance supervisors on the one hand, and airline pilots and first officers on the other.

Helmreich and Merritt, and Merritt stressed that the items of the “Communication and Teamwork” scale attracted strong agreement among all pilots surveyed.<sup>171</sup> Analysis of the different items of the CC scale also shows an almost universal consensus among AMTs and maintenance supervisors on matters pertaining to communication and co-ordination. The findings on the items of the CC scale also provide additional support for the contention that AMTs are more individualistic as a group than are airline pilots from the same

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<sup>169</sup> As an illustration, many pilots who, for Helmreich and Merritt were considered Anglo, were not. They were born in Anglo countries but their specific ethnic background made them collectivists culturally.

<sup>170</sup> Another problem with the data used by Merritt and by Helmreich and Merritt is that it has been so manipulated (i.e. statistically transformed) that it may no longer be real data. The fact that these studies may also have stripped the “culture” component from the data weakens even further their conclusions.

<sup>171</sup> This scale is called “CC” in this survey.



countries, who are, in turn, considerably more individualistic than are other members of their countries' populations.

#### 4.2.2. Communication and Co-ordination (CC)

The first items of the CC scale to be analysed here are CC-Ind6, CC-Manage, CC-Ind3, CC-Coord2, and CC-Ind1, which share the theme of "Managerial responsibility and openness in the workplace". The findings on CC-Ind6 (see Table CC4.01) apparently indicate that AMTs from most collectivistic culture groups think and behave like putative individualists. Three clusters of culture groups can be discerned on the basis of the findings on CC-Ind6.

Table CC4.01

CC-Ind6<sup>172</sup>

*(Q 9. To resolve conflicts, team members should openly discuss their differences with each other.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	5.0000	.0000
	Christian Filipino	4.8333	.4082
	Shinto or Japanese	4.7500	.5000
	Hindu culture	4.7143	.4880
	Buddhist culture	4.6000	.5477
	Confucian culture	4.5556	.5270
2 <sup>nd</sup> cluster	Muslim culture	4.4412	.7800
	Germanic culture	4.3333	.5774
	Anglo culture	4.1471	.9577
	Latin culture	4.0909	.9439
3 <sup>rd</sup> cluster	Korean culture	3.7500	1.2583

<sup>172</sup> The "Ethnback2" variable allows us to observe variations within groups, when such variations are present, regarding the CC-Ind6 item. There were no significant variations in scores among the Indian groups: "Indian/nd" (4.7500), "Hindus" (4.6667) and "Indian/Christians" (4.3333). But there were significant variations in scores between the "Filipino/Christians" (4.8333) and the "Filipino/nd" (4.4167) on the one hand, and the "Filipino/Malays" (3.6667) on the other. There were no variations in scores among the Arab groups: "Arab/Muslims" (4.5581), "Arab/nd" (4.5000) and "Arab/Christians" (4.4000). The same was true for the US groups: "US/nd" (4.5000), "US/Hispanics" (4.3333) and "US/Caucasians" (4.2000).

The scores on CC-Ind6 for most cultural groups could have only positive ramifications for aviation maintenance organisations. Morale and safety concerns in the workplace are usually affected by the outlook that AMTs and maintenance supervisors have on the issue of conflict in the workplace. Resolution of conflicts in the workplace demands that team members be willing to discuss openly their differences with each other. The findings on CC-Ind6 seem to indicate that most respondents from collectivistic culture groups affirmed this statement more strongly than did those from individualistic culture groups. This result was unexpected in the light of the theory on Individualism-Collectivism, which holds that members of collectivistic cultures generally prefer to defer to managers and supervisors on the issue of conflict resolution, as well as on many other issues, and to make clear distinctions between in-group and out-group members. It is important to mention here that, because of differences in the cognitive processes of people from different cultures, there are variances in the way different cultural groups view conflicts, and the ways to resolve them (Adler, Doktor and Redding, 1986).

There are several explanations for the apparent evolution of mentality regarding conflict resolutions on the part of the respondents belonging to collectivistic culture groups, as underscored by the findings on CC-Ind6. The main explanation is that these respondents underwent transformation as they were being educated and trained in Western countries, and as they were placed in contact with Western expatriates and/or Western colleagues.

However, the findings on CC-Manage (see Table CC4.02) point to a near cross-cultural consensus on this item. Specifically, the scores on CC-Manage were high for all culture groups. Even though the scores on CC-Manage describe two cluster groups, the significant point here is the high scores across the board.

Table CC4.02

CC-Manage<sup>173</sup>*(Q 10. Training is a particularly important management responsibility.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Germanic culture	5.0000	.0000
	Scandinavian culture	5.0000	.0000
	Confucian culture	4.8889	.3333
	Christian Filipino	4.8333	.4082
	Buddhist culture	4.8000	.4472
	Shinto or Japanese	4.5000	.5774
2 <sup>nd</sup> cluster	Muslim culture	4.4706	.7425
	Anglo culture	4.3529	1.0977
	Hindu culture	4.2857	.4880
	Korean culture	4.2500	.9574
	Latin culture	4.1818	.9816

As was emphasised before, the salient feature here is the high scoring on the CC-Manage item across the board. These high scores indicate a near cross-cultural consensus on the issue of training as being a particularly important management responsibility. The ramifications of these findings on aircraft maintenance organisations are both positive and negative. The positive side relates to the acceptance, by AMTs and maintenance supervisors from all cultural groups, of management's responsibility for training. The negative side may be a tendency on the part of AMTs to leave the issue of training (i.e. improving one's skills) solely to management. This is so because an individual also has the responsibility of making himself/herself a better worker through study and practice outside the job site (for a review of the literature on training and development, see Hansen and Brooks, 1994).

<sup>173</sup> The "Ethnback2" variable allows us to discern variations within groups, when present, regarding the CC-Manage item. There were significant variations in scores between "Indian/Christians" (5.0000) and "Indian/nd" (4.7500) on the one hand, and "Hindus" (4.1667) on the other. But there were no meaningful variations in scores among the sub-groups making up the Filipino group: "Filipino/Christians" (4.8333), "Filipino/nd" (4.5000) and "Filipino/Malays" (4.3333). The same was true for the Arab group: "Arab/nd" (4.7143), "Arab Christians" (4.6000) and "Arab/Muslims" (4.4651). However, there were significant variations in scores between "US/Hispanics" (4.6667) on the one hand, and "US/Caucasians" (3.9000) and "US/nd" (3.6667) on the other.

Therefore, both management and individual AMTs must assume the responsibility of raising the skill level of AMTs.

The findings on the CC-Ind3 item (see table CC4.03) also provide still more support for the contention that AMTs, as a professional group, are more individualistic than pilots from the same countries, for example. Two clusters of culture groups could be discerned from the findings on CC-Ind3. The scores of the culture groups belonging to the second cluster indicate a move towards slight agreement with the thrust of CC-Ind3.

Table CC4.03

CC-Ind3<sup>174</sup>*(Q 5. Co-ordination requires taking other people's personalities into account.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.6667	.5164
	Latin culture	4.6364	.5045
	Confucian culture	4.5556	.5270
	Shinto or Japanese	4.5000	.5774
	Korean culture	4.5000	1.0000
	Germanic culture	4.3333	1.1547
	Scandinavian culture	4.2000	.4472
	Muslim culture	4.1176	.8557
2 <sup>nd</sup> cluster	Anglo culture	3.8529	.9255
	Buddhist culture	3.8000	.8367
	Hindu culture	3.7143	1.2536

<sup>174</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding the CC-Ind3 item. There were significant variations in scores between the "Indian/Christians" (4.3333) and "Indian/nd" (4.0625) on the one hand, and "Hindus" (3.5000) on the other. The variations in scores were more pronounced regarding the Filipino groups: "Filipino/Christians" (4.6667), "Filipino/nd" (4.0000) and "Filipino/Malays" (3.3333). There were no meaningful variations in scores among the sub-groups making up the Arab group: "Arab/nd" (4.4286), "Arab/Muslims" (4.2791) and "Arab/Christians" (4.0000). But there were significant variations in scores between "US/Hispanics" (4.6667) on the one hand, and "US/Caucasians" (3.8000) and "US/nd" (3.3333) on the other.

The important finding here is not so much the relatively low mean scores for the “Anglo culture” group,<sup>175</sup> but the high scores for many of the putatively collectivistic culture groups, and the indication of a near cross-cultural consensus as to the need to take into account other peoples’ personality traits in co-ordination matters. This last finding could have only positive ramifications for aircraft maintenance operations in multicultural settings, since it shows that AMTs and maintenance supervisors who are putatively collectivists recognise the importance of taking people’s personalities into account in the co-ordination process. Based on this finding, regarding the CC-Ind3 item, the AMTs and maintenance supervisors who are putatively collectivists did not seem to think in terms of in-groups and out-groups.<sup>176</sup> There are several possible explanations for what appears to be an evolution of mentality on the part of AMTs and maintenance supervisors who are putatively collectivists. It seems that the AMTs and maintenance supervisors of collectivist cultural groups no longer think in terms of in-groups and out-groups because of the socialisation processes of education and training in Western training countries, and contacts with Western expatriates and Western colleagues.

However, the findings on the CC-Coord2 item (see Table CC4.04 below) do not point to a clear cross-cultural consensus on the issue that co-ordination among groups was a management responsibility. The findings describe two clusters of cultural groups.

The respect for a clear chain of command in the workplace, underscored by some of the findings on the CC-Coord2 item, could have only

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<sup>175</sup> The differences between the “Anglo”, “Scandinavian” and “Germanic culture” groups are not very significant anyway.

<sup>176</sup> This can have only positive ramifications for maintenance organisations headquartered in collectivist societies. There are four of these studied in this survey.

positive ramifications for aircraft maintenance organisations. Such a chain of command eliminates the need for improvisation in situations of emergency.

Table CC4.04

CC-Coord2<sup>177</sup>*(Q 35. Co-ordination among groups is a managerial responsibility.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Hindu culture	4.4286	.5345
	Scandinavian culture	4.4000	.5477
	Shinto or Japanese	4.2500	.9574
	Christian Filipino <sup>178</sup>	4.0000	.6325
2 <sup>nd</sup> cluster	Muslim culture	3.7794	1.0051
	Germanic culture	3.6667	1.1547
	Anglo culture <sup>179</sup>	3.6471	1.0698
	Confucian culture	3.5556	1.5092
	Korean culture	3.5000	1.0000
	Buddhist culture	3.4000	.8944
	Latin culture	3.2727	1.1909

However, findings on the CC-Ind1 item indicate a cross-cultural consensus on the issue of team members feeling obliged to mention their psychological stress or physical problems to each other before or during the performance of the assigned task. The important finding here is the fact that the eleven culture groups identified in this study all fall into a cluster of high

<sup>177</sup> The "Ethnback2" variable allows the observation of variations within groups, when present, regarding the CC-Coord2 item. There were significant variations in scores between the "Hindus" (4.3333) on the one hand, and "Indian/nd" (3.5625) and "Indian/Christians" (3.3333) on the other. The variations of scores were even more significant among the sub-groups forming the Filipino group: "Filipino/Christians" (4.0000), "Filipino/nd" (3.4167) and "Filipino/Malays" (2.6667). Regarding the sub-groups making up the Arab group, there were no meaningful variations in scores: "Arab/Christians" (4.2000), "Arab/nd" (4.0000) and "Arab/Muslims" (3.8372). But there were significant variations in scores between "US/Caucasians" (3.6000) and "US/Hispanics" (3.3333) on the one hand and "US/nd" (2.3333), on the other.

<sup>178</sup> This cluster is dominated by collectivistic culture groups. The exception, however, is the "Scandinavian culture" group.

<sup>179</sup> The scores of the "Muslim", "Germanic" and "Anglo culture" groups place them at the higher end of the "neutral" scale.

scores on this item,<sup>180</sup> rather than the fact that the “Anglo culture” groups registered the lowest of the high scores on CC-Ind1 (4.1176).<sup>181</sup>

The high mean scores of the respondents from the collectivistic cultural groups on the CC-Ind1 item are, on the surface, surprising. This is the case because collectivists are generally not comfortable talking about their psychological stress even with in-group members, let alone with out-group members. The findings on the CC-Ind1 item could have only positive ramifications for maintenance operations in multicultural settings, since they show AMTs and maintenance supervisors who are putatively collectivists to be open to discussing psychological and physical problems with their colleagues for the sake of better communication in the workplace, and probably also in order to facilitate carrying out a given task to fruition. Such a predisposition is likely to make for a safer work environment.

The findings on the CC-Ind1 item also provide additional support for the contention that AMTs, as a professional group, are more individualistic than pilots from the same countries. The findings on CC-Ind3 and CC-Ind6 also support this contention. The findings on the items falling within the “Management responsibility and openness in the workplace” category indicated that the respondents associated with most collectivistic cultural groups think and behave similarly to individualists.

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<sup>180</sup> The ranking is as follows: 1) “Scandinavian culture” group and the “Buddhist culture” group (4.6000), 3) “Christian Filipino culture”, “Korean culture”, and “Shinto or Japanese culture” groups (4.5000), 6) “Hindu culture group” (4.4286), 7) “Latin culture” group (4.3636), 8) “Germanic culture” group (4.3333), 9) “Confucian culture” group (4.2222), 10) “Muslim culture” group (4.1176), and 11) “Anglo culture” group (4.1176).

<sup>181</sup> The scores for the “US/Caucasians” (3.6000) were apparently responsible for the lowering of the score for the entire “Anglo culture” group. It is important to mention here that there were no significant variations in scores among the different ethnic sub-groups highlighted before, when using the “Ethnback2” variable. According to the literature on individualism-collectivism, the Anglo culture group should have the highest score on this item. It did not. The point being made is that the main finding concerning CC-Ind1 is the eleven culture groups having scored on this item. This buttresses the contention that collectivistic AMTs are similar to individualistic AMTs.

The next items of the CC scale to be analysed here are CC-Critique1, CC-Ind4, and CC-Coord1, which share the theme of “Open communication in the workplace”. It is important to mention here that respondents belonging to both collectivistic and individualistic cultural groups think alike regarding the CC-Critique1 item. The findings on the CC-Critique1 (see Table CC4.05) describe two clusters of cultural groups.

Table CC4.05

CC-Critique1<sup>182</sup>

*(Q 1. Debriefing/critique is important for communication.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Confucian culture	4.7778	.4410
	Germanic culture	4.6667	.5774
	Latin culture	4.6364	.5045
	Buddhist culture	4.6000	.5477
	Shinto or Japanese	4.5000	.5774
	Christian Filipino	4.5000	.5477
	Muslim culture	4.3382	.7844
	Anglo culture	4.3235	.8780
2 <sup>nd</sup> cluster	Korean culture	4.0000	.8165
	Scandinavian culture	4.0000	.0000
	Hindu culture	3.8571	1.0690

These findings are not in line with Merritt's (1996) and Helmreich and Merritt's (1998) main finding, which was that pilots of the Anglo and Western countries all registered significantly lower mean scores than did the pilots from the non-Western and collectivistic countries. Helmreich and Merritt (1998) attributed the low scores of the pilots from the Anglo and Western

<sup>182</sup> The “Ethnback2” variable allows us to observe variations within groups, when these variations are present, regarding the CC-Critique1 item. There were significant variations in scores among the sub-groups making up the Indian group: “Indian/Christians” (5.0000), “Indian/nd” (4.3125) and “Hindus” (3.6667). However, there were no meaningful variations in scores among the sub-group comprising the Filipino group: “Filipino/nd” (4.6667), “Filipino/Christians” (4.5000) and the “Filipino/Malays” (4.0000). The same was true for the sub-groups making up the Arab group: “Arab/Muslims” (4.4651), “Arab/nd” (4.4286) and “Arab/Christians” (4.0000). There were no meaningful variations in score for the sub-groups forming the US group: “US/nd” and “US/Hispanics” (4.6667), and “US/Caucasians” (4.2000).



countries to those pilots' reluctance to evaluate their own performance publicly.<sup>183</sup>

Merritt (1996: 145) indicates that her sense of this item of the questionnaire was,

“based on overall response patterns and the tendency of the item to sometimes load with the command item in some factor analyses, is that it is tapping an issue related to Power Distance. In high Power Distance countries, a captain-initiated and captain-led debrief and critique would be seen as the captain's prerogative (and first officer's lot), while in low Power Distance Anglo countries, both the captain and the first officer may feel uncomfortable with such open performance appraisal”.<sup>184</sup>

Merritt's position is at variance with the literature on Individualism-Collectivism, which holds that individualists always feel comfortable expressing themselves publicly and evaluating their own performance in a similar fashion. This study's findings on the CC-Critique1 corroborate this position, as they show respondents from putatively individualistic cultural groups to be anything but reluctant to evaluate publicly their own performances. Moreover, these respondents, along with the respondents from collectivistic cultures, seem to regard the thrust of CC-Critique1 as an integral part of guaranteeing the safety of the flying public. This study finds that respondents from cultural groups considered to be individualistic in nature were not always happy, however, to criticise others openly or have their own performance scrutinised.

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<sup>183</sup> Helmreich and Merritt (1998: 77) also offered another explanation, namely, that pilots from high PD cultures expect debriefing and a critique from the captain. There may be some truth in that proposition.

<sup>184</sup> Merritt (1996: 145-146) adds that “This item was originally written to promote Crew Resource Management activity of crew-based, interactive critique - what was done right, and what could have been done better, rather than who did what. The debrief was never intended to be a captain-initiated performance appraisal. As such this item is not working as it was intended, and the wording will need to be clarified in future versions of the questionnaire”.

The findings on the CC-Critique1 item contradict the findings of the literature on collectivistic cultures, such as the notion that collectivists are more reserved in expressing their opinions, and are reluctant to engage in public evaluations of job performance (Hofstede, 1980). Consequently, it is possible that the respondents from the collectivistic culture groups evaluated here scored high on CC-Critique1 because they expected the debriefing/critique to be initiated by superiors. However, the most likely explanation for the high mean score on the CC-Critique1 item for the respondents from most collectivistic cultural groups is a combination of the following factors: 1) their having been educated and trained in individualistic societies, and 2) their having had prolonged exposure to Western expatriates and/or Western colleagues in the workplace.

The transformation that these AMTs and maintenance supervisors seemingly underwent could only augur positively for aircraft maintenance organisations. This is the case because engaging in, and accepting, public evaluation of one's performance in the workplace is a must for employees of aircraft maintenance organisations which, as a general rule, have practically no margin for error as far as safety is concerned (Drury and Latorella, 1991; Drury and Rangel, 1996). The attitude that these AMTs and maintenance supervisors demonstrated is a prerequisite for the creation of an "error-minimisation" corporate culture. (The term "error-minimisation" corporate culture is more adequate than an "error-free" corporate culture, which is an impossibility).

Further indication that AMTs and maintenance supervisors from collectivistic cultural groups think and behave like individualists is provided by findings on the CC-Ind4 item (see Table CC4.06). Most culture groups registered high scores on the CC-Ind4 item. Specifically, three cluster groups on the CC-Ind4 item can be discerned from the findings.

Table CC4.06

CC-Ind4<sup>185</sup>*(Q 7. I expect to be consulted on matters that affect the performance of my duties.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Korean culture	5.0000	.0000
	Christian Filipino	4.6667	.5164
	Confucian culture	4.6667	.5000
	Scandinavian culture	4.6000	.5477
	Buddhist culture	4.6000	.5477
	Anglo culture	4.5588	.5609
2 <sup>nd</sup> cluster	Muslim culture	4.3971	.8129
	Latin culture	4.1818	.6030
	Hindu culture	4.1429	1.0690
	Shinto or Japanese	4.0000	.0000
3 <sup>rd</sup> cluster	Germanic culture	3.6667	.5774

The findings on the CC-Ind4 item could have only positive ramifications for aircraft maintenance organisations because, as these findings show, AMTs who are putative collectivists want to be part of the decision-making process.<sup>186</sup> Participation in decision-making processes on the job could only make AMTs more pro-active and possibly more safety-minded as well. An issue related to active involvement in the decision-making process is a desire for feedback about performance. Regardless of culture, people are motivated to seek feedback on performance. Bailey, Chen and Dou (1996: 609) indicate that “It is a veritable survival imperative to know how one is

<sup>185</sup> The “Ethnback2” variable allows us to discern variations within groups, when such variations are present, regarding the CC-Ind4 item. There were significant variations in scores within the Indian group: “Indian/Christians” (5.0000), “Indian/nd” (4.0625) and “Hindus” (4.0000). The same was true regarding the Filipino, Arab and US groups. Regarding the Filipino group, we have “Filipino/nd” (4.7500) and “Filipino/Christians” (4.6667), on the one hand, and “Filipino/Malays” (3.0000) on the other. Regarding the Arab group, we have “Arab/nd” (4.5000) and “Arab/Muslims” (4.3953), on the one hand, and “Arab/Christians” (3.8000) on the other. And finally, concerning the US group, we have “US/Caucasians” (4.4000) and “US/Hispanics” (4.3333), on the one hand, and “US/nd” (3.3333), on the other.

<sup>186</sup> The literature on Individualism-Collectivism tells us that this is the preference of individualists instead.

doing in relation to local standards, and all cultures sanction means for ascertaining performance”.<sup>187</sup>

The findings on the CC-Coord1 item (see Table CC4.07) clearly point to a near cross-cultural consensus on the issue that co-ordination is especially important in emergency situations. The scores on CC-Coord1 are high for all the cultural groups surveyed here, and these fall within two clusters on the basis of the findings. The higher scores in the two clusters belong to respondents from collectivistic cultural groups, while the relatively lower scores were registered by respondents from individualistic cultural groups.

Table CC4.07

## CC-Coord1

*(Q 16. Co-ordination is especially important in emergency situations.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Korean culture	5.0000	.0000
	Confucian culture	5.0000	.0000
	Christian Filipino	4.8333	.4082
	Buddhist culture	4.8000	.4472
	Shinto or Japanese	4.7500	.5000
	Hindu culture	4.5714	.5345
	Latin culture	4.5455	.6876
2 <sup>nd</sup> cluster	Anglo culture	4.4706	.7481
	Muslim culture	4.2794	.8784
	Scandinavian culture	4.2000	.4472
	Germanic culture	4.0000	1.0000

<sup>187</sup> Bailey, Chen and Dou (1996: 609-610) state that

“these means are contingent on the imprint of culture on the self. Specifically, individualists are more motivated to seek feedback about performance successes, whereas collectivists are more motivated to seek feedback about failures. This is so for three reasons. Firstly, distinguishing oneself through success is the cornerstone of the independent, idiocentric self-concept. ... Secondly, the nature of social relations in individualist societies is often competitive, whereas in collectivist societies it tends to be more cooperative. .... Thirdly, seeking success feedback is consistent with the self-serving norm of individualists, whereas seeking failure feedback is consistent with the self-effacing norm of collectivists”.

The main point here is the high mean scores on the CC-Coord1 item, and the fact that these scores indicate a near cross-cultural consensus on the issue of the importance of co-ordination in emergency situations. The ramifications of the findings on CC-Coord1 could only augur well for aircraft maintenance organisations. This the case because co-ordination of activities is a must for organisations dealing with the safety of the flying public.<sup>188</sup>

In summary, the findings on the items falling under the “Open communication in the workplace” heading generally indicated similarities in attitudes and behaviour on the part of the respondents from collectivistic and individualistic cultural groups alike.

The final items of the CC cluster analysed here are CC-Ind17, and CC-Pre-Assign Brief which have the following theme in common: “Openness and inclusiveness in the workplace”. The findings on the CC-Ind17 item (see Table CC4.08 below) indicate that respondents from most culture groups largely behaved according to expectation. The findings themselves describe four clusters of cultural groups.

The findings indicate that the respondents from the last cultural group seem to feel the least comfortable with outspokenness in the workplace.

It is important to mention here that Table 4.1 ANOVA Tukey Post Hoc Pairwise comparisons show that CC-Ind17 was significantly different for the “Anglo” versus the “Muslim”, “Japanese” and “Hindu culture” groups. These differences are unlikely to be attributed to chance, according to probability theory.

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<sup>188</sup> The “Ethnback2” variable allows us to observe variations within groups, when present, regarding the CC-Coord1 item. There were no significant variations in scores among the sub-groups comprising the Indian group: “Indian/nd” (4.6875), “Indian/Christians” (4.6667) and “Hindus” (4.5000). The same was true of the sub-groups making up the Filipino group: “Filipino/Christians” (4.8333), “Filipino/Malays” (4.6667) and “Filipino/nd” (4.4167). There were also no significant variations in scores among the sub-groups comprising the Arab group: “Arab/Christians” (4.6000), “Arab/Muslims” (4.3488) and “Arab/nd” (4.2857). There were only slight differences in scores regarding the sub-groups making up the US group: “US/Hispanics” (4.6667), “US/Caucasians” (4.4000) and “US/nd” (4.0000).

Table CC4.08

CC-Ind17<sup>189</sup>*(Q 32. If I perceive problems with the task at hand, I will speak up regardless of who might be affected.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Anglo culture	4.4706	.6147
	Scandinavian culture	4.4000	.5477
2 <sup>nd</sup> cluster	Christian Filipino	4.0000	1.0954
	Latin culture <sup>190</sup>	3.9091	.9439
	Buddhist culture	3.8000	1.3038
	Confucian culture	3.7778	1.2019
3 <sup>rd</sup> cluster	Muslim culture	3.4706	.9996
	Germanic culture	3.3333	1.5275
	Korean culture	3.2500	1.2583
	Hindu culture	3.0000	1.5275
4 <sup>th</sup> cluster	Shinto or Japanese	2.5000	1.0000

The findings on CC-Ind17 were to be expected because most collectivists are said to be reserved in expressing their opinions publicly, and are never keen to shame fellow workers (Hofstede, 1980 and 1991; Triandis, 1995).<sup>191</sup> The consequences of outspokenness in the workplace can be both positive and negative. The positive consequences stem from a given worker's being forthcoming in alerting fellow workers about potential dangers in the workplace. The negative consequences can be the animosity and divisions on

<sup>189</sup> The "Ethnback2" variable allows the observation of variations within groups, when present, regarding the CC-Ind17 item. There were no significant variations in scores among the sub-groups forming the Indian group: "Indian/Christians" (3.6667), "Indian/nd" (3.6250) and "Hindus" (3.3333). But there were significant variations in scores among the sub-groups making up the Filipino group: "Filipino/Christians" and "Filipino/Malays" (4.0000), and "Filipino/nd" (3.4167). This was also true regarding the sub-groups making up the Arab group, since we have "Arab/Christians" (4.4000) on the one hand, and "Arab/Muslims" (3.4186) and "Arab/nd" (3.2857) on the other. There were no meaningful variations in scores among the sub-groups comprising the US group: "US/Hispanics" (4.6667), "US/Caucasians" (4.4000) and "US/nd" (4.3333).

<sup>190</sup> The score for the "Christian Filipino culture" group is unexpected, but is in line with that of the "Latin culture" group (3.9091), and both groups have Catholicism in common.

<sup>191</sup> The literature on Individualism-Collectivism states that collectivists tend to shy away from reporting problems in the workplace so as not to shame an in-group member responsible for a mishap or accident. This attitude is frequently detrimental to safety in the workplace.

the job resulting from the attitude of “speaking up regardless of the consequences”.

The conclusion here is that there is a need for reporting problems in the workplace, but that the manner in which the reporting is carried out is equally important. In short, the requirement for both safety on the job and work harmony, have to be balanced.

However, the findings on the CC-Pre-Assign-Brief item (see Table CC4.09 below) point to a near cross-cultural consensus on the issue of the importance of pre-assignment briefing. Indeed, the scores on CC-Pre-Assign Brief are high for most of the culture groups identified previously. The exception is the “Germanic culture” group (3.6667), which makes up the third cluster of cultural groups.<sup>192</sup>

The fact that the findings on CC-Pre-Assign Brief indicate a near consensus on this item among most cultural groups precludes the interpretation put forth by Merritt (1996), and Helmreich and Merritt (1998) that CC-Pre-Assign Brief taps into an issue related to UA. The main reason for rejecting this interpretation was the fact that the Aerospace Crew Research Project had found that Hofstede’s (1980) UA was only replicated when it was defined to centre on the attitude that written procedures were needed for all situations, and that an organisation’s rules should never be broken, even when it might be in the organisation’s best interest to do so. As Hofstede had stated, the need for rules in strong UA societies is emotional, and stems from people’s having been programmed since early childhood to feel comfortable

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<sup>192</sup> But even here, the score of the AMTs and maintenance supervisors from the “Germanic culture” group shows a move on their part towards agreeing slightly with the thrust of this item.

in structured environments, while in countries with weak UA, there is an emotional revulsion to formal rules.<sup>193</sup>

Table CC4.09

CC-Pre-Assign-Brief<sup>194</sup>*(Q 13. Pre-assignment briefing is important.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.8333	.4082
	Anglo culture	4.8253	1.6962
	Confucian culture	4.6667	.5000
	Muslim culture	4.5441	.5842
	Korean culture	4.5000	.5774
2 <sup>nd</sup> cluster	Hindu culture	4.4286	.5345
	Scandinavian culture	4.4000	.5477
	Buddhist culture	4.4000	.8944
	Latin culture	4.2727	1.0090
	Shinto or Japanese	4.2500	.9574

The ramifications of the findings on the CC-Pre-Assign Brief could be only positive for aircraft maintenance organisations, because the findings do indicate that respondents belonging to most cultural groups concur regarding the importance of pre-assignment briefing. Pre-assignment briefing is important for most activities and especially for those dealing with the safety of the flying public.

<sup>193</sup> Using Hofstede's (1980) UA index scores, which range from 8 to 112, Helmreich and Merritt (1998: 59-60) indicate that

"the countries which are high in uncertainty avoidance are those in Latin America, Latin Europe, and the Mediterranean. The common stereotype associated with these Romance countries is emotional and expressive, with large sweeping gestures and raised voices. Medium to high are the scores of the German-speaking countries with their predilection for rules, and the medium to low are the Anglo and the Nordic countries, plus the Asian countries with the exception of Japan and Korea. The USA, with a score of 46, is ranked 43 out of 50 countries, suggesting low uncertainty avoidance".

<sup>194</sup> The "Ethnback2" variable allows the discernment of variations within groups, when such are present, regarding the CC-Pre-Assign-Brief item. As far as the sub-groups comprising the Indian group are concerned, there were no significant variations in scores: "Indian/Christians" (4.6667), "Indian/nd" (4.5000) and "Hindus" (4.3333). The same was true for the sub-groups forming the Filipino group: "Filipino/Christians" (4.8333), "Filipino/Malays" (4.6667) and "Filipino/nd" (4.5833). Likewise, there were no significant variations in scores among the sub-groups making up the Arab group: "Arab Muslims" (4.5116), "Arab/nd" (4.4286) and "Arab/Christians" (4.2000). However, there was an exception to this pattern which resulted from the significant differences in scores observed among the sub-groups forming the US group: "US/Hispanics" (5.0000), "US/Caucasians" (4.5000) and "US/nd" (4.3333).



In summary, most of the items of the CC scale drew strong agreement among the respondents belonging to most of the cultural groups identified in this study.<sup>195</sup> As with the findings on the items of the CR scale, the findings on the items of the CC scale indicate a near cultural convergence among the respondents. The findings on several of the items of the CC scale, especially, bolster the premise that AMTs are, as a professional group, more individualistic in outlook than are airline pilots and first officers from the same countries. The other important finding pertaining to the items of the CC scale is that AMTs and maintenance supervisors subscribe to attitudes that could only be of benefit to aircraft maintenance organisations in the areas of group harmony and work safety.

There are also positive ramifications for aircraft maintenance organisations stemming from the findings on several items of the RSE scale.<sup>196</sup> The items of the RSE scale to be analysed first here are RSE-Ind18, RSE-Ind16, RSE-Abnormal, and RSE-Fatigue, which share the theme of “(Absence of) fatalism and (Realistic) conceptions of self”.<sup>197</sup>

### *4.2.3. Recognition of Stressor Effects (RSE)*

The findings on the RSE-Ind18 item (see Table RSE4.01) are not disturbing because they do not indicate the existence of a fatalistic attitude

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<sup>195</sup> Merritt (1996), and Helmreich and Merritt (1998) also found that five of the six items of the CC scale attracted strong agreement across all pilot groups. This means that, to some extent, the findings of these two studies resemble those of this study. However, the Helmreich and Merritt studies differ from this study concerning the debriefing/critique item.

<sup>196</sup> It is important to clarify at the outset that RSE-Ind5, RSE-Ind12, RSE-Ind16, RSE-Ind18, RSE-Ind20, and RSE-Empathize have been framed to tap into issues related to Individualism-Collectivism.

<sup>197</sup> It is important to mention here that the items of the RSE scale whose wording is specific to stress and related problems are RSE-Ind16, RSE-Ind18, RSE-Ind20, RSE-Stress, RSE-Fatigue, and RSE-Abnormal. For that reason, findings on these items are particularly meaningful.

towards stress. Three clusters of cultural groups can be discerned on the basis of the findings on RSE-Ind18.

Table RSE4.01

RES-Ind18<sup>198</sup>

(Q 36. *If I get stressed, I get stressed. I have no control over it.*)

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Hindu culture	3.7143	1.2536
	Latin culture	3.6364	1.1201
	Scandinavian culture <sup>199</sup>	3.6000	1.9494
2 <sup>nd</sup> cluster	Korean culture	3.0000	1.4142
	Germanic culture	3.0000	2.0000
	Muslim culture	2.9853	1.2155
	Christian Filipino	2.8333	1.7224
	Buddhist culture	2.8000	2.0494
	Anglo culture	2.7647	1.3720
	Confucian culture	2.5556	1.1304
3 <sup>rd</sup> cluster	Shinto or Japanese	2.0000	1.4142

Fatalism is traditionally associated with some collectivistic cultures (e.g. the “Muslim” and “Hindu”) (Naipal, 1981; Mortimer, 1982). The findings on RSE-Ind18, though, do not indicate anything untoward on this issue. Higher scores on RSE-Ind18 would have been alarming for aircraft maintenance organisations, because a fatalistic outlook is antithetical to safety in the workplace. Indeed, AMTs who have fatalistic outlooks are also unlikely to heed warning signs of degraded performance in the workplace. As a result,

<sup>198</sup> The “Ethnback2” variable allows the observation of variations within groups, when present, regarding the RSE-Ind18 item. There were significant variations in scores between the “Hindus” (3.5000) on the one hand, and “Indian/nd” (2.4375), and “Indian/Christians” (2.0000) on the other. But there were no significant variations in scores between “Filipino/Christians” (2.8333), “Filipino/nd” (2.5385) and “Filipino/Malays” (2.3333). The same was true regarding the sub-groups making up the Arab group: “Arab/Muslims” (3.0930), “Arab/nd” (2.9286) and “Arab/Christians” (2.8000). But there were significant variations in scores among the members of the US group: “US/Hispanics” (4.0000), “US/nd” (3.3333) and “US/Caucasians” (2.9000).

<sup>199</sup> It is a surprise to have the “Scandinavian culture” group included in this cluster, because its members are individualists. The sample size may account for the score of the AMTs and maintenance supervisors from the “Scandinavian culture” group.

mishaps and errors are likely to flourish on the job. The findings on the RSE-Ind16 item (see Table RSE4.02) point to such possibilities for some cultural groups.

Three clusters of culture groups could be discerned from the findings on the RSE-Ind16 item.

Table RSE4.02

RES-Ind16<sup>200</sup>*(Q 31. Managers can come to work without bringing their personal problems with them.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.1667	.7528
	Buddhist culture	4.0000	1.2247
	Korean culture	4.0000	.8165
	Confucian culture <sup>201</sup>	3.6667	1.4142
2 <sup>nd</sup> cluster	Muslim culture	3.2794	1.4231
	Hindu culture	3.0000	1.4142
	Shinto or Japanese	3.0000	1.4142
	Anglo culture <sup>202</sup>	2.8529	1.4170
3 <sup>rd</sup> cluster	Latin culture	2.4545	1.0357
	Scandinavian culture	2.4000	1.5166
	Germanic culture	2.3333	.5774

In the first cluster, paradoxically, the members of these culture groups, which are collectivistic in outlook, have the most unrealistic perceptions of

<sup>200</sup> The "Ethnback2" variable allows us to discern variations within groups, when present, regarding the RSE-Ind16 item. Regarding the sub-groups comprising the Indian group, there were significant variations in scores between "Indian/Christians" (4.6667) on the one hand, and "Indian/nd" (3.4375) and "Hindus" (3.1667) on the other. There were also significant variations in scores between "Filipino/Christians" and "Filipino/nd" (4.1667), on the one hand, and "Filipino/Malays" (3.0000), on the other. Regarding the sub-groups forming the Arab group, there were significant variations in scores between the "Arab/Christians" (4.2000) on the one hand, and "Arab/Muslims" (3.4186) and "Arab/nd" (3.2143) on the other. There were also significant variations in scores between the "US/nd" (2.6667) and "US/Caucasians" (2.6000) on the one hand, and "US/Hispanics" (1.6667) on the other. Respondents from the US group, as a whole, registered the most realistic assessments of their abilities, with the results showing the "US/Hispanics" to score the highest in this respect.

<sup>201</sup> The only thing these culture groups have in common is being Asian. But this cannot be the explanation for the relatively high scores for these cultural groups, because two other Asian cultural groups registered relatively lower scores. These were the "Hindu" and the "Shinto or Japanese culture" groups (3.0000).

<sup>202</sup> One would have expected members of the "Anglo culture" group (as well as the members of the other individualistic culture groups) to have the most unrealistic perceptions of abilities. But this was not borne out by the survey's findings.

their abilities<sup>203</sup> of all of the cultural groups surveyed here. The AMTs and maintenance supervisors belonging to the latter cultural group could be said to register a somewhat realistic conception of their abilities.<sup>204</sup>

The ramifications of some of the findings on RSE-Ind16 may be negative for aircraft maintenance organisations. Indeed, unrealistic conceptions of one's abilities can have catastrophic consequences at the workplace, because warning signs of degraded performance may go unheeded (on conception of self, see Markus and Wurf, 1987; Markus and Kitayama, 1991; Taylor, 1989). Mishaps and errors are all the more likely to occur in such a context. It can be said here that by turning into individualists on issues related to fatigue and stress, some of the collectivistic AMTs and maintenance supervisors surveyed here (who were from the three cultural groups with the highest scores on RSE-Ind16) have internalised a dangerous individualistic trait. Trends like this can bode ill for aircraft maintenance organisations.<sup>205</sup>

In contrast to those regarding the RSE-Ind16 item, the findings on the RSE-Abnormal item (see Table RSE4.03 below) do not point to anything alarming for aircraft maintenance organisations regarding the issue of decision-making in abnormal situations. Three clusters of cultural groups can be discerned from the findings on the RSE-Abnormal item.

The third cluster comprises only the "Scandinavian culture" group, whose respondents have somewhat realistic conceptions of their abilities.

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<sup>203</sup> Unrealistic perception of abilities is usually associated with members of individualistic cultures. Triandis (1995), in fact, associated flattering self-perception with individualists, and realistic perception of abilities with collectivists.

<sup>204</sup> The findings, therefore, registered a tendency among members of putatively collectivistic cultures to think like individualists, and vice versa.

<sup>205</sup> The other side of the coin is that some putative individualists are acting like collectivists. This can be a positive development, at least regarding this issue.

Table RSE4.03

RES-Abnormal<sup>206</sup>*(Q 27. My decision-making is good in abnormal situations.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Muslim culture	3.8235	1.0358
	Confucian culture	3.6667	.8660
	Anglo culture	3.5000	1.3314
	Korean culture	3.5000	1.7321
	Christian Filipino	3.5000	.8367
2 <sup>nd</sup> cluster	Hindu culture	3.1429	1.2150
	Germanic culture	3.0000	2.0000
	Buddhist culture	3.0000	.7071
	Shinto or Japanese	3.0000	1.4142
	Latin culture	2.8182	.9816
3 <sup>rd</sup> cluster	Scandinavian culture	2.4000	1.5166

There is nothing particularly disturbing about the findings on RSE-Abnormal, because there was no clear manifestation of an unrealistic conception of their abilities concerning the issue of decision-making in abnormal situations on the part of the respondents from the cultural groups identified in this study. Specifically, regarding this issue, most of the AMTs and maintenance supervisors surveyed here did not manifest a “superman complex”. The existence of the “superman complex” would have meant that AMTs would be unlikely to heed warning signs of degraded performance in the workplace. As mentioned before, in such a context, mishaps and errors on the job would be all the more likely to occur.

<sup>206</sup> The “Ethnback2” variable allows us to discern variations within groups, when variations are present, regarding the RSE-Abnormal item. There were significant variations in scores among the sub-groups forming the Indian group: “Indian/nd” (4.1250), and “Indian/Christians” (4.0000) on the one hand, and “Hindus” (3.3333) on the other. However, there were no variations in score between “Filipino/Christians” (3.5000), “Filipino/nd” (3.4167) and “Filipino/Malays” (3.3333). Likewise, there were no significant variations in scores among “Arab/Muslims” (4.0698), “Arab/Christians” (4.0000) and “Arab/nd” (3.5714). The same was true of the scores for the sub-groups comprising the US group: “US/Caucasians” (2.8000), “US/nd” (2.6667) and “US/Hispanics” (2.3333). Again, AMTs and maintenance supervisors from the “US/Hispanics” group registered the most realistic conceptions of their abilities.

The findings on the RSE-Personal item are even more comforting for aircraft maintenance organisations than those for the RSE-Abnormal item have been. This is the case because the respondents from all of the cultural groups analysed here convey adherence to a somewhat realistic or outrightly realistic conception of one's own abilities as far as the issue of performing while fatigued is concerned.

Table RSE4.04

RSE-Personal<sup>207</sup>*(Q 37. Personal problems can adversely affect my performance)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Hindu culture	4.1429	1.0690
	Korean culture	4.0000	1.4142
	Christian Filipino	3.8333	.9832
	Latin culture	3.8182	.9816
	Scandinavian culture	3.8000	1.0954
	Buddhist culture	3.8000	1.6432
	Confucian culture	3.7778	.8333
	Germanic culture	3.6777	1.1547
2 <sup>nd</sup> cluster	Muslim culture	3.4412	1.1248
	Anglo culture	3.3529	1.4117
3 <sup>rd</sup> cluster	Shinto or Japanese	3.0000	1.1547

Three clusters of cultural groups can be discerned from the findings on RSE-Personal. The third cluster is made solely of the "Japanese or Shinto culture" group (3.0000). The different degrees of realistic conception of one's abilities, shown by the respondents of the different cultural groups analysed here, makes for greater safety in the workplace.

<sup>207</sup> The "Ethnback2" variable allows the observation of variations within groups, when such are present, regarding the RSE-Personal item. There were significant variations in scores between "India/Christians" (4.3333), and "Hindus" (4.0000) on one hand, and "India/nd" (3.6250) on the other. Likewise, there were significant variations in scores between the "Filipino/Malays" (4.3333) on one hand, and the "Filipino/nd" (3.250) on the other. Significant variations in score can also be detected between "Arab/nd" (4.1429) and "Arab/Christians" (4.0000), on one hand, and "Arab/Muslims" (3.3488) on the other. There are even more significant variations in scores among the sub-groups forming the US group: "US/Hispanics" (5.0000), on the one hand, and "US/nd" (3.3333), and "US/Caucasians" (3.1000), on the other.

In summary, the findings on the items falling within the “(Absence of) fatalism and (realistic) conception of the self” category have shown that the respondents from most cultural groups are not fatalistic in outlook, but that they seem to be somewhat ambivalent on the issue of realistic/unrealistic conceptions of abilities.<sup>208</sup> An embrace of the realistic conception of one’s abilities on the part of AMTs and maintenance supervisors is vital for safety on the job.

The next items of the RSE scale to be analysed here are those sharing the theme of “Empathy and sensitivity in the workplace”. These are RSE-Ind12, RSE-Empathize, and RSE-Ind5.

The findings on the RSE-Ind12 item do not indicate a cross-cultural consensus on the issue of sensitivity to other people’s problems. Three clusters of cultural groups could be discerned on the basis of the findings on the RSE-Ind12 item (see Table RSE4.05 below).

Sensitivity regarding other people’s problems is a characteristic of individualistic cultures, since these cultures emphasise individual needs, concerns, problems, etc.<sup>209</sup> Collectivists, by contrast, are generally more concerned about the in-group than they are about individuals *per se*. This means that they empathise with their in-groups, rather than with out-groups or individuals *per se*.

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<sup>208</sup> The findings indicated that respondents belonging to some cultural groups had realistic conceptions of their abilities in some instances, and less realistic ones regarding others.

<sup>209</sup> Individualism stands for a society in which the ties between individuals are loose, such that individuals are only expected to look after themselves and their immediate family members (Hofstede, 1991).

Table RSE4.05

RES-Ind12<sup>210</sup>*(Q 21. We should be sensitive to other people's problems.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Buddhist culture	4.8000	.4472
	Christian Filipino	4.3333	.5164
2 <sup>nd</sup> cluster	Anglo culture	4.2353	.7808
	Confucian culture	4.2222	.9718
	Scandinavian culture	4.2000	.4472
	Shinto or Japanese	4.0000	1.4142
	Korean culture	4.0000	1.4142
	Hindu culture	3.8571	1.0690
	Muslim culture	3.8382	.9866
3 <sup>rd</sup> cluster	Latin culture	3.5455	.9342
	Germanic culture	3.3333	.5774

As far as aircraft maintenance organisations are concerned, sensitivity to other people's problems is a desirable trait, because sensitivity to a stressed colleague, for instance, may prevent mishaps on the job.<sup>211</sup> AMTs and maintenance supervisors associated with seven of the cultural groups surveyed here (five of which are collectivistic in orientation) seemed to reflect a degree of sensitivity to other people's problems.

A closely related item to RSE-Ind12 is RSE-Empathize. As with RSE-Ind12, the findings indicate no cross-cultural consensus on the issue of empathy among team members for each others' predicaments. Three clusters of cultural groups were discerned on the basis of the findings regarding the RSE-Empathize item (see Table RSE4.06 below).

<sup>210</sup> The "Ethnback2" variable allows us to discern variations within groups, when present, regarding the RSE-Ind12 item. There were no meaningful variations in scores among the sub-groups forming the Indian group: "Indian/nd" (4.0625), "Indian/Christians" (4.0000) and the "Hindus" (3.6667). However, there were significant variations in scores among the sub-groups making up the Filipino group: "Filipino/Christians" (4.3333), "Filipino/nd" (3.6667) and "Filipino/Malays" (2.6667). There were also significant variations in scores between "Arab/nd" (4.7140) on the one hand, and "Arab/Muslims" (3.9070) and "Arab/Christians" (3.8000) on the other. The variations in scores were even more significant for the members of the US group: "US/Caucasians" (4.4000), "US/Hispanics" (3.6667) and "US/nd" (2.0000).

<sup>211</sup> The relatively low scores on RSE-Ind12 for the "Latin culture" group and the "Germanic culture" group may raise some problems for aircraft maintenance organisations.



Table RSE4.06

RES-Empathize<sup>212</sup>*(Q 42. Team members should be able to empathize with one another's predicaments.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.6000	.5477
	Christian Filipino	4.3333	.5164
	Latin culture	4.1818	.8739
	Confucian culture	4.1111	.3333
2 <sup>nd</sup> cluster	Hindu culture	4.0000	.8165
	Buddhist culture	4.0000	.7071
	Anglo culture	3.9706	.6735
	Muslim culture	3.9412	.6665
	Shinto or Japanese	3.7500	.5000
	Korean culture	3.7500	1.2583
3 <sup>rd</sup> cluster	Germanic culture	3.3333	.5774

The findings indicate a trend towards empathising with colleagues' predicaments on the part of the respondents from the last five cultural groups.

As explained before regarding RSE-Ind12, empathy with a colleague's predicament is a characteristic of individualistic cultures.<sup>213</sup> Collectivists, on the other hand, are more concerned with the in-group (the problems it faces and its goals) than they are with individuals.

As far as aircraft maintenance organisations are concerned, empathy with colleagues' predicaments is necessary, if only because it increases group

<sup>212</sup> The "Ethnback2" variable allows the discernment of variations within groups, when present, regarding the RES-Empathize item. Regarding the sub-groups forming the Indian group, there were no meaningful variations in scores: "Indian/Christians" (4.3333), "Indian/nd" (4.1875) and "Hindus" (3.8333). The same was true regarding the sub-groups comprising the Filipino group: "Filipino/Christians" and "Filipino/Malays" (4.3333) and "Filipino/nd" (4.0000). Likewise, there were no meaningful variations in scores among the members of the Arab group: "Arab/Christians" (4.4000), "Arab/nd" (4.0714) and "Arab/Muslims" (3.9767). But there were significant variations, within the US group, in scores between "US/Hispanic" (4.3333) and "US/Caucasian" (4.0000) on the one hand, and "US/nd" (3.3333) on the other.

<sup>213</sup> Being empathic means "accurately understanding the thoughts and motivations of another person in an interaction and putting oneself in another's shoes when making a judgement about them. It does not necessarily mean agreeing with them or sympathizing with them - rather, it implies really trying to understand them" (Guirdham, 1999: 245).

identification, and may facilitate the prevention of accidents and mishaps in the workplace.<sup>214</sup>

The findings on the RSE-Ind5 item (see Table RSE4.07) indicate a cross-cultural consensus on the issue of managers' encouragement of questions from team members. Indeed, the scores on the RSE-Ind5 item are high for the respondents from all of the culture groups identified previously. There are only two clusters of cultural groups that the findings regarding RSE-Ind5 discerned.

Table RSE4.07

RES-Ind5<sup>215</sup>

*(Q 8. Managers should encourage questions from team members.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Confucian culture	4.8889	.3333
	Christian Filipino	4.8333	.4082
	Shinto or Japanese	4.7500	.5000
	Anglo culture	4.6471	.4851
	Scandinavian culture	4.6000	.5477
	Muslim culture	4.5882	.6744
	Korean culture	4.5000	.5774
	Hindu culture	4.4286	.5345
	Buddhist culture	4.4000	.5477
2 <sup>nd</sup> cluster	Latin culture	4.2727	1.0090
	Germanic culture	4.0000	1.0000

It is important to stress here that collectivist workers are generally said to like to defer to managers on issues related to decision-making in the

<sup>214</sup> AMTs who know that they can count on colleagues' empathy are likely to be more open with their feelings and doubts, which may help prevent the occurrence of accidents or mishaps on the job.

<sup>215</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding the RSE-Ind5. There were significant variations in scores between "Indian/nd" (4.6250) and "Hindus" (4.3333) on the one hand, and "Indian/Christians" (3.6667) on the other. There were even more significant variations in scores among the sub-groups comprising the Filipino group: "Filipino/Christians" and "Filipino/nd" (4.8333), and "Filipino/Malays" (3.3333). But there were no meaningful variations in scores among the sub-groups making up the Arab group: "Arab/Muslims" (4.6977), "Arab/nd" (4.5000) and "Arab/Christians" (4.2000). However, there were some slight variations in scores between "US/Hispanics" (4.6667) and "US/Caucasians" (4.6000) on the one hand, and "US/nd" (4.0000) on the other.

workplace. However, the survey's findings show that AMTs and maintenance supervisors associated with all the collectivistic cultural groups surveyed here tend to think like individualists on the RSE-Ind5 item. Furthermore, individualistic traits on the issue of decision-making are positively associated with group cohesiveness, and especially job safety. Indeed, AMTs who want to have their input on work-related issues considered certainly contribute to the improvement of work safety.

The findings on the items which fall within the category of "Empathy and sensitivity in the workplace" indicate that AMTs and maintenance supervisors from most collectivistic cultural groups tend to think and behave similarly to their colleagues from the individualistic cultural groups on the issues of sensitivity to, and empathy with, colleagues, but there is an actual cross-cultural consensus only on the issue of managers' encouragement of questions from team members. The findings on the items included within the "Empathy and sensitivity in the workplace" category generally support the argument that AMTs and maintenance supervisors from most collectivistic cultural groups are individualistic in outlook.

The next items to be analysed here are those falling within the "Fatigue/stress does not impair my performance" category. The findings on the RSE-Stress item (see Table RSE4.08 below) are encouraging for aircraft maintenance organisations because these findings convey a realistic conception of their own abilities on the part of AMTs and maintenance supervisors associated with most cultural groups. Two clusters of cultural groups can be discerned from the findings on the RSE-Stress item.

The culture groups in the first cluster registered a somewhat realistic conception of their own abilities, or at least a tendency in that direction. This translates into a healthy attitude towards stress.

Table RSE4.08

RES-Stress<sup>216</sup>*(Q 43. I am less effective when under stress or fatigued.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Korean culture	4.2500	.9574
	Confucian culture	4.2222	.9718
	Christian Filipino	4.1667	.4082
	Latin culture	4.0000	.8944
	Germanic culture	4.0000	1.0000
	Hindu culture	4.0000	1.0000
	Scandinavian culture	3.8000	1.6432
	Buddhist culture	3.8000	.8367
	Shinto or Japanese	3.7500	.5000
2 <sup>nd</sup> cluster	Anglo culture	3.5294	1.2610
	Muslim culture	3.3824	1.1333

The second cluster comprises the “Anglo culture” group (3.5294) and the “Muslim culture” group (3.3824), whose respondents seem to be undecided on the issue of stress.

The findings on the RSE-Stress item could have only a positive effect on safety in the workplace. This is so because an overall absence of a macho attitude and/or of a “superman complex”<sup>217</sup> on the part of AMTs and maintenance supervisors could be only conducive to safety culture in the workplace. The absence of a macho attitude is beneficial in this respect because it enables AMTs and maintenance supervisors to heed warning signs of degraded performance on the job. The findings on the RSE-Fatigue item

<sup>216</sup> The “Ethnback2” variable allows the discernment of variations within groups, when present, regarding the RSE-Stress item. There were meaningful variations in scores between “Hindus” (3.8333) on the one hand, and “Indian/Christians” (3.3333), and “Indian/nd” (3.2500) on the other. There were also significant variations in scores between “Filipino/Christians” (4.1667), on the one hand, and “Filipino/nd” (3.6667), and “Filipino/Malays” (3.3333) on the other. But there were no significant variations in scores among the sub-groups making up the Arab group: “Arab/nd” (3.4286), “Arab/Muslims” (3.3750) and “Arab/Christians” (3.0000). However, the variations in scores were significant between “US/Hispanics” (4.6667) on the one hand, and “US/Caucasians” (3.7000) and “US/nd” (3.3333) on the other.

<sup>217</sup> A macho attitude and a “superman complex” were observed among the AMTs and maintenance supervisors from some cultural groups regarding RSE-Ind20, RSE-Abnormal and RSE-Ind18 items.

(see Table RSE4.09) point more conclusively to this conclusion (on stress and fatigue in the aviation field, see Isaac and Ruitenbergh, 1999).

Three clusters of cultural groups could be discerned from the findings on RSE-Fatigue.

Table RSE4.09

RES-Fatigue<sup>218</sup>*(Q 25. I perform effectively even when fatigued.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	2.8000	1.6432
	Muslim culture	2.7941	1.2040
	Germanic culture	2.6667	1.5275
	Latin culture	2.6364	1.4334
	Buddhist culture	2.6000	.8944
	Korean culture <sup>219</sup>	2.5000	1.2910
2 <sup>nd</sup> cluster	Shinto or Japanese	2.2500	1.2583
	Confucian culture	2.2222	1.0929
	Anglo culture	2.2059	1.1750
	Hindu culture	2.1429	.8997
3 <sup>rd</sup> cluster	Christian Filipino	1.5000	.5477

The respondents belonging to these first two clusters of cultural groups registered a somewhat realistic conception of their abilities, and this manifestation translates into a healthy attitude toward stress. The third cluster comprises only the “Christian Filipino culture” group (1.5000), whose AMTs and maintenance supervisors registered the most realistic conceptions of their

<sup>218</sup> The “Ethnback2” variable allows the discernment of variations within groups, when such variations are present, regarding the RSE-Fatigue item. There were significant variations in scores between “Indian/Christians” (3.3333) and “Indian/nd” (2.9375) on the one hand, and “Hindus” (2.3333) on the other. There were also significant variations in scores between the “Filipino/nd” (2.5833) on the one hand, and the “Filipino/Malays” (1.6667) and “Filipino/Christians” (1.5000) on the other. Significant variations in scores could also be detected between “Arab/Christians” (3.8000) on the one hand, and “Arab/nd” (3.2143) and “Arab/Muslims” (2.9302) on the other. There were even more significant variations in scores among the sub-groups forming the US group: “US/Hispanics” (2.6667), “US/Caucasians” (2.1000) and “US/nd” (1.0000).

<sup>219</sup> It is important to mention here that the scores of AMTs and maintenance supervisors from the “Scandinavian”, “Muslim”, “Germanic”, “Latin” and “Buddhist” cultural groups place the respondents from these groups at the higher end of the “slightly disagree” scale.

abilities, and the healthiest attitude toward fatigue as far as the RSE-Fatigue item is concerned.

The ramifications of the findings on the RSE-Fatigue item could be only positive for aircraft maintenance organisations, since the less AMTs and maintenance supervisors manifest an unrealistic conception of their abilities regarding stress, fatigue, and related issues, the better it is for aircraft maintenance organisations. As explained previously, mishaps and errors are less likely to occur the more AMTs and maintenance supervisors are aware of their frailties. This awareness can also help AMTs and maintenance supervisors heed warning signs of degraded performance at work.

The findings on the items falling under the “Fatigue/stress does not impair my performance” heading indicate that AMTs and maintenance supervisors from most cultural groups have a somewhat healthy attitude towards stress and fatigue.

The final items of the RSE scale to be analysed here fall under the “In control” category. These items are RSE-Ind20 and RSE-Plans. The findings on RSE-Ind20 (see Table RSE4.10 below) are not as encouraging for aviation maintenance organisations as were the findings on RSE-Fatigue. This is the case because AMTs and maintenance supervisors associated with two cultural groups seem to adhere to a type of “superman complex”, and may therefore be incapable of heeding warning signs of degraded performance.

Three clusters of cultural groups could be discerned on the basis of the findings on the RSE-Ind20 item.

The respondents from the cultural groups belonging to the second cluster seem to be ambivalent regarding the thrust of the RSE-Ind20 item.

The respondents from the cultural groups in the third cluster convey the most realistic conceptions of their abilities, in comparison with the respondents from the other cultural groups comprising the first two clusters.

Table RSE4.10

RES-Ind20<sup>220</sup>

*(Q39. My performance is not adversely affected by working with an inexperienced or less capable team member.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.2000	.4472
	Korean culture	4.0000	.8165
	Hindu culture	3.7143	1.6036
2 <sup>nd</sup> cluster	Latin culture	3.5000	1.2136
	Muslim culture	3.4853	1.2398
	Anglo culture	3.3235	1.4082
	Germanic culture	3.0000	1.0000
	Confucian culture	3.0000	1.2247
3 <sup>rd</sup> cluster	Christian Filipino	2.6667	1.0328
	Shinto or Japanese	2.5000	1.0000
	Buddhist culture	2.2000	1.3038

The findings on RSE-Ind20 are not particularly encouraging for aviation maintenance organisations, because the AMTs and maintenance supervisors associated with most of the cultural groups identified in this study either give an indication of adherence to a type of “superman complex”, or are ambivalent on the issue of whether their performances might be adversely affected by working with inexperienced or less capable team members. Both the AMTs and maintenance supervisors who give an indication of adherence to a type of “superman complex” and those who are ambivalent may be incapable of heeding warning signs of degraded performance.

The next item to be analysed here, namely RSE-Plans, presents a problem in determining which issue this item is actually tapping into. One

<sup>220</sup> The “Ethnback2” variable allows us to observe variations within groups, when present, regarding the RSE-Ind20 item. Regarding the sub-groups comprising the Indian group, there were significant variations in scores between “Indian/Christians” (4.6667) on the one hand, and “Hindus” (3.5000) and “Indian/nd” (3.3750) on the other. The variations in scores were even more significant regarding the sub-groups making up the Filipino group: the “Filipino/Malays” (4.3333), the “Filipino/nd” (3.2500) and the “Filipino/Christians” (2.6667). There were also significant variations in scores between “Arab/Christians” (4.2000) on the one hand, and “Arab/nd” (3.9286) and “Arab/Muslims” (3.6977) on the other. The same was also true regarding the sub-groups making up the US group: “US/nd” (3.6667), “US/Hispanics” (3.0000) and “US/Caucasians” (2.7000).

may be tempted to maintain, along with Helmreich and Merritt (1998), that this item taps into issues related to UA, but as was stressed before, researchers at the Aerospace Crew Research Project had found that Hofstede's (1991) UA was only replicated when it was defined to centre on the attitude that written procedures were needed for all situations, and that an organisation's rules should never be broken, even if it might be in the organisation's own best interest to do so.

Table RSE4.11

RES-Plans<sup>221</sup>*(Q30. Managers should inform us of plans and actions.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.8000	.4472
	Shinto or Japanese	4.7500	.5000
	Korean culture	4.7500	.5000
	Latin culture	4.6364	.5045
	Buddhist culture <sup>222</sup>	4.6000	.5477
	Confucian culture	4.5556	1.0138
	Muslim culture	4.4853	.6107
	Anglo culture	4.4412	1.0207
2 <sup>nd</sup> cluster	Germanic culture	4.3333	1.1547
	Christian Filipino	4.1667	1.1690
	Hindu culture	4.1429	1.0690

The problem with the RSE-Plans item is that its wording is not specific enough to be read as something that relates to stress and other connected issues. This clarification aside, the findings on RSE-Plans are positive for

<sup>221</sup> The "Ethnback2" variable allows us to discern variations within groups, when present, regarding the RSE-Plans item. There were significant variations in scores between "Indian/nd" (4.5000), and "Hindus" (4.1667) on the one hand, and "Indian/Christians" (3.0000) on the other. But there were no meaningful variations in scores among the sub-groups forming the Filipino group: "Filipino/nd" (4.4167), "Filipino/Malays" (4.3333) and "Filipino/Christians" (4.1667). By contrast, there were some slight variations in scores between "Arab/Muslims" (4.6047) on the one hand, and "Arab/nd" (4.4286) and "Arab/Christians" (4.0000) on the other. Regarding the sub-groups comprising the US group, there are significant variations in scores: "US/Caucasians" (4.8000), "US/Hispanics" (4.6667) and "US/nd" (3.3333).

<sup>222</sup> The scores of the "Scandinavian", "Shinto or Japanese", "Korean", "Latin" and "Buddhist culture" groups place them at the higher end of the "agree slightly" scale.



maintenance organisations because a near consensus seems to exist among AMTs and maintenance supervisors representing all cultural groups regarding the need for managers to inform AMTs of plans of action.

Two clusters of culture groups can be discerned from the findings on the RSE-Plans item (see Table RSE4.11 above).

The high scores by AMTs and maintenance supervisors belonging to all cultural groups convey a near consensus on the need for managers to keep AMTs informed as to the company's plans of action.<sup>223</sup> The need for communication between managers and employees is dictated by common sense, as the respondents to this survey appear to affirm. The need for communication is, in any event, vital for a healthy, productive, and safe working environment.

In summary, the findings on the items of the RSE scale did not point to a universal outlook regarding stress, fatigue and related issues. However, the findings contrast with those of Merritt (1996) and Helmreich and Merritt (1998) on airline pilots and stress, because these authors interpreted their findings to mean that pilots adhered to unrealistic, safety-threatening performance norms. Helmreich and Merritt stress that the "Attitudes toward Stress" scale showed that pilots, across national cultures, tended to reflect a universal desire to minimise or deny the negative effects of stress upon their performances. Merritt (1996), specifies that pilots from four countries (i.e. Switzerland, Ireland, Japan and former British Hong Kong) demonstrated awareness of the differences between the realistic and the unrealistic outlook, while all the other pilots did not.

Because this survey's findings indicate the co-existence, often among the AMTs and maintenance supervisors from the same cultural groups, of

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<sup>223</sup> Relying on probability theory, the high mean scores for all of the cultural groups here, whether collectivistic or individualistic, preclude the interpretation that the RSE-Plans item was tapping into issues related to UA.

both realistic and unrealistic conceptions of their abilities in relation to stress, fatigue, etc.,<sup>224</sup> it cannot generalise in the way Helmreich, Merritt, and Sherman (1996: 14) did regarding airline pilots and stress, to the effect that

“A strong belief persists throughout the pilot profession that the truly professional pilot is never anxious, and never overloaded. From this perspective, showing some signs of being under stress is perceived as a sign of weakness (a failure to meet professional standards) rather than a predictable reaction to certain environmental conditions”.

As Helmreich, Merritt and Sherman have observed, as long as pilots cherish this image of invulnerability, human errors will tend to occur and “effective human error management will be difficult to achieve because warning signs of degraded performance might go unheeded, thereby increasing the likelihood of error”.

The findings regarding some of the items of the AC scale may also have positive ramifications for aircraft maintenance organisations, as will be demonstrated below.<sup>225</sup>

#### *4.2.4. Avoiding Conflict (AC)*

The items to be analysed first here fall under the “Avoidance of conflict” heading. These are AC-Ind2, AC-Workplace, and AC-Ind8. It is important to mention here that Table 4.1 ANOVA Tukey Post Hoc Pairwise comparisons show that AC-Ind2 was significantly different for the “Latin” and “Shinto or Japanese culture” groups.

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<sup>224</sup> In other words, these AMTs and maintenance supervisors gave indications of realistic conceptions of their abilities regarding stress etc. in relation to some items of the RSE scale, and of unrealistic conceptions of their abilities in relation to other items of the RSE scale.

<sup>225</sup> However, findings on other items within this scale lend themselves to different interpretations. The reason probably has to do with the wording of the items. A case in point here is the AC-Ind8 item, which states that “Team members should avoid disagreeing with others, because conflicts create tension and reduce effectiveness in the workplace”.

Four clusters of cultural groups can be discerned from the findings on the AC-Ind2 item (see Table AC4.01).

Table AC4.01

AC-Ind2<sup>226</sup>*(Q 3. It is important to avoid negative comments about others.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Germanic culture	4.6667	.5774
	Latin culture	4.5455	.5222
	Scandinavian culture	4.4000	.5477
	Confucian culture	4.2222	1.3017
	Christian Filipino	4.1667	1.1690
2 <sup>nd</sup> cluster	Muslim culture	3.9118	1.0891
	Anglo culture	3.5882	1.1578
	Hindu culture	3.5714	1.5119
3 <sup>rd</sup> cluster	Buddhist culture	3.4000	1.8166
	Korean culture	3.2500	1.7078
4 <sup>th</sup> cluster	Shinto or Japanese	2.2500	1.2583

There are different degrees of adherence to the thrust of the AC-Ind2 item, and the findings on this item also lend themselves to differing interpretations.<sup>227</sup> Given the fact that this item is not worded explicitly enough for an unambiguous interpretation, it is unclear whether in responding, the respondents were referring to negative personal comments about colleagues, or negative comments about a colleague's technical errors. The ramifications for airline maintenance organisations would be healthier if the respondents were clearly referring to negative personal comments about their colleagues.

<sup>226</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding the AC-Ind2 item. There were significant variations in scores among the sub-groups comprising the Indian group: "Indian/Christians" (4.6667), "Indian/nd" (4.1429) and "Hindus" (3.3333). There were also significant variations in scores between the "Filipino/Christians" and "Filipino/nd" (4.1667) on the one hand, and "Filipino/Malays" (2.6667) on the other. There were also significant variations in scores between "Arab/Muslims" (4.2093) and "Arab/nd" (4.1429) on the one hand, and "Arab/Christians" (3.2000) on the other. There are also significant variations in scores between "US/Hispanics" (4.6667) on the one hand, and "US/Caucasians" (3.7000) and "US/nd" (3.3333) on the other.

<sup>227</sup> The fact that the findings on the AC-Ind2 item could be read to mean two different things stems from the wording of the item.

The findings on the AC-Workplace item support the interpretation that many AMTs and maintenance supervisors believe that good rapport among team members can mitigate conflicts in the workplace. Three clusters of cultural groups can be discerned on the basis of the findings on the AC-Workplace item (see Table AC4.02).

Table AC4.02<sup>228</sup>

## AC-Workplace

*(Q 26. We should seek to understand each other better in the workplace.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Shinto or Japanese	5.0000	.0000
	Christian Filipino	4.6667	.8165
	Confucian culture	4.6667	.5000
	Scandinavian culture	4.6000	.5477
2 <sup>nd</sup> cluster	Muslim culture	4.3382	.8032
	Korean culture	4.2500	1.5000
	Latin culture	4.1818	.9816
	Hindu culture	4.1429	1.2150
	Anglo culture	4.0588	.8856
	Buddhist culture	4.0000	1.0000
3 <sup>rd</sup> cluster	Germanic culture	3.3333	.5774

The score of the “Germanic culture” group notwithstanding, there is a near cross-cultural consensus on the AC-Workplace item. The ramifications of these findings could be only positive for aviation maintenance organisations, because workers who strive to understand their fellow workers better make better employees. Furthermore, a good working environment may make the organisation more productive and, at the same time, more

<sup>228</sup> The “Ethnback2” variable allows the observation of variations within groups, when such are present, regarding the AC-Workplace item. There were significant variations in scores among the sub-groups making up the Indian group: “Indian/Christians” (5.0000), “Indian/nd” (4.6875) and “Hindus” (4.0000). But there were no meaningful variations in scores regarding the sub-groups making up the Filipino group: “Filipino/Christians” (4.6667), “Filipino/Malays” (4.3333) and “Filipino/nd” (4.1667). Nor were there significant variations in scores among the sub-groups forming the Arab group: “Arab/nd” (4.5000), “Arab/Muslims” (4.3953) and “Arab/Christians” (4.2000). But there were significant variations in scores between “US/Hispanics” (4.6667) and “US/Caucasians” (4.2000) on the one hand, and “US/nd” (1.3333) on the other.

safety-conscious. It is important to mention here that collectivists are generally the ones who want to understand better their colleagues in the workplace. This collectivistic trait is a desirable trait in working environments.<sup>229</sup>

In contrast to those pertaining to the AC-Workplace item, the findings on the AC-Ind8 item (see Table AC4.03) point to different degrees of adherence to the thrust of this item. Four clusters of cultural groups can be discerned from the findings on the AC-Ind8 item.

Table AC4.03

AC-Ind8<sup>230</sup>

*(Q 15. Team members should avoid disagreeing with others, because conflicts create tension and reduce effectiveness in the workplace.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.6667	.5164
	Buddhist culture	4.4000	1.3416
2 <sup>nd</sup> cluster	Korean culture	4.0000	1.4142
	Latin culture	3.7273	1.1909
3 <sup>rd</sup> cluster	Hindu culture	3.4286	1.7182
	Muslim culture	3.4265	1.3307
	Anglo culture	3.3235	1.0652
	Scandinavian culture	3.2000	1.3038
	Confucian culture	3.1111	1.3642
4 <sup>th</sup> cluster	Shinto or Japanese	2.7500	1.5000
	Germanic culture	2.6667	1.5275

<sup>229</sup> It was also shown previously that there are individualistic traits which are desirable.

<sup>230</sup> The "Ethnback2" variable allows observation of variations within groups, when variations are present, regarding the AC-Ind8 item. There were no significant variations in scores among the sub-groups making up the Indian group: "Indian/Christians" (3.3333), "Indian/nd" (3.1875) and "Hindus" (3.1667). But there were significant variations in scores between "Filipino/Christians" (4.6667) on the one hand, and "Filipino/nd" (3.5000) and "Filipino/Malays" (3.0000) on the other. Likewise, there were significant variations in scores between "Arab/Christians" (4.2000) and "Arab/nd" (3.7857) on the one hand, and "Arab/Muslims" (3.6047) on the other. The variations in scores were also significant with regard to the sub-groups of the US group: "US/Caucasians" (3.1000), "US/nd" (3.0000) and "US/Hispanics" (2.3333).

The diversity of opinions regarding the AC-Ind8 item suggest differing perceptions regarding the issue of disagreements in the workplace. It is unclear whether, in responding to the AC-Ind8 item, the AMTs and maintenance supervisors were referring to personal disagreements with their colleagues, or to disagreements about the carrying out of a technical task. The ramifications for airline maintenance organisations would be healthier if the respondents were clearly referring to personal disagreement with their colleagues. It can be speculated here that if the respondents meant that all disagreements expressed in the workplace are negative and counterproductive,<sup>231</sup> it is unlikely that they would welcome disagreements about safety procedures. As we know, disagreements about technical matters are healthy things for managers to encourage, because a lively exchange of ideas helps to foster a corporate safety culture.

The findings on the items falling within the “Avoidance of Conflicts” category indicated that for the items AC-Ind2 and AC-Ind8, the results could lend themselves to different interpretations, and that there was a near cultural consensus on the issue of the importance of mutual understanding among co-workers on the job.

The final items of the AC scale to be analysed here are AC-Ind11, AC-Ind14 and AC-Conversation, which share the theme of “Roots of conflict”. It is important to stress at the outset that the wording of the AC-Ind11 item, which states that “Conflict in the workplace is natural and unavoidable”, is specific to the workplace. This item is tapping into issues related to Individualism-Collectivism. Individualists tend to adhere to this premise, while collectivists tend to believe that conflict in the workplace is not unavoidable and is not necessarily a natural phenomenon. Collectivists also tend to believe that better rapport outside the context of the job can mitigate

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<sup>231</sup> As emphasised before, collectivists are said to shy away from criticism of colleagues, while individualists are not.

conflicts in the workplace. Clearly, the AC-Ind14 and AC-Ind11 items outline opposite viewpoints about conflict avoidance, namely the collectivistic and individualistic viewpoints.

Three cluster groups can be discerned from the findings on the AC-Ind11 item (see Table AC404).

Table AC4.04

AC-Ind11<sup>232</sup>*(Q 19. Conflict in the workplace is natural and unavoidable.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.4000	.5477
	Shinto or Japanese	4.0000	.8165
	Hindu culture	4.0000	.5774
	Latin culture	3.9091	.7006
2 <sup>nd</sup> cluster	Korean culture	3.7500	1.2583
	Muslim culture	3.7206	1.0629
	Germanic culture <sup>233</sup>	3.6667	.5774
	Anglo culture	3.5294	1.1074
	Buddhist culture	3.4000	1.8166
3 <sup>rd</sup> cluster	Confucian culture	2.8889	1.4530
	Christian Filipino	2.6667	1.6330

The respondents from the cultural groups belonging to the first cluster are the most individualistic on the AC-Ind11 item.<sup>234</sup>

<sup>232</sup> The "Ethnback2" variable allows the discernment of variations within groups, when present, regarding the AC-Ind11 item. There were significant variations in scores between the "Hindus" (4.0000) on the one hand, and "Indian/nd" (3.3750) and "Indian/Christians" (3.3333) on the other. The variations in scores were even more significant between "Filipino/nd" (3.8333), on the one hand, and "Filipino/Malays" and "Filipino/Christians" (2.6667), on the other. But there were no meaningful variations in scores among the sub-groups making up the Arab group: "Arab/nd" (3.7857), "Arab/Muslims" (3.6512) and "Arab/Christians" (3.6000). Finally, regarding the sub-groups comprising the US group, there were significant variations in scores between "US/Hispanics" (4.3333) and "US/Caucasians" (4.0000) on the one hand, and "US/nd" (3.3333) on the other.

<sup>233</sup> The scores of the "Latin", "Korean", "Muslim" and "Germanic" cultural groups place them at the higher end of the "neutral" scale.

<sup>234</sup> Only one of these cultural groups, the "Germanic", is actually individualistic.

With the exception of the “Scandinavian”, “Christian Filipino”, and “Confucian culture” groups,<sup>235</sup> the findings about the other cultural groups are contradictory on the issue of the roots of conflict. This is because the respondents associated with the remaining eight cultural groups surveyed here seemed to adhere both to the collectivistic and individualistic viewpoints, at the same time, regarding this issue. The only explanation that can be offered for this contradiction is that AMTs and maintenance supervisors associated with these cultural groups apparently think that conflict in the workplace is natural and unavoidable, but also cling to the hope that conflict on the job can be alleviated through good rapport among colleagues outside the workplace.<sup>236</sup> It is also possible that these respondents believe that socialising outside the job would make co-workers understand each other better, and that the resulting rapport would lead to a reduced likelihood of conflict in the workplace.

As was also the case with AC-Ind11, there is no ambiguity regarding the wording of AC-Ind14 item. The wording of this item leaves no doubt that references to conflict avoidance are specifically focused on the workplace.

Two clusters of cultural groups can be discerned from the findings on the AC-Ind14 item (see Table AC4.05 below).

It is important to clarify here that it is generally collectivists who emphasise good rapport outside the workplace because they think that such rapport fosters group harmony. Individualists are generally less concerned about group harmony, and distinguish between the job and private life.

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<sup>235</sup> The responses from the respondents associated with the “Scandinavian culture” group were consistent. This was so because respondents from this group ranked last on the AC-Ind14 item, which reflected the collectivistic viewpoint on the roots of conflict and the Scandinavian respondents ranked first on the AC-Ind11 item, which reflected the individualistic viewpoint on the roots of conflict.

<sup>236</sup> If this view were widely held, it would have positive ramifications for the workplace, because it presents conflict as an unavoidable yet manageable phenomenon.



Table AC4.05

AC-Ind14<sup>237</sup>

*(Q 28. Conflict avoidance has its roots outside the job (i.e., good relationships among team members outside the workplace will reduce the likelihood of conflict at work.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Confucian culture	4.1111	1.2693
	Korean culture	4.0000	.8165
	Christian Filipino	4.0000	1.0954
	Buddhist culture	3.8000	.4472
	Muslim culture	3.7794	.9902
	Shinto or Japanese	3.7500	.9574
	Hindu culture	3.7143	.7559
2 <sup>nd</sup> cluster	Germanic culture	3.6667	.5774
	Latin culture	3.6364	1.0269
	Anglo culture	3.5882	1.0479
	Scandinavian culture	3.4000	1.3416

Regarding the AC-Conversation item, three clusters of cultural groups can be discerned on the basis of the findings on this item (see Table AC4.06 below).

The ramifications of these findings could be only positive for aviation maintenance organisations. This is so because casual conversation is a first step towards improving co-ordination among team members. But meaningful co-ordination among AMTs actually requires substantive conversation among co-workers in the workplace.

<sup>237</sup> The "Ethnback2" variable allows us to observe variations within groups, when present, regarding the AC-Ind14 item. There were significant variations in scores between "Indian/Christians" (4.6667), and "Hindus" (4.3333) on the one hand, and "Indian/nd" (3.6875) on the other. The variations in score were even more significant between "Filipino/Christians" (4.5000) on the one hand, and "Filipino/nd" (3.5000) and "Filipino/Malays" (3.3333) on the other. There were also significant variations in scores between "Arab/Christians" (4.2000) and "Arab/nd" (4.0714) on the one hand, and "Arab/Muslims" (3.5814) on the other. But the variations in scores were even more significant among the sub-groups making up the US group: "US/Hispanics" (4.6667), "US/Caucasians" (3.5000) and "US/nd" (2.3333).

Table AC4.06

AC-Conversation<sup>238</sup>*(Q2. Casual conversation improves co-ordination among team members.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Scandinavian culture	4.6000	.5477
	Christian Filipino	4.5000	.8367
	Hindu culture	4.4286	.5345
	Confucian culture	4.4222	.9718
	Shinto or Japanese	4.2500	.5000
2 <sup>nd</sup> cluster	Anglo culture	3.8235	1.0863
	Buddhist culture	3.8000	1.6432
	Germanic culture	3.6667	.5774
	Latin culture	3.6364	1.2863
	Muslim culture	3.5882	1.0683
3 <sup>rd</sup> cluster	Korean culture	3.2500	.9574

In summary, the findings on the items of the AC scale generated some ambivalent attitudes regarding conflict avoidance on the part of respondents belonging to most cultural groups.<sup>239</sup> The AC-Ind14 and AC-Ind11 items furnish a case in point here. But there seems to exist a cross-cultural agreement on the importance both of better understanding among colleagues, and of casual conversation as a means for improving co-ordination among team members.

<sup>238</sup> The "Ethnback2" variable allows the observation of variations within groups, when present, regarding the AC-conversation item. There were significant variations in scores between "Indian/Christians" (4.6667), and "Hindus" (4.3333), on the one hand, and "Indian/nd" (3.6875) on the other. There were also significant variations in scores between "Filipino/Christians" (4.5000), on the one hand, and "Filipino/nd" (3.5000) and "Filipino/Malays" (3.3333) on the other. Regarding the sub-groups making up the Arab group, there were also significant variations in scores between "Arab/Christians" (4.2000) and "Arab/nd" (4.0714), on the one hand, and "Arab/Muslims" (3.5814) on the other. The variations in scores were even more significant among the sub-groups forming the US group: "US/Hispanics" (4.6667), "US/Caucasians" (3.5000) and "US/nd" (2.3333).

<sup>239</sup> It is important to mention here that because Merritt (1996), and Helmreich and Merritt (1998) did not include an "Avoiding Conflict" scale in their studies, a comparison between AMTs and maintenance supervisors on the one hand, and airline pilots on the other, is not possible regarding this issue.

### ***4.3. Conclusion***

The attitude items of the questionnaire analysed in this chapter were factored into four broad content areas, namely “Command Responsibility” (CR)”, “Communication and Co-ordination (CC)”, “Recognition of Stressor Effects (RSE)” and “Avoiding Conflict (AC)”.

The findings on the items of the CR scale show that these items were not as significant a cultural discriminator for the AMTs and maintenance supervisors in this study as they were for Merritt’s (1996), and Helmreich and Merritt’s (1998) airline pilots. Four possible explanations for the differences between AMTs and maintenance supervisors on the one hand, and airline pilots on the other, were put forth, and explained above. (see page 115).

Regarding this study, the most significant differences on the CR scale among respondents according to cultural group were brought to light by ANOVA Tukey Post Hoc Pairwise comparisons. The item CR-Ind7, for example, was demonstrated to be significantly different for the “Anglo” and “Muslim culture” groups, and the “Scandinavian” and “Christian Filipino culture” groups. The CR-Ind13 item was also found to be significantly different for the “Anglo culture” group versus both the “Muslim” and the “Buddhist culture” groups, as well as for the “Buddhist” versus the “Christian Filipino culture” group.

As with this study’s findings on the items of the CR scale, the findings on the items of the CC scale pointed to a near cultural convergence among the AMTs and maintenance supervisors belonging to most of the surveyed cultural groups. In particular, the findings on several of the items of the CC scale bolster the claim that AMTs are as a group more individualistic in outlook than are airline pilots and first officers, for example, from the same

countries.<sup>240</sup> Regarding the CC scale, the most significant differences among respondents according to cultural group were brought to light by ANOVA Tukey Post Hoc Pairwise comparisons. Item CC-Ind17 alone was shown to be significantly different for the “Anglo” versus the “Muslim”, “Japanese” and “Hindu culture” groups.

The findings on the items of the RSE scale did not point to a universal outlook regarding stress, fatigue, and related issues. In this regard, the findings here contrasted with those of Merritt (1996), and Helmreich and Merritt (1998) on airline pilots and stress. These authors, in fact, interpreted their findings to mean that pilots adhered to unrealistic, safety-threatening performance norms. The findings of this study, by contrast, indicate the co-existence, often among the AMTs and maintenance supervisors from the same cultural groups, of both realistic and unrealistic conceptions of their abilities in relation to stress, fatigue, etc. This renders the deficiencies which AMTs and maintenance supervisors have in the area of abilities in situation of stress and fatigue more manageable than those of the airline pilots as underscored by Helmreich and Merritt.

Finally, the findings on the items of the AC scale generated some ambivalent attitudes regarding conflict avoidance on the part of AMTs and maintenance supervisors belonging to most cultural groups. But most importantly, the findings of this study point to a cross-cultural consensus on the issues of the importance of better understanding among colleagues, and of casual conversation as a means for improving co-ordination among team members.

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<sup>240</sup> Merritt (1996), and Helmreich and Merritt (1998) also found that five of the six items of their counterpart to this CC scale engendered strong agreement across all pilot groups. This means that, to some extent, the findings of these two authors are somewhat similar to those of this study. However, the Merritt and Helmreich studies differ concerning the debriefing/critique item.

Regarding the AC scale, the most significant differences among respondents according to cultural group were brought to light by ANOVA Tukey Post Hoc Pairwise comparisons. AC-Ind2 was in fact shown to be significantly different for the “Latin” versus the “Shinto or Japanese culture” group.

## Chapter Five

This chapter will present the findings of the eleven culture group analyses of the sixteen work goal items of the questionnaire.<sup>241</sup> Factor analysis will be used to establish an initial factor structure, and ANOVA will be utilised to determine the best discriminators of group differences. Discussion will then focus on differences and similarities among the eleven culture groups examined here, and what the findings may actually mean for aircraft maintenance organisations. The comparison of the ethnic and cultural groups of interest to this study run on the dependent variables is done using group means as the most robust measure of central tendency.<sup>242</sup>

### 5.0. Items

The analyses in this chapter focus on the Work Goal section of the questionnaire, which contains sixteen items relating to work goals. Respondents were asked to consider their ideal job and rate the importance of the different attributes in relation to that job. The items were scored according to the 5-point Likert Scale (1="Of No Importance", 2="Of Little Importance", 3="Of Moderate Importance", 4="Very Important" and 5="Of Utmost Importance").

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<sup>241</sup> Chapter Five, like Chapter Four, also presents variations within the most important cultural groups surveyed in this study. The "Ethnback2" variable serves as a complement to the "Culture Group" variable.

<sup>242</sup> As emphasised in Chapter Three, close examination of the data indicated no pattern of scoring bias related to cultural groups. Therefore, no remedial transformation was undertaken. Since neither scoring patterns nor homogeneity were a problem, it was decided to run the analyses with the original numbers.

## 5.1. Exploratory Analyses

The first exploratory analysis to be undertaken here is Factor Analysis. Principal component analyses with varimax orthogonal rotation were run on the Work Goal items to identify patterns of correlation between the item responses. As indicated in Chapter Four, the results would be interesting for two reasons: firstly, they might uncover unexpected relationships between the items, and secondly, they might confirm, or refute, conceptual relationships drawn from the literature on cross-cultural studies and employed in this study (e.g. Hofstede, 1980; Triandis, 1995). The expected relationships included goals clustering around individualistic and collectivistic orientations, for example, in functional areas of workplace activity.<sup>243</sup>

The Factor Analysis of the Work Goal items resulted in the extraction of six factors with eigenvalues greater than 1.0.<sup>244</sup> The six factors together accounted for more than 68% of the total variance.<sup>245</sup> Factor One has an eigenvalue of 3.7 and total variance explained of 23.4%. The three high loading variables (loading greater than .4) are Goal 2-Ind34, Goal 1-Ind33, and Goal 3-Ind35, given here in order of loading magnitude: Goal 2-Ind34 (“Understanding and agreeing on goals”) .82, Goal 1-Ind33 (“Receiving feedback on performance”) .81, and Goal 3-Ind35 (“Being informed of the organisation goals”) .80.

Factor One has the same high loading as Factor Five in the “all variables” run (see Chapter Four). Receiving feedback on, understanding

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<sup>243</sup> An initial factor analysis was run on all questionnaire items to see what relationships were actually present in the data, and the resulting factors and loadings were quite revealing in that they tended to confirm the cohesion of individualistic versus collectivistic attitudes and goals, as well as the clustering of these goals and attitudes within functional areas expected in Merritt (1996), for example.

<sup>244</sup> In other words, the data were analysed by forced three-, four-, five- and six-factor solutions.

<sup>245</sup> The six-factor solution was also supported by inspection of the scree plot.

and agreeing to, and being informed of, goals all point to a theme of communication and involvement in the operations of the workplace. The theme that emerges here could be called “Communication and active involvement in the workplace”.

Factor Two has an eigenvalue of 2.1 and total variance explained of 13.6%. The four loading variables (loading greater than .4) are also given here in order of loading magnitude: Goal 5-Ind23 (“Having other groups plan and co-ordinate activities with my group”) .787, Goal 4-Ind22 (“Having other groups act as if they share my group’s goals”) .781, Goal 6-Ind24 (“Having subordinates voice concerns about the organization’s goals”) .66, and Goal 7-MAS1 (“Working with team members who maintain good interpersonal relationships with each other”) .46.

The high loading variables on this factor are the same as those found in Factor Four of the “all variables” run. The theme that emerges here could be labelled “Co-operation and co-ordination”.

Factor Three has an eigenvalue of 1.46 and total variance explained of 9.1%. The three high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 12-Ind28 (“Working in a place where I can have considerable freedom to adopt my own approach to the job”) .87, Goal 11-MAS3 (“Working in a place where I can develop a warm relationship with my direct bosses”) .69, and Goal 13-Ind29 (“Working for an organization which offers me challenging tasks, from which I can get a personal sense of accomplishment”) .62.

These high loading variables were not found to be highly related to the “all variables” run, and this is not surprising since the smallest factors extracted often contain a substantial degree of random error. Nevertheless, there does appear to be a thematic relationship between the items. The theme that emerges here could be labelled “A fulfilling job and warm



relationship with my bosses”. A fulfilling job which allows one to have considerable freedom to adapt one’s approach to the job, and to derive from it a personal sense of accomplishment meets the aspirations of individualists. However, the need for a warm personal relationship with bosses is a feminine priority.

Factor Four has an eigenvalue of 1.32 and total variance explained of 8.2%. The three high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 9-Ind25 (“Working for an organization which offers job security”) .83, Goal 8-MAS2 (“Working for an organization which offers opportunities for advancement and high earnings”) .69, and Goal 10-Ind26 (“Working for an organization where the group’s achievements are valued over individuals’ successes”) .46.

These high loading variables were not found to be highly related in the “all variables” run, and this is not surprising since the smallest factors extracted often contain a substantial degree of random error. Nevertheless, there does appear to be a thematic relationship among the items. The theme that emerges here can be labelled “Job security and opportunity for career advancement”. These are the concerns of masculine collectivists who also believe that group achievements should take precedence over individual success.

Factor Five has an eigenvalue of 1.17 and a total variance explained of 7.3%. The two high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 14-Ind30 (“Working for an organization which gives me sufficient time for my personal/family life”) .78, and Goal 15-Ind31 (“Working for an organization which cares for its employees”) .70.

These high loading variables were not found to be highly related to the “all variables” run, and this is not surprising since the smallest factors

extracted often contain a substantial degree of random error. The theme emerging here can be labelled “A caring company”. Collectivists expect a company to meet the needs of its employees, while individualists want the company they work for to provide them with ample time for personal and/or family life.

Factor Six has an eigenvalue of 1.0 and total variance explained of 6.2%. The two high loading variables (loading greater than .4) are given here in order of loading magnitude: Goal 16-Ind32 (“Working for an organization which sets my goals for me”) .88, and Goal 7-MAS1 (Working with team members who maintain good interpersonal relationships with each other) -.47.

These high loading variables were not found to be highly related in the “all variables” run, and this is not surprising since the smallest factors extracted often contain a substantial degree of random error. The theme that emerges here can be labelled “An organization which sets goals for its employees”. This is the aspiration of collectivists, who expect the organisation they work for to guide almost every aspect of their working life.

The second exploratory analysis to be run here is a one-way analysis of variance (ANOVA), which is an extension of the two-sample t test. ANOVA was employed to discover significant differences of means between the cultural groups on the dependent variables, and the Tukey Honesty Significant Difference (HSD) test was used to generate post hoc significant statistics. Pairwise multiple comparisons were used to test the significance of each difference of means at an alpha level of .05 (a standard level for social science hypothesis testing). The Tukey HSD test uses the STUDENTISED range statistic for Pairwise comparisons. All statistical runs were made using SPSS statistical software.

ANOVA was run with all the eleven culture groups as an independent variable on Work Goals as dependent variables. Only differences of means between cultural groups that were significant (or near significant) at an alpha level of .05 will be presented and discussed here. It must be remembered that a strict inference cannot be claimed from these statistics to general population parameters even for the statistically significant relationships because the data was not collected using a random sampling method (see Chapter Three). Nevertheless, the results are presented and discussed for their heuristic value. A summary table, Table 5.1, is provided for all statistically significant differences of means. The analysis of these findings will be undertaken in the “Results” section.

Table 5.1 ANOVA Tukey HSD Post Hoc  
Pairwise Comparisons

**ITEM: GOAL 3**

*(Q46. Being informed of this organization's goals.)*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	-0.647	0.181	0.019	-1.24	0.00
Scandinavian/Muslim	-1.059	0.4	0.023	-2.714	0.00
Filipino/Scandinavian	1.7	0.523	0.053	-0.001	3.41

## ITEM: GOAL 14

*(Q57. Working for an organization which gives me sufficient time for personal/family life.)*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Japanese	1.558	0.389	0.004	0.287	2.283
Scandinavian/Japanese	1.6	0.493	0.054	-0.001	3.213
Muslim/Japanese	1.397	0.378	0.012	0.159	2.634
Latin/Japanese	1.545	0.429	0.017	0.141	2.949
Confucian/Japanese	1.666	0.442	0.009	0.221	3.112
Hindu/Japanese	1.571	0.461	0.032	0.006	3.079

## ITEM: GOAL 16

*(Q59. Working for an organization which sets my goals for me.)*

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	-1.602	0.499	0.06	-3.236	0.00

**5.2. Results**

Goals 1-Ind33, 2-Ind34 and 3-Ind35 have been framed to tap into issues related to Individualism-Collectivism. The high mean scores on these items suggest that both putatively collectivistic and individualistic respondents consider “communication and active involvement in the workplace” to be important for aviation maintenance organisations.<sup>246</sup>

<sup>246</sup> Many of the findings of this research show that AMTs and maintenance supervisors are influenced by, and borrow from, different cultural tool kits, and not just from the cultural kit with which they are associated. This is called “cultural bricolage”. As long as AMTs and maintenance supervisors “pick” the goals that are congruent with group harmony and work safety that should be fine for aviation maintenance organisations.

Some of these respondents may have reason to want their ideal workplace to meet these criteria because their actual workplace does not.<sup>247</sup>

Regarding Goal 2-Ind34, the findings (see Table WG4.01) point to two clusters of cultural groups.

Table WG4.01

Goal 2-Ind34<sup>248</sup>*(Q 45. Understanding and agreeing on work goals.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Buddhist culture	4.6000	.5477
	Korean culture	4.5000	.5774
	Christian Filipino	4.5000	.5477
	Germanic culture	4.3333	.5774
	Confucian culture	4.3333	1.0000
	Shinto or Japanese	4.2500	.5000
	Muslim culture <sup>249</sup>	4.2500	.6551
2 <sup>nd</sup> cluster	Hindu culture	3.8571	1.0690
	Latin culture	3.8182	.7508
	Anglo culture	3.7941	.8083
	Scandinavian culture	3.6000	.8944

The respondents from these collectivistic culture groups regard Goal 2-Ind34 as a very important goal as far as their search for the ideal job is concerned. The respondents from the cultural groups belonging to the second cluster regarded this goal as being of moderate importance as far as their search for the ideal job was concerned. It is important to mention here

<sup>247</sup> This clarification also applies to the other work goals examined in this chapter.

<sup>248</sup> The "Ethnback2" variable allows us to discern variations within groups, when present, regarding Goal 2-Ind34. There were no meaningful variations in scores between the sub-groups making up the Indian group: "Indian/Christians" (4.3333), "Indian/nd" (4.1875) and "Hindus" (3.8333). But there were some variations in scores among the sub-groups comprising the Filipino group: "Filipino/nd" (4.6667), "Filipino/Christians" (4.5000) and "Filipino/Malays" (4.0000). The same was true regarding the sub-groups forming both the Arab and the US groups: "Arab/Muslims" (4.2791), "Arab/nd" (4.0000) and "Arab/Christians" (3.6000), and "US/Hispanic" (3.6667), "US/nd" (3.3333) and "US/Caucasians" (3.1000), respectively.

<sup>249</sup> The scores of the "Korean culture" group place it at the high end of the "very important" scale.

that the scores of all the culture groups belonging to the second cluster place them at the high end of the “of moderate importance” scale.

The most important point here is that only two collectivist culture groups, namely the “Japanese” and “Buddhist”, ranked Goal 2-Ind34 co-number one in overall value, and two other culture groups, namely, the “Korean” and “Germanic”, ranked this same goal as co-number two and co-number three in overall value respectively. The remaining seven culture groups ranked Goal 2-Ind34 from fifth to tenth in overall most important value.

There is also a high level endorsement of Goal 1-Ind33 among the respondents from most cultural groups. Three clusters of cultural groups can be discerned from the findings on Goal 1-Ind33 (see Table WG4.02).

Table WG4.02

Goal 1-Ind33<sup>250</sup>*(Q 44. Receiving feedback on performance.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Korean culture	5.0000	.0000
2 <sup>nd</sup> cluster	Buddhist culture	4.4000	.5477
	Germanic culture	4.3333	.5774
	Muslim culture	4.3088	.6049
	Hindu culture	4.1429	1.2150
	Confucian culture	4.1111	.7817
	Anglo culture	4.0294	.8699
	Christian Filipino	4.0000	.6325
	Latin culture	3.9091	.9439
3 <sup>rd</sup> cluster	Scandinavian culture	3.8000	.4472
	Shinto or Japanese	3.5000	1.7321

<sup>250</sup> The “Ethnback2” variable allows the observation of variations within groups, when present, regarding Goal 1-Ind33. There were no meaningful variations in scores among the sub-groups forming the Indian group: “Indian/nd” (4.5625), “Indian/Christians” (4.3333) and “Hindus” (4.0000). The same was true regarding the sub-groups forming the Filipino group: “Filipino/nd” (4.5000), “Filipino/Malays” and “Filipino/Christians” (4.0000). However, there were some variations in scores between “Arab/Muslims” (4.3488) and “Arab/nd” (4.0000) on the one hand, and “Arab/Christians” (3.8000) on the other. Concerning the sub-groups making up the US group, there were no meaningful variations in scores: “US/Caucasians” (3.8000), “US/Hispanics” and “US/nd” (3.3333).

The first cluster is made up only of the “Korean culture” group (5.0000). The respondents from this cultural group consider Goal 1-Ind33 a value of utmost importance concerning their search for an ideal job. It is important to stress here that Goal 1-Ind33 and Goal 2-Ind34 are ranked the first and second most important goals respectively by the respondents belonging to the Korean cultural group.

The respondents from the cultural groups in the second cluster consider Goal 1-Ind33 a very important value, or are leaning in that direction, regarding their search for an ideal job.

The third cluster is made up of the “Scandinavian culture” group (3.8000)<sup>251</sup> and the “Shinto or Japanese culture” group (3.5000). The respondents from the cultural groups in this cluster consider Goal 1-Ind33 a value merely of moderate importance concerning their search for the ideal job.

Again the important point here is that only the respondents from one collectivistic cultural group, namely the “Korean”, ranked Goal 1-Ind33 as their most important value regarding their search for the ideal job, and the respondents from another cultural group, namely the “Germanic”, ranked Goal 1-Ind33 third overall in value regarding their search for the ideal job. Most significant, though, is the fact that respondents representing seven culture groups (i.e. the “Hindu”, “Confucian”, “Buddhist”, “Muslim”, “Latin”, “Scandinavian” and “Anglo”) ranked Goal 1-Ind33 as falling between their fifth and seventh most important value. Only the respondents from two collectivistic cultural groups, namely, the “Shinto or Japanese” and the “Christian Filipino” respectively ranked Goal 1-Ind33 as their tenth and eleventh most important values regarding their search for the ideal job.

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<sup>251</sup> The scores of the “Scandinavian culture” group place it at the high end of the “of moderate importance” scale.

Concerning the findings on Goal 3-Ind35 (see Table WG4.00), three clusters of cultural groups can be discerned. Goal 3-Ind35 successfully discriminates the lower score of the “Scandinavian culture” group (2.8000) from those of the other cultural groups.<sup>252</sup> The “Scandinavian culture” group is the sole constituent of the third cluster.

Table WG4.03

Goal 3-Ind35<sup>253</sup>*(Q 46. Being informed of this organization's goals.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.5000	.5477
	Korean culture	4.2500	.9574
	Shinto or Japanese	4.2500	.5000
	Muslim culture	4.2059	.8022
	Buddhist culture	4.2000	.8367
	Germanic culture	4.0000	.0000
	Confucian culture	4.0000	1.0000
2 <sup>nd</sup> cluster	Latin culture <sup>254</sup>	3.7273	1.0090
	Anglo culture	3.5588	1.0207
	Hindu culture	3.4286	.7868
3 <sup>rd</sup> cluster	Scandinavian culture	2.8000	1.0954

The important point here is that respondents from eight cultural groups (i.e. the “Korean”, “Christian Filipino”, “Germanic”, “Muslim”,

<sup>252</sup> Table 5.1 ANOVA Tukey Post Hoc Pairwise comparisons, however, showed that Goal 3-Ind35 was significantly different for the “Scandinavian culture” group versus both the “Muslim” and the “Christian Filipino culture” groups, as well as for the “Anglo culture” group versus the “Muslim culture” group. Here the “Scandinavian” and “Anglo culture” groups, which are individualistic, registered lower scores than the “Muslim” and “Christian Filipino culture” groups, which are putatively collectivistic. It is important to mention here that the N for the “Scandinavian”, “Muslim”, “Christian Filipino” and “Anglo culture” groups were 5, 68, 6, and 34 respectively.

<sup>253</sup> The “Ethnback2” variable allows the discernment of variations within groups, when such are present, regarding Goal 3-Ind35. There were significant variations in scores between “Indian/Christians” (4.3333) and “Indian/nd” (4.0000) on the one hand, and “Hindus” (3.3333) on the other. There were also significant variations in scores between “Filipino/Christians” and “Filipino/nd” (4.5000) on the one hand, and “Filipino/Malays” (3.3333) on the other. The same was also true for the sub-groups comprising the Arab group: “Arab/Muslims” (4.2791), “Arab/nd” (3.9286) and “Arab/Christians” (3.4000). There were also some variations in scores among the sub-groups making up the US group: “US/Hispanics” (3.6667), “US/Caucasians” (3.2000) and “US/nd” (3.0000).

<sup>254</sup> The scores of the “Latin culture” group place it at the high end of the “of moderate importance” scale.



“Buddhist”, “Latin”, “Confucian” and “Anglo”) ranked Goal 3-Ind35 as being their fifth to ninth most important value in regard to their search for the ideal job. However, the respondents from the “Hindu” and “Scandinavian” culture groups respectively ranked Goal 3-Ind35 as their twelfth and fourteenth most important values concerning their search for an ideal job. The respondents representing the “Shinto or Japanese culture” group, by contrast, ranked Goal 3-Ind35 as co-number one most desirable value. In summary, Goals 1-Ind33, 2-Ind34, and 3-Ind35 were consistently ranked among the top seven values for four culture groups, and among the top nine for three culture groups.

The findings on Goals 1-Ind33, 2-Ind34, and 3-Ind35 could have only positive ramifications for aviation maintenance organisations because they show that AMTs and maintenance supervisors value being actively involved in the day-to-day operations of the workplace. Such involvement is a necessary ingredient for a productive and safety-conscious organisation. AMTs and maintenance supervisors who regard as ideal a job which involves them in the day-to-day operations of their companies are assets to aviation maintenance organisations.<sup>255</sup> Any aviation maintenance organisation willing to involve its employees in this way is likely to attract AMTs and maintenance supervisors who rank Goals 1-Ind33, 2-Ind34 and 3-Ind35 high in their priorities.

The findings on the Work Goals falling under the “Co-operation and co-ordination” category, by contrast, are likely to have mixed consequences for aircraft maintenance organisations, as will be shown later. The goals within this category are Goals 4, 5, 6 and 7, which have been framed to tap into issues of Individualism-Collectivism and Masculinity-Femininity. As

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<sup>255</sup> Perhaps such AMTs and maintenance supervisors should be more highly valued than those who accord priority to working for an organisation which gives them sufficient time for their personal/family life.

mentioned before, Individualism/Collectivism has to do with whether one's identity is defined by personal choices and achievements or by the character of the collective groups with which one is more or less permanently affiliated.<sup>256</sup> Hofstede (1980) conceptualised masculinity at the national level as an attribute of societies in which gender roles are clearly distinct, i.e. men are supposed to be assertive, tough, and focused on material success; while women are supposed to be modest, tender, and concerned with quality of life. Femininity, on the other hand, is attributed to societies in which gender roles overlap, and where there is great concern for quality of life. Hofstede (1991: 81) explains that the masculinity versus femininity dimension

“...was associated most strongly with the importance attached to:

For the ‘masculine’ pole:

1. Earnings. Have an opportunity for high earnings.
2. Recognition. Get the recognition you deserve when you do a good job.
3. Advancement. Have an opportunity for advancement to higher-level jobs.
4. Challenge. Have challenging work to do - work from which you can get a personal sense of accomplishment.

For the opposite, ‘feminine’ pole:

5. Manager. Have a good working relationship with your direct superior.
6. Cooperation. Work with people who cooperate well with one another.
7. Living area. Live in an area desirable to you and your family.

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<sup>256</sup> Triandis (1995:2) defines individualism as “a social pattern that consists of loosely linked individuals who view themselves as independent of collectives; are primarily motivated by their own preferences, needs, rights, and the contracts they have established with others; give priority to their personal goals over the goals of others; and emphasize rational analyses of the advantages and disadvantages of associating with others”. He also defines collectivism as a “social pattern consisting of closely linked individuals who see themselves parts of one or more collectives (family, co-workers, tribes, nation); are primarily motivated by the norms of, and duties imposed by, those collectives; are willing to give priorities to the goals of those collectives over their own personal goals, and emphasize their connectedness to members of those collectives”.

8. Employment security. Have the security that you will be able to work for your company as long as you want to”.<sup>257</sup>

Hofstede (1991: 82) states that the reason he settled on Work Goals along the Masculinity-Femininity continuum was that he found this dimension to be “*the only one on which the men and the women among the IBM employees scored consistently differently (except .... in countries at the extreme feminine pole)*”. (Italics in text). In Hofstede’s (1980) study the four countries ranked highest on the femininity scale were Sweden, Norway, the Netherlands and Denmark, while the countries ranking highest on the masculinity scale were Japan, Austria, Venezuela, Italy, Switzerland, Mexico, Ireland, Jamaica, Great Britain, Germany, the Philippines, Columbia, South Africa, Ecuador, USA, Australia, Greece, Hong Kong, Argentina, India, Belgium, Arab countries and Canada, with Japan being the highest and Canada the lowest. Most of these countries are part of Latin America, continental Europe, North America and the Arab Middle East.

Three clusters of cultural groups can be discerned from the findings on Goal 5-Ind23 (see Table WG4.04 below).

The respondents belonging to the first three cultural groups in the first cluster lean towards considering Goal 5-Ind23 a very important value. The respondents from the latter cultural groups in the second cluster seem to consider Goal 5-Ind23 a moderately important value.

The third cluster, which is made up only of the “Shinto or Japanese culture” group (2.7500), considers Goal 5-Ind23 a value of little importance regarding their search for the ideal job. Goal 5-Ind23, therefore, successfully discriminates the lower score of the “Shinto or Japanese culture” group from those of the other cultural groups. However, this

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<sup>257</sup> Hofstede (1991: 82) points out that “Challenge” is also associated with the individualism dimension.

discrimination is not at an alpha .05 level, and therefore the differences observed on this item may be attributed to chance.

Table WG4.04

Goal 5-Ind23<sup>258</sup>*(Q 48. Having other groups plan and co-ordinate their activities with my group.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Korean culture	3.7500	.5000
	Latin culture	3.6364	.6742
	Muslim culture	3.6324	.8794
	Anglo culture	3.4706	.9609
	Germanic culture	3.3333	.5774
	Christian Filipino	3.3333	1.3663
2 <sup>nd</sup> cluster	Scandinavian culture	3.2000	.4472
	Buddhist culture	3.2000	1.4832
	Confucian culture	3.1111	1.0541
	Hindu culture	3.0000	1.1547
3 <sup>rd</sup> cluster	Shinto or Japanese	2.7500	1.2583

The important point here is that respondents belonging to all cultural groups ranked Goal 5-Ind23 consistently between the thirteenth and sixteenth most important value for them concerning their search for an ideal job. However, respondents from three of these culture groups, namely, the “Germanic”, “Buddhist” and “Shinto or Japanese”, actually ranked Goal 5-Ind23 as the least important value. This shows that Goal 5-Ind23 was not important for respondents across the cultural groups surveyed here, whether individualistic or collectivistic.

<sup>258</sup> The “Ethnback2” variable allows the observation of variations within groups, when present, regarding Goal 5-Ind23. There were some variations in scores among the sub-groups associated with the Indian group: “Indian/nd” (3.5625), “Indian/Christians” (3.3333) and “Hindus” (3.0000). This was also true for the sub-groups comprising the Filipino group: “Filipino/nd” (3.7500), “Filipino/Christians” (3.3333) and “Filipino/Malays” (3.0000). But there were no significant variations in scores among the sub-groups forming the Arab group: “Arab/Christians” (3.8000), “Arab/Muslims” (3.6512) and “Arab/nd” (3.5625). By contrast, there were significant variations in scores between “US/Hispanics” (3.6667) and “US/Caucasians” (3.2000) on the one hand, and “US/nd” (2.6667) on the other.

Based on the findings on Goal 4-Ind22 (see Table WG4.05), two cluster groups can be discerned.

Table WG4.05

Goal 4-Ind22<sup>259</sup>*(Q 47. Having other groups act as if they share my own group's goals.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Germanic culture	4.0000	.0000
	Buddhist culture	4.0000	1.0000
	Korean culture	3.7500	.9574
	Latin culture	3.7273	.7862
	Muslim culture	3.6029	.9327
	Scandinavian culture	3.6000	.5477
	Shinto or Japanese	3.5000	.5774
	Christian Filipino	3.5000	1.0488
2 <sup>nd</sup> cluster	Anglo culture	3.2059	.9464
	Confucian culture	3.1111	1.2693
	Hindu culture	2.8571	1.3452

The respondents from most of the cultural groups in the first cluster consider Goal 4-Ind22 a very important value, or, at least, are leaning in that direction.

The respondents associated with these culture groups in the second cluster consider Goal 4-Ind22 a value of little importance, or lean in that direction.

The important point here is that respondents belonging to all culture groups represented here consistently rank Goal 4-Ind22 between eighth and sixteenth most important value concerning their search for the ideal job. It

<sup>259</sup> The "Ethnback2" variable allows us to observe variation within groups, when variations are present, regarding Goal 4-Ind22. There were no significant variations in scores among the sub-groups making up the Indian group: "Indian/nd" and "Indian/Christians" (3.0000) on the one hand, and "Hindus" (2.6667) on the other. The same was true regarding the sub-groups comprising the Filipino and Arab groups: "Filipino/Christians" (3.5000), "Filipino/nd" (3.0833) and "Filipino/Malays" (3.0000), and "Arab/Christians" (3.6000), "Arab/Muslims" (3.5814) and "Arab/nd" (3.5714). But there were significant variations in scores among the sub-groups making up the US group: "US/Hispanics" (4.0000), "US/nd" (3.0000) and "US/Caucasians" (2.6000).

is important to mention here that respondents from two of these culture groups, namely, the “Muslim” and the “Hindu”, considered Goal 4-Ind22 the least important value.

Regarding Goal 6-Ind24, two clusters of cultural groups can be discerned from the findings on this goal (see Table WG4.06).

Table WG4.06

## Goal 6-Ind24

*(Q 49. Having subordinates voice concerns about the organization's goals.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Shinto or Japanese	4.2500	.5000
	Germanic culture	4.0000	1.0000
	Christian Filipino	3.8333	1.1690
2 <sup>nd</sup> cluster	Muslim culture	3.7206	.8612
	Hindu culture	3.7143	.9512
	Confucian culture	3.6667	.7071
	Buddhist culture	3.6000	1.6733
	Anglo culture	3.5588	.7859
	Scandinavian culture	3.4000	.5477
	Korean culture	3.2500	.9574
	Latin culture	3.0909	.9439

The respondents from these three cultural in the first cluster groups consider Goal 6-Ind24 a very important value, or at least show such an inclination. The respondents from the first four culture groups of the second cluster seem inclined to regard Goal 6-Ind24 as a very important value, while the respondents from the remaining cultural groups consider Goal 6-Ind24 merely to be a moderately important value as far as their quest for an ideal job was concerned.<sup>260</sup>

<sup>260</sup> The “Ethnback2” variable permits the discernment of variations within groups, when present, concerning Goal 6-Ind24. There were some variations in scores among the sub-groups forming the Indian group: “Hindus” (3.6667), “Indian/nd” (3.1250) and “Indian/Christians” (3.0000). However, there were significant variations in scores among the sub-groups making up the Filipino group: “Filipino/Christians” (3.8333), “Filipino/nd” (3.7500) and “Filipino/Malays” (2.3333). Among the sub-groups comprising the Arab group, there were some variations in scores: “Arab/Christians” (3.8000), “Arab/Muslims” (3.6977) and “Arab/nd” (3.2857). But there were no variations in scores among the sub-groups making up the US group: “US/Hispanics” (3.3333), “US/Caucasians” (3.2000) and “US/nd” (3.0000).

The most important point is that respondents from eight cultural groups (i.e. the “Muslim”, “Confucian”, “Hindu”, “Scandinavian”, “Christian Filipino”, “Korean”, “Latin” and “Buddhist”) ranked Goal 6-Ind24 as their tenth to fourteenth most important value. Only the respondents from three other cultural groups accorded Goal 6-Ind24 a higher value. These were the “Anglo” (ninth), the “Germanic” (seventh) and the Japanese (co-number one).

Finally, concerning Goal 7-MAS1, three clusters of cultural groups can be discerned based on the findings for this Goal (see Table WG4.07 below).

The first cluster is made up of the “Christian Filipino culture” group (4.8333) and the “Scandinavian culture” group (4.8000), whose AMTs and maintenance supervisors seem to be inclined towards regarding Goal 7-MAS1 as a value of utmost importance.<sup>261</sup>

The respondents from the cultural groups belonging to the second cluster consider Goal 7-MAS1 a very important value, or, at least, are inclined to do so. The third cluster includes only the “Germanic culture” group (3.6667). The respondents from this cultural group also seem inclined to consider Goal 7-MAS1 a very important value.

The important point here is that while respondents from the “Scandinavian” and “Christian Filipino culture” groups ranked Goal 7-MAS1 as co-number one overall value, respondents belonging to the other cultural groups ranked Goal 7-MAS1 as their sixth to thirteenth most important value regarding their search for an ideal job.

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<sup>261</sup> By looking at the mean scores alone, the conclusion would be reached that these two cultural groups belong to the extreme feminine pole. The finding about the Scandinavian culture group is in line with Hofstede's (1980) findings, but that about the “Christian Filipino” culture group apparently is not. The reason is that the Philippines rank eleventh overall in Hofstede's (1980) masculinity index values. But Hofstede's (1980) study was looking at the Philippines in general. This study, by contrast, treats three Filipino ethnic groups separately, and observes the following differences: “Christian Filipinos” (4.8333), “Filipino/nd” (4.0833) and “Filipino/Malays” (2.6667). If we were to tabulate the scores of both the Filipino/Malays and the Filipino/Christians together, then the score for the Filipino group as a whole on the Masculinity-Femininity index would be much closer to that of Hofstede.

Table WG4.07

Goal 7-MAS1<sup>262</sup>*(Q 50. Working with team members who maintain good interpersonal relationships with each other.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.8333	.4082
	Scandinavian culture	4.8000	.4472
2 <sup>nd</sup> cluster	Korean culture	4.2500	.5000
	Muslim culture	4.1471	.8511
	Confucian culture	4.1111	.7817
	Latin culture	4.0909	.8312
	Hindu culture	4.0000	.5774
	Anglo culture	3.9412	.6937
	Buddhist culture	3.8000	1.0954
	Shinto or Japanese <sup>263</sup>	3.7500	.5000
3 <sup>rd</sup> cluster	Germanic culture	3.6667	1.1547

The findings on Goals 4, 5, 6, and 7 may have mixed consequences for aviation maintenance organisations. The findings on Goal 5-Ind23, for example, may be disturbing for aircraft maintenance organisations because AMTs and maintenance supervisors from most cultural groups regarded the important issue of group co-ordination of activities a very unimportant value regarding finding an ideal job.<sup>264</sup> Likewise, the findings on Goal 6-Ind24 do not bode well for maintenance organisations because AMTs and maintenance supervisors representing most cultural groups did not consider

<sup>262</sup> The "Ethnback2" variable permits us to observe variations within groups, when present, regarding Goal 7-MAS1. There were significant variations in scores between "Indian/Christians" (4.3333) and "Hindus" (4.0000) on the one hand, and "Indian/nd" (3.7500) on the other. The variations in scores were even more significant concerning the sub-groups making up the Filipino group: "Filipino/Christians" (4.8333), "Filipino/nd" (4.0833) and "Filipino/Malays" (2.6667). However, there were no significant variations in scores between the sub-groups forming the Arab group: "Arab/Christians" (4.4000), "Arab/Muslims" (4.1860) and "Arab/nd" (4.0714). The variations in scores were highly significant for the sub-groups making up the US group: "US/Hispanics" (5.0000), "US/Caucasians" (4.1000) and "US/nd" (3.6667).

<sup>263</sup> Even though the "Shinto or Japanese culture" group ranks second to last the importance it attributes to Goal 7-MAS1, that score should actually be much lower, because Hofstede (1980) found Japan to be the most masculine country in the world. The reason why Japan's score regarding Goal 7-MAS1 was not as low as might have been expected was the small number of Japanese responses.

<sup>264</sup> The ideal profile for this is that of the (theoretical) collectivists. The findings on Goal 5-Ind23 support the claim that AMTs and maintenance supervisors are, as a group, more individualistic than, for example, airline pilots from the same countries.



the idea of subordinates' expressions of concern about the organisation's goals to be an important value. The exception to this trend was the Japanese cultural group. In summary, aviation maintenance personnel who value subordinates' expressions of concern about the organisation's goals are likely to be active employees and consequently, safety-conscious employees.

The findings on Goal 4-Ind22, by contrast, may bode well for aviation maintenance organisations, because none of the respondents from any cultural groups seemed inclined to consider as an important value for their ideal job the proposition that other groups should act as if they shared their own groups' goals. This may mean that these AMTs and maintenance supervisors want genuine sharing of goals, when these are possible, and not group conformity for its own sake.<sup>265</sup>

The findings on Goal 7-MAS1 may also have positive ramifications for aviation maintenance organisations because they show that AMTs and maintenance supervisors from most cultural groups have realistic expectations as far as interpersonal relationships are concerned. The very fact that these AMTs and maintenance supervisors did not regard good interpersonal relationships in the workplace as an important value as far as their search for the ideal job was concerned shows that they were realistic on the issue of interpersonal relationships in the workplace. However, the "Christian Filipino" and "Scandinavian culture" groups proved to be the exception to this trend.

The analysis of the Work Goals included within the category of "A fulfilling job and a warm relationship with my direct bosses" would demonstrate the possibility that these goals might be congruent with work productivity. Goal 12-Ind28 was framed to tap into an issue related to individualism; Goal 13-Ind29 was framed to tap into issues related to both

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<sup>265</sup> Sharing of goals by group is important for safety, and this is usually the preference of collectivists.

individualism and masculinity; while Goal 11-MAS3 was framed to tap into an issue related mainly to masculinity.<sup>266</sup>

As explained previously, a fulfilling job which allows one to have considerable freedom to adopt one's approach to the job reflects the aspiration of individualists. However, the findings on Goal 12-Ind28 indicate that even some putatively collectivistic respondents registered that aspiration as well.

Regarding Goal 12-Ind28 (see Table WG4.08 below), the findings describe two clusters of cultural groups.

The respondents from the cultural groups belonging to the first cluster consider Goal 12-Ind28 a very important value, or at least, showed such an inclination, concerning their "wish list" for an ideal job. The respondents of the second cluster associated with those culture groups consider Goal 12-Ind28 to be only a moderately important value.

As with the previous goals, the mean scores tell only part of the story.<sup>267</sup> The other, and equally important, part is told by the ranking order of the goals, or "wish lists" of the AMTs and maintenance supervisors regarding their ideal jobs. Respondents belonging to all cultural groups ranked Goal 12-Ind28 from their sixth to their thirteenth most important value concerning their search for an ideal job. This outcome shows that Goal 12-Ind28 is not high on the "wish lists" of the respondents.

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<sup>266</sup> It is important to mention here that Work Goal 13-Ind29 is in the best composite predictors of Hofstede's (1980) Ind and MAS country scores, while Goal 11-MAS3 is in the best composite predictors of Hofstede's (1980) country scores for MAS.

<sup>267</sup> Regarding Goal 12-Ind28, the mean scores, for example, alert us to the fact that the "Anglo" and "Scandinavian culture" groups unexpectedly rank lower than six putatively collectivist cultural groups on an item that was framed to tap into individualism. The simple explanation for this discrepancy (as well as for previous ones) may be the small sample size concerning most cultural groups in this study.

Table WG4.08

Goal 12-Ind28<sup>268</sup>*(Q 55. Working in a place where I can have considerable freedom to adopt my own approach to the job.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.1667	.7528
	Hindu culture	4.1429	.6901
	Buddhist culture	4.0000	1.0000
	Germanic culture	4.0000	.0000
	Shinto or Japanese	3.7500	.5000
	Korean culture	3.7500	.9574
	Muslim culture	3.7059	.8649
2 <sup>nd</sup> cluster	Anglo culture	3.5588	.7464
	Latin culture	3.4545	.9342
	Scandinavian culture	3.4000	.8944
	Confucian culture	3.1111	1.2693

Regarding Goal 13-Ind29 (see Table WG4.09 below), the findings allow us to discern two clusters of cultural groups.

The first cluster is made up of the “Buddhist”, “Hindu”, “Latin”, “Christian Filipino” and the “Confucian culture” group. The respondents associated with these culture groups considered Goal 13-Ind29 a very important value. The respondents from most of the cultural groups in the second cluster lean towards regarding Goal 13-Ind29 as a very important value concerning their quest for an ideal job.

<sup>268</sup> The “Ethnback2” variable permits us to discern variations within groups, when present, regarding Goal 12-Ind28. There were significant variations in scores between the sub-groups comprising the Indian group: “Hindus” (4.1667), “Indian/nd” (3.9375) and “Indian/Christians” (1.6667). But there were no significant variations in scores between the sub-groups making up the Filipino group: “Filipino/Christians” (4.1667), “Filipino/Malays” and “Filipino/nd” (3.6667). The same was true regarding constituent sub-groups of the Arab group: “Arab/Muslims” (3.5814), “Arab/nd” (3.5714) and “Arab/Christians” (3.4000). There were, however, significant variations in scores between the sub-groups forming the US group: “US/Hispanics” (3.6667), “US/Caucasians” (3.3000) and “US/nd” (2.3333).

Table WG4.09

Goal 13-Ind29<sup>269</sup>

(Q 56. Working for an organization which offers me challenging tasks, from which I can get a personal sense of accomplishment.)

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Buddhist culture	4.6000	.5477
	Hindu culture	4.2857	.7559
	Latin culture	4.2727	.7862
	Christian Filipino	4.1667	.7528
	Confucian culture	4.1111	.7817
2 <sup>nd</sup> cluster	Anglo culture	4.0000	.8165
	Germanic culture	4.0000	.0000
	Muslim culture	3.9706	.8973
	Shinto or Japanese	3.7500	.5000
	Scandinavian culture	3.6000	.5477
	Korean culture	3.5000	.5774

The mean scores only tell us that respondents from different culture groups adhere to different degrees of individualism and masculinity on Goal 13-Ind29. However, the ranking order of the Work Goals tells us that respondents belonging to nine cultural groups (i.e. the “Latin”, “Hindu”, “Confucian”, “Anglo”, “Shinto or Japanese”, “Germanic”, “Christian Filipino”, “Scandinavian” and “Muslim”) ranked Goal 13-Ind29 from fourth to ninth in importance. But this order also reveals that respondents associated with the “Buddhist culture” group ranked it co-number one, while respondents from the “Korean culture” group ranked it thirteenth on the most important value regarding their search for the ideal job. These findings indicate that respondents from most cultural groups assign greater

<sup>269</sup> The “Ethnback2” variable permits the observation of variations within groups, when present, regarding Goal 13-Ind29. There were significant variations in scores between the “Indian/nd” (4.4375) and “Hindus” (4.3333) on the one hand, and “Indian/Christians” (3.3333) on the other. The variations in scores between the sub-groups forming the Filipino group were almost as significant as those for the Indian group: “Filipino/Christians” (4.1667), “Filipino/nd” (3.9167) and “Filipino/Malays” (3.3333). But there were no significant variations in scores between the sub-groups making up the Arab group: “Arab/Muslims” (3.7907), “Arab/nd” (3.5000) and “Arab/Christians” (3.4000). As for the sub-groups comprising the US group, there were significant variations in scores between “US/Hispanics” (4.0000) and “US/Caucasians” (3.9000) on the one hand, and “US/nd” (3.3333) on the other.

importance to working for an organisation which offers them challenging tasks, from which they could obtain a personal sense of accomplishment, than working for a company which allows them to adopt their own approaches to the job.<sup>270</sup>

Goal 11-MAS3 is in the best composite predictors of Hofstede's (1980) country scores for MAS. Four clusters of culture groups can be discerned from the findings on Goal 11-MAS3 (see Table WG4.10).

Table WG4.10

Goal 11-MAS3<sup>271</sup>*(Q 54. Working in a place where I can develop a warm relationship with my direct bosses.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.1667	1.1690
	Hindu culture	4.1429	1.0690
	Germanic culture	4.0000	.0000
2 <sup>nd</sup> cluster	Muslim culture	3.6176	1.1594
	Buddhist culture	3.6000	1.5166
	Korean culture	3.5000	1.2910
	Confucian culture	3.3333	1.0000
	Shinto or Japanese <sup>272</sup>	3.2500	1.5000
3 <sup>rd</sup> cluster	Anglo culture	3.0882	.9651
	Latin culture	2.6364	1.0269
4 <sup>th</sup> cluster	Scandinavian culture	2.4000	.8944

<sup>270</sup> Both of these alternatives tend to suit individualists.

<sup>271</sup> The "Ethnback2" variable permits the observation of variations within groups, when present, regarding Goal 11-MAS3. There were highly significant variations in scores among the sub-groups forming the Indian group: "Hindus" (4.1667), "Indian/nd" (3.3750) and "Indian/Christians" (2.0000). There were also significant variations in scores between "Filipino/Christians" (4.1667) on the one hand, and "Filipino/nd" and "Filipino/Malays" (3.3333) on the other. But there were no significant variations in scores among the sub-groups comprising the Arab group: "Arab/Christians" (3.8000), "Arab/nd" (3.7143) and "Arab/Muslims" (3.6977). As for the sub-groups making up the US group, there were significant variations in scores between them: "US/Caucasians" (3.0000), "US/Hispanics" (2.6667) and "US/nd" (1.6667).

<sup>272</sup> The scores of the "Muslim" and "Buddhist culture" groups place them at the higher end of the "of moderate importance" scale.

The first cluster is made up of the “Christian Filipino culture” group (4.1667), the “Hindu culture” group (4.1429) and the “Germanic culture” group (4.0000). The respondents from these cultural groups regard working in a setting where they could develop warm relationships with their bosses to be a very important value. The culture groups in the second cluster consider developing warm relationships with their bosses only a moderately important value regarding their search for the ideal job. However, there are two clusters of respondents for whom this value is even lower on their wish list. These are 1) the third cluster, formed by the respondents from the “Anglo culture” group (3.0882) and the “Latin culture” group (2.6364), and 2) the fourth cluster, consisting solely of respondents from the “Scandinavian culture” group (2.4000).

The mean scores tell us that many of the findings on Goal 11-MAS3 contradict Hofstede’s (1980) results.<sup>273</sup> The most glaring differences are found at the opposite end of the results sheet on Goal 11-MAS3, which assesses the “Christian Filipino”, the “Hindu” and the “Germanic culture” groups as the most feminine of the cultural groups studied, and the “Scandinavian culture” group as the least feminine.<sup>274</sup>

The ranking order of the Work Goals tells us that respondents from nine cultural groups, namely the “Confucian”, “Shinto or Japanese”, “Korean”, “Buddhist”, “Scandinavian”, “Anglo”, “Muslim”, “Latin” and “Christian Filipino”, ranked Goal 11-MAS3 between their eleventh and

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<sup>273</sup> It is important to emphasise here that the flawed data at the researcher’s disposal notwithstanding, this study and Merritt (1996) reached different conclusions regarding Goal 11. Merritt (1996: 136) indicates that this was the only item which did not load on any factor in her study. By contrast, Goal 11-MAS3 did load in this study, as discussed in the “factor analysis” section.

<sup>274</sup> The sample size here is the most probable explanation for these anomalies.

sixteenth most important values.<sup>275</sup> Only the respondents from the remaining two cultural groups, namely, the “Hindu” and “Germanic”, ranked Goal 11-MAS3 as their seventh most important value. These findings indicate that respondents from most cultural groups place working in a setting where they could develop warm relationships with their direct bosses low on their ideal job “wish lists”.<sup>276</sup>

The findings on Goals 11-MAS3, 12-Ind28 and 13-Ind29 generally may have positive ramifications for aviation maintenance organisations. This is the case because AMTs and maintenance supervisors from many cultural groups valued finding a job that was fulfilling for them, and one which offered them challenging tasks to complete. People who think in this fashion tend to be creative, and probably productive as well, since they find the job challenging and enjoyable.

People seeking as an ideal job one that will give them considerable freedom to adopt their own approaches to the task at hand could be both assets and liabilities to aviation maintenance organisations. The reason for this is that while aviation maintenance does not need robot-like AMTs, they certainly do not need AMTs who freelance all the time, and who act independently of their team.<sup>277</sup> The findings on Goal 12-Ind28 do not point to AMTs being liabilities for the aviation maintenance organisations employing them simply because they have chosen a median position,

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<sup>275</sup> It is important to specify here that the AMTs and maintenance supervisors of four of these eight cultural groups (i.e. the “Scandinavian”, “Anglo”, “Muslim” and “Latin”) ranked Goal 11-MAS3 as their fifteenth, or next to last, most important value. When we add the AMTs and maintenance supervisors from the “Christian Filipino culture” group who ranked Goal 11-MAS3 sixteenth in their wish list, then we have AMTs and maintenance supervisors from almost half of the cultural groups surveyed considering Goal 11-MAS3 to be their least important value concerning their quest for the ideal job.

<sup>276</sup> Goal 11-MAS3 was considered an even less important value in comparison to Goal 13-Ind29, and Goal 12-Ind28, which also ranked low on the “wish lists” of the AMTs and maintenance supervisors from most of the cultural groups surveyed here.

<sup>277</sup> Such an ultra-independent attitude could be detrimental to group cohesiveness and harmony.

because such a position does not render them inclined to constant freelancing, or to acting independently of their team.

However, aviation maintenance organisations may have a problem with AMTs whose ideal job would entail working in a place where they could develop a warm relationship with their direct bosses.<sup>278</sup> A warm relationship between employees and bosses is not vital to an organisation, but a respectful relationship is. The low level of importance that AMTs and maintenance supervisors assigned to this value augurs well for aviation maintenance organisations.

Goals 9-Ind25, 8-MAS2, and 10-Ind26 fall within the category of “Job security and opportunity for career advancement”. These goals are associated with masculine collectivists.

Regarding Goal 9-Ind25(see Table WG4.11 below), the findings discern two clusters of culture groups.

The respondents from the cultural groups belonging to these two clusters seem either to be inclined towards considering Goal 9-Ind25 to be a very important value, or to consider it outright a very important value.

These findings show a near cross-cultural consensus on the value of “job security” (Goal 9-Ind25) which respondents from all culture groups seem to consider very important as far as their ideal job is concerned.<sup>279</sup> The ranking order of the work goals also conveys the importance of this value to respondents belonging to all cultural groups, and likewise tells us that respondents from nine cultural groups consistently ranked Goal 9-Ind25 between their first and fifth most important value on their ideal job “wish list”. Specifically, respondents from three cultural groups (i.e. the

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<sup>278</sup> It is unlikely that such an aspiration could ever be met, or for that matter, expressed in individualistic societies.

<sup>279</sup> It is important to emphasise here that these AMTs and maintenance supervisors belong to both putatively collectivistic and individualistic culture groups.



“Confucian”, “Buddhist” and “Christian Filipino”) ranked Goal 9-Ind25 their number one or co-number one value, while respondents from three other cultural groups (i.e. the “Muslim”, “Germanic” and “Anglo”) ranked this goal as their third most important value. Moreover, respondents from three other culture groups, (i.e. the “Scandinavian”, “Latin” and “Hindu”) ranked Goal 9-Ind25 as their fourth most important value, while respondents from the remaining two cultural groups, (i.e. the “Shinto or Japanese” and “Korean”) ranked this goal their fifth most important value on their ideal job “wish list”.

Table WG4.11

Goal 9-Ind25<sup>280</sup>*(Q 52. Working for an organization which offers job security.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Confucian culture	4.8889	.3333
	Christian Filipino	4.8333	.4082
	Scandinavian culture	4.6000	.5477
	Buddhist culture	4.6000	.5477
	Muslim culture	4.5000	.8011
	Anglo culture	4.4412	.6126
	Hindu culture	4.4286	.7868
2 <sup>nd</sup> cluster	Germanic culture	4.3333	.5774
	Latin culture	4.2727	.7862
	Korean culture	4.2500	.5000
	Shinto or Japanese	4.0000	1.1547

In contrast to Goal 9-Ind25, there is no near cross-cultural consensus on Goal 8-MAS2. But respondents from nine out of the eleven cultural

<sup>280</sup> The “Ethnback2” variable allows the observation of variations within groups, when present, regarding Goal 9-Ind25. There were significant variations in scores between “Indian/Christians” (5.0000) and “Indian/nd” (4.7000) on the one hand, and “Hindus” (4.3333) on the other. There were also significant variations in scores between the sub-groups making up the Filipino group: “Filipino/Christians” (4.8333), “Filipino/Malays” (4.6667) and “Filipino/nd” (4.0833). But there were no significant variations in scores between the sub-groups comprising the Arab group: “Arab/Christians” (4.8000), “Arab/Christians” (4.6279) and “Arab/nd” (4.5000). As for the sub-groups forming the US group, there were significant variations in scores between “US/nd” (4.3333) and “US/Caucasians” (4.3000) on the one hand, and “US/Hispanics” (3.3333) on the other.

groups studied here regarded working for an organisation which offers them opportunities to advance in their careers and to have high earnings a very important value. It is significant to mention here that Goal 8-MAS2 is a Hofstede item for the MAS index, and is part of the best composite predictor of Hofstede's (1980) country scores for MAS.

Two clusters of cultural groups can thus be discerned on the basis of the findings on Goal 8-MAS2 (see Table WG4.12).

Table WG4.12

## Goal 8-MAS2

*(Q 51. Working for an organization which offers opportunities for advancement, and high earnings.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.8333	.4082
	Scandinavian culture	4.8000	.4472
	Latin culture	4.6364	.6742
	Muslim culture	4.5735	.6305
	Hindu culture	4.5714	.5345
	Confucian culture	4.4444	.7265
	Anglo culture	4.3529	.8121
	Germanic culture	4.3333	.5774
2 <sup>nd</sup> cluster	Buddhist culture	4.0000	1.2247
	Korean culture	3.7500	1.8930
	Shinto or Japanese	3.5000	.5774

The respondents from the cultural groups belonging to the first cluster either outrightly considered Goal 8-MAS2 to be a very important goal or, at least, were so inclined.

The respondents in the second cluster associated with these cultural groups form a mixed group, whose valuations range from very important to moderately important regarding this goal.<sup>281</sup>

<sup>281</sup> It is important to mention here that Merritt (1996: 136) found no significant group differences on item 59 of her questionnaire (which is similar to Goal 8-MAS2 in this study), though she added that the Swiss respondents constituted the only group with a negative z-score.

The group mean scores convey the importance of Goal 8-MAS2 to respondents from most cultural groups. The ranking order of the Work Goals, too, conveys this tendency. The important finding regarding the ranking order of the Work Goals is not that respondents from all cultural groups consistently ranked Goal 8-MAS 2 between their first and tenth most important value, but that respondents from eight cultural groups (i.e. the “Christian Filipino”, “Scandinavian”, “Latin”, “Hindu”, “Muslim”, “Germanic”, “Anglo” and “Confucian”) ranked Goal 8-MAS2 between their first and their fourth most important value. The remaining three culture groups (“Korean”, “Buddhist” and “Japanese”), ranked Goal 8-MAS2 between their eighth and tenth most important value concerning the search for their ideal job.

Findings on Goal 10-Ind26 also indicate support of the thrust of this goal, with respondents’ expressions of support ranging from “moderately important” to “very important”. Two clusters of cultural groups can be discerned from the findings on Goal 10-Ind26 (see Table WG4.13 below).

The first cluster group, made up of the “Christian Filipino”, “Korean”, “Buddhist” and “Scandinavian culture” groups, ranked Goal 10-Ind26 as a very important value.

The respondents from the cultural groups belonging to the second cluster reflected a tendency towards considering Goal 10-In26 to be a very important value, or only considered this goal moderately important to their search for an ideal job.

The group mean scores do not show that Goal 10-Ind26 was as important to the respondents from most cultural groups as Goals 8-MAS2, and 9-Ind25 were. The ranking order of the Work Goals conveys this

tendency. Indeed, respondents from all cultural groups consistently ranked Goal 10-Ind26 between their fifth and thirteenth most important value.<sup>282</sup>

Table WG4.13

Goal 10-Ind26<sup>283</sup>

*(Q 53. Working for an organization where the group's achievements are valued over individuals' successes.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.5000	.5000
	Korean culture	4.2500	1.5000
	Buddhist culture	4.0000	1.2247
	Scandinavian culture	4.0000	.7071
2 <sup>nd</sup> cluster	Shinto or Japanese	3.7500	.5000
	Muslim culture	3.7206	.9596
	Germanic culture	3.6667	.5774
	Anglo culture	3.5294	.7481
	Confucian culture	3.4444	.7265
	Hindu culture	3.4286	.9759
	Latin culture	3.3636	1.3618

Goals 8-MAS2, 9-Ind25 and 10-Ind26 specifically deal with the two issues of “Job security and opportunity for career advancement” and “Measurement of achievement”. The findings on these goals mainly have a bearing on a company’s recruitment policy, since they provide information for companies as to what AMTs and maintenance supervisors from various cultural groups consider to be important values. Above all, the findings

<sup>282</sup> This finding could be interpreted to mean that AMTs and maintenance supervisors from most cultural groups are not keen to work for organisations where the group’s achievements are valued over individuals’ successes. This inclination fits into the profile of individualists, and the putatively collectivistic respondents’ failure to embrace that inclination buttresses the argument that AMTs are, as a professional group, more individualistic than are pilots from the same countries.

<sup>283</sup> The “Ethnback2” variable allows us to discern variations within groups, when present, regarding Goal 10-Ind26. There were significant variations of scores between “Indian/Christians” (4.6666) on the one hand, and “Indian/nd” (3.5625) and “Hindus” (3.5000) on the other. There were also significant variations in scores between “Filipino/Christians” (4.5000) and “Filipino/Malays” (4.3333) on the one hand, and “Filipino/nd” (3.6667) on the other. In contrast, there were no significant variations in scores for the sub-groups comprising the Arab group: “Arab/Muslims” (3.7907), “Arab/Christians” (3.4000) and “Arab/nd” (3.2857). As for the sub-groups making up the US groups, there were significant variations in scores between “US/Caucasians” (3.4000) and “US/Hispanics” (3.0000) on the one hand, and “US/nd” (2.6667) on the other.

show that AMTs and maintenance supervisors from all cultural groups, collectivistic and individualistic alike, want job security and opportunities for advancement and high earnings.<sup>284</sup>

Goals 14-Ind30 and 15-Ind31 fall within the “A caring company” category. Both of these goals were written to tap into issues related to individualism. As explained before, collectivists expect a company to care for its employees, while individualists expect the company they work for to provide them with ample time for personal and/or family life.

Goal 14-Ind30 is considered to be one of two items identified as the best composite predictor of Hofstede’s (1980) Ind country score. Findings on this goal show that respondents from most cultural groups value having sufficient time for personal and/or family life. Indeed, respondents from nine out of eleven cultural groups generally considered sufficient time for personal and/or family life to be a very important value as far as their ideal job was concerned.

Three clusters of cultural groups can be discerned based on the findings on Goal 14-Ind30 (see Table WG4.14 below).

The first cluster shows the cultural groups whose members regard sufficient time for personal and/or family life to be a very important value.

The second cluster includes only the “Christian Filipino culture” group (3.8333). The respondents from this cultural group seem to lean towards considering Goal 14-Ind30 to be a very important value. The third cluster has only the “Shinto or Japanese” cultural group (3.0000) as a constituent. The respondents from the “Shinto or Japanese culture” group seemed merely to regard Goal 14-Ind30 as a moderately important value on their ideal job “wish list”. Goal 14-Ind30, in fact, successfully discriminates

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<sup>284</sup> The literature on individualism and collectivism emphasises that it is collectivists who consider job security important.

the low score of the “Japanese culture” group from those of the remaining cultural groups surveyed here.<sup>285</sup>

Table WG4.14

Goal 14-Ind30<sup>286</sup>

*(Q 57. Working for an organization which gives me sufficient time for personal/family life.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Germanic culture	4.6667	.5774
	Confucian culture	4.6667	.5000
	Scandinavian culture	4.6000	.5477
	Hindu culture	4.5714	.7868
	Anglo culture	4.5588	.5609
	Latin culture	4.5455	.6876
	Korean culture	4.5000	.5774
	Buddhist culture	4.4000	.8944
	Muslim culture <sup>287</sup>	4.3971	.7153
2 <sup>nd</sup> cluster	Christian Filipino	3.8333	.9832
3 <sup>rd</sup> cluster	Shinto or Japanese	3.0000	1.4142

As expected, AMTs and maintenance supervisors associated with individualistic cultures consider sufficient time allotments for personal and/or family life to be a very important value on their ideal job “wish list”. The “Anglo” and “Germanic culture” groups ranked Goal 14-Ind30 as their number one overall value, and the “Scandinavian culture” group ranked it as their fourth overall value. Commenting on this item as it pertained to her

<sup>285</sup> Table 5.1 ANOVA Tukey Post Hoc Pairwise comparisons show that Goal 14-Ind30 was an item on which the “Japanese” differed significantly from the “Anglo”, “Scandinavian”, “Muslim”, “Latin”, “Confucian” and “Hindus” culture groups.

<sup>286</sup> The “Ethnback2” variable allows observation of variations within groups, when present, regarding Goal 14-Ind30. There were significant variations in scores between “Hindus” (4.5000) and “Indian/nd” (4.0000) on the one hand, and “Indian/Christians” (3.3333) on the other. But there were no significant variations in score between the sub-groups comprising the Filipino group: “Filipino/nd” (4.1667), “Filipino/Malays” (4.0000) and “Filipino/Christians” (3.8333). The same was true regarding the sub-groups making up the Arab group: “Arab/Christians” (4.8000), “Arab/nd” (4.7143) and “Arab/Muslims” (4.3953). Likewise, there were no significant variations in scores regarding the sub-groups comprising the US group: “US/Caucasians” (4.8000), “US/Hispanics” (4.6667) and “US/nd” (4.3333).

<sup>287</sup> The scores of the “Germanic”, “Confucian” and “Scandinavian culture” groups place them at the higher end of the “very important” scale.

study, Merritt (1996: 128) wrote that the “separation from the work organization may reflect an individualist preference for independence, and greater personal freedom in one’s life”.

But this finding on Goal 14-Ind30 also shows that AMTS and maintenance supervisors from six collectivistic cultures considered time away from the job to be a very important value concerning their conception of the ideal job.<sup>288</sup> The AMTs and maintenance supervisors from collectivistic cultures also seemed to value spending more time with their families, and this is in line with the importance of families in collectivistic cultures.

The group mean scores convey the importance of Goal 14-Ind30 to AMTs and maintenance supervisors from most cultural groups, collectivistic and individualistic alike. The ranking of Work Goal 14-Ind30 conveys this tendency as well. Indeed, respondents from nine cultural groups (i.e. the “Anglo”, “Scandinavian”, “Hindu”, “Confucian”, “Korean”, “Latin”, “Muslim”, “Germanic” and “Buddhist”) ranked Work Goal 14-Ind30 between their first and fifth most important value regarding their ideal job “wish list”.<sup>289</sup> The remaining two cultural groups, namely, the “Christian Filipino” and “Shinto or Japanese”, respectively ranked this goal their twelfth and fifteenth most important value.

Goal 15-Ind31 is an even more important value for respondents, as conveyed both by the group mean scores and by the ranking of the Work Goals on the ideal job “wish list”. Regarding the group mean scores, there are two distinct clusters of cultural groups (see Table WG4.15).

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<sup>288</sup> It is important to mention that none of those cultural groups ranked Goal 14-Ind30 a number one overall value, but three collectivistic culture groups (i.e. the “Confucian”, “Korean” and “Hindu”) ranked it their second overall value, and another collectivistic culture group, namely the “Latin”, ranked it their fourth most important value.

<sup>289</sup> The “Anglo” and “Scandinavian culture” groups ranked this goal their number one or co-number one overall value.

Table WG4.15

Goal 15-Ind31<sup>290</sup>*(Q 58. Working for an organization which cares for its employees.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Christian Filipino	4.8333	.4082
	Latin culture	4.8182	.4045
	Scandinavian culture	4.8000	.4472
	Muslim culture	4.7500	.4362
	Hindu culture	4.7143	.4880
	Germanic culture	4.6667	.5774
	Buddhist culture	4.6000	.5477
	Confucian culture	4.5556	.7265
	Korean culture	4.5000	.5774
	Anglo culture	4.5000	.5641
2 <sup>nd</sup> cluster	Shinto or Japanese	4.2500	.5000

The respondents from all of these cultural groups in the first cluster seem to be leaning towards considering Goal 15-Ind31 as a value of utmost importance. The second cluster comprises only the “Shinto or Japanese culture” group (4.2500). The respondents associated with this cultural group considered Goal 15-Ind31 to be a very important value.

The most important finding here is that respondents from eight cultural groups (six collectivistic and two individualistic) ranked Goal 15-Ind31 either as their number one, or their co-number one overall value.<sup>291</sup> Respondents from two other cultural groups, namely the “Anglo” and “Korean”, ranked this goal as their second overall value, and respondents

<sup>290</sup> The “Ethnback2” variable permits discernment of variations within groups, when variations are present, regarding Goal 15-Ind31. There were no significant variations in scores for all the sub-groups mentioned before, with the exception of those making up the Indian and US groups. Concerning the sub-groups making up the Indian group, there were significant variations in scores: “Indian/Christians” (5.0000), “Hindus” (4.6000) and “Indian/nd” (4.0000). Concerning the sub-groups of the US group, there were significant variations in scores: “US/Hispanics” (5.0000), “US/Caucasians” (4.6000) and “US/nd” (4.0000). However, there were no significant variations in scores between the sub-groups making up the Filipino group: “Filipino/Christians” (4.8333), “Filipino/Malays” (4.6667) and “Filipino/nd” (4.5000). The same was true for the Arab group: “Arab/Christians” (4.8000), “Arab/Muslims” (4.7674) and “Arab/nd” (4.7675).

<sup>291</sup> These are the “Japanese”, “Christian Filipino”, “Buddhist”, “Scandinavian”, “Muslim”, “Latin”, “Germanic” and “Hindu”.



from the final cultural group, the “Confucian”, ranked Goal 15-Ind31 as their third overall value. Based on these findings, Goal 15-Ind31 is the single most important value for respondents from both collectivistic and individualistic national cultures.

It is likely that the findings on Goals 14-Ind30 and 15-Ind31 mainly have a bearing on a company’s recruitment policy, since they indicate to aviation maintenance companies what AMTs and maintenance supervisors regard as the most important value when seeking employment. The findings on these goals reveal that AMTs and maintenance supervisors registered as their most important values those goals that pertain to their personal needs, as contrasted with those pertaining to company priorities.<sup>292</sup> A company which is seen as caring for its employees and which provides them with ample time away from the job for personal needs, for example, would have the edge in recruitment.<sup>293</sup>

The final item to be analysed here is Goal 16-Ind32, which was framed to tap into issues related to Individualism-Collectivism. Specifically, the expectation is that collectivists would agree with the thrust of this item, while individualists would not.

The findings on Goal 16-Ind32 (see Table WG4.16 below) bear out this tendency to a great extent. Three clusters of cultural groups can be discerned from the findings on this goal.

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<sup>292</sup> Findings on these goals, therefore, support the argument that collectivistic AMTs and maintenance supervisors are really very individualistic in terms of the criteria they use in their job searches.

<sup>293</sup> Since AMTs and maintenance supervisors from all collectivistic and individualistic culture groups value working for a caring company highly, and since these AMTs may include the best and the most qualified personnel, any company which embodies the ideal of caring for its employees will reap the rewards of recruiting quality employees.

The respondents from these three cultural groups seem to lean towards considering Goal 16-Ind32 to be a very important value. With the exception of the “Germanic culture” group, there are no surprises here.<sup>294</sup>

Table WG4.16

Goal 16-Ind32<sup>295</sup>*(Q 59. Working for an organization which sets my goals for me.)*

CLUSTERS	CULTURE GROUPS	MEAN	Std. DEVIATION
1 <sup>st</sup> cluster	Muslim culture	3.8382	4.0023
	Buddhist culture	3.8000	.8367
	Germanic culture	3.6667	1.1547
2 <sup>nd</sup> cluster	Shinto or Japanese	3.2500	.5000
	Christian Filipino	3.0000	.6325
	Latin culture	2.9091	1.2210
	Hindu culture	2.8571	.8997
	Confucian culture	2.7778	.9718
	Korean culture	2.7500	.5000
	Anglo culture <sup>296</sup>	2.2353	1.1297
3 <sup>rd</sup> cluster	Scandinavian culture	1.6000	

The second cluster for these culture groups also largely matched expectations. The third cluster includes only the “Scandinavian culture” group (1.6000). This outcome also largely conformed to expectations, and Goal 16-Ind32 successfully discriminates the low score of the “Scandinavian culture” group from those of the other cultural groups. However, this

<sup>294</sup> The findings on the “Germanic culture” group may not after all be unexpected, because the “Germanic” group is atypical of the other individualistic groups. The members of this group, after all, are more hierarchically prone than are the members of the “Anglo” group.

<sup>295</sup> The “Ethnback2” variable allows us to see variations within groups, when present, regarding Goal 16-Ind32. There were significant variations in scores between “Indian/nd” (3.3125) on the one hand, and “Hindus” and “Indian/Christians” (2.6667) on the other. But there were some variations in scores between the sub-groups making up the Filipino group: “Filipino/nd” (3.5833), and “Filipino/Malays” and “Filipino/Christians” (3.0000). The variations of scores are more significant as far as the sub-groups of the Arab group are concerned: “Arab/Muslims” (4.1163), “Arab/nd” (3.3571) and “Arab/Christians” (3.2000). But there were no meaningful variations in scores between the sub-group making up the US group: “US/Hispanics” and “US/nd” (2.0000), and “US/Caucasians” (1.8000).

<sup>296</sup> The respondents from these cultural groups considered this goal a moderately important value or are leaning in that direction.

discrimination is not at as high as it was for the “Anglo” versus the “Muslim culture” group, as shown by the ANOVA technique.<sup>297</sup>

The most important finding here is that respondents from six cultural groups (four collectivistic and two individualistic) ranked Goal 16-Ind32 as their sixteenth overall value,<sup>298</sup> and respondents belonging to two cultural groups, one individualistic and the other collectivistic, ranked Goal 16-Ind32 as their fifteenth overall value.<sup>299</sup> Finally, three collectivistic cultural groups, namely, the “Muslim”, “Buddhist” and “Shinto or Japanese”, respectively ranked Goal 16-Ind32 their tenth, twelfth and fourteenth value overall.

The latter findings show that respondents from both collectivistic and individualistic culture groups consider Goal 16-Ind32 the least important value on their ideal job “wish list”. That this was the assessment of respondents from most collectivistic and individualistic culture groups is not surprising because it was shown in Chapter Four that AMTs and maintenance supervisors from collectivistic cultures thought and behaved in a manner similar to that of their colleagues from individualistic cultures.

The ramifications of the findings on Goal 16-Ind32 could be both positive and negative for aviation maintenance organisations. The positive side is that workers who want to set up their own goals have a “take charge” attitude. The negative side may be that the workers who would want to freelance in the workplace might balk at following strict guidelines on safety set by the organisation. However, further research on this subject will be needed before it is possible to draw final conclusions. Ideally one would

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<sup>297</sup> It is important to mention here that Table 5.1 ANOVA Tukey HSD Post Hoc Pairwise Comparisons provides a nearly significant (.06) difference of means for the “Anglo” and “Muslim culture” groups at an alpha level of .05, and this difference is therefore of heuristic value. The individualistic “Anglo culture” group has scores on Goal 16-Ind32 which are much lower than those of the collectivistic “Muslim culture” group.

<sup>298</sup> These were the “Hindu”, “Confucian”, “Christian Filipino”, “Korean”, “Anglo” and “Scandinavian”.

<sup>299</sup> These are the “Germanic” and the “Latin”.

want workers who are keen to follow safety goals set up by organisations,<sup>300</sup> but who also have a “take charge” attitude, and refuse to delegate responsibility for that which they should decide for themselves.

The final conclusions drawn from the research on work goals is that across cultures, the AMTs’ and maintenance supervisors’ priorities, as far as their ideal job “wish lists” are concerned, are: 1) “A caring company”; 2) “Job security and opportunities for career advancement”; 3) “Communication and active involvement in the workplace”; 4) “Cooperation and co-ordination”; 5) “A fulfilling job and a warm relationship with bosses”; and 6) “A company which sets goals for employees”.<sup>301</sup>

The first two clusters of Work Goals deal with the needs of the aviation maintenance personnel *per se*, while the remaining four clusters of Work Goals pertain to more general workplace situations. It is possible that AMTs and maintenance supervisors tend to assign priority, in their ideal job “wish lists” to goals that advance their careers and provide them with ample time for personal and/or family life,<sup>302</sup> in contrast to goals that are of importance to the companies employing them.

Harpas (1990) found little difference in the Work Goals of employees from seven industrialised nations. These findings lend support to this conclusion and, moreover, show that the differences in Work Goals between employees from industrialised and non-industrialised nations are not significant either.

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<sup>300</sup> One caveat to stress here is that no prospective employee would admit reluctance regarding adherence to safety goals set up for him by his organisation.

<sup>301</sup> Here is the cross-culture ranking of the Work Goals: 1) Work Goal 15; 2) Work Goal 9; 3) Work Goal 14; 4) Work Goal 8; 5) Work Goal 2; 6) Work Goal 1; 7) Work Goal 7; 8) Work Goal 3; 9) Work Goal 13; 10) Work Goal 10; 11) Work Goal 12; 12) Work Goal 4; 13) Work Goal 6; 14) Work Goal 5; 15) Work Goal 11; and 16) Work Goal 16.

<sup>302</sup> This finding is generally in line with that of Sakamoto (1982), who found that Japanese employees reported being motivated by the task itself, self-improvement and financial rewards, in contrast with the greater emphasis among US employees upon affiliation, social concern and recognition.

### 5.3. Conclusion

Empirically driven analyses were used to establish similarities and differences between AMTs and maintenance supervisors with regard to sixteen Work Goals. This study also made speculations as to the ramifications of the findings on these Work Goals for aviation maintenance organisations.

It is important to mention here that, in her study of the work goals of airline pilots, Merritt (1996) found that the strongest discriminator was the four-item UA Values scale.<sup>303</sup> Merritt (1996) specifically found that every Anglo and Swiss group was significantly lower than every other group on the UA Value scale.

Regarding the UA Value scale, comparison with Merritt's (1996) findings is possible only regarding Goal 13-Ind29.<sup>304</sup> These findings show that the "Anglo culture" groups rank high regarding this goal. The finding of this study, unlike that of Merritt, is in line with the literature on Individualism-Collectivism, which emphasises that individualists prefer performing challenging tasks, since such tasks give them a sense of accomplishment. For members of "Anglo culture" groups, work satisfaction is linked to performing challenging tasks (e.g. Sekaram, 1986).

But there is agreement between this study and those of Merritt (1996), and Helmreich and Merritt (1998) regarding the "Anglo culture" group's giving a high rank to the goal of "Sufficient time left for personal or family life" (it is this group's number one value for both studies). This study also found that the other individualistic culture groups, such as the

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<sup>303</sup> These were items No. 66 ("Observe strict time limits for work projects"); No. 65 ("Find the truth, the correct answer, the one solution"); No.61 ("Know everything about the job, to have no surprises); and No. 60 (similar to this study's Goal 13-Ind29, "Have challenging task to do from which you get a personal sense of accomplishment"). Considering item No. 60 a UA value is questionable.

<sup>304</sup> This is the case because there is no UA Value scale in this study.

“Germanic” and “Scandinavian” assigned a high rank to the goal of “Sufficient time left for personal or family life”. (These two groups respectively ranked this goal first and fourth most important value).

However, in contrast to Merritt (1996), this study also found that most collectivistic culture groups assigned a high rank to Goal 14-Ind30. This finding adds weight to the claim that AMTs, as a professional group, are more individualistic than are pilots from the same countries.

There is also agreement between this study and that of Merritt (1996) that Goal 8-MAS2 (item No. 59 in Merritt) and Goal 11-MAS3 (item No. 57 in Merritt) did not indicate any significant group differences. This study was able to show differences regarding Goal 11-MAS3 (item No. 57 in Merritt) only at .5 level, which means that these differences could be attributed to chance.

Overall, statistically significant differences of means were observed for cultural groups only in regard to Goals 3-Ind35, 14-Ind30 and 16-Ind32. Probability theory would say that these observations would occur five times or less out of a hundred. This outcome indicates that these differences cannot merely be attributed to chance.

## Chapter Six

This chapter presents the profiles of the eight maintenance organisations whose employees filled out the questionnaires. The data from Section B and Section D (Parts 1, 2 and 3) of the questionnaires have been used to create the profiles of the maintenance organisations presented in this chapter. These data provide a glimpse into the operation of the eight maintenance organisations examined here, and specifically into the way in which respondents from specific national culture groups look at the members of their own cultures, similar cultures, and different cultures. The data tell us a great deal about the working atmosphere in different maintenance organisations, about the morale in these organisations, and about employees' loyalty towards the companies they work for. The diagnosis of these maintenance companies' problems could help their managers correct those problems. The same diagnosis could also assist organisations which do not yet face these problems to take preventive measures to spare themselves the headaches and pitfalls faced by organisations plagued by workers' dissension, poor morale, etc.

The outlining of the profiles of these eight maintenance organisations follows the presentation of a general picture of aircraft maintenance operations as seen through the eyes of respondents from different national cultural groups. The purpose of this chapter is to move from the general to the specific.

## 6.0. Items

Among other things, this chapter analyses items pertaining to “Organisational Climate” (OC). In the questionnaire, respondents were asked to rate the importance of the different OC items, and to score them on the 5-point Likert Scale: 1=“Disagree Strongly”, 2=“Disagree Slightly”, 3=“Neutral”, 4=“Agree Slightly”, and 5=“Agree Strongly”.

### 6.1. Exploratory Analyses

The first exploratory analysis to be undertaken here is factor analysis. In Chapters Four and Five, it was explained that principal components analyses with varimax orthogonal rotation were run first on all questionnaire items to see what relationships were actually present in the data. Once the existence of these expected relationships was established for the data as a whole, additional factor runs were performed with the expected item clusters in order to uncover possible underlying dimensions of interest. The results of the exploratory factor analyses concerning the OC cluster are reviewed here.

The factor analysis of the items of the OC scale resulted in a very clear solution with the extraction of only one factor with an eigenvalue of 1.9 and a total variance explained of 48.5%. Four variables had loading greater than .4, and are given here in order of magnitude: OC-Organiz (“I am proud to work for this organization”) .88, OC-Fam (“Working for this organization is like being part of a large family”) .76, OC-Job (“I like my job”) .63, and OC-Ind10 (“Fate placed me in this organization and I am grateful”) .40.



The three highest loading variables/items on this factor were also the highest loading variables/items on Factor Two of the “all variables” run, presented in Chapter Four. The theme that emerges from this loading could be called “Positive organisational identity”.

The second explanatory analysis to be run here is the one-way analysis of variance (ANOVA), which is an extension of the two-sample t test. As explained in Chapters Four and Five, ANOVA was employed to discover significant differences of means among the cultural groups on the dependent variables, and the Tukey Honest Significant Difference (HSD) test was used to generate post hoc significant statistics. Pairwise multiple comparisons were used to test the significance of each difference of means at an alpha level of .05.<sup>305</sup>

It is important to re-emphasise here that a strict inference cannot be claim from these statistics to general population parameters even for statistically significant relationships, because the data were not collected using random sampling methods. Nevertheless the results are presented and discussed here for their heuristic value.

A summary table, Table 6.1, is provided below for the statistically significant differences of means observed regarding the OC items. The analysis of the findings will be undertaken in the “Results” section.

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<sup>305</sup> As also explained in Chapter Four, probability theory would hold that such observations would occur five times or fewer out of one hundred.

Table 6.1 ANOVA Tukey HSD Post hoc  
Pairwise Comparison\*

ITEM: OC-Ind10

*"Fate placed me in this organization and i am grateful"*.

Group	Mean Difference	Standard Error	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Anglo/Muslim	-1.205	0.278	0.001	-2.116	-0.295

\*Statistically significant differences of means at alpha level .05.

## 6.2. Results

This section presents firstly the general findings of the survey, and secondly the findings about the items of the OC scale. The findings that are specific to the eight maintenance organisations surveyed here will be presented in the next section, which also outlines the profiles of the same eight aviation maintenance companies.

### 6.2.1. The General Findings

In general, the respondents to the questionnaires seem to value working with colleagues whose national cultures are different from theirs, and different motivations have influenced these preferences. These motivations include AMTs' and maintenance supervisors' desires to broaden their cultural horizons and, especially, their wish to learn new ways of

resolving technical problems they may encounter in the workplace.<sup>306</sup> The findings of the survey point to acceptance of multicultural maintenance teams by AMTs and maintenance supervisors from both putatively collectivistic and individualistic cultures.<sup>307</sup> This is a significant finding, and it bodes well for the future of aircraft maintenance organisations, which have to function in harmony with a world which has been moving towards greater integration as a result of the evolution of economic, technological and demographic forces. These forces point to an increase in multicultural teams in the aviation maintenance field. The Arab Gulf countries of Saudi Arabia, Kuwait, the United Arab Emirates (UAE), Bahrain, Oman and Qatar provide proof that the developing countries are now part of the “global village”. Around the world, multicultural AMT teams (the term “multicultural” is used here to refer to teams whose members come from varying national cultures) are now more prevalent in aviation maintenance than they were in the past. The eight aircraft organisations profiled in this study bear out this reality.

The respondents also found several rewarding aspects of working with team members whose national cultures were similar to their own. Understandably, the most significant of the rewarding aspects was the ease with which the respondents could communicate and interact with team

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<sup>306</sup> Almost 39% of the respondents mentioned learning new things and different aspects of different cultures as a motivation, while almost 12.5% mentioned being exposed to a different approach to a technical problem as one of the rewarding aspects of working with people whose national cultures were different from theirs. It is important to stress here that only 5.5% of the respondents saw no rewarding aspect at all of working with team members whose national cultures were different from their own. Of note here also is the fact that slightly more than 3% of the respondents liked working with colleagues whose national cultures are different from theirs because they liked being exposed to different social values. These results show that some AMTs liked being exposed to new values (and ideas). This predisposition may make them willing to embrace culture change, and by extension, such tools as MRM.

<sup>307</sup> However, as will be emphasised later, there are certain individuals (and even groups), who, as a result of their socialisation, are resistant to the idea of working with people whom they had been taught to hate, or to be suspicious of. This has been the case with Pakistanis and Indians, Muslims and Israelis, and, of late, Kuwaitis and Iraqis.

members with whom they shared cultural affinities.<sup>308</sup> Other rewards of working with people whose national cultures were similar to their own which respondents mentioned included “Supporting each other to meet work goals” (almost 9%), “Trust” (almost 5.5%) and “Sharing similar things, i.e. national holidays, interest in the same sports and jokes” (almost 5%).<sup>309</sup>

These results in Section D clearly indicate that AMTs and maintenance supervisors feel the need for a comfort zone in the workplace. Therefore, it is not surprising that more than 16% of the respondents indicated that they saw no frustrating aspect of working with team members whose national cultures were somewhat similar to their own.

However, some respondents did mention several frustrating aspects of working with team members whose national cultures were somewhat similar to their own. Among these were “Taking advantage of one because he is from your national culture” (slightly more than 10%), “Favouritism” (almost 9.5%) and “Only one approach to tackling technical problems” (slightly more than 4%).<sup>310</sup>

In summary, from the perspective of a large group of AMTs and maintenance supervisors, working with people whose national cultures were similar to their own might not be challenging or rewarding, but it offered predictability (and a comfort zone).<sup>311</sup> Indeed, almost 34% of the

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<sup>308</sup> Almost 47% of the respondents mentioned the ease with which they communicated and interacted with team members of similar cultures as a rewarding aspect of this arrangement. Other respondents mentioned the mores, traditions, food, jokes etc. that they shared with team members from cultures similar to their own.

<sup>309</sup> It is important to mention here that one respondent significantly mentioned that the most rewarding aspect of working with people whose national cultural was similar to his was that people from similar cultures would help cover up mistakes made by other members of their in-group. Not surprisingly, this respondent was from a putatively collectivistic culture group. The tendency of team members to cover up mistakes made by fellow in-group members is one of the most serious problems facing aircraft maintenance organisations. The issue to be raised here is whether there are there other AMTs who think the way this respondent did. In all likelihood, there are.

<sup>310</sup> These issues need to be addressed because they may have serious ramifications not only for group cohesiveness and morale but also for the safety of the workers of maintenance organisations.

<sup>311</sup> However, as will be indicated later, this outlook can be changed with education, and a new organisational culture.

respondents registered “Difficulty in communication” as the most frustrating aspect of working with team members whose national cultures were unrelated to their own.<sup>312</sup> More significantly though, more than 23% of the respondents mentioned “discrimination” as one of the most serious problems they faced when working with team members whose national cultures differed from their own. Westerners, as well as people from Third World countries, were mentioned as perpetrators of discrimination in the workplace.<sup>313</sup> The existence of discrimination, and even the perception that it may exist in the workplace, can bring devastating consequences to any organisation, such as deterioration of workers’ morale, group cohesiveness and productivity.

The other frustrating aspects that respondents associated with working (or supervising) people whose national cultures were different from their own were as follows: “They would not share knowledge” and “They are not honest and loyal” (4.2%), “There are religious differences” (3%), “They are too emotional” (2.4%) and “They worry too much about losing face” (almost 2%). These issues can undermine team cohesiveness and workers’ morale in maintenance organisations if they are not addressed. The perception that the “others” are not honest or loyal to the company, along

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<sup>312</sup> By comparison, only 5% of the respondents saw no frustrating aspects of working with team members whose national cultures were unrelated to their own.

<sup>313</sup> In response to the specific question on difficulties faced by members of national cultures other than their own in the workplace, 21.5% of the respondents singled out discrimination as the main difficulty. (By comparison, 39.2% of the respondents focused on difficulty in communicating in response to the same question). The problem of discrimination in the workplace was considered to be so serious that some AMI’s felt that they were being treated as outcasts, and one of them even launched an SOS signal in the “comments” section of the questionnaire: “Please can you help!” In addition, several respondents (chiefly Muslims) mentioned religious insensitivity in the workplace. It was surprising that maintenance organisations so often seemed unresponsive, for example, to the simple request of Muslims for a prayer room. This example seems to show that some aircraft maintenance organisations are oblivious to the fact that contented workers are loyal and productive workers.

with intolerance towards religious, social, and other differences, are even more likely to engender conflict in the workplace.<sup>314</sup>

By contrast, the expression of reluctance to work with people who fear losing face (a characteristic of collectivistic cultures) should not be viewed as an expression of prejudice, because in this case, the respondents were simply pointing to the difficulty of communicating with, and relating to, individuals who fear losing face from being corrected in public by co-workers or supervisors. Safety is at stake here, and pointing to any act that may compromise safety is a practice that aviation maintenance organisations should encourage. At the same time, encouragement of this vigilance needs to be accompanied by an organisation-wide sensitivity campaign, which would teach individualists about the nuances of dealing with colleagues for whom losing face is an important concern. Individualists might be taught, for example, that it might be more effective to convey their concerns in private, rather than in public, to their co-workers who fear losing face.

However, the respondents to the questionnaires also pointed out that working with people whose national cultures were similar to their own also had its drawbacks. The most significant of these drawbacks that the respondents mentioned were that these co-workers tended to “ask for favours and tend to take advantage of one’s sense of loyalty” (more than 17%), that “they would want to cover up mistakes” (more than 4%), and that they would not be “innovative” (more than 4%).<sup>315</sup> The first two drawbacks would have negative ramifications for the cohesiveness and morale of an aviation maintenance organisation, as well as for safety,

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<sup>314</sup> One respondent, for example, considered the wearing of national dress on the job by co-workers to be “rude”, and not in harmony with the working environment. This response was significant, because it was voiced not by someone from an individualistic society, but by someone from a collectivistic society.

<sup>315</sup> The last issue raised, namely that of not being “innovative”, is partly a stereotype that collectivists seem to have about themselves, and partly a recognition of the reality that innovation occurs only when people (in this case collectivists) are exposed to other cultures and their “technologies”, and operate in an environment that is conducive to innovation.

because of the practice of covering up mistakes, and of helping someone keep his job when he has proved to be incompetent, has engaged in risky behaviour in the job, or has otherwise failed in performance.

The respondents have referred to Asian, Western European and North American cultural traits as being the ideal characteristics that they would like people working with them to have. Asian cultural traits (Asian in general, Japanese and Chinese in particular) obtained the highest endorsement in this survey, followed by Western European cultural traits (Western European in general, English and German in particular), and finally by North American cultural traits (North American in general, and the US in particular).<sup>316</sup> The respondents to the questionnaire also identified people from specific national groups whom they would like to have in their crew. These were: “Americans” (9.5%), “Chinese” (6.6%), “Germans” and “Asians” (4.7%), “English” (3%), “Koreans” and “Indians” (2.5%), and “Egyptians” (2.1%). Again, for the reasons mentioned before, the Filipinos were not included in the list. The most disturbing fact emerging from the findings about the ideal cultural traits, and, as will be shown later, about the cultural traits that the respondents did not want people working with them to have, is that many traits were apparently considered to be culture-specific, while actually they are individual-specific (i.e. are characteristics that vary from individual to individual, and not bound to specific national cultures).<sup>317</sup>

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<sup>316</sup> The percentages for cultural traits were as follows: 30.6% for Asian, 19.1% for Western European and 11.5% for North American. But by country, the rankings and percentages were as follows: the US (9.3%), Britain and China (7.5%), Germany (5.7%) and Japan (5.3%). Other countries were also mentioned as offering desirable cultural traits, but their share was small. Of note here is the share of the Philippines, but this share is questionable because it was mainly the result of self-evaluation by the Filipino workers themselves, who were employed by one Middle Eastern company. As will be mentioned later, the Filipino employees of that Middle Eastern company seem to be engaged in a PR campaign on their national culture's behalf, which was also aimed at tarnishing the reputation of certain other national groups with whom the Filipino employees of that company seemed to be in competition.

<sup>317</sup> The same is true of the traits that the respondents said they would not want their team members to have. The traits mentioned were as follows: “Arrogance and unwillingness to learn”, “Laziness” and “Cheating and lying”.

Examples of such misconstrued traits included “high work ethic”,<sup>318</sup> “sense of loyalty”, “honesty”, “intelligence”, “predisposition to learn”, “being co-operative” and “tolerance of other cultures”.<sup>319</sup> Western Europeans, North Americans, and some Asians (e.g. Japanese, Chinese and Koreans) were associated with these favourable qualities. By contrast, Arabs, Middle Easterners in general, sub-Saharan Africans and Latin Americans were rarely associated with these qualities.

Stereotypes such as these are dangerous in that they foster (or strengthen) prejudices that may already exist in organisations.<sup>320</sup> Several respondents also said that they would not want to have people working with them who have the cultural traits of “Jews”, and “Blacks”. Most did not offer any explanation as to why they thought this way, but the racism of these remarks is apparent and renders any explanations from these individuals unnecessary. One respondent, though, called Jews “devious”, in line with a common stereotype. Equally disturbing is the response of some Muslims who have stressed that the ideal cultural traits can only emanate from “true Muslims from any race or culture”. The second part of the sentence underscores inclusiveness, but the emphasis on “true Muslims” makes a distinction between members of the Muslim community itself, by presuming to distinguish between “true believers” and “unbelievers and secularists”. Moreover, these respondents discriminate against non-Muslims

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<sup>318</sup> One respondent wrote “Some cultures in the Far East are very hard working, honest and very polite. They remain unspoiled in a world that is fast becoming indecent and immoral”. And he bemoaned the behaviour of those “who try hard to forget their origins and moral standards and are absorbed in the bad habits of other nations”.

<sup>319</sup> As an illustration, more than 90% of those who mentioned “high work ethic” as an ideal cultural trait that they would like team members to have, seemed to consider this trait culture-specific, and not individual-specific.

<sup>320</sup> Some of the disturbing stereotypes uncovered by this research are as follows:

- 1) “I do not want crew [members] from the Philippines, [because they are ] not honest, not hardworking [and] if given opportunity they would [steal] spare parts” from the company;
- 2) “Mexicans [are] liars, cheats, and [they] would let you down” when you need them most; and
- 3) “Thais and Indians lie, cheat, [and] steal”.



in favour of Muslims, irrespective of their qualifications and performance in the workplace.<sup>321</sup> This extreme view was expressed even more strongly by one Muslim respondent who said that he did not want people working with him to be “Mushriqin and Kufar” (idolaters and unbelievers).<sup>322</sup>

Such beliefs are dangerous in that they politicise the workplace by creating dissent and divisions among team members. In such a context, workers’ morale, team cohesiveness and productivity are likely to be affected.<sup>323</sup>

But it is important to mention here that a sizeable group (32%) of AMTs and maintenance supervisors indicated no specific preferences regarding national group as to the people they wanted to work with or supervise.<sup>324</sup> This finding, and the one mentioned in FN number 331, bode well for the future of multicultural AMT teams.

The same can be said about the AMTs’ and maintenance supervisors’ responses to the question of whether or not they believed that people from some national cultures had developed better maintenance skills than had people from others. Indeed, more than 45% of the AMTs and maintenance supervisors rejected the contention that some national cultures produced AMTs with better maintenance skills than did others, leading this researcher

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<sup>321</sup> It is important to stress that only a minority of Muslims, i.e. the Islamists, hold this view. Hindu fanatics, and extremists among the Orthodox Christian Serbs and the Israelis hold similar views.

<sup>322</sup> Regarding the question of “Are there people from specific national cultures whom you would rather not have in your team?” respondents identified several nationalities. They were: “Indians” (8.1%), “Pakistanis” (5.2%), “Egyptians” (4.7%), “Africans” (3.3%), and “Jews”, “Brazilians”, “Filipinos” and “Mexicans” (1.4% for each of these last four national and/or religious groups). Not surprisingly, all of these unfavoured groups were non-Western and non-European.

<sup>323</sup> While only a minority of the respondents registered these views, it would be a mistake to consider these views innocuous, since even a small group of extremists and zealots in the workplace could threaten the overall morale and cohesiveness of an organisation.

<sup>324</sup> More emphatically, more than 51% of the respondents said that there were no people from specific national cultures they would rather not have on their work team.

to conclude that they saw maintenance skills as individual-specific, rather than culture-specific.<sup>325</sup>

However, there was also a sizeable group of respondents who expressed the beliefs that Westerners had acquired better maintenance skills simply because they come from advanced countries or simply because they were Westerners.<sup>326</sup> British and Americans (close to 10% each) were singled out by this second group of respondents. The British and Americans were followed by the Japanese (6.2%), Western Europeans in general (almost 5%), and finally, the Germans and the Chinese (almost 3% each).<sup>327</sup> Those who identified the nationalities making claims about their superior maintenance were expressing displeasure with the nationalities making such claims. Several respondents pointed out that these were “nonsense”, “myths” and two respondents belittled “Americans”, for example, for making such claims, adding that Americans “think they know everything”. Maintenance organisations have to be attentive to this issue, because it can affect the cohesiveness of crews and morale in the organisation.

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<sup>325</sup> The implication of this finding can be only positive for aircraft maintenance organisations, because it indicates these respondents’ understanding of reality, and their tendency not to adhere to myths. As an illustration, several respondents mentioned that the belief that Westerners had superior maintenance skills was pure myth. One respondent added that unfortunately some Westerners themselves believed this myth. AMTs who are imbued with a sense of superiority about their skills are likely to foster dissent in the workplace and to be the cause of resentment from their colleagues. On the other hand, AMTs who suffer from a sense of inferiority as far as skills are concerned are unlikely to show initiative in the workplace.

<sup>326</sup> It is true that the Western industrialised countries presently have some of the best institutions of higher education in the world, but anyone who is familiar with the problems of the US educational system, especially at the primary and secondary levels in both the inner city and many rural areas, would not make the generalisation that coming from Western countries *ipso facto* imbues people with advanced technical skills. The US, Canada and Australia, among other Western countries, would have been at a disadvantage without the influx of many highly skilled immigrants from Third World countries.

<sup>327</sup> More disturbing, though, are the findings concerning the issue of whether the respondent had the experience of hearing colleagues from some national cultures proclaim their supposedly superior maintenance skills. Only 31.8% of the respondents answered that they had not had such an experience. The remaining respondents either said that they had, without specifying the national groups from which the claimants to superior skills had come (6.2%), or said they had and did identify the nationalities of those making such claims (62%). The nationalities most frequently mentioned in relation to this claim were: “Germans” and “English” (11.1% each), “Americans” (9.2%), “Japanese” (6.6%), “Indians and Pakistanis” (5.1%), “Egyptians” (2.9%) and “Filipinos” (1.1%). It is important to mention here, though, that a few respondents stressed that the claims made by the Germans and Japanese were well-founded, as they managed to prove themselves in the workplace.

In general, these findings bode well for aviation maintenance organisations with multicultural AMT teams. The findings on the issue of acceptance or lack thereof, of a supervisor from another culture group also bode well for organisations with multicultural AMT teams. Indeed, most respondents indicated that they would accept any supervisor, provided he was “qualified” (35.5% insisted he be qualified, and 30.2% said they would accept anyone).<sup>328</sup> Only 12% expressed an unwillingness to accept as a supervisor one who was not from their own national culture group, or a similar one.<sup>329</sup>

Some of the findings on socialising among team members could also have positive ramifications for aircraft maintenance organisations with multicultural AMT teams.<sup>330</sup> Specifically, 81.5% of the respondents indicated that they did socialise with co-workers whose national cultures were different from their own. Almost 42% of the respondents indicated that they socialised in this way without offering any reason for choosing to do so. The fact that they did not offer any explanation as to why they chose to socialise with co-workers whose natural cultures are different from their own may suggest that they regard socialising as a natural phenomenon of connecting with fellow human beings,<sup>331</sup> and as a way to improve the atmosphere in the workplace. Socialising tends to generate trust, and trust is important for a work team, as it is for any social group.

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<sup>328</sup> In total, 65.7% expressed their willingness to accept a supervisor whose national culture was different from theirs.

<sup>329</sup> Within this 12%, 6.6% preferred American supervisors, 3.1% British supervisors, and 1.3% preferred Arab supervisors. The Kuwaitis who participated in the survey mentioned that only a pure Kuwaiti supervisor would do, because he would automatically be a Kuwaiti citizen. To understand this point, one needs to know that those born in Kuwait but who are not citizens (called Bidun in Arabic) would not be wanted as supervisors, no matter what their qualifications.

<sup>330</sup> Socialising can be a barometer of the atmosphere existing in different companies. People who socialise with each other usually like each other, and can relate to each other. Conversely, people who do not socialise with each other are unlikely to empathise with each other. Socialising among work team members can have a positive effect on morale.

<sup>331</sup> Almost 3.5% of the respondents who, on the other hand, identified the reasons why they chose to socialise with colleagues whose national cultures were different from theirs, simply stated that they did so because “we are all humans”.

Other respondents however, did specify the reasons why they chose to socialise with people who were from national cultures that differed from their own. More than 10% of the respondents, for example, mentioned as a reason the desirability of getting to know each other's cultures. The group of AMTs and maintenance supervisors giving this response may be the most open-minded group of respondents surveyed here, because they wanted to relate to their colleagues on a deeper level, through their emphasis on getting to know their colleagues' national cultures. The very interest in someone else's culture is a sign of openness, and curiosity.<sup>332</sup>

However, among many respondents who mentioned why they socialised with co-workers who were from national cultures different from their own, job-related reasons predominated. The most frequently mentioned reasons were that of "exchanging ideas about the workplace" and that of "smoothing operations in the workplace" (10% for both items).<sup>333</sup>

Additional respondents, accounting for almost 3% of the total, mentioned wanting to promote friendship as the reason why they socialised with colleagues who came from national cultures different from their own.<sup>334</sup> Yearning for friendship is deeply-rooted in the human psyche. This may be an extreme reason for people wanting to socialise with co-workers whose national cultures are different from theirs.

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<sup>332</sup> This sort of thinking in potential employees can be detected via psychometric and other methods of examination and analysis. Since this attitude is particularly healthy, and bodes so well for work team cohesion and morale, aviation maintenance organisations, and for that matter, other organisations should make it a point to recruit such employees.

<sup>333</sup> However, one respondent (a Pakistani) mentioned that he socialised in order to proselytise ("I want to influence Islam on them"). Such behaviour is fraught with dangers for an aviation maintenance organisation because it is bound to engender hostility and mistrust in the workplace, as well as resentment among the targets of this proselytising. Religious proselytising does not help to build healthy social relations in any setting among workers of different national cultures and belief systems.

<sup>334</sup> This group joins the group of respondents who mentioned socialising out of a desire to get to know their colleagues' various national cultures, as the other most open-minded group of AMTs and maintenance supervisors identified in this study.

However, the survey also shed light on the reasons why some AMTs and supervisors avoided socialising with colleagues whose national cultures were different from theirs. The one reason around which there was agreement was: “because my social values and ways of life are different from theirs” (almost 5%).<sup>335</sup>

People’s belief systems are to be respected, but interactions among different groups of people are important for most social organisations because they create the foundation for group harmony and identity. Socialising usually generates trust and empathy among the people involved, and may create even stronger bonds between colleagues.<sup>336</sup> All of these attributes could only bode well for any social organisation.

While organisations cannot mandate socialising, they can surely help to foster it. They can, for instance, take measures to enable those members of some cultural and religious groups who shy away from socialising with co-workers from different national cultures and religious backgrounds to feel comfortable about participating in certain social and cultural events. Some Muslims, for example, harbour a misconception that socialising with non-Muslims mainly entails the consumption of alcoholic beverages. These Muslims, as well as the members of other cultures and religions which mandate certain prohibitions, can be encouraged to socialise outside their cultural or religious in-groups via the planning of social or cultural events which they will find enriching, rather than corrupting.

Most of the findings of the survey bode well for aviation maintenance organisations with multicultural AMT teams. These findings show an

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<sup>335</sup> It is important to mention here that almost 5.2% of the respondents stated that they socialised only with colleagues from their own national cultures, or with colleagues with whom they feel specific affinities (religious and social). Muslims made up the bulk of this group (3.3%). However, it needs to be stressed that this way of thinking characterises only a minority within the Muslim community. As a group, Muslims are generally quite sociable across the board.

<sup>336</sup> Social organisations cannot function properly without the ingredients of trust and empathy.

acceptance of multicultural teams by AMTs and maintenance supervisors from putatively collectivistic and individualistic cultures alike. But there are some troubling issues which, if not addressed, may undermine the cohesiveness and work efficiency of multicultural AMT teams. These issues include the perception that the acquisition of maintenance skills is culture-specific, i.e. associated with certain national cultures as opposed to others, rather than individual-specific, i.e. varying from individual to individual. These issues also include the more disturbing stereotypes which continue to pervade the workplace.<sup>337</sup>

The survey revealed one additional disturbing finding, which suggested the failure of aviation maintenance organisations to educate their employees about Maintenance Resource Management/Human Factors (MRM/HF). This is a significant failure.

Specifically, as the survey shows, only 21.28 of the respondents showed familiarity with the concepts of MRM/HFs, while the remaining 78.72% either stated that they were unfamiliar with MRM/HFs, or offered answers that clearly showed their unfamiliarity with these concepts. Two opposite explanations can be put forth regarding the disturbing finding for the latter group of respondents. The first and most logical explanation is that the respondents had never hitherto been introduced to MRM/HFs but still wanted to impress the researcher by conveying familiarity with these concepts. The second explanation is that they had a superficial exposure to MRM/HFs.

The most disturbing aspect of this finding is that the respondents who really had no clue about the concept of MRM/HF, but claimed otherwise, compounded the problem that this misrepresentation caused by

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<sup>337</sup> Managers need to be attentive to these problems, and more importantly to take steps to remedy the situation through education and awareness-raising activities.

stating, that by contrast, their colleagues were ignorant of MRM and its role. Equally disturbing is the other finding that some respondents who had no clue about MRM and its role stated that their colleagues were knowledgeable about it.<sup>338</sup> This finding is disturbing simply because these respondents, in their own ignorance, were in no position to assess the knowledge of their colleagues. The danger for aviation maintenance organisations stemming from dynamics like this is that MRM-ignorant AMTs may end up relying on the advice of equally ignorant colleagues who merely give the impression of being knowledgeable about MRM/HF.

Assessments of the knowledgeability of their colleagues coming from respondents who are familiar with MRM (these represented 14.4% of the total) are obviously more credible. But even this group of respondents had no clear grasp of the extent of ignorance of MRM among their fellow AMTs and maintenance supervisors alike.

It is also important to mention here that even the respondents who had no clear idea about MRM and its role in aircraft maintenance seemed to have an intuition that MRM was important both for the company by whom they were employed and for the country in which that company was located.<sup>339</sup> Close to 35.5% of the respondents indicated that the organisation for which they worked was not MRM-conscious, while slightly more than 50% of the respondents said the opposite. However, the last finding is questionable because the group of respondents making this claim

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<sup>338</sup> These represented 19.4% of the respondents. But it also needs to be emphasised here that another 17.2% of the respondents, who clearly had no knowledge of the concept of MRM or its role, stated that they could not tell whether or not their colleagues had a clear idea about the concept and role of MRM.

<sup>339</sup> The fact that many AMTs and maintenance supervisors had an intuition that MRM was good for the company would tend to predispose them towards acceptance of MRM as a concept, and towards willingness to learn it.

included a sizeable number of AMTs and maintenance supervisors who had no clear idea about the meaning of MRM in the first place.<sup>340</sup>

Among the explanations offered by the AMTs and maintenance supervisors who said that the organisation they worked for was not MRM-conscious were the following: “They [management] believe and practice blame culture”; “The company does not accept change due to old management and mentality”; and “They [management] do not know what’s going on”.

The respondents’ predispositions to accept MRM as a valid concept for maintenance operation, and possibly to be willing to learn it, is underscored by the findings regarding the issues of whether, in the respondents’ opinion, MRM was a valid tool, and whether it was a useful tool for the countries in which they worked. As an illustration, almost 85% of the respondents indicated that they believed that MRM was a valid tool. Moreover, more than 80% of the respondents stated that MRM was a useful tool for the countries in which they worked.<sup>341</sup>

In summary, most of the findings of this survey bode well for aviation maintenance organisations with multicultural AMT teams. This is the case because generally, the findings indicate an acceptance of multicultural AMT teams on the part of the respondents across national cultural groups. However, as has been stressed before, the findings also brought to light some troubling issues which, if not addressed by

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<sup>340</sup> By comparison, almost 19% of the MRM-knowledgeable respondents indicated that the organisation they worked for was MRM-conscious.

<sup>341</sup> In comparison, only 2.23% of the respondents stated that they did not consider MRM a valid tool, and only 4.49% of the respondents said that they did not consider MRM a valid tool at all for the countries in which they worked. These answers are significant because none of the respondents furnishing them had a clear idea about MRM. Some of the reasons that they offered as to why they did not think MRM was a valid tool conveyed their ignorance about MRM. Among these responses were the following: “It is not suitable for our workplace”; “Most of them [employees and managers] are lazy. Hence MRM is not a useful tool for the country”; “Japan is a mono-cultural country”; and “I think the first problem that needs to be addressed is how people perceive our roles in the company. They need to value us better and understand that we play a valuable role. Planes don’t fix or fly themselves”. The validity of the last remark notwithstanding, MRM and the importance of valuing workers are not mutually exclusive.



management, may undermine the cohesiveness, work efficiency, and morale of multicultural AMT teams. Among these issues were the perception of some respondents that the attainment of maintenance skills was culture-specific rather than individual-specific,<sup>342</sup> along with some disturbing stereotypes that continue to pervade the workplace.

Another challenge that aviation maintenance organisations employing multicultural AMT teams face is the limited exposure to MRM that most of the respondents, across national cultural groups, have had. It is also important to stress that while MRM is a vital concept/tool for aviation maintenance organisations, it mainly addresses the technical/psychological aspects of the workplace, and needs to be complemented by tools that can address the socio-cultural challenges facing aviation maintenance organisations that employ multicultural AMT teams.

The nature of the organisational climate characterising a given aviation maintenance organisation is another factor that may determine whether or not AMTs and maintenance supervisors will readily accept new concepts, such as MRM, and the training programmes that accompany it. The data on the OC scale of the survey provides a glimpse into the organisational climate prevailing in the eight maintenance organisations examined in this chapter. However, before examining this data, it is important to clarify that “organisational climate” is not synonymous with “organisational culture”; rather the climate is the appraisal of the company’s culture (Westrum, 1996). The main assumption here is that if the organisational culture is in harmony with the individual AMTs’ and maintenance supervisors’ values, then these employees will feel proud to work for the airline company, will enjoy their job, and some of them may

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<sup>342</sup> It can be said here that some respondents seem to believe in the genetic-superiority theory which is central to racist and xenophobic movements such as Nazism and other forms of Fascism, and relatedly, they seem to believe in the technological superiority of Westerners simply because they are Westerners.

even feel comfortable enough to describe the maintenance organisation they work for as a large family. Conversely, if there were a conflict between the organisation's culture and the AMTs' and supervisors' own values, morale in the company would be affected adversely (Merritt and Helmreich, 1995).<sup>343</sup>

### 6.2.2. *The Findings on the Items of the OC Scale*

Table OC4.01 below summarises the output of mean of the Organizational Climate (OC) items. Regarding the OC-Organiz item, there was a significant difference in scores between the respondents of Middle Eastern Company Number Two, who registered the highest score (4.4286), and the respondents of Western European Company Number Two, who registered the lowest score (3.4500). Two clusters of companies can be discerned from the findings on the OC-Organiz item. The first cluster is made up of Middle East Company Number Two (4.4286), Asian Company Number One (4.2308), Middle Eastern Company Number Three (4.0294) and North American Company Number One (4.0000). The respondents from these companies agreed somewhat with the thrust of OC-Organiz. The second cluster comprises Middle Eastern Company Number One (3.9620), North American Company Number Two (3.7895), Western European Company Number One (3.5789) and Western European Company Number Two (3.4500).

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<sup>343</sup> It should be stressed here that when the organisational culture is strong and positive, AMTs and supervisors will more readily accept new concepts such as MRM, and the training programmes which go with it. In such a context, organisational culture can be made into a tool both for uniting the diverse national cultures present in the company, and for promoting superordinate values such as safety (Merritt 1996).

Table OC4.01

OC-Organiz (Q 41. *I am proud to work for this organization.*),OC-Job (Q 23. *I like my job.*),OC-Ind10 (Q 18. *Fate placed me in this organization, and I am grateful.*), andOC-Fam (Q 11. *Working for this organization is like being part of a large family.*).

<i>Company</i>		OC-Organiz	OC-Job	OC-Ind10	OC-Fam
Asian Company 1	Mean	4.2308	4.4231	2.2692	3.8846
	N	26	26	26	26
	Std. Deviation	.8629	.6433	1.0023	1.1429
North American Company 1	Mean	4.0000	4.2222	3.0000	3.1852
	N	27	27	27	27
	Std. Deviation	.9608	.6980	1.1094	1.3020
North American Company 2	Mean	3.7895	4.1053	2.5789	3.1053
	N	19	19	19	19
	Std. Deviation	1.1822	1.1496	1.6095	1.4489
Middle Eastern Company 2	Mean	4.4286	4.5000	3.0000	4.0000
	N	14	14	14	14
	Std. Deviation	.7559	.8549	1.4142	1.1094
Middle Eastern Company 3	Mean	4.0294	4.3235	2.8529	3.9412
	N	34	34	34	34
	Std. Deviation	.8699	.7270	1.7080	1.1532
Middle Eastern Company 1	Mean	3.9620	4.4557	3.0380	3.8354
	N	79	79	79	79
	Std. Deviation	1.0554	.6563	1.4272	1.2652
Western European Company 1	Mean	3.5789	4.4211	3.1579	3.2105
	N	19	19	19	19
	Std. Deviation	1.0706	.5073	1.1673	1.2283
Western European Company 2	Mean	3.4500	4.2000	3.1500	3.3500
	N	20	20	20	20
	Std. Deviation	1.0501	.7678	1.3870	1.1821
Total	Mean	3.9454	4.3571	2.9034	3.6429
	N	238	238	238	238
	Std. Deviation	1.0111	.7310	1.3974	1.2640

It is important to mention here that, based on their scores, the respondents from Middle Eastern Company Number One and North American Company Number Two leaned towards agreement with the respondents of the companies belonging to the first cluster.

There is also variance in the mean scores registered by the respondents of the companies surveyed here on the OC-Fam item of the OC scale. The highest scores on this item again came from the respondents of Middle Eastern Company Number Two (4.0000), while the lowest score was registered by the respondents from North American Company Number Two (3.1053). Two clusters of companies can be discerned from the findings on the OC-Fam. The first cluster comprises Middle Eastern Company Number Two (4.0000), Middle Eastern Company Number Three (3.9412), Asian Company Number One (3.8846) and Middle Eastern Company Number One (3.8354). The respondents from these companies agreed somewhat with the thrust of OC-Fam, or leaned in that direction. The second cluster is made up of Western European Company Number Two (3.3500), Western European Company Number One (3.2105), North American Company Number One (3.1852) and North American Company Number Two (3.1053). The respondents from these companies seemed to be indifferent to the notion that the organisation they worked for could be a large family and that they could be part of it.

The analysis of the OC-Fam item seems to point to a correlation between companies headquartered in collectivistic countries/societies and relatively high scores on the OC-Fam item.<sup>344</sup> Conversely, this analysis uncovered a correlation between companies headquartered in individualistic societies and relatively lower scores registered on the OC-Fam item.

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<sup>344</sup> There was no anomaly between the scores on the OC-Fam and OC-Ind10 items registered by the respondents from Asian Company Number One. Not all collectivists are alike. Some are fatalistic and others are not, so it is conceivable for AMTs and maintenance supervisors to feel that "working for this organization is like being part of a large family", while at the same time not adhering to fatalism.

The issue to be raised here, therefore, is that of whether respondents from putatively collectivistic culture groups were more inclined to think of the companies employing them as a large family than were their counterparts from putatively individualistic culture groups. The literature on Individualism-Collectivism points to the affirmative on this question, and the findings on the OC-Fam item in this survey substantiate that result. It is a known fact that collectivists tend to consider the organisations that they work for, or those they associate with (i.e. social clubs), as a larger embodiment of the family. It is possible that, were it not for the putatively collectivistic respondents, the score of the respondents of the companies headquartered in individualistic societies would have been even lower on the OC-Fam item. This is the case because the putatively individualistic respondents working for companies headquartered in individualistic societies in all likelihood would not regard the companies they work for as a family (this is supported by the literature on Individualism/Collectivism). Therefore, the relatively high scores on the OC-Fam item for the companies headquartered in individualistic societies could only be attributed to the putatively collectivistic respondents working for these companies.

The results on the OC-Job item indicated that respondents across the board registered the same approval of the thrust of this item (somewhat agree). Only one cluster of companies can be discerned from the findings on OC-Job: Middle Eastern Company Number Two (4.5000); Middle Eastern Company Number One (4.4557), Asian Company Number One (4.4231), Middle Eastern Company Number Three (4.3235), Western European Company Number One (4.4211), North American Company Number One (4.2222), Western European Company Number Two (4.2000) and North American Company Number Two (4.1053).

The high scores that the respondents from the companies in this cluster registered on the OC-Job items may have been helped by the traditionally high endorsement of this item by respondents from putatively collectivistic culture groups, who, more than those from putatively individualistic culture groups, tend to feel grateful for having a job. Such an outlook is always desirable from the vantage point of the management of aviation maintenance companies.

The OC-Ind10 item, which states, “Fate placed me in this organization and for that I am grateful” generated the lowest endorsement of all the items of the OC-scale.<sup>345</sup> The highest score on the OC-Ind10 item was only 3.1579 (for the respondents from Western European Company Number One), while the lowest was 2.2692 (for the Asian Company Number One). Two clusters of companies can be discerned from the findings on OC-Ind10. The first cluster is made up of Western European Company Number One (3.1579), Western European Company Number Two (3.1500), Middle Eastern Company Number One (3.0380), Middle Eastern Company Number Two and North American Company Number One (3.0000), and Middle Eastern Company Number Three (2.8529). The respondents of these companies seemed to be indifferent regarding the fate issue, or seemed to lean in that direction.

The second cluster comprises North American Company Number Two (2.5789) and Asian Company Number One (2.2692). The respondents from these companies disagreed somewhat with the thrust of OC-Ind10. But it is important to mention here that Table 6.1, ANOVA Tukey Post Hoc Pairwise comparisons, shows that scores on OC-Ind10 were significantly different for the respondents from the “Anglo culture” group,

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<sup>345</sup> This finding lends further support to the contention that AMTs, as a professional group, are more individualistic than are airline pilots from the same country.

who are individualistic, and for respondents from the “Muslim culture” group, who are collectivistic and fatalistic.<sup>346</sup> From the perspective of probability theory, the differences between the “Anglo” and “Muslim culture” groups on OC-Ind10 were unlikely to be attributable to chance.

The prevailing OC of each company in the survey could be deduced by averaging the responses on OC-Organiz, OC-Job, and OC-Fam<sup>347</sup> for each of the eight maintenance organisations. The results are as follows: Middle Eastern Company Number Two (4.3095), Asian Company Number One (4.1795), Middle Eastern Company Three (4.0980), Middle Eastern Company Number One (4.0843), North American Company Number One (3.8024), Western European Company Number One (3.7368), North American Company Number Two and Western European Company Number Two (3.6666).

It is important to mention here that these scores indicate a positive organisational climate for the eight companies examined here. This is a significant finding. The main item which was responsible for the organisational climate’s being positive for all the eight maintenance organisations studied here has been OC-Job, because of the scores it generated across respondents. Respondents liked their jobs, and this implied that the organisational climate for the different companies would be positive. Overall, the scores show that the maintenance companies’ organisational climate was in harmony with the respondents’ values.<sup>348</sup>

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<sup>346</sup> It is worth noting that ANOVA did not reveal other Pairwise Comparisons involving other putative fatalists, such as the Hindus.

<sup>347</sup> OC-Ind10 was excluded from this calculation for two main reasons. The first reason was that this item was mainly used to determine the extent to which fatalism was prevalent among respondents. The second, and more important reason, was that it is difficult to justify making a determination of adherence to fatalism as a measure of the prevailing OC of a given aircraft maintenance organisation. Fate is the opposite of choice.

<sup>348</sup> The items on the preference list for the respondents were the following, in rank order: 1) liking the job, 2) feeling proud to work for the organization; and 3) working for this organization is like being a member of a large family.

In summary, the findings on the three items of the OC scale are in line with those of Merritt (1996), and Helmreich and Merritt (1998) for airline pilots. These findings associating the relatively high scores on most of the items of the OC scale with companies headquartered in collectivistic societies, are also in line with the findings of Merritt (1996), and Helmreich and Merritt (1998) for airline pilots. These findings and those of Merritt, and Helmreich and Merritt on the latter issue beg the question of whether AMTs and airline pilots from collectivistic culture groups bring with them a predisposition to think favourably of maintenance organisations for which they work, and to view these organisations as extensions of their own families. The data on AMTs support such an interpretation, and therefore allow the results of surveys on the OC scale to be put into perspective.

Now it is appropriate to turn to the issue of “profiles” of the different maintenance organisations. It is important to bear in mind that some respondents revealed more about the companies employing them than others. There seems to be a correlation between the sample size and the information revealed about a given company.

### *6.3. Profiles*

Asian Company Number One has a positive organisational climate and faces no major problem that could undermine its operations.<sup>349</sup> There are no hints of serious instances of dissent among the company’s employees,<sup>350</sup> which could be viewed as a form of “civilisation clash”

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<sup>349</sup> There are 16 nationalities in the sample related to Asian Company Number One.

<sup>350</sup> However, there were some respondents who registered negative opinions about co-workers from certain culture groups. One respondent, for example, singled out Japanese for being too submissive and stressed that it was very hard to take what they said at face value. Another indicated that Koreans were short-tempered and were therefore not suited for aircraft maintenance work. Still another complained that Asians always kept to themselves, and the final respondent stated that Pakistanis were dishonest. But these negative remarks were mild in comparison with those voiced by respondents from other companies, as will be shown later.



(Huntington, 1993).<sup>351</sup> But this does not mean that cultural misunderstandings or conflicts were non-existent in Asian Company Number One's workplace. Rather, it simply means that this survey did not highlight such conflicts.

### 6.3.1. Asian Company Number One

Only 38% of the respondents from Asian Company Number One seemed to be indicating that the place in which they worked matched their ideal workplace.<sup>352</sup> Almost 17% of them chose the C/C match,<sup>353</sup> more than 11% the B/B match,<sup>354</sup> and an equal percentage the E/E match.<sup>355</sup> However, 55.55% of the respondents chose mismatches, and these choices highlight the lack of consensus on the part of the respondents regarding characterising the actual workplace versus the ideal workplace.<sup>356</sup> This shows that there are as many opinions as there are respondents regarding

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<sup>351</sup> It is interesting to note that one respondent himself mentioned the danger of a "clash of civilisations" in the workplace.

<sup>352</sup> This 38% represented the highest number of respondents to register such a match for any company in the survey.

<sup>353</sup> Description C was that "In the workplace, team members form a harmonious unit, despite the fact that they come from different national cultures. Team members also make extra efforts to understand each other, and to communicate in simple language when communication problems arise on the job. Team members like each other a lot, and also socialize across cultural lines outside the job".

<sup>354</sup> Description B was that "In the workplace, team members form a harmonious unit, despite the fact that they come from different national cultures. Team members also make extra efforts to understand each other, and to communicate in simple language when communication problems arise in the job. Team members generally like each other even though they *do not* socialize across cultural lines outside the job".

<sup>355</sup> Description E states that "In the workplace members of our team are from various national cultures, but they are so well integrated that they consider themselves members of one working family, and of a larger community as well".

<sup>356</sup> As an illustration, 11.11% chose the C/E mismatch and 11% chose the D/B mismatch. The D description states that "The workplace contains a mixed culture team, which forms neither a harmonious nor a disharmonious unit. Team members try to carry out their job assignments to the best of their abilities, on a day-to-day basis, with a varying degree of success".

the characterisation of their actual workplace and the selection of an ideal one.<sup>357</sup>

One of the challenges facing Asian Company Number One was the fact that a mere 8% of the respondents from this company registered any knowledge of MRM/HF.<sup>358</sup> Another important challenge to this company is adaptation to a changed geopolitical environment. The area where this company is headquartered has been returned to a power with a political ideology markedly different from that of its predecessor, which exercised sovereignty over the area for a century.<sup>359</sup> Though the company continues to operate in a free-market environment, the transfer of sovereignty raises questions as to the future of the airline and of its maintenance organisation. It remains to be seen whether the company will be able to continue to recruit personnel from different national cultures, as it did in the past, and whether the company will also continue to be able to attract some of the best and brightest AMTs and maintenance supervisors.<sup>360</sup>

North American Company Number Two faces more serious challenges than does Asian Company Number One.<sup>361</sup> In particular, there are several hints at dissent among the AMTs and maintenance supervisors working for North American Company Number Two.

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<sup>357</sup> This is to be expected because individuals have different perceptions, goals, likes and dislikes, and aspirations. This does not mean that workers' diverse preferences could never be met by an organisation. The goal is to find aspects around which a consensus could be built.

<sup>358</sup> This was the lowest percentage for that question among all of the eight aviation maintenance companies examined in this study.

<sup>359</sup> However, it is important to note that the current power in control agreed to a political deal with its predecessor that preserved the area's capitalist and "democratic" system for a period of fifty years.

<sup>360</sup> This question becomes especially salient in the light of the strike and massive resignation by pilots in the year 2001 over a disagreement with management over pay and benefits.

<sup>361</sup> There are 12 different nationalities in the respondent sample for North American Company Number Two.

### 6.3.2. North American Company Number Two

The dissension within this company manifests itself in the many negative comments and stereotypes that respondents working for North American Company Number Two conveyed about their colleagues who belong to different ethnic and cultural groups. Specifically, many of these respondents either stated or hinted that they did not “get along” with these colleagues, and would rather not have to work with them.<sup>362</sup> One respondent, for example, stressed that he could not get along with Europeans because of their sense of superiority,<sup>363</sup> and he also singled out Muslims for socialising only among themselves and accused them of supporting only people of their own faith.

Another respondent found fault with several cultural groups: “British are arrogant, Arabs are scared of hard work and are very lazy, Mexicans are cheats and liars, Burmese are not trustworthy”, “Filipinos will steal ... and Indians will let you down in time of need”.<sup>364</sup> A third respondent indicated that he did not want to work with Filipinos because “they are not honest, not hard working”, and that “if given the opportunity” they would steal spare parts from the company.<sup>365</sup> A fourth respondent provided a long list of ethnic and cultural groups which he found lacking in qualities like hard work, honesty, competence, predisposition to learn, etc. For instance, he

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<sup>362</sup> It is possible that most of the respondents who expressed negative views about certain ethnic and cultural groups may have had bad experiences with one or two individuals from these ethnic or cultural groups, and, as a consequence, may have come to adopt negative beliefs and stereotypes concerning those colleagues’ ethnic or cultural groups in their entirety.

<sup>363</sup> Another respondent also singled out Germans for being arrogant about their knowledge. A third respondent indicated that he would not want to have Germans in his crew “because they always contest your decision”.

<sup>364</sup> Still another respondent mentioned that he did not like to work with Cubans because they cheated and did not do their fair share of the work.

<sup>365</sup> Another respondent expressed his dislike for Pakistanis and Indians. Regarding Indians, still another respondent simply said, “He did not like Indians too much”. Because he offered no explanation as to why he felt that way, his remarks could only be taken to signify prejudice. It is important to stress, however, that this does not mean that those who are able to offer justification for their biased positions are not racists.

stated that people from the Arabian/Persian Gulf, Peruvians and Africans were only interested in talking and not working, and that Brazilians, Mexicans, and Spaniards were “lazy, cheats, and not interested in learning”.

The very fact that almost 58% of the respondents associated with the North American Company Number Two saw fit to voice negative opinions about colleagues from other ethnic and cultural groups and/or indicated that they did not get along with people from these ethnic and cultural groups, is an indication in the OC score of the anti-productive atmosphere pervading this company, and of poor management of cultural diversity as well. This company had the lowest OC (3.6666) in our survey.

The surprising fact about all of these expressions of inter-ethnic hostility is that they were voiced by respondents living in a society that ostensibly values tolerance, encourages immigration (and thrives as a result of it), and has a long tradition of multicultural work teams in various industries. The contradiction between the stated values of the society in which this company functions, and the actual atmosphere within North American Company Number Two, makes it necessary to place the blame on this company for the atmosphere which fosters and allows dissemination of dangerous stereotypes in the workplace, and for the tangible dissent that this survey revealed among some of the company’s AMTs and maintenance supervisors.

Moreover, in comparison with the respondents from Asian Company Number One, only 26.3% of the respondents from North American Company Number Two stated that the characteristics of the place in which they worked matched those of their ideal workplace. Slightly more than 20% of these respondents chose the C/C match and 5.26% the B/B match. However, 73.7% chose mismatches and these choices, like those pertaining to Asian Company Number One, highlight the lack of consensus on the part

of the respondents from North American Company Number Two regarding characterising their actual workplace and selecting their ideal one.<sup>366</sup>

In summary, North American Company Number Two needs to address its shortcomings in the area of inter-cultural coexistence, and, to some extent, in the area of MRM/HF as well. Regarding MRM/HF, 50% of the respondents from North American Company Number Two showed familiarity with this tool/concept. Although this was the highest score for all the companies surveyed here, 50% is still too low, and North American Company Number Two still needs to familiarise the remaining 50% of its work force with MRM.<sup>367</sup> Familiarising the remainder of its workforce with MRM may be less challenging for North American Company Number Two than fostering cultural tolerance in the workplace might be.<sup>368</sup>

Regarding the area of inter-cultural coexistence, sensitivity courses might serve as a useful first step in changing people's ideas and perceptions about people from other cultural groups, and thereby help to foster a climate of tolerance within the company. However, the current societal backlash against immigration in the society in which North American Company Number Two is headquartered may compromise the effectiveness of measures that the company needs to implement in order to make the working environment a culture-friendly and peaceable one. Intolerance in society seeps into the workplace, and the workplace is usually a reflection of society as a whole.<sup>369</sup>

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<sup>366</sup> More than 5% of the respondents from North American Company Number Two were so unhappy with their workplace that they attributed their misfortune to fate. They expressed their fatalism by selecting Characterisation I', which states that "In the workplace, team members come from various national cultures, and have been thrown together by fate. What fate has put together, humans cannot undo", as an accurate description of their workplace.

<sup>367</sup> The main caveat about this score, however, is that it did not come from a random sample of respondents.

<sup>368</sup> This assumption is made because this company has the resources to meet the MRM challenge.

<sup>369</sup> In the conclusion, this chapter presents one model which provides a road-map for managing cultural diversity. This road-map could be utilised by this company, as well as by others having cultural tolerance problems.

North American Company Number One did not fare better than North American Company Number Two in the area of cultural tolerance.<sup>370</sup> As in the case of North American Company Number Two, the survey revealed dissension within the workforce of North American Company Number One.

### *6.3.3. North American Company Number One*

As with respondents from North American Company Number Two, several respondents from North American Company Number One adhered to stereotypes about several ethnic and cultural groups, and some respondents also indicated, or hinted, that they did not get along with people from certain ethnic and cultural groups, and would rather not have to work with them. One respondent, for example, stressed that he found it “frustrating to work with Mexicans” because they took work lightly, “have no sense of responsibility and are very disrespectful” towards their colleagues.<sup>371</sup> Another respondent stressed that he did not want to work with Indians, even though he considered them intelligent and hard working, because “they are not trustworthy and look only at their personal benefits rather than to the company’s”.<sup>372</sup>

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<sup>370</sup> There were 14 different nationalities represented in the sample for North American Company Number One.

<sup>371</sup> Another respondent, belonging to the same ethnic and cultural group as the previous one, also seemed to have problems with Mexicans, as he indicated that Mexicans could not be trusted. These two respondents supplied an example of a group stereotype (i.e. a stereotype believed by more than one member of an ethnic and/or cultural group concerning another). This may indicate the existence of a feud between the Mexicans and the members of the ethnic and cultural group to which the two respondents supplying the stereotype about Mexicans belonged.

<sup>372</sup> This respondent added that the Indians would transfer to another company if they were offered more money there. It is important to mention here that this remark was made by a respondent from a putatively collectivistic ethnic group. Another respondent also indicated that Indians had no loyalty to the company, and merely wanted to squeeze benefits from it. This response, though, was from a respondent from an individualistic culture.

A third respondent indicated that he did “not like Middle Eastern people to be in [his] team because they are not hardworking, ... are financially well-off, and they do not want to upset their lives by taking too much work pressure”. Three stereotypes are at work here: “Arabs are lazy (i.e. not hardworking)”; “they are wealthy (and therefore do not need to work)”; and “they do not want to upset their lives through work”.<sup>373</sup>

A fourth respondent stated that he would not want Asians to be working with him,<sup>374</sup> while a fifth respondent mentioned that he would rather not have to work with Africans. Neither of these respondents offered any explanation for these preferences. It is possible that both of these respondents, being under the influence of stereotypes, felt that no explanation was necessary.<sup>375</sup>

A sixth respondent, who belonged to the same cultural group as the fifth, mentioned five different nationalities whose members he would rather not have to work with. These are Thais, Burmese, Brazilians, Mexicans and British. This respondent had previously associated Thais, Brazilians and Mexicans with being “disloyal, dishonest, [and] liars”.

As is now evident, most of the stereotypes expressed by the respondents making up the sample from North American Company Number One were aimed at ethnic and cultural groups which are putatively collectivistic. Remarkably, there were respondents from these targeted cultures who spoke negatively of other members of their own ethnic or

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<sup>373</sup> The respondent supplying these stereotypes is from a collectivistic culture. A member of this culture group also stressed that he did not want an Iraqi to be in his crew. Still another member of this ethnic and cultural group characterised Arabs as arrogant and lazy. The conclusion to be derived from the fact that three members of the same cultural group voiced negative comments about Arabs indicates a group stereotype, and the existence of a possible feud between Hindus, the cultural group from which the three respondents came, and Arabs.

<sup>374</sup> Another respondent associated Asians with “cheating and irresponsible work behaviour”. This respondent, though, was from an individualistic group.

<sup>375</sup> As studies on stereotypes show, those who express stereotypes usually believe that they are expressing universal truths.

cultural group. For example, one respondent, an Arab, characterised Middle Easterners as reluctant to be honest about their opinions,<sup>376</sup> and added that he would rather not have to work with Arabs because dealing with them is “particularly draining” and one would “have to be extra cautious” around them.

The respondents of this sample rarely stereotyped Westerners, and when they did criticise Westerners, it was usually for being culturally insensitive to non-Western people, and for being arrogant. As an illustration, a respondent indicated that he would rather not have to work with British AMTs because British people are “very arrogant. Even the most junior members of the staff [who are British] look down at you”.<sup>377</sup>

It is important to mention here that because almost 59% of the respondents associated with North American Company Number One voiced negative opinions about colleagues from other ethnic and cultural groups and/or indicated that they would rather not work with these colleagues, this finding could be interpreted to mean that several cultural groups do not get along in the workplace and that, therefore, cultural co-existence in the workplace is frayed at best. The situation faced by North American Company Number One also seems to be serious because one instance was found of what may be an ongoing feud between Arabs and Hindus.<sup>378</sup>

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<sup>376</sup> He also indicated that Middle Easterners were shy and hesitant in the workplace, and that they took any comment as a personal insult.

<sup>377</sup> Across all eight aviation maintenance organisations, Westerners’ qualifications, competence, work ethic, loyalty, ability to learn, etc. were rarely questioned by respondents from non-Western societies. This is not surprising because Westerners generally have been the propagators of stereotypes about non-Westerners. Non-Westerners have internalised the general stereotypes that Westerners have made about them, but they have also produced their own stereotypes about fellow non-Western peoples.

<sup>378</sup> In addition, since all Arabs are considered Muslims by Hindus, one can extrapolate that Hindus are also involved in feuds with Muslims in general (and Pakistanis in particular). The Pakistani/Hindu rivalry is mainly religious, but it also has a geopolitical component as a rivalry between two states. This study furnishes additional illustration of how this rivalry is played out in aviation maintenance organisations.



The surprising fact about all of these stereotypes is that they are subscribed to by respondents who are living in arguably one of the most tolerant societies in the world, and one which made multiculturalism a tenet of its social policy. This society, like that in which North American Company Number Two is headquartered, has encouraged immigration and has thrived as a result of it. This being the case, the management of North American Company Number One must assume the blame for the dissemination of dangerous stereotypes in the workplace, and for the feuds among employees of at least two cultural groups.

Moreover, in comparison with the employees of North American Company Number Two, a mere 7.4% of the respondents from North American Company Number One stated that the characteristics of the place in which they worked matched those of their ideal workplace. This percentage is split between a B/B match, and an E/E match. However, an overwhelming 92.6% of the respondents from North American Company Number One chose mismatches, and these choices, like those pertaining to Asian Company Number One and North American Company Number Two, imply that there is dissatisfaction among the respondents with their workplace. More than 22% of the respondents from North American Company Number One settled on the A/E mismatch, 11.11% on the B/C mismatch, and 7.4% on the D/B mismatch.

One disturbing fact here is that almost 26% of the respondents settled on Description A as defining their actual workplace. Description A states that “The workplace contains team members who are from different national cultures; who have difficulty understanding each other; and who, as a result, act as though they would rather not work together. Consequently, the workplace situation is usually tense. Outside the job, people congregate along nationality/national culture lines”. This assessment by 26% of the

respondents from North American Company Number One is in line with the stereotyping prevalent among the respondents from this company as presented above. However, there is not enough data about North American Company Number One to say that Description A precisely portrays this company. Interviews with this company's employees, and the company's worldwide reputation, imply the opposite. Therefore, a more cautious assessment of the company's prevailing climate in the area of national cultural co-existence is necessary.<sup>379</sup>

This caveat notwithstanding, North American Company Number One seems to have a more serious deficit in the area of cultural co-existence than does North American Company Number Two. North American Company Number One's management may need to go beyond the implementation of sensitivity programmes if it wants to remedy the situation and create optimal conditions in the workplace.<sup>380</sup> Cultural tolerance is a *sine qua non* for a peaceful, productive, and possibly also safety-conscious workplace.

North American Company Number One also needs to raise its employees' level of familiarity with MRM. This is the case even though North American Company Number One fared better than did North American Company Number Two in this area (almost 56% of the respondents from North American Company Number One registered familiarity with MRM/HF, in comparison with 50% for North American Company Number Two).

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<sup>379</sup> However, the very fact that 26% of the respondents from North American Company Number One have such a negative perception of the workplace should be a source of concern for management.

<sup>380</sup> As was stressed before, sensitivity courses are only a useful first step in changing people's ideas and perceptions about people from other cultural groups.

The very fact that North American Company Number One is headquartered in a society which has elevated multiculturalism as an operative component of its social policy should facilitate that company's task of raising the level of cultural tolerance in the workplace. However, in the society where North American Company Number One is headquartered, there are also forces which oppose immigration and multiculturalism. It is important to emphasise, though, that societal backlash against immigration and cultural diversity is not unique to North America.

Western European countries also face this problem, and maybe more dramatically so, in the light of the emergence of racist parties in different Western European countries, and aviation maintenance organisations headquartered in West European countries are not immune from societal influences. Western European Company Number One is a case in point, faring no better than North American Company Numbers One and Two did in the area of cultural tolerance.<sup>381</sup>

#### ***6.3.4. Western European Company Number One***

As in the case of North American Company Numbers One and Two, the survey indicated some dissent among the respondents from Western European Company Number One. Several respondents from this company also adhered to stereotypes about several ethnic and cultural groups, while others indicated that they either did not get along, or did not want to work, with members of those ethnic and cultural groups.

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<sup>381</sup> There were 11 different nationalities represented in the sample for Western European Company Number One.

One respondent, for example, mentioned that he did not like the traits associated with Japanese,<sup>382</sup> Turks and Arabs, while another respondent indicated that he would not want to work with Jews. A third respondent stated that he would rather not have to work with Sudanese because they are “hard to please, and are not always motivated”, and with Indians and Pakistanis because “they do not mix very well in the workplace”. While there is some truth in the latter statement because of the religious animosity between many of Pakistan’s Muslims and India’s Hindus, it also has racial overtones. This conclusion can be drawn because the respondent who made this remark seemed to be stating that Western European Company Number One would be better off without employees from either cultural group.

A fourth respondent indicated that he would rather not have on his team Greeks, Turks, people from the Balkans and Frenchmen because “they are hot-headed, and unwilling to mix in the workplace”.<sup>383</sup> A fifth respondent, who was from the same ethnic and cultural group as the fourth, also indicated that he would not want his co-workers to have the traits of “high volatility”, which he associated with Italians, Frenchmen and Spaniards. This respondent also did not want his co-workers to be irrational, a trait he associated mainly with Arabs, Indians<sup>384</sup> and Africans. A sixth respondent indicated that he did not want his co-workers to have the

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<sup>382</sup> Regarding the Japanese, a pattern can be discerned from this survey. Specifically, many Filipinos have developed a dislike for the Japanese, and a partiality towards Americans. Japan’s role in Asia during World War II may explain the Filipino respondents’ dislike of the Japanese. The admiration for things American that many Filipino respondents expressed could be attributed to several factors, such as the US’s role in the liberation of the Philippines during World War II, and the US’s position as the favourite destination for Filipinos wanting to study or emigrate.

<sup>383</sup> However, this respondent also indicated that he did not like people who used their religion as a barrier against communicating and working with others. Though this remark was aimed at fundamentalist Christians and Muslims, the respondent who made it would also be likely to have a negative view of radical Hindus and fundamentalist Jews as well. While it is difficult to call this dislike an example of prejudice, his clearly prejudiced views of Greeks, Turks, people from the Balkans and Frenchmen show that common sense and prejudice do co-exist within the same individual.

<sup>384</sup> Another respondent stressed that he did not like his colleagues to have the trait of “closed-mindedness”; a trait he associated with Indians.

traits of dependency and the inability to make decisions. He associated this characteristic exclusively with Asians.<sup>385</sup>

Respondents from Western European Company Number One, like those from North American Company Numbers One and Two, rarely stereotyped Westerners regarding work ethic, predisposition to learning, trust, competence, etc. However, respondents from Western European Company Number One, like those from the two North American Companies, did criticise Westerners for lack of humility,<sup>386</sup> and generally for their behaviour as individuals.<sup>387</sup> Like the respondents from North American Company Numbers One and Two, respondents from Western European Company Number One levelled the most damaging stereotypes at colleagues from collectivistic ethnic and cultural groups. For instance, one respondent indicated that he did not want his co-workers to have the following traits: lack of responsibility, lack of commitment, lack of trust and unwillingness to share information about the job. He associated these characteristics mainly with Arabs and stated that he would rather not have them on his team. Paradoxically, he himself is an Arab.<sup>388</sup>

Because almost 58% of the respondents from Western European Company Number One voiced negative opinions about colleagues from

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<sup>385</sup> Still another respondent stressed that he did not want his colleagues to be inefficient in the workplace; a characteristic he associated with Southern Asians, and attributed to the fact that they came from a tropical zone. There is a theory according to which people living in cold climates are more productive and more developed economically and technologically than those living in hot climates, who tend to be less productive, less efficient, and underdeveloped economically and technologically. This respondent may have read or heard about this theory and thought it was a valid analytical/predictive tool.

<sup>386</sup> An example is the respondent who criticised Americans and Germans for lack of humility. This, too, is a stereotype, because many Germans and Americans, along with many other Westerners, are humble.

<sup>387</sup> A respondent from a collectivistic national culture indicated that the only problem he had with American and British colleagues was their behaviour as individuals, and not any particular cultural characteristic.

<sup>388</sup> This begs the question of whether people are to be believed because they provide what they claim is an “insider view” of a specific culture, but this view turns out to be negative. The researcher here would contend that such people are not credible because all they demonstrate is that they, too, have internalised stereotypes about their own ethnic and cultural groups. Moreover, the providers of these so-called “insider views” may also have hidden agendas, or may be trying to rationalise their abandonment of their native lands. On cultural stereotyping, see Mattock (1999: 7-8), and Scarborough, (1998: 97-98).

other ethnic and cultural groups and/or indicated that they would rather not work with them, one can infer that there were AMTs from several different national cultural groups who did not get along in the workplace and that, therefore, cultural co-existence on the job was frayed at best. However, Western European Company Number One contrasted with North American Company Number One in that, in the former case, there were no meaningful indications of ongoing feuds between elements belonging to different ethnic and cultural groups.<sup>389</sup> Nonetheless, one respondent from Western European Company Number One did remark that Pakistanis and Indians did not mix well in the workplace.

Moreover, in comparison with the employees of North American Company Number Two, only 10.5% of the respondents from Western European Company Number One stated that the characteristics of the place in which they worked matched those of their ideal workplace. All of these agreed on the E/E match. However, 89.5% of the respondents chose mismatches. More than 21% of the respondents settled on the D/E mismatch, 15.78% on the B/E mismatch and an equal 15.78% on C/E.

Western European Company Number One seems to have serious problems in the area of cultural co-existence, and in the area of MRM-awareness as well. As with the companies previously discussed, in the area of cultural sensitivity, Western European Company Number One would need to embark on an ambitious programme in order to make the workplace (national) culture-friendly. This would include the need for sensitivity and outreach programmes, which would be components of a new strategy to manage diversity. As will be clarified in this chapter's conclusion, the backbones of this strategy should be transformational leadership, education

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<sup>389</sup> By "meaningful indications" it is meant here that respondents from cultural groups involved in feuds would, themselves, provide indications of such feuds through their answers.

and alignment of management resources.<sup>390</sup> The aim here would be to enable employees from different national cultures to feel welcome and valued on the job.

Western European Company Number One also faces the daunting task of making its employees knowledgeable about MRM/HF. This could be seen in the fact that only 15.78% of the respondents from this company showed familiarity with MRM/HF. This is a surprising finding, given the fact that this company is attached to one of the premier airlines in the world.<sup>391</sup>

The resources that this company possesses render the MRM mission feasible. Like its North American competitors, Western European Company Number One can also succeed in making the workplace a friendlier one for employees from different ethnic and cultural groups. However, as with the North American companies discussed above, Western European Company Number One is not immune to societal backlashes. The country in which this company is headquartered has experienced a rise of xenophobic groups, race riots, etc. This, and the fact that Western European Company Number One may have a deficit in the area of cultural co-existence, is likely to handicap this company in attracting the most qualified, and promising, AMTs and maintenance supervisors. Competition for the best, and most promising, AMTs and maintenance supervisors may intensify in the era of globalisation. It is important to stress here that for Western European Company Number One as well as for the others

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<sup>390</sup> The adoption of this strategy is recommended for the seven other companies as well.

<sup>391</sup> This investigator's expectation was that this premier airline's employees would show a greater familiarity with MRM/HF, since this aviation maintenance organisation is affiliated with one of the premier airlines in the world. It is possible that the respondents from Western European Company Number One (as well as for those working for Western European Company Number Two) were familiar with the term "Human Factors" instead. But because many among them equated MRM with Human Factors, or mentioned Crew Resource Management (CRM) in their answers to the question on MRM, non-familiarity with MRM or Human Factors may be the real explanation for the high percentage of erroneous answers to the MRM question.

surveyed in this chapter, there is a public relations value in being identified as an organisation that manages diversity competently.

Western European Company Number One's worldwide reputation, though, gives it an edge as far as recruitment is concerned. Should it succeed in the challenge of alleviating the problems of national cultural tolerance in the workplace, this company would enhance its reputation, and would therefore continue to draw the best, and most promising, AMTs and maintenance supervisors.

### *6.3.5. Western European Company Number Two*

Western European Company Number Two was also found to have a serious deficit both in the area of culture tolerance and in the area of MRM-awareness.<sup>392</sup> Western European Company Number Two differs from Western European Company Number One in that it is a start-up company, and one which lacks the resources and world-wide reputation of the latter.

Despite its start-up status, Western European Company Number Two is perceived as a trend-setter, as a result of its advertisement campaign and the personality of its owner. As with the last three companies studied here, i.e. North American Company Number Two, North American Company Number One and Western European Company Number One, survey answers indicate dissent among the AMTs working for Western European Company Number Two. Like several of the respondents from North American Company Numbers One and Two, as well as from Western European Company Number One, respondents from Western European Company Number Two also hold stereotypes about certain

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<sup>392</sup> There were twelve different nationalities represented in the sample related to Western European Company Number Two.



ethnic and national cultural groups, and some of these respondents let it be known they would rather not have colleagues from certain ethnic and national cultural groups on their teams.

One respondent, for example, indicated outrage at colleagues who come to the workplace wearing national costumes. He considered this to be a cultural trait which clashed with the working environment. He also indicated that he would rather not work with people whose cultural traits are to “try hard to forget their origins and moral standards and [who] are absorbed in the bad habits of other nations [i.e. the Western nations in which they had settled]”.<sup>393</sup>

A second respondent mentioned that he would not want people working with him to have the cultural traits of Germans, Indians, Blacks, Jews and British.<sup>394</sup> A third respondent stereotyped Egyptians as being “slow moving, ...lazy, hostile and deceivers”,<sup>395</sup> and indicated that he would rather not have to work with them. He also indicated that he did not want his colleagues to have the traits of Egyptians, Jordanians and Saudis.<sup>396</sup>

In the sample for Western European Company Number Two, there were also respondents who gave critical assessments of their own cultural groups. One such respondent indicated a dislike of the cultural traits associated with Iraqis, saying that they “do not tolerate ...opposing opinions

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<sup>393</sup> This respondent also lavished praise on some Far Eastern cultures, saying that members of those cultures were “hard working, honest, and very polite. They remain unspoiled in a world that is fast becoming indecent and immoral”. This respondent seems to be deploring the passing of an age of decency and morality, and seems to regard Western cultures and traditions as immoral and indecent.

<sup>394</sup> This respondent did not indicate the reasons why he felt the way he did. It is important to mention here that several respondents chose not to answer certain questions by saying “pass”, “no comments”, “I do not want to be considered a racist”, “I will keep silent”, etc. This respondent is a case in point, as he used the phrase “I will keep silent” regarding the question of whether or not there were people from specific national cultures whom he would rather not have on his team. But he had already given a hint concerning that question by mentioning the cultural traits he did not want his co-workers to have.

<sup>395</sup> Another respondent indicated that he would rather not have on his team “Orientals” because they did not seem to co-operate with other nationalities.

<sup>396</sup> Though he did not offer any explanation as to the reason for his many dislikes, he seemed to have problems with Arabs.

to theirs”. The second respondent mentioned a dislike of the cultural traits associated with British people of Pakistani ancestry because they were “cheats, frauds, [showed] no respect for duty”, and were opportunistic. This respondent also stressed that he would rather not have British people of Pakistani ancestry on his team.

Yet another respondent gave an indication of an ongoing rivalry between India’s Hindus and Pakistan’s Muslims.<sup>397</sup> This respondent indicated that he would rather not have Indians and British Indians in his crew, explaining that “They are narrow-minded with respect to national[ity] and religion. [And moreover] They have an inbuilt rivalry with Pakistanis”.

In the case of Western European Company Number Two, Western and non-Western respondents alike associated non-Western people with the worst stereotypes,<sup>398</sup> but respondents rarely stereotyped Westerners regarding work ethic, predisposition to learning, trust, competence and loyalty. When Westerners were criticised, it was mainly for their individual behaviour, or for such other reasons as lack of humility.<sup>399</sup> Rare, also, were the respondents who indicated that they would rather not have Westerners on their teams.

Those culturally-based criticisms of Westerners that did occur in the sample for Western European Company Number Two were mild. One respondent, for example, associated Americans with such cultural traits as “overpowering, loud, and attention-seeking” behaviour. A second respondent associated Americans with a “lack of irony”,<sup>400</sup> and a third

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<sup>397</sup> It is worth restating here that indications from respondents about an ongoing feud between India’s Hindus and Pakistan’s Muslims were found in samples from several of the companies examined in this study.

<sup>398</sup> Everything about non-Western people is questioned: Work ethic, competence, loyalty, ability to learn, etc.

<sup>399</sup> However, as occurred in samples from other companies, a couple of respondents blamed Westerners for discriminating against non-Westerners.

<sup>400</sup> He also associated Frenchmen with “adherence to bureaucracy”.

respondent linked Americans with the cultural trait of “not listening or overriding” those under their authority.<sup>401</sup> A fourth respondent associated such cultural traits as “negativity and cynicism” with the British and “arrogance” with Frenchmen.

The fact that 55% of the respondents from Western European Company Number Two held stereotypes about colleagues from certain ethnic and cultural groups, and/or had indicated that they would rather not work with them can be taken as a sign of cultural discord within the company. There is also a sign of a feud between Pakistan’s Muslims and India’s Hindus. This finding compounds the problems facing Western European Company Number Two, because the atmosphere in a workplace politicised by an inter-ethnic feud is always counter-productive.

It is important to mention here that only 10% of the respondents working for Western European Company Number Two stated that the characteristics of the place in which they worked matched those of their ideal workplace. These respondents were split between the D/D and the C/C match, but 90% of the respondents chose mismatches: 15% for the B/E mismatch, 10% for the D/E mismatch, an equal 10% for the A/E and the D/C mismatch.

Like North American Company Numbers One and Two, and Western European Company Number One, Western European Company Number Two seems to have a serious deficit both in the area of cultural co-existence in the workplace, and in the area of MRM-awareness. Regarding cultural co-existence, Western European Company Number Two is in the same predicament as the last three companies surveyed, and like them, would need to embark on an ambitious programme to make the workplace culture-friendly and tolerant, along the lines specified previously.

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<sup>401</sup> He also associated “lack of respect for time schedules” with Frenchmen, Italians and Spaniards.

Like Western European Company Number One, Western European Company Number Two has a serious deficit in the area of MRM-awareness. Specifically, the survey showed that only 15% of the respondents from Western European Company Number Two who took part in the survey were familiar with the MRM/HF programme.

Western European Company Number Two operates in a socio-cultural environment similar to that of Western European Company Number One, and thus faces the daunting task of making the workplace more culturally friendly within a broader environment which seems to be unfriendly to most non-Western people. The rise of xenophobic groups, and the eruption of ethnic riots are not encouraging signs for Western European Company Number Two. However, investing in cultural peace in the workplace by making these changes is as important as investing in hardware.

The MRM/HF challenge is a straightforward one. MRM has to become part of the company's culture. Western European Company Number Two's "trend-setter" image can help it in the area of recruitment, but the company lacks the resources of Western European Company Number One, and of North American Company Numbers One and Two and therefore is unlikely to become a major player in the air transport business.<sup>402</sup> However, were Western European Company Number Two to capitalise on its image as a trend-setter by making bold improvements in the cultural co-existence area, it would narrow the gap between it and its Western European and North American competitors, and would be able to recruit its share of the best and most promising AMTs and maintenance supervisors. In the era of globalisation, companies compete not only for a

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<sup>402</sup> A caveat is in order here, though: success in air transportation, as in any other economic activity, is determined far less by financial means than by the adoption of the right innovative ideas at the right time.

share of the passenger market but also for a share of the best technical personnel, the lack of which would automatically render any aviation company uncompetitive in the first place.

Middle Eastern Company Number Two faces competition in a globalised market place,<sup>403</sup> while handicapped by many liabilities. These liabilities include a deficit both in the area of cultural tolerance and in the area of MRM-awareness.

### *6.3.6. Middle Eastern Company Number Two*

As underscored by the survey's findings, cultural co-existence is frayed at best in Middle Eastern Company Number Two. Indeed, a large number of respondents from Middle Eastern Company Number Two held stereotypes about certain ethnic and cultural groups, and some of these respondents also made it known that they would rather not have to work with colleagues belonging to certain ethnic and cultural groups.

One respondent, for example, indicated that he did not want the people working with him to have the cultural traits of Mexicans because they are "liars, cheats and let you down". This respondent also mentioned that he would rather not have to work with Americans, because he associated them with "arrogance". This same respondent considered the US to be an arrogant power, because Washington was involved in a conflict with his country.<sup>404</sup>

A second respondent pointed out that he did not want the people working with him to have the traits of "rebelliousness" and to be "robot-

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<sup>403</sup> There are 9 different nationalities in the sample related to Middle Eastern Company Number Two.

<sup>404</sup> This respondent conveyed the belief that Americans as a people reflected the arrogant image of their government and armed forces.

like”, i.e. to “follow instructions” blindly. He mainly associated these traits with Indians. This respondent also stated that there were people from a specific cultural group, namely Africans, that he did not want in his crew, on the grounds that Africans were “not sincere, [and moreover were] lazy people”. This remark was patently racist, because it singled out an entire group of people solely because of the colour of their skin.

A third respondent indicated that he did not want the people working with him to have the cultural trait of “taking criticism too personally”. He associated that trait with Asians in general, and with Arabs. A fourth respondent mentioned that he did not want people working for him to have the cultural traits of “yes men, or to be meek”, because he wanted his co-workers to “stand for their own convictions”. He associated these traits with Indians and Pakistanis. A fifth respondent indicated that he would rather not work with Indians, Thais and Burmese, on the grounds, that he considered members of these cultural groups to be liars, cheats, and thieves.<sup>405</sup>

As stated before, throughout the survey few non-Westerners indicated that they would rather not work with Westerners. There was one such respondent in the sample for Middle Eastern Company Number Two. However, this sample also included a Westerner who mentioned that he would rather not have Germans on his team because they were “a bit too difficult to work with”.<sup>406</sup>

The fact that 50% of the respondents associated with Middle Eastern Company Number Two held stereotypes about certain ethnic and cultural groups, and/or had indicated that they would rather not work with

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<sup>405</sup> A sixth respondent indicated that he would rather not work with Somalis.

<sup>406</sup> This remark cannot be considered a genuine ethnic slur, and it seems to be another indication that Westerners rarely see any major cultural flaws in their fellow Westerners. Non-Westerners also seem to hold this position regarding Westerners.

members of these groups, can be taken as a sign of cultural discord in this company's workplace. However, there was no indication of feuds among ethnic or cultural groups within Middle Eastern Company Number Two.<sup>407</sup>

The caveat mentioned in FN number 407 notwithstanding, Middle Eastern Company Number Two fared better regarding the issue of inter-ethnic feuds than did Western European Company Numbers One and Two. Middle Eastern Company Number Two also fared better than these two companies in the area of match between actual and ideal workplace. Specifically, 28.57% of the respondents from Middle Eastern Company Number Two stated that the characteristics of the place in which they worked matched those of their ideal workplace. Slightly over 21% of the respondents settled on the B/B match, while the remaining 7.15% chose the E/E match. 71.43% of the respondents chose mismatches, the predominant one being B/E, which 21.42% of the respondents selected. The third and the fourth group (which accounts for 7.15%) seemed to agree that description B characterised their workplace. This description states that "In the workplace, team members form a harmonious unit, despite the fact that they come from different national cultures. Team members also make extra efforts to understand each other, and to communicate in simple language when communication problems arise in the job. Team members generally like each other even though they do not socialise across cultural lines outside the workplace".

The small sample size for Middle Eastern Company Number Two, and the evidence of a serious deficit in the area of cultural coexistence within this company precludes the conclusion that description B is realistic. In addition to the deficit in the area of cultural tolerance, Middle Eastern

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<sup>407</sup> The sample of respondents for Middle Eastern Company Number Two was by far the smallest for all eight companies surveyed. It is therefore possible that the survey's failure to unearth evidence of feuds among ethnic and cultural groups within this company was merely due to the small size of the sample.

Company Number Two suffers from a deficit in MRM-awareness. This assessment is warranted even though Middle Eastern Company Number Two fared better in the area of MRM than did Western European Company Numbers One and Two. The MRM-awareness result was unexpected because this researcher presumed that Western European companies would do better than would Middle Eastern companies in the areas of MRM-awareness. This was the case because, being from technologically advanced countries, Western European companies were assumed to be at the forefront of the MRM revolution.

Remarkably, however, 42.85% of the respondents from Middle Eastern Company Number Two showed familiarity with MRM. This contrasts with the 15-16% for Western European Company Numbers One and Two.

Given that a large group of respondents from Middle Eastern Company Number Two harboured stereotypes about colleagues from certain national cultures, this company needs to embark on an ambitious programme to make the workplace culture-friendly and tolerant.<sup>408</sup> Cultural tolerance should be an important component of Middle Eastern Company Number Two's culture (as it should be with all the companies suffering from a tolerance deficit). All of these companies should adopt a culture that enables all of the employees to feel that that they are welcome and valued workers. An important element of this effort, as far as the Middle Eastern companies are concerned, is the dismantling of these companies' pay scales, which have alienated the non-Western expatriate personnel. The non-Western expatriate personnel resent the fact that Middle Eastern companies penalise them for not being Westerners, even though they are as qualified as

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<sup>408</sup> Like the other companies, Middle Eastern Company Number Two needs also to launch an ambitious programme in the area of MRM.



the Western expatriates. The pay scales have created a tense atmosphere in the workplace, and have distracted the non-Western expatriate personnel from focusing on the work at hand. In order to beat an unjust and discriminatory system, some AMTs resorted to taking the citizenship of Western countries. The very fact that those AMTs who took Western citizenship were made eligible for increased pay scales underscores the inherent hypocrisy in the system, and pushes other employees either to take the citizenship of Western countries, or to seek employment with companies headquartered in the West.

The abolition of these pay scales on the part of all Middle Eastern companies may prevent a haemorrhage of employees seeking better pay and fairer treatment in the West, and would help to alleviate the disadvantaged position of the Middle Eastern companies in relation to Western ones in the area of recruitment. The management of Middle Eastern companies must understand that Western-based companies presently offer more advantages to prospective employees, such as freer societies, the opportunity to become citizens, and a chance to give their children a more promising future.

In summary, unless it implements the changes necessary to make the environment more culture-friendly and more sensitive to the needs of non-Western expatriate personnel, Middle Eastern Company Number Two is unlikely to retain the best AMTs and maintenance supervisors it currently employs, or to attract additional, promising ones. Instead, this company may find itself in the position of merely providing experience for employees who then move on to more advantageous employment elsewhere.

This may also be the lot of Middle Eastern Company Numbers One and Three. Compared with Middle Eastern Company Number Two, Middle Eastern Company Number One faces a more serious deficit both in the area

of cultural tolerance in the workplace, and in the area of MRM-awareness.<sup>409</sup> There are three main reasons why Middle Eastern Company Number One's deficit in the area of cultural tolerance is considered more significant than that of Middle Eastern Company Number Two. Firstly, the ethno-religious stereotypes pervading this company are far more intense than is the case for Middle Eastern Company Number Two. Secondly, there are many indications of feuds in the workplace between members of different ethnic and religious groups. Thirdly, there is the possible existence of a charged religious atmosphere in the workplace, because some respondents showed evidence of religious bigotry in relation to other employees.

### *6.3.7. Middle Eastern Company Number One*

As was the case with Middle Eastern Company Number Two, a large group of respondents from Middle Eastern Company Number One harboured stereotypes about colleagues from certain ethnic and cultural groups, and some of these respondents also conveyed their desire not to work with colleagues from these groups.

The less disturbing stereotypes that the survey unearthed will be examined first. One respondent, for instance, indicated that the cultural traits that he did not want his colleagues to have included a "superiority complex, a feeling of insecurity and arrogance". He associated these traits with Kuwaitis,<sup>410</sup> Asians in general, and Europeans. A second respondent stressed that he did not want his co-workers to have the cultural traits of a

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<sup>409</sup> There were 26 different nationalities represented in the sample for Middle Eastern Company Number One.

<sup>410</sup> This respondent was himself a Kuwaiti. Another Kuwaiti said that he did not want his co-workers to exhibit the cultural traits of his own cultural group, nor did he want fellow Kuwaitis on his team.

“low level of education and language” skills; traits he associated with Egyptians, Indonesians and Indians.<sup>411</sup>

A third respondent indicated that he did not want his colleagues to be two-faced after getting a promotion; a characteristic he associated with Indians, Pakistanis, Egyptians and South Africans. A fourth respondent stressed that he would rather not work with British and Germans, because “they think they own the company by heritage”.<sup>412</sup>

However, the most serious problems facing Middle Eastern Company Number One came from the more disturbing stereotypes pervading this company, along with the religious insensitivity displayed by some respondents, and number of inter-ethnic feuds.

Among the disturbing stereotypes that this survey unearthed were to the effect that Egyptians were considered to be dishonest,<sup>413</sup> Jews to be devious,<sup>414</sup> sub-Saharan Africans to be lazy, liars, and uneducated,<sup>415</sup> sub-Saharan Africans and Indians to be “dirty, and [to] smell ... bad”,<sup>416</sup> Arabs not to show dedication to work and to be insincere, some Americans and Europeans to be “Rednecks”, and Westerners to be “greedy ... and materialistic”.

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<sup>411</sup> It is important to mention here that another respondent indicated that he did not want his colleagues to be homosexuals, and called himself “straight”.

<sup>412</sup> Another respondent indicated that he did not want his co-workers to exhibit the cultural traits of the British, and did not want to work with them, or with Indians. Yet another respondent said he did not want his co-workers to have the cultural traits of Japanese, Thais, Turkish, some Arabs and some Europeans.

<sup>413</sup> This was raised by two respondents from two different ethnic and cultural groups.

<sup>414</sup> Another respondent, from a Western cultural group, indicated that he would rather not have to work with “Israelites”.

<sup>415</sup> Remarks like this one about sub-Saharan Africans were made by several respondents from the same ethnic group and nationality. These responses were taken to indicate either a feud between those who stereotyped the sub-Saharan Africans and the sub-Saharan Africans themselves, or of an undercurrent of animosity between these two groups.

<sup>416</sup> This stereotype was also expressed by several respondents from different ethnic and cultural groups.

This study's data also indicated disturbing signs of religious intolerance in the workplace of Middle Eastern Company Number One. One respondent, for example, indicated that he would rather not have Sikhs on his team, because they are untrustworthy, and "hate[d] Muslims", while a second respondent stressed that he would not want his co-workers to exhibit the characteristics of "Kufar and Mushrikeen" (unbelievers and idolaters). This respondent also stated his preference for not working with such "unbelievers and idolaters".

There were also indications of several inter-ethnic feuds within this company. These included the perennial feud between Pakistan's Muslims and India's Hindus, a Kuwaiti-Iraqi feud, and finally, a Lebanese-sub-Saharan African feud.

Dangerous stereotypes, religious insensitivity expressed for some respondents, and inter-ethnic feuds are all indications of a serious tolerance deficit, and indeed, a charged, and even toxic, atmosphere in the workplace of Middle Eastern Company Number One. Considering the respondents in aggregate, almost 43% of them harboured stereotypes about colleagues from certain ethnic and cultural groups and/or indicated that they would rather not work with these colleagues.

Regarding the issue of match between actual and ideal workplace, only 24.67% of the respondents from Middle Eastern Company Number One agreed on matches.<sup>417</sup> More than 10% of these settled on the B/B match, 7.79% for the E/E match, and 3.89% for the C/C match.

75.33% of the respondents from the Middle Eastern Company Number One's sample chose mismatches. More than 15% of the respondents settled on the D/C mismatch, 14.28% on the B/C mismatch, 11.68% on the B/E mismatch and 7.77% on the A/E mismatch.

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<sup>417</sup> This percentage was slightly lower than that for Middle Eastern Company Number Two.

It is important to mention here that in addition to the serious deficit in the area of cultural co-existence in the workplace, the sample from Middle Eastern Company Number One also revealed a deficit in the area of MRM-awareness. Specifically, in comparison with the respondents from Middle Eastern Company Number Two, only about 13% of those from Middle Eastern Company Number One registered familiarity with MRM/HF.

Given the seriousness of the deficits evidenced by the data on Middle Eastern Company Number One, the management of this company has no choice but to embark on ambitious programmes which will both build MRM consciousness in the company's employees, and construct a culture-friendly, religiously tolerant work environment.

Such measures would allow Middle Eastern Company Number One to be competitive with its international competitors in the area of recruitment. As stressed before, the Middle Eastern companies examined in this study are already at a disadvantage in this area in relation to their Western competitors because these Western companies are headquartered in societies that are democratic, immigration-friendly, advanced economically and technologically, and socially tolerant. In the light of the advantages that Western societies offer, it becomes imperative for Middle Eastern Company Number One (as well as for Middle Eastern Company Numbers Two and Three) to create a culture-friendly environment, i.e. an environment tolerant of ethnic, cultural and religious differences. Failure to do so may well cause Middle Eastern Company Number One to lose its best and most promising AMTs to its international competitors. The irony would be that Middle Eastern Company Number One would be helping its competitors by training AMTs only to have them defect to those competitors.

Middle Eastern Company Number Three faces a predicament similar to that of the other two Middle Eastern companies. This company, like the other two, seems to suffer from a pronounced deficit in the area of cultural tolerance.<sup>418</sup> Workplaces which are characterised by inter-cultural and inter-religious tension are unlikely to be productive, or to be safety-conscious,<sup>419</sup> and usually have high attrition rates. This study's findings also indicate that Middle Eastern Company Number Three suffers from an MRM-awareness deficit.

### *6.3.8. Middle Eastern Company Number Three*

As in the case of Middle Eastern Company Number One, entrenched attitudes within the workplace indicate the extent of Middle Eastern Company Number Three's cultural tolerance deficit. These are: dangerous stereotypes pervading the workplace, the existence of religious insensitivity in the workplace, and evidence of a number of feuds between different ethnic and cultural groups.<sup>420</sup>

As with Middle Eastern Company Number One, the examination of Middle Eastern Company Number Three will begin with a discussion of milder stereotypes pervading the workplace. Examples of this are the notion that Egyptians and Sudanese are "unco-operative" and prone to indulge in "too many complaints", that Egyptians are domineering, "harsh

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<sup>418</sup> There were 19 different nationalities represented in the population sample for Middle Eastern Company Number Three.

<sup>419</sup> Simply put, this proposition is stating that that when workers find it difficult to get along, they have no incentive to help each other, or to serve as back-ups and watch-dogs for each others' mistakes or omissions.

<sup>420</sup> Evidence of religious intolerance in the workplace of Middle Eastern Company Number Three is as pronounced as it is for Middle Eastern Company Number One. Even though the main divide in the case of Middle Eastern Company Number Three is between some Muslims and some Christians, there may be other religious divides as well, i.e. Muslims vs. Hindus, Muslims vs. Sikhs, Christians vs. Hindus, etc.

and rude”, and “critical” in the workplace, that Indians and Pakistanis need “more high tech. education and training”, and that they do not “give consideration or credit to others”, and that Pakistanis are “nonchalant”.

Examples of the more disturbing stereotypes are the view that Pakistanis, Indians, Sudanese and Egyptian are “lazy” and “arrogant”, that Egyptians are “manipulators”, Arabs and Indians are “liars” and “cheats”, and that Pakistanis, Indians and Filipinos are “neglectful of personal hygiene”.<sup>421</sup>

With regard to the religious intolerances prevalent in the workplace of Middle Eastern Company Number Three, the greatest animosity seems to be between Muslims and Christians. This animosity can be seen in a statement by a Christian Filipino to the effect that the main problem he had with Indonesians (Muslims) was basically religious. A Muslim (Malay) Filipino however, stated that he did not want his co-workers to “have a conflict of [religious] belief ” with him. He mentioned as an example Christian Filipinos.

This Muslim Filipino also indicated that he would rather not have to work with “nationals having conflicts with us [i.e. Muslims]”. He mentioned Christian Filipinos once again, and added “other Christians” as well. This Muslim Filipino seems to adhere to the same worldview as the respondent from Middle Eastern Company Number One, who had stated that he did not want “unbelievers and idolaters” in his team.<sup>422</sup> Another respondent from Middle Eastern Company Number Three seemed to adhere to this

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<sup>421</sup> As emphasised before, non-Westerners are stereotyped by Westerners and non-Westerners alike. This means that Westerners enjoy a better reputation among non-Westerners, and that the core aspects of Western culture are rarely assailed. Criticisms of Westerners, when levelled, tend to be mild.

<sup>422</sup> Before the rise of political Islam, or Islamism, opinions like these were rare among Muslims, and were frowned upon by most of them. However, the rise of Islamism, and conflicts between some Muslim countries and movements (e.g. the Palestinian movement) and the Western backers of Israel have created a much more hostile environment.

worldview as well, since he too indicated that he would rather not have to work with non-Muslims.

Religious intolerance seems also to colour the outlook of two other respondents from Middle Eastern Company Number Three, Westerners in this case, who rejected wholesale the local Muslim culture, and stated that they did not want their colleagues to have the traits of this Muslim society. The intolerance demonstrated by these two Westerners, though unjustified, may also have been a response to the inter-religious tensions generally pervading the workplace of this company.

In addition to this religious intolerance in the workplace, Middle Eastern Company Number Three also seems to be burdened with a number of feuds between different ethnic and cultural groups. The data indicate that there are feuds between the following groups: Filipinos and Egyptians, Filipinos and Indians, Filipinos and Pakistanis, Filipinos and Sudanese, Egyptians and Sudanese, Sudanese and Indians, Sudanese and Pakistanis, Indian and Egyptians, Egyptians and Pakistanis, and Indians and Pakistanis.

Based on the indications above, of all the companies examined here, Middle Eastern Company Number Three seems to be characterised by the most toxic working environment. The seriousness of the situation that this company faces is underscored by the fact that almost 76% of the respondents from Middle Eastern Company Number Three harboured stereotypes about certain ethnic and cultural groups, indicated that they would rather not work with people from these groups, and/or gave indications of religious intolerance and of being involved in inter-ethnic feuds.

More than 38% of the respondents from Middle Eastern Company Number Three stated that the characteristics of the place in which they worked matched those of their ideal workplace. More than 35% of these



respondents settled on the E/E match, and the remaining 2.94% settled on the F/F match.

The data do not support the assessment of the 35.23% of respondents who settled on the E/E match, because the data show Middle Eastern Company Number Three's work environment to be highly toxic. Hence, the respondents who settled on the E/E match did so because, as collectivists, they were expressing a tendency to view the workplace as an extension of the family and/or of the wider community.

In any event, 61.77% of the respondents from Middle Eastern Company Number Three chose mismatches. Of these, 17.64% settled on the D/E mismatch; a similar percentage settled on the F/B mismatch; 5.88% on the D/C mismatch, and a similar percentage on the B/C mismatch.

As mentioned above, in addition to suffering from a serious deficit of cultural and religious tolerance in the workplace, Middle Eastern Company Number Three is characterised by a pronounced deficit in its employees' MRM-awareness. Middle Eastern Company Number Three's MRM-awareness deficit, in fact, seems to be more marked than that of any other company surveyed in this study, since none of the respondents from Middle Eastern Company Number Three showed any familiarity at all with MRM/HF.

Given the seriousness of its deficits in the area of MRM-awareness, and cultural and religious tolerance, Middle Eastern Company Number Three will need to initiate ambitious MRM programmes and measures to make its workplace culture-friendly, religiously tolerant, and free of racial/religious acrimony and feuds. As with most of the companies surveyed in this chapter, cultural/ethnic/religious tolerance should be a component of Middle Eastern Company Number Three's corporate culture.

Like Middle Eastern Company Numbers One and Two, Middle Eastern Company Number Three is at a disadvantage with regard to recruitment compared with its Western competitors, since Western aviation companies are headquartered in societies which are democratic and immigration-friendly, economically and technologically advanced, and socially tolerant. Middle Eastern Company Number Three will need to take measures which will make its workplace environment culture-friendly, i.e. tolerant of ethnic, cultural, and religious differences. In the absence of such measures, and given the fact that this company is characterised by a particularly toxic work environment, Middle Eastern Company Number Three is likely to lose its best and most promising AMTs to its international and regional competitors.

Changes in the work environment are a *sine qua non* for a successful, productive, and possibly also safety-conscious company. It was explained before that tolerance makes for greater cohesion within the workforce, and this, in turn, is likely to facilitate both safety-consciousness and productivity. Of all the companies surveyed here, Middle Eastern Company Number Three faces the most arduous task in meeting the challenge of cultural tolerance, MRM awareness and competition in a globalised market. This company's financial resources may help to alleviate this situation, but not without bold ideas with regard to fostering cultural and religious tolerance, and MRM awareness.

#### **6.4. Conclusion**

Cultural diversity should be viewed not only as a potential performance barrier but also as a potential value-added attribute. Indeed, Cox (2001: 6) stresses that well-managed diversity could “add value to an

organization by (1) improving problem solving, (2) increasing creativity and innovation, (3) increasing organizational flexibility, (4) improving the quality of personnel through better recruitment, and (5) improving marketing strategies, especially for organizations that sell products or services to end users”.<sup>423</sup>

The literature on organisational behaviour and human resources management is rich in proposals for improving communication across cultures (e.g. Schein, 1993; Henderson, 1994; Seelye and Seelye-James, 1995: 40-58; Guirdham, 1999; Lewis, 1997: 94-114; Battle, 1998); and for managing diversity well (Fernandez, 1991; Loden and Rosener, 1991; Fleras and Elliot, 1992; Henderson, 1994; Cox, 2001). Cox’s (2001) proposal on capturing the power of diversity is especially attractive in that it offers a road-map towards that goal. That road-map (strategy) has already been applied to major multinational corporation, and has shown potential. In Cox’s (2001: 18) model for organisational change, “...the change effort cycles through all of the elements and is continually assessed and refined over time in a process of continuous loop learning”.

The cornerstone of this model for cultural change is leadership, which Cox (2001) defines as behaviour “that establishes a direction or goal for change (a vision), provides a sense of urgency and importance for the vision, facilitates the motivation of others, and cultivates necessary conditions for achievement of the vision”.<sup>424</sup> These are the characteristics of transformational leadership, which is different from transactional leadership. The latter’s main function is overseeing and co-ordinating tasks within an existing vision, while that of the former is guiding the organisation to a new vision. The function of transformational leadership is to preside over

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<sup>423</sup> The last item, obviously, is not relevant to maintenance organisations.

<sup>424</sup> As Cox (2001: 18) states, “Leadership is the most essential element for change; without it, nothing happens”.

revolutionary change in the organisation, while the function of transactional leadership is merely to guide the organisation through incremental change. (On differences between these two types of leaderships, see Tichy and Devanna, 1990; Bass and Avolio, 1990; Cox, 2001: 23).

The second component of Cox's model is research and measurement. In the context of organisational change, measurement is important and means the "use of research to keep score on the progress of a change initiative", or to assess the results of the initiative (Cox, 2001: 20). Cox explains that for change to be successful, "organizational change must be well informed by relevant data, with results systematically measured at pertinent intervals during the process".

The third component of Cox's model for cultural change is education. Cox (2001) uses "education", instead of "training", to emphasise that the learning process must be approached through a variety of methods. The centrality of education in Cox's model for cultural change is rooted in Thomas Kuhn's (1970) pioneering study of scientific revolution. Kuhn (1970: 112), in fact, regards education as a vehicle for bringing about paradigm shifts:

"... at times of revolution, when the normal scientific tradition changes, the scientist's perception of his environment must be re-educated - in some familiar situations he must learn to see a new gestalt. After he has done so the world of his research will seem, here and there, incommensurable with the one he had inhabited before. That is another reason why schools guided by different paradigms are always slightly at cross-purposes".<sup>425</sup>

The fourth component of the model for cultural change is "alignment of management systems", with the term "management systems" used

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<sup>425</sup> Kuhn (1970: 112) adds that, "In their most usual forms, of course, gestalt experiments illustrate only the nature of perceptual transformations. They tell us nothing about the role of paradigms or of previously assimilated experience in the process of perception".

broadly to include “any organizational policy, practice, rule, or procedure” (Cox, 2001: 21). This term “covers the major HR activities like recruitment, promotion and development, as well as other conditions such as work schedules or the design of the physical work environment. All these systems must be aligned with the goal of leveraging diversity”.

The final component of the model for cultural change is follow-up, which component “involves implementing action, establishing accountability for results, and capturing and recycling the learning so that the action steps become more and more precise” (Cox, 2001: 22). This final component overlaps all of the others, previously mentioned, but is especially connected with the research and measurement components.

The fact that Cox’s model for cultural change has five components, and includes the notion of continuous-loop learning is traced to systems theory concepts. One of the most important exponents of systems theory is Ludwig von Bertalanffy, who was a professor of theoretical biology at the University of Alberta, Canada, and whose work in the field dates from the 1920s. Bertalanffy (1956) suggests that the ever-increasing specialisation within modern science begets fragmentation in the discipline as a whole: “The physicist, the biologist, the psychological and the social scientist are, so to speak, encapsulated in a private universe, and it is difficult to get a word from one cocoon to the other”. Systems theory represents a response to the threat of greater academic specialisation which threatened to fragment the scientific community into isolated enclaves of knowledge unable to communicate with one another. Rapoport (1968) suggests that systems theory has the potential of re-establishing approaches which emphasise the functional relationship between parts and whole without sacrificing scientific rigour. The analogies established or conjectured in systems theory are not mere metaphors. According to Rapoport and Bertalanffy, these analogies

are rooted in actual correspondences between systems or theories of system (For other uses of systems theory, see Parsons and Shils, 1962; Boulding, 1956; Kaplan 1962). Bertalanffy (1956) suggests that a “system” implies an arrangement or combination of parts or elements in a whole which may apply to a cell, a human being, or a society.

Cox’s model for cultural change is only a tool for managing cultural diversity. This model could be improved upon by the management of the aircraft maintenance organisations studied here.<sup>426</sup> The bolder the moves they make, the greater the payoffs. The management of these companies has to come to regard cultural diversity not only as having the potential to disrupt performance and peace in the workplace, but also as having the potential to add value to the organisation in such areas as problem-solving, creativity, flexibility and safety, when nurtured creatively. Well-managed cultural diversity can also bring new recruits to the company, allowing it to compete effectively in the era of globalisation, and as stressed before, there is also public relations value in being identified as a national culture-friendly organisation.

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<sup>426</sup> Cox’s model, for example, offers no practical guidelines as to how to deal with elements of certain ethnic and cultural groups who engage in feuds with members of other ethnic and cultural groups, as exemplified by the Indian-Pakistani feud. One approach, proposed here, would entail special awareness programmes directed at groups like these. These programmes would be aimed at inculcating in members of ethnic or cultural groups a sense of the company culture, such that their main loyalties would be redirected towards the company, and away from narrow ethnic interests. One element of these programmes could be the placing of members of feuding ethnic or cultural groups in the same work teams, and rewarding those teams on the basis of productivity and safety-consciousness. Measures such as this would be aimed at motivating individual employees to think of themselves as members of a work team first, and only secondly as members of this or that ethnic or cultural group. As for the Middle Eastern companies, the pay scale is one of the obstacles to creating a company culture and group harmony. Therefore, the elimination of this pay scale is imperative.

## Chapter Seven

This chapter, the general conclusion of this study, summarises the findings of Chapters Four, Five and Six, while comparing and contrasting them with findings of other studies dealing with airline pilots or AMTs. The purpose of this exercise is to answer the fundamental questions of this study, as stated in Chapter Three. These were: <sup>①</sup> Are AMTs, as a professional group, more individualistic than pilots in their attitudes, values, and work goals? <sup>②</sup> Whether AMTs and maintenance supervisors from most collectivistic culture groups have attitude and aspirations similar to those AMTs and maintenance supervisors from individualistic culture groups? <sup>③</sup> To what extent AMTs' work-related attitudes and values are universal, or influenced by their national cultures? <sup>④</sup> Are AMTs generally favourably predisposed to being part of multi-cultural AMT teams? <sup>⑤</sup> Which of the individualistic or collectivistic AMTs are more favourably predisposed towards being part of multicultural AMT teams? <sup>⑥</sup> <sup>427</sup> Did the aircraft maintenance organisations surveyed here manage cultural diversity effectively? <sup>⑦</sup> Have the aircraft maintenance organizations surveyed here begun to mine the value-added potential of cultural diversity? <sup>⑧</sup> Whether multicultural AMT teams face insurmountable problems as functioning units because of stereotypes, discrimination, and other ills, absent effective measures to remedy these problems? <sup>⑨</sup> Whether placing AMTs from different national cultures in the same work team would have a deleterious effect on

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<sup>427</sup> Only further research can tell us how strong is this favourable predisposition, and whether collectivistic AMTs have as strong a predisposition to being part of multi-cultural teams as generally have individualistic AMTs.

the functioning of an aviation maintenance organisation? <sup>428</sup> <sup>(10)</sup> Are multi-cultural AMT teams more error prone than are mono-cultural ones? <sup>(11)</sup> Is there a national culture which is superior to others, and therefore, more conducive to aviation safety? <sup>(12)</sup> Is there a particular national culture that has a monopoly in producing AMTs with superior maintenance skills? <sup>(13)</sup> Is the nature of the political environment in which AMTs function significant in determining whether the AMTs will maximize their potential or not? <sup>(14)</sup> And were the aircraft maintenance organization surveyed in this study successful in making their employees familiar with MRM/HF?

There is not enough data at our disposal to answer question 10. But there is a common sense answer to this question: Supported by enlightened management, multi-cultural teams are no more likely to be more error prone than are mono-cultural ones. Further research is therefore needed here.

Also there is not enough data at our disposal to answer question 11. But as in the case of the previous two questions, there is a common sense answer to question 11 as well: There are no national cultures that are superior to others and therefore more conducive to aviation safety. But only further research would allow us to provide a categorical answer to this question.

The remarks concerning question 11 applies to question 12 as well.

The common sense answer to question 13 is that the nature of the political environment is significant in enabling AMTs to maximize their potential. We have anecdotal evidence for this. Ali (1985), for example, stated that Arabs who are known to be “dependent, apathetic, and conservative” in the authoritarian setting of their ancestors “become thoughtful, [take risks] and are courageous, and creative” and usually reach

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<sup>428</sup> However, the caveat here is “foresighted management.” This begs the question of how foresighted is the management of the aircraft maintenance organizations surveyed here. Only further research would allow us to provide a categorical answer to this question.



their potential when they operate in more democratic settings.” But only further research on this subject would allow us to provide a categorical answer to this question.

The answer to this question 14 is that most of the aircraft maintenance organizations surveyed in this study did not do a good job in the area of MRM/HF. However, this conclusion was reached on the basis of limited data. There is a need to reframe the questions pertaining to MRM/HFs so that they are meaningful to those who are familiar with both the American and the British systems. Moreover, it may be necessary to conduct interviews with AMTs in different aircraft maintenance organizations in order to be able to assess whether these AMTs are actually familiar with MRM/HFs. The survey and the interviews are complementary tools.

Chapter Seven also makes some suggestions regarding improvements to the questionnaire, and the direction that future research could take on the functioning of AMTs in multicultural work settings. The importance of aviation safety requires that such steps be taken.

### ***7.0. Findings in the Aviation Field: AMTs and Pilots***

One of the main assumptions guiding this research was that maintenance workers, regardless of national origin, tended to be more uniformly individualistic than were the pilots in Merritt's (1996), and Helmreich and Merritt's (1998) international sample, which showed them to be considerably more individualistic than Hofstede's (1980) international sample of IBM employees. Taylor (1999a, 1999b), Patankar (1999), and Taylor and Patankar (1999) came to a similar conclusion about AMTs, and stressed that the individualism of the airline mechanics may have stemmed

from the individualistic culture of A&P certificate holders, a professional designation which gives them a considerable say in determining the airworthiness of aircraft.

The main study which emphasises the significant difference between A&P certificate holders and their AME counterparts is Patankar's (1999) comparative study of US and Indian airline mechanics. In that study, Patankar posits that higher individualism is related to aircraft mechanics' return-to-service authority. He asserts that such authority is more widespread among US mechanics, who hold the A&P certificate, which permits them to sign for the airworthiness of a wide range of repairs to a single aircraft, than among Indian mechanics. Patankar reports finding substantial differences in the proportion of mechanics with return-to-service authority between a company employing US-certified A&P mechanics and one operating under the British-style AME licensing system. In the former company, 90% were A&P certified, while in the latter, the AME mechanics (hired in smaller numbers) were assisted by unlicensed mechanics (i.e. apprentices and mechanic assistants), who worked as a team under the direction of the AME mechanics. In the latter company also, the ratio was one AME mechanic to nine apprentices or mechanic assistants.

Patankar explains the differences between the US and Indian companies based on two factors. The first is the continued use of the apprentice system in India, while the second is the relative difficulty experienced by mechanics in obtaining and renewing the AME licence. Patankar's ethnographic research results show that the expression of individualistic values is higher among the A&P mechanics than among the AME mechanics.

On the basis of Patankar's findings, Taylor (1999b) theorised that non-Western workplaces, which work on the assumptions and expectations

for the American A&P licence, are therefore likely to look and feel more individualistic than non-Western workplaces, which work on the assumptions and expectations for the British AME. This was the case because the signatory authority of A&P caused mechanics to act more like individualists because, unlike airline pilots, these mechanics were not dependent on others to help them achieve their assigned tasks. In the environment dominated by A&P holders, the working mechanics, and the lead mechanic providing them with operational guidance, “are more likely to focus on satisfactorily completing assigned repair tasks than to consider larger goals or objectives such as quantity, cost, or safety”. These larger goals are, in fact, left to “maintenance foremen and managers to administer” (Taylor, 1999b: 27).

It needs to be emphasised here that airline pilots always distinguish the position of a single pilot-in-command from the subordinate and co-ordinated positions of all others in the cockpit. Those in subordinate positions in the cockpit would probably find it inappropriate to act like the A&P holder mechanics. Pilots and their crews may actually come to regard their work as a complex set of interrelated tasks which are subject to strict co-ordination in order to attain the safety and efficiency goals set by the organisation.

Though it subscribes to Patankar’s and Taylor’s positions that the individualism of AMTs may be traceable mainly to the signatory authority of A&P, this study also maintains that such individualism has been shaped by other factors. Among these are education and training in Western countries, and working and socialising with Westerners, whether the latter are local or expatriates. This is the case because while the signatory authority of A&P may cause mechanics to act more like individualists in the execution of technical tasks, it is unlikely to influence the mechanics’ outlooks towards

cultural coexistence, acceptance of supervisors from other national cultures, regarding merit, and not social status and connections, as the main criteria for promotion in the workplace, etc. These outlooks are shaped by education, socialisation, and other related factors which may be as important as the signatory authority provided by the A&P certificate.<sup>429</sup>

This study has shown that a large contingent of AMTs and maintenance supervisors from collectivistic cultures think like individualists, and have the same aspirations as individualists. These AMTs and maintenance supervisors have shown a preference for a command style that is closer to the egalitarian pole than to the hierarchical one. They seem to reject blind obedience to supervisors, to believe that technical merit, not social status or good connections, make for successful managers, and to accept only limited of rules to deal with the issue of uncertainty in the workplace, etc.

Specifically, this study's findings on the items of the CR scale regarding AMTs and maintenance supervisors showed that these items were not the significant cultural discriminators that Merritt's (1996), and Helmreich and Merritt's (1998) research on airline pilots made them out to be.<sup>430</sup> There are at least four possible explanations for the differences between AMTs and maintenance supervisors, on the one hand, and airline pilots on the other. The first explanation is the limited sample size for

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<sup>429</sup> The individualism of non-A&P holders, as highlighted in this study, may have stemmed essentially from education, work socialisation, and other related factors, since it could not be attributed to an A&P certificate that they did not possess.

<sup>430</sup> On the "Command Responsibility" and "Assertiveness" scales, Taylor (1999b) finds higher scores for the US regions and lower scores for the Asian regions, a result which was consistent with the expected PD positions. Regarding the "Command Responsibility" scale, Taylor further finds the Latin American region to be apparently lower on PD than the Asian regions, but that the PD position of the Latin American region is not statistically different from either the US or Asian regions. Regarding the "Assertiveness" scale, Taylor finds that the PD for East Asia is significantly greater than the already high PD for the South-East Asia region (the "Command Responsibility" difference between the two Asian regions, by contrast, is found to be non-significant). The implication that Taylor (1999b: 23) draws from his findings is that the even greater PD "distance of mechanics in Japan and Korea is evidenced by their being less willing than their counterparts in Singapore, Thailand, Hong Kong, Taiwan and India to speak up when it may cause conflict or disagreement with others". But Taylor's research may be skewed because he was not comparing homogeneous regions. (More on this later).

AMTs and maintenance supervisors in comparison with Merritt's, and Helmreich and Merritt's large sample size for airline pilots. The second possible explanation for the differences between AMTs and airline pilots found in this study is that other research, such as that of Taylor, (1999a, 1999b), Pantakar (1999), and Taylor and Patankar (1999), reveals similar findings, namely, that AMTs, as a professional group, are more individualistic than airline pilots. The third and most logical explanation is that both Merritt, and Helmreich and Merritt skewed their research by selecting "pilots of the same nationality (with no change from birth) as the country in which the airline was based" without consideration of ethnicity.<sup>431</sup>

Helmreich and Merritt apparently assumed that all Americans, British, New Zealanders, Australians, Canadians, etc., irrespective of specific ethnic background, were individualists. Our study has shown this assumption to be a simplistic one. As a result, Merritt's, and Helmreich's and Merritt's findings may not be as useful as they could have been. The final possible explanation for the "CR" scale's failure to be as significant a cultural discriminator for the sample of AMTs and maintenance supervisors in our study as it was for Merritt's, and Helmreich and Merritt's airline pilots, is that all of the reasons above mentioned in aggregate played a role in this discrepancy.

The findings of this study on most of the items of the CR scale show that AMTs and maintenance supervisors from most collectivistic cultural groups have attitudes that are similar to those of the AMTs and maintenance supervisors from individualistic cultural groups, and that

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<sup>431</sup> A similar critique can be mounted against Taylor. Taylor, in fact, was comparing possibly homogeneous regions (South-East Asia, East Asia and Latin America, which were made up of putative collectivists) with regions less likely to be homogenous, namely the US East Coast, the US Midwest and the US West Coast. Taylor seems to assume that the mechanics in the three US regions are individualistic in orientation, an assumption that would not hold as a result of an examination of outlook of mechanics in the US regions. Even the selection of South-East and East Asia may be questionable, because these encompass ethnic groups that differ somewhat regarding PD and UA, as indicated in Hofstede (1980).

AMTs, as a profession, tend to be more individualistic than the pilots from the same countries. The findings of this study on most of the items of the CC scale add weight to these contentions. In fact, this study indicates a near cross-cultural consensus on nine of the ten items of the CC scale. The only item of the CC scale where AMTs and maintenance supervisors associated with collectivistic and individualistic cultural groups differ, i.e. produce results in line with the findings of the literature on Individualism-Collectivism, was CC-Ind17. The theoretical assumption underlying this item was that collectivists would be reserved in expressing their opinions publicly, and would not be keen to shame their colleagues.

The findings on the other items of the CC scale, by contrast, contradicted the theoretical assumptions of the literature on Individualism-Collectivism, as well as Merritt's (1996), and Helmreich and Merritt's (1998) assumptions and findings regarding the aviation pilots. In this study, AMTs and maintenance supervisors from collectivistic culture groups were, for example, found to believe as strongly as did their counterparts from individualistic culture groups regarding the issues that team members should 1) openly discuss their differences with each other in order to resolve conflicts, 2) take into account other people's personality traits in co-ordination matters, and 3) feel obliged to mention their psychological stress or physical problems to each other before or during the performance of the assigned tasks. These three characteristics are the traditional traits of individualists, which AMTs and maintenance supervisors from most collectivistic culture groups have come to internalise.

This study, as well as those of Merritt, and Helmreich and Merritt on the other, reached similar conclusions on some of the items on the CC scale. On these items there was strong agreement among AMTs and maintenance supervisors in this study, and strong agreement across all pilot groups in the

Helmreich and Merritt study. However, there was disagreement between the two studies regarding the item on the debriefing/critique. Regarding this item, Helmreich and Merritt's finding was that pilots of the Anglo and Western countries had significantly lower scores than did the pilots from the non-Western, or collectivistic, countries.<sup>432</sup> But the explanation that these authors provided regarding the differences of scores among the pilots on the debriefing/critique item was an implausible one. This explanation was that pilots from individualistic countries were reluctant to publicly evaluate their own performance.

Merritt (1996: 145) indicates that her sense of the debriefing/critique item, based on overall response patterns and the tendency of this item to occasionally load with the command items in some factor analyses, is that the debriefing/critique item is tapping into an issue related to PD. Merritt explains that in high PD countries, a captain-initiated and captain-led debriefing/critique is likely to be seen as the captain's prerogative, while in low PD Anglo countries, both the captain and the first officer may feel ill at ease with such open performance appraisal.

However, this study's findings on the debriefing/critique item does not support Merritt's speculation, as the findings on this item show AMTs and maintenance supervisors being far from reluctant to publicly evaluate their own job performances.<sup>433</sup> This study's findings on the debriefing/critique item, as it relates to putative individualists, is in line with

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<sup>432</sup> In contrast with this study's findings.

<sup>433</sup> Regarding the debriefing/critique item, Taylor (1999b) finds meaningful differences on this item among the three US regions, as well as less effect between the US and foreign regions. Taylor (1999b: 25) adds that "Compared with Helmreich and Merritt's results all mechanics' mean scores [on the debriefing/critique item] are substantially larger than [those of] the US pilots and substantially smaller than [those of] the pilots from Japan and Brazil. Mechanics, it appears, are less diverse overall than the pilot sample and their mean scores on the [debriefing/critique] item are lower (less collectivistic) than *two thirds* of the countries in the pilot samples, including all except the Western European, US and Anglo pilots". (Italics in the text). Taylor further adds that both of the items measuring collectivistic values, namely, the debriefing/critique and the start of the shift-meeting, "reveal that mechanics in the US are more individualistic than their counterparts in three foreign regions".

the literature on Individualism/Collectivism, but this study's findings on this same item, as it relates to the putatively collectivistic AMTs and maintenance supervisors for most collectivistic cultures (namely, their high endorsement of the debriefing/critique item), is not in line with the literature on Individualism-Collectivism. The literature, in fact, holds that collectivists are more reserved in expressing their opinions, and in engaging in public evaluations of their job performance. Finally, this study's findings on the debriefing/critique item are more or less in line with those of Taylor (1999a, 1999b), and Taylor and Patankar (1999).

The most significant difference between this study and that of Helmreich and Merritt is that this study's findings bolster the claims that AMTs and maintenance supervisors from collectivistic cultural groups have attitudes similar to those of the AMTs and maintenance supervisors from individualistic cultural groups, and that AMTs, as a professional group, tend to be more individualistic in their attitudes than are airline pilots and first officers from the same countries surveyed by Helmreich and Merritt. Helmreich and Merritt would probably have expected the cultural differences they observed with airline pilots and first officers to be replicated with AMTs and maintenance supervisors.

The findings of this study on many of the items of the RSE scale also support the contentions that AMTs from collectivistic cultures had outlooks similar to those of AMTs from individualistic cultures, and that AMTs, as a professional group, tended to be more individualistic than were airline pilots from the same countries. These findings were shown to have both positive and disturbing attributes. On the positive side, AMTs and maintenance supervisors from many collectivistic cultures did not adhere to a fatalistic outlook towards stress or fatigue. On the negative side, AMTs and maintenance supervisors of some cultural groups displayed a flattering



self-perception or unrealistic perceptions of their abilities.<sup>434</sup> Triandis (1995) associates a person's realistic conception of his or her abilities with collectivists, and flattering self-perceptions with individualists.<sup>435</sup>

However, this study's findings on the items of the RSE scale do not point to a universal outlook regarding stress, fatigue, etc. In fact, AMTs and maintenance supervisors did not adhere to anything similar to pilots' self-image of invulnerability.<sup>436</sup>

This means that the findings of this study regarding AMTs on the items of the RSE scale contrasted with those of Merritt (1996), and Helmreich and Merritt (1998) on airline pilots and stress, because these authors interpreted from their findings that pilots adhered to unrealistic, safety-threatening performance norms. Helmreich and Merritt stress that the "Attitudes toward Stress" scale showed that pilots, across national cultures, tended to reflect a universal desire to minimise or deny the negative effects of stress upon their performances. Merritt contrasts pilots from four countries (i.e. Switzerland, Ireland, Japan and British Hong Kong) who, in her study, demonstrated awareness of the differences between the realistic and the unrealistic outlook with all the other pilots who did not.

In the light of the fact that this study's findings point to several instances of the co-existence of both realistic and unrealistic conceptions of their abilities in relation to stress, fatigue, etc., among AMTs and maintenance supervisors within the same given cultural group, a generalisation similar to the one that Helmreich, Merritt and Sherman (1996) make regarding airline pilots and stress is not warranted. Specifically,

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<sup>434</sup> An example here would be the attitudes of AMTs and maintenance supervisors from three collectivistic cultures regarding RSE-Ind16, which states that "Managers can come to work without bringing their personal problems with them".

<sup>435</sup> A person's realistic conception of his or her abilities is a desirable trait as far as aviation safety is concerned.

<sup>436</sup> The ramifications of this finding could be only positive for aircraft maintenance organisations.

Helmreich, Merritt and Sherman (1996: 14) state that “A strong belief persists throughout the pilot profession that the truly professional pilot is never anxious, and never overloaded. From this perspective, showing some signs of being under stress is perceived as a sign of weakness (a failure to meet professional standards) rather than a predictable reaction to certain environmental conditions”. As Helmreich, Merritt and Sherman have observed, as long as pilots adhere to this unrealistic image of invulnerability, human errors will tend to occur and “effective human error management will be difficult to achieve because warning signs of degraded performance might go unheeded, thereby increasing the likelihood of error”.

Regarding the items of the AC scale, the findings of this study generate some ambivalent attitudes regarding conflict avoidance on the part of AMTs and maintenance supervisors from most of the cultural groups surveyed. Items AC-Ind11 and AC-Ind14 are a case in point, because they convey two opposite viewpoints on conflict avoidance, namely the individualist and the collectivist. Individualists tend to believe that conflict in the workplace is both natural and unavoidable (and fulfils a desirable social function, which is to clear the air so that co-workers can focus on the task at hand). Collectivists, by contrast, see conflicts on the job as unnatural, undesirable (having no social utility), and harmful to the collective/group. For this reason, collectivists tend to believe that good rapport outside the workplace serves the purpose of preventing conflict from occurring within the workplace.

The only explanation offered as to the ambivalence of attitude among AMTs and maintenance supervisors within several cultural groups, i.e. their adherence to opposing viewpoints on the roots of conflict in the workplace, is that they might have thought conflict in the workplace was natural and unavoidable, while at the same time seeing merit in the proposition that

conflict could be alleviated through good rapport among colleagues outside the workplace.<sup>437</sup> It is also speculated that these AMTs and maintenance supervisors may have believed that socialising with colleagues outside the workplace would make for better mutual understanding, and that this would reduce the likelihood of conflict on the job.<sup>438</sup>

The contradictory findings about AC-Ind11 and AC-Ind14 notwithstanding, AMTs and maintenance supervisors from both collectivistic and individualistic culture groups were found to agree on the issues of the importance of better understanding among colleagues in the workplace and of casual conversation as a means for improving co-ordination among team members.

However, the findings on some items of the AC cluster show that AMTs and maintenance supervisors from some cultural groups may have a distorted view of the root causes of conflicts. Specifically, they demonstrated belief that negative personal comments *per se* could cause conflicts in the workplace.<sup>439</sup> Another example of a distorted view of the root causes of conflicts is that team members should avoid any disagreements of any kind. In this case, any disagreement is apparently seen as a cause of conflict, which in all cases is believed to reduce the effectiveness of the team. Such a view of conflict maybe self-defeating, because the airing of disagreements about technical matters, and especially

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<sup>437</sup> If this interpretation is correct, then it strengthens the contention that AMTs, as a professional group, tend to be more individualistic than are pilots from the same countries.

<sup>438</sup> This argument is plausible because Chapter Six shows that AMTs and maintenance supervisors from most culture groups accord great importance to socialising with their colleagues outside the workplace.

<sup>439</sup> It is important to re-emphasise here that since there was no equivalent to the AC scale in the Merritt, and Helmreich and Merritt studies, a comparison of findings was not possible. Nor did Taylor's (1999b) study mention the finding on the AC scale, and this also precluded a comparative analysis of the findings on this scale.

those affecting safety, is a necessity for all organisations that deal with safety issues.<sup>440</sup>

Concerning the items of the OC cluster, the findings in this study indicated a very positive organisational climate for the eight companies examined. The main item serving as the indicator of this organisational climate across the surveyed aviation maintenance organisations was OC-Job. The respondents liked their jobs, and this response made it likely that the organisational climate across the aviation maintenance companies was generally positive, and in harmony with the AMTs' and maintenance supervisors' values. The finding which associated a high score on the items of the OC scale with companies headquartered in collectivistic societies prompted this investigator to inquire whether AMTs and maintenance supervisors from ethnic and cultural groups which are putatively collectivistic tended to bring with them a favourable predisposition towards maintenance organisations for which they work, and to view these organisations as extensions of their own families. This data support an affirmative interpretation.

The finding which associated a high score on the items of the OC scale with companies headquartered in collectivistic societies prompted this investigator to inquire whether AMTs and maintenance supervisors from ethnic and cultural groups which are putatively collectivistic tended to bring with them a favourable predisposition towards viewing the organisations as extensions of their own families. This data support an affirmative interpretation. However, only further research would determine whether there is a cause and effect between being putatively collectivistic and having

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<sup>440</sup> Perhaps the AMTs and maintenance supervisors in this survey would have given different responses to this item had the wording contained a caveat about disagreements regarding the execution of technical tasks.

a favourable predisposition towards viewing the organisation one works as an extension of one's family.

This study's findings on the three main items of the OC scale are in line with those of Merritt (1996), and Helmreich and Merritt (1998) for airline pilots. This is also true of the association of the relatively high scores on most of the items of the OC scale with companies headquartered in collectivistic societies.

The findings of this study on Work Goal items also support the contentions that AMTs from most collectivistic cultural groups have attitudes and aspirations similar to those of their colleagues from individualistic cultural groups, and that AMTs, as a professional group, tend to be more individualistic than the pilots from the same countries. The findings on Work Goals indicated that across cultures, the AMTs' and maintenance supervisors' priorities concerning their ideal job were as follows: 1) "A caring company", 2) "Job security and opportunities for career advancement", 3) "Communication and active involvement in the workplace", 4) "Co-operation and co-ordination", 5) "A fulfilling job and a warm relationship with bosses", 6) "A company which sets goals for employees".<sup>441</sup>

The first two clusters of preferences dealt with the personal needs of the aviation maintenance personnel, while the remaining four were mostly job-related. It is possible that the AMTs' and maintenance supervisors gave priority on their job "wish lists" to factors that would lead to career advancement, and would provide maintenance personnel with ample time

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<sup>441</sup> Regarding Work Goals, statistically significant differences of means were observed for cultural groups, but only in regard to Goals 3-Ind35, 14-Ind30 and 16-Ind32. Probability theory would say that these observations would occur five times or fewer out of a hundred. This outcome indicates that these differences cannot be attributed to chance alone.

for personal and/or family life.<sup>442</sup> Notwithstanding the different meanings that putative individualists and collectivists may have attached to the term “caring company”,<sup>443</sup> the fact is that these AMTs and maintenance supervisors were found to be expressing the same work aspirations.<sup>444</sup>

This study’s findings on Work Goals are in line with that of Harpas (1990) to the effect that there was little difference in the work goals of employees from seven industrialised nations. More significantly, though, is this study’s finding that there were no major differences between the work goals of collectivistic AMTs and maintenance supervisors (i.e. from the non-industrialised world) on the one hand, and those of individualistic AMTs and maintenance supervisors (i.e. from the industrialised Western world) on the other.

This finding is not in line with the emphases of the literature on Individualism-Collectivism. Nor is it entirely in line with Merritt’s, and Helmreich and Merritt’s on airline pilots. There are other differences, as well as commonalities, between this study’s findings on AMTs and maintenance supervisors and those of Merritt, and Helmreich and Merritt on airline pilots. For example, in her study of the work goals of airline pilots, Merritt found that the strongest discriminators were the four items of the Work Goals scale, which items, she maintained, tapped into issues related to UA. Merritt specifically found that every Anglo and Swiss group scored significantly lower than every other group on these four items.

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<sup>442</sup> The AMTs and maintenance supervisors surveyed also accorded importance to being actively involved in the workplace. This, too, is an individualist *desiderata*.

<sup>443</sup> This was to be expected because people from different cultures might assign different meanings to a given concept.

<sup>444</sup> The cross-culture ranking of the Work Goals conveys this fact as well. This ranking is as follows: 1) Goal 15-Ind31, 2) Goal 9-Ind25, 3) Goal 14-Ind30, 4) Goal 8-MAS2, 5) Goal 2-Ind34, 6) Goal 1-Ind33, 7) Goal 7-MAS1, 8) Goal 3-Ind35, 9) Goal 13-Ind29, 10) Goal 10-Ind26, 11) Goal 12-Ind28, 12) Goal 4-Ind22, 13) Goal 6-Ind24, 14) Goal 5-Ind23, 15) Goal 11-MAS3, and 16) Goal 16-Ind32.

However, regarding this study's findings, comparison with Merritt (1996) is possible only regarding Goal 13-Ind29.<sup>445</sup> The findings here showed that the "Anglo culture" groups ranked this goal highly. In contrast to that of Merritt, this finding was in line with the literature on Individualism-Collectivism, which emphasises that individualists prefer performing challenging tasks, since such tasks give them a sense of accomplishment. For members of "Anglo culture" groups in this study, work satisfaction was found to be linked to performing challenging tasks. This finding is in line with Sekaran (1986) who has stressed that Anglos derive work satisfaction, and greater personal sense of accomplishment mainly from performing challenging tasks. Collectivists, by contrast, may tend to derive a personal sense of accomplishment by working for a company that the collectivists view as an extension of their families, or from the personal relationships they have with their bosses.

But one agreement between this study and those of Merritt, and Helmreich and Merritt focuses upon the Anglo culture group's tendency to assign a high rank to the goal of sufficient time left for personal or family life. In all of these studies, the Anglo culture group marked this goal as its primary value. This study also found that the other individualistic culture groups, such as the Germanic and Scandinavian, assigned a high rank to this goal.<sup>446</sup>

There is also agreement between this study and that of Merritt that Goal 8-MAS2 (item No. 59 in Merritt) and Goal 11-MAS3 (item No. 57 in Merritt) did not indicate any significant group differences. This study was

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<sup>445</sup> It is important to mention here that this research contended that Merritt's position regarding the equivalent of Goal 13-Ind29 item in the study, as tapping into issues related to UA was questionable.

<sup>446</sup> However, in contrast to Merritt, and Helmreich and Merritt, this study also found that most collectivistic culture groups assigned a high rank to Goal 14-Ind30. This finding adds weight to the contention that AMTs, as a professional group, and irrespective of their nationality of origin, tended to be more individualistic than were pilots from the same countries.

able to show differences regarding Goal 11-MAS3 (item No. 57 in Merritt) but only at .05 level, which means that these differences could be attributed to chance.<sup>447</sup>

However, the comparisons between this study and those of Merritt, and Helmreich and Merritt are made solely for heuristic reasons. This is the case because these comparisons are actually of the “apples” vs. “oranges” type.<sup>448</sup> As was explained previously, Merritt, and Helmreich and Merritt skewed their research by selecting pilots of the same nationality, with no change from birth, as the country in which the airline was based without consideration of ethnicity.<sup>449</sup>

As a result, Merritt’s, and Helmreich and Merritt’s findings on national cultures and pilots may be of limited utility. The same may also be true of Taylor’s, and Taylor and Patankar’s findings regarding national cultures and AMTs. In both instances, an ideal data bank was not fully utilised because of methodological stands. This study, by contrast, had limited data, but, because of its methodology, the objects of study (i.e. ethnic and cultural groups) are clearly identified.

The presentation of this study’s findings now allows the provision of answers to some of the fundamental questions the study has posed, such as whether AMTs and maintenance supervisors from most collectivistic cultural groups have attitudes and aspirations similar to those of AMTs and maintenance supervisors from individualistic cultural groups; whether

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<sup>447</sup> Taylor (1999b: 26) finds that both South East Asia and Latin America are significantly higher on the goal sharing scale than all three US regions, and that “These original findings graphically depict Japan (a major component of the ‘East Asia’ region in the present analysis) lying closer to the US on the ‘individualism’ dimension, while Hong Kong, Singapore, Thailand, and Taiwan (components of the SE [South East] Asia region), and Brazil (sole constituent of the Latin American region) lay further distant on that scale”.

<sup>448</sup> This also applies to Taylor (1999a, 1999b), and Taylor and Patankar (1999), which were studies used in support of the main contention of this study.

<sup>449</sup> It is important to re-emphasise here that Taylor and Patankar seem to make the simplistic assumption that the mechanics in the three US regions are individualistic in orientation/outlook, while some of them actually could not be, as was borne out by this study’s samples for the North American companies.



AMTs, as a professional group, are more individualistic than are airline pilots from the same countries in attitudes, values, and work goals; and to what extent AMTs' work-related attitudes and values are universal, or influenced by their national cultures.

This study has repeatedly provided affirmative answers for the first two questions. It has also emphasised that AMTs' work-related attitudes and values, though shaped by their various national cultures, have come to be generally similar across cultural groups as a result of the professional licensing system, and of such socialisation processes as education, training, and mixing in the workplace.

Methodological differences are not the only factors differentiating this study from the studies by Merritt, Helmreich and Merritt, Taylor, and Taylor and Patankar. Unlike all of these studies, this study delves into the dynamics of multicultural AMT teams to understand how AMTs from individualistic and collectivistic cultures look at colleagues from their own national cultures, from similar national cultures, and from different national cultures. The aim of this study was to uncover the favourable and unfavourable predispositions that AMTs have about working in multicultural settings, and to determine whether the management of the eight aviation maintenance organisations surveyed in this study has been meeting the challenges of cultural diversity effectively.

### ***7.1. Multiculturalism and Aviation Maintenance Organisations***

Most of the findings of this study bode well for aviation maintenance organisations with multicultural AMT teams. This is the case because generally, the findings indicate an acceptance of the idea of working in

multicultural AMT teams on the part of collectivistic and individualistic respondents alike. However, this study also brought to light some troubling issues which, if not addressed by management, may undermine the cohesiveness, work efficiency, and morale of multicultural AMT teams. Among these issues was the perception of some respondents that the attainment of maintenance skills was culture-specific rather than individual-specific, along with some disturbing ethno-religious stereotypes that were found to pervade the workplaces of most of the aircraft maintenance organisations surveyed.

For example, this study found that most of the aviation maintenance organisations profiled in Chapter Six have a serious deficit in the area of cultural tolerance in the workplace as a result of these stereotypes. Some of the companies surveyed suffered from a particularly serious deficit in the area of cultural tolerance because the ethno-religious stereotypes pervading these companies' workplaces were found to be particularly intense and because of indications of several feuds involving members of different ethnic and religious groups.

The findings on the eight aviation maintenance organisations pertaining to these problems may highlight the failure of these companies to manage (national) culture diversity effectively. The findings also indicate that most of these companies have a long way to go in minimising cultural diversity as a potential barrier to performance, let alone in the beginning to mine the value-added potential of cultural diversity.

This study can answer affirmatively the question of whether national culture teams face insurmountable problems as functioning units because of stereotypes, discrimination, and other ills, and the absence of effective measures to remedy these problems. However, there is not enough available data to enable this researcher to determine whether placing AMTs from

different national cultures in the same work teams has deleterious effects on the functioning of an aviation organisation. Common sense, though, indicates that such inter-cultural mixing would not pose any problem in organisations characterised by foresighted management.

To varying degrees, the eight maintenance organisations profiled in this study were also found to have failed another challenge, namely, that of familiarising their employees with MRM/HF.

## ***7.2. Aviation Maintenance Organisations and the MRM Challenge***

This study found that only 21.28% of the respondents in the entire sample were familiar with MRM/HF, while the remaining 78.72% either stated that they did not know what MRM/HF was, or offered answers which showed their ignorance of it. The responses of the larger percentage were disturbing because they could be attributed to two, adverse, explanations: 1) that the respondents had previously been exposed to MRM but had forgotten what MRM stood for as a concept; or 2) that they had never hitherto been introduced to MRM but still wanted to convey to the researcher the impression that they were, in fact, knowledgeable about it. The latter explanation seems to be more convincing because even a limited exposure to MRM/HF would probably have left at least a residue of information in most of the respondents' minds.

MRM-awareness among the aviation maintenance organisations' employees ranged from nil to 56%. Paradoxically, however, the next lowest percentage of respondents who were ignorant about MRM/HF belonged to two Western-based aviation maintenance organisations.

### *7.3. Improvement of the Questionnaire and the Direction of Future Research*

This conclusion presents some suggestions regarding improvements of the questionnaire, as well as regarding the direction that future research can take on the functioning of AMTs in a multicultural work setting.

This study has already pointed to poor and imprecise wording of some items on the questionnaire.<sup>450</sup> Two examples of this are AC-Ind2, AC-Ind8. These two questions could be combined into one so as to read as follows: “Team members should avoid negative comments about each other, and disagreeing with each other, because such comments and disagreement could increase tension and reduce effectiveness in the workplace”. The following question could be added: “Team members should avoid disagreeing with each other even about technical tasks, where the choice of action may have different consequences for the workplace”.

In any event, the new questionnaire would need the input of other experts on national cultures, organisations, etc. Such collaboration should also extend to the research on multicultural teams in aviation maintenance, because experts in different fields would bring a rich variety of insights to the research and would also make it possible to build up valuable profiles of the different cultural and ethnic groups studied. These profiles would allow us sufficient understanding of the various cultural and ethnic groups to be able to explain seeming contradictions and inconsistencies in respondents' answers.

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<sup>450</sup> There is also an additional need to make the ethnic background question more useful by providing the respondents with a list of the world's different ethnic groups so that the researcher is spared having to deal with the respondents' confounding of nationality with ethnicity, religion with ethnicity, etc. The amended questionnaire should include a variable that deals with religion.

It would be also useful, in terms of future studies, consider the nature of individual behavioural factors, such as introvert/extrovert tendencies, and their influence in multicultural aviation teams.<sup>451</sup>

These suggestions about the questionnaire, and about the necessity of cross-disciplinary investigation stem from the need to assemble better data on multicultural teams in aviation maintenance, and to carry out the most multi-faceted and comprehensive analysis of this data. Following these suggestions regarding improvements to the questionnaire and improvements to the analysis of the data would be of benefit to aviation maintenance organisations and to aviation safety in particular.

The main suggestion to add with respect to future research is applying the approach to the aviation field in general, and not just to AMTs. However, for the purpose of the future research, the approach needs to be refined further, and the questionnaire revamped to make it relevant to the aviation field in general. The other important point that needs to be addressed in future research is the validity of the concept of the “clash of civilisations” as it pertains to the aviation field, namely whether some AMTs would regard their colleagues belonging to another culture as being from an alien, and dangerous culture. The tragedy of September 11, 2001 points to the danger both of a “highly politicised” workplace, and of the simplistic presentation of Islam, as a religion, way of life, and civilization. There is therefore a need of, and even urgency in, studying the dynamics of multicultural teams, so as to avert the possible dangers that lay for organisations dealing with the safety of the flying public.

“The challenges of cultural tolerance” as a theme in any workplace is clearly an ongoing area for research. These challenges are global and will

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<sup>451</sup> Further research is also recommended in terms of decision-making by pilots in a multicultural environment, particularly in emergency situations.

require careful, sensitive solutions to be integrated into everyday working environments, particularly that of aviation maintenance, where potential and very real areas of discontent have to be acknowledged, discussed and acted upon positively. Living and working in harmony is not just about aviation maintenance. However, for world-wide safety, aviation maintenance has to be about living and working in harmony.



Ref. No.: \_\_\_\_\_

# Aircraft Maintenance Technicians' Survey

In co-operation with



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Dear respondent:

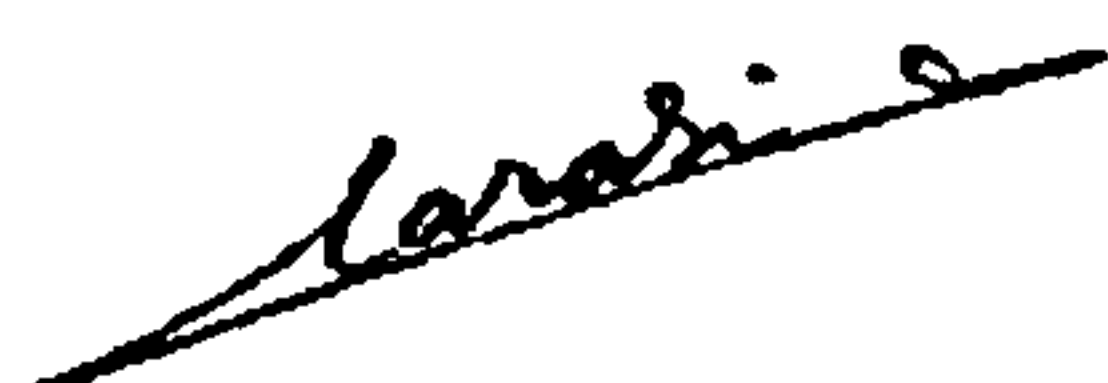
I am conducting research on aviation maintenance in multicultural settings, as part of my Ph.D. degree requirements at Cranfield University. The objective of this research is to identify the possible problems stemming from situations in which members of multicultural crews work together, as well the challenges that such situations pose for aircraft safety.

You have been selected randomly, along with other employees, to participate in this study by answering the enclosed questionnaire. *I wish to assure you that this survey will be conducted anonymously.* Your answers, combined with those of other respondents in maintenance operations, will help me design a Maintenance Resource Management (MRM) program that is suited for a multicultural environment. MRM in its present form is a program designed to address errors related to *human factors*, and the resolution of problems through open and honest communication between technicians and managers.

Let me clarify the ground rules for filling out this questionnaire. Firstly, I recommend that you answer the questions in this survey in the *language* in which you feel most comfortable. Secondly, please do not collaborate with colleagues while completing this questionnaire. You may, however, discuss its contents after you have completed and submitted it, if you wish. Thirdly, I want to stress that there are no right or wrong answers to these questions. Therefore, you are requested to answer them according to your genuine feelings and attitudes. You may be sure that your answers will be taken in the strictest confidence, and that, as the questionnaire is anonymous, I will have no way of knowing who you are.

Finally, I want to emphasize that this survey has concrete, and not merely academic, applications. Specifically, it is meant to help me design program that will improve your work environment.

Thank you for your time and for your contribution to aviation safety.



Ali Al-Harabi  
Ph.D. Researcher

Please Turn Over ➔



**Section A:****Background Information**

1. Age: \_\_\_\_\_
2. Gender: Male  Female
3. How long have you been working in this maintenance department?  
\_\_\_\_\_
4. How long have you been working in aviation maintenance in general?  
\_\_\_\_\_
5. Which one of the choices listed below best describes your current employment position? (Select [] more than one if appropriate)
  - Aircraft Maintenance Technician (AMT)
  - Inspector
  - Crew leader
  - Supervisor
  - Other, please specify \_\_\_\_\_
6. Which of the following certificates/licenses do you currently hold? (Select [] more than one if appropriate)
  - Airframe Certificate
  - Airframe & Power Certificate (A&P)
  - Repairmen Certificate
  - Inspection Authorization Certificate
  - FCC license
  - Other, please specify \_\_\_\_\_
7. What is the highest level of education that you have attained?
  - Middle school
  - High school diploma/GED
  - Associate degree or equivalent (2 years college)
  - College graduate (B.A., B.S., or other Bachelor degree)
  - Master degree
  - Other, please specify \_\_\_\_\_

8. Where did you receive *most* of your technical training?

- Military
- Technical high school
- Technical school (A&P)
- Company training
- Other, please specify \_\_\_\_\_

9. What is your nationality? \_\_\_\_\_

10. What was your nationality at birth (if different from present nationality)?  
\_\_\_\_\_

11. What is your ethnic background? \_\_\_\_\_

12. What language(s) is/are used for communication in your job situation?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13. How many languages do you speak? \_\_\_\_\_

Please specify \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Section B:

*Attitudes Items*

Please indicate your own opinion about these statements by writing beside each one the appropriate *letter* from the scale below. The “**Neutral**” response should only be used if you honestly *do not* hold any opinion on that particular statement.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<b>Disagree Strongly</b>	<b>Disagree Slightly</b>	<b>Neutral</b>	<b>Agree Slightly</b>	<b>Agree Strongly</b>

- \_\_\_ 1. Debriefing/critique is important for communication.
- \_\_\_ 2. Casual conversation improves co-ordination among team members.
- \_\_\_ 3. It is important to avoid negative comments about others.
- \_\_\_ 4. In abnormal situations, I rely on my superiors to tell me what to do.
- \_\_\_ 5. Co-ordination requires taking other people’s personalities into account.
- \_\_\_ 6. Senior staff deserve extra benefits.
- \_\_\_ 7. I expect to be consulted on matters that affect the performance of my duties.
- \_\_\_ 8. Managers should encourage questions from team members.
- \_\_\_ 9. To resolve conflicts, team members should openly discuss their differences with each other.
- \_\_\_ 10. Training is a particularly important management responsibility.
- \_\_\_ 11. Working for this organization is like being part of a large family.
- \_\_\_ 12. We should not question superiors’ actions.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<b>Disagree Strongly</b>	<b>Disagree Slightly</b>	<b>Neutral</b>	<b>Agree Slightly</b>	<b>Agree Strongly</b>

- \_\_\_13. Pre-assignment briefing is important.
- \_\_\_14. Technical proficiency makes for successful management.
- \_\_\_15. Team members should avoid disagreeing with others, because conflicts create tension and reduce effectiveness in the workplace.
- \_\_\_16. Co-ordination is especially important in emergency situations.
- \_\_\_17. Subordinates should not take control under any circumstances.
- \_\_\_18. Fate placed me in this organization, and I am grateful.
- \_\_\_19. Conflict in the workplace is natural and unavoidable.
- \_\_\_20. Supervisors who encourage suggestions from team members are weak leaders.
- \_\_\_21. We should be sensitive to other people's problems.
- \_\_\_22. High social status and good connections make successful managers.
- \_\_\_23. I like my job.
- \_\_\_24. Junior team members should not question the supervisor's or senior crew members' decisions.
- \_\_\_25. I perform effectively even when fatigued.
- \_\_\_26. We should seek to understand each other better in the workplace.
- \_\_\_27. My decision making is good in abnormal situations.
- \_\_\_28. Conflict avoidance has its roots outside the job (i.e., good relationships among team members outside the workplace will reduce the likelihood of conflict at work).
- \_\_\_29. I am ashamed when I make a mistake in front of my fellow team members.
- \_\_\_30. Managers should inform us of plans and actions.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<b>Disagree Strongly</b>	<b>Disagree Slightly</b>	<b>Neutral</b>	<b>Agree Slightly</b>	<b>Agree Strongly</b>

- \_\_\_31. Managers can come to work without bringing their personal problems with them.
- \_\_\_32. If I perceive problems with the task at hand, I will speak up regardless of who might be affected.
- \_\_\_33. Team members should feel obliged to mention their own psychological stress or physical problems to each other before or during the performance of the assigned task.
- \_\_\_34. The organization's rules should not be broken, even in situations where the employees think it is in the organization's best interests to do so.
- \_\_\_35. Co-ordination among groups is a managerial responsibility.
- \_\_\_36. If I get stressed, I get stressed. I have no control over it.
- \_\_\_37. Personal problems can adversely affect my performance.
- \_\_\_38. It is better to agree with other team members than to voice a different opinion.
- \_\_\_39. My performance is not adversely affected by working with an inexperienced or less capable team member.
- \_\_\_40. Managers should take charge in emergencies.
- \_\_\_41. I am proud to work for this organization.
- \_\_\_42. Team members should be able to empathize with one another's predicaments.
- \_\_\_43. I am less effective when under stress or fatigued.

## Section C:

**Work Goals**

In this section the answers are *different* from those in the preceding section and relate to individual perception of importance rather than agreement. Please answer by writing beside each item the appropriate *number* from the scale below.

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b>Of Utmost Importance</b>	<b>Very Important</b>	<b>Of Moderate Importance</b>	<b>Of Little Importance</b>	<b>Of No Importance</b>

- \_\_\_44. Receiving feedback on performance.
- \_\_\_45. Understanding and agreeing on work goals.
- \_\_\_46. Being informed of this organization's goals.
- \_\_\_47. Having other groups act as if they share my own group's goals.
- \_\_\_48. Having other groups plan and co-ordinate their activities with my group.
- \_\_\_49. Having subordinates voice concerns about the organization's goals.
- \_\_\_50. Working with team members who maintain good interpersonal relationships with each other.
- \_\_\_51. Working for an organization which offers opportunities for advancement, and high earnings.
- \_\_\_52. Working for an organization which offers job security.
- \_\_\_53. Working for an organization where the group's achievements are valued over individuals' successes.
- \_\_\_54. Working in a place where I can develop a warm relationship with my direct bosses.
- \_\_\_55. Working in a place where I can have considerable freedom to adopt my own approach to the job.

1	2	3	4	5
Of Utmost Importance	Very Important	Of Moderate Importance	Of Little Importance	Of No Importance

\_\_\_56. Working for an organization which offers me challenging tasks, from which I can get a personal sense of accomplishment.

\_\_\_57. Working for an organization which gives me sufficient time for personal/family life.

\_\_\_58. Working for an organization which cares for its employees.

\_\_\_59. Working for an organization which sets my goals for me.

**Section D (Parts 1, 2, and 3):**

*(Please remember that you can answer the questions below in the **language** in which you feel most comfortable)*

**Part 1.**

1) Please describe the **most rewarding** and the **most frustrating** aspects of supervising crews whose members come from national cultures **similar** to yours. In answering this question, please identify these national cultures.

a) The **most rewarding** aspects:

b) The **most frustrating** aspects:

2) Please describe the **most rewarding** and the **most frustrating** aspects of supervising crews whose members come from national cultures that are **different** from yours. In answering this question, please identify these national cultures.

a) The **most rewarding** aspects:

b) The **most frustrating** aspects:



3) Describe the ideal cultural, rather than individual, traits that you would like team members working with you to have. In answering this question, please mention which countries or national groups you associate with these traits.

4) Describe the cultural, rather than individual, traits that you would *not* want team members working with you to have. In answering this question, please mention which countries or national groups you associate with these traits.

5) Describe the difficulties encountered in the workplace by members of other national cultures, and suggest what needs to be done to alleviate them. Please identify these national cultures.

6) Do you socialize with team members whose national cultures are different from yours? If yes, why, and if not, why not? Please identify these national cultures.

7) Are there people from specific national cultures or national groups who you would like to have in your crew? If yes, which ones, and why?

8) Are there people from specific national cultures or national groups who you would rather *not* have in your crew? If yes, which ones, and why?

9) Do you believe that people from some national cultures have better maintenance skills than others? If yes, which ones?

10) Would you accept a member of another national culture as a supervisor or manager? If yes, why, and if not, why not? Please identify which national culture(s).

11) Do you believe that members of some national cultures would make better supervisors than members of others? If yes, which ones?

12) Has it been your experience that members of some national cultures or national groups are more likely than others to proclaim their superior maintenance skills? If yes, mention the *national cultures* of those members or groups who have made such claims, and describe your reaction to these claims.

13) What does Maintenance Resource Management (MRM) mean to you?

14) Do your colleagues have a clear idea of MRM, and of its role? If yes, describe what you believe MRM means to them, and what its role is, from their perspective.

15) Is the organization you work for MRM-conscious? If yes, why, and if not, why not?

16) Do you think that MRM is a valid tool? If yes, why, and if not, why not?

17) Is MRM a useful tool for the country in which you work and for its national culture?  
If yes, why, and if not, why not?

**Part 2.**

18) Select (✓) JUST ONE of the three following sets of characteristics that you MOST want your *colleagues* to have:

**Set A** (treating all co-workers as equals; asking for co-workers' input when making decisions; and believing that individuals' interests should take precedence over those of groups)

**Set B** (not treating all co-workers as equals; making decisions without consulting co-workers; and believing that groups' interests should take precedence over those of individuals)

**Set C** (sharing ties with you, such as being from the same family/city/region, or having graduated from the same school)

**Set A**                       **Set B**                       **Set C**

19) Select (✓) JUST ONE of the four following sets of characteristics that you MOST want your *supervisors* to have:

**Set A** (making decisions without consulting team members; sticking to rules and regulations, even when conditions dictate otherwise; and not being mindful of team members' welfare)

**Set B** (consulting team members before making decisions; being flexible, i.e., adhering to rules and regulations only when conditions so dictate; and being mindful of team members' welfare)

**Set C** (making decisions without consulting team members; sticking to rules and regulations, even when conditions dictate otherwise; but being mindful of team members' welfare)

**Set D** (sharing ties with you, such as being from the same family/city/region, or having graduated from the same school).

**Set A**                       **Set B**                       **Set C**                       **Set D**

**Part 3.**

Please read the descriptions of the workplace situations below before answering (✓) the questions at the end.

**Description A:** The workplace contains team members who are from different national cultures; who have difficulty communicating with each other in the job; who have difficulty understanding each other; and who, as a result, act as though they would rather not work together. Consequently, the workplace situation is usually tense. Outside the job, people congregate along nationality/national culture lines.

**Description B:** In the workplace, team members form a harmonious unit, despite the fact that they come from different national cultures. Team members also make extra efforts to understand each other, and to communicate in simple language when communication problems arise in the job. Team members generally like each other even though they *do not* socialize across cultural lines outside the workplace.

**Description C:** In the workplace, team members form a harmonious unit, despite the fact that they come from different national cultures. Team members also make extra efforts to understand each other, and to communicate in simple language when communication problems arise on the job. Team members like each other a lot, and also socialize across cultural lines outside the job.

**Description D:** The workplace contains a mixed-culture crew, which forms neither a harmonious nor a disharmonious unit. Team members try to carry out their job assignments to the best of their abilities, on a day-to-day basis, with varying degrees of success.

**Description E:** In the workplace, the members of our crew are from various national cultures, but are so well integrated that they consider themselves members of one working family, and of a larger community as well.

**Description F:** In the workplace, team members come from various national cultures, and have been thrown together by fate. What fate has put together, humans cannot undo.

I) Which one of the above descriptions fits the workplace situation in which you usually supervise?

- 1. Description A
- 2. Description B
- 3. Description C
- 4. Description D
- 5. Description E
- 6. Description F

II) Which one of the above descriptions represents the workplace situation in which you would most enjoy being a supervisor?

- 1. Description A
- 2. Description B
- 3. Description C
- 4. Description D
- 5. Description E
- 6. Description F

And III) Which one of the above descriptions represents the workplace situation in which you would least enjoy being a supervisor?

- 1. Description A
- 2. Description B
- 3. Description C
- 4. Description D
- 5. Description E
- 6. Description F

Thank you for taking the time to complete this survey. It is concerned individuals such as yourself, who participate in research studies, that help to make positive changes in the field of aviation possible.







Comments...



A large, empty rectangular box with a light gray border, intended for writing comments.

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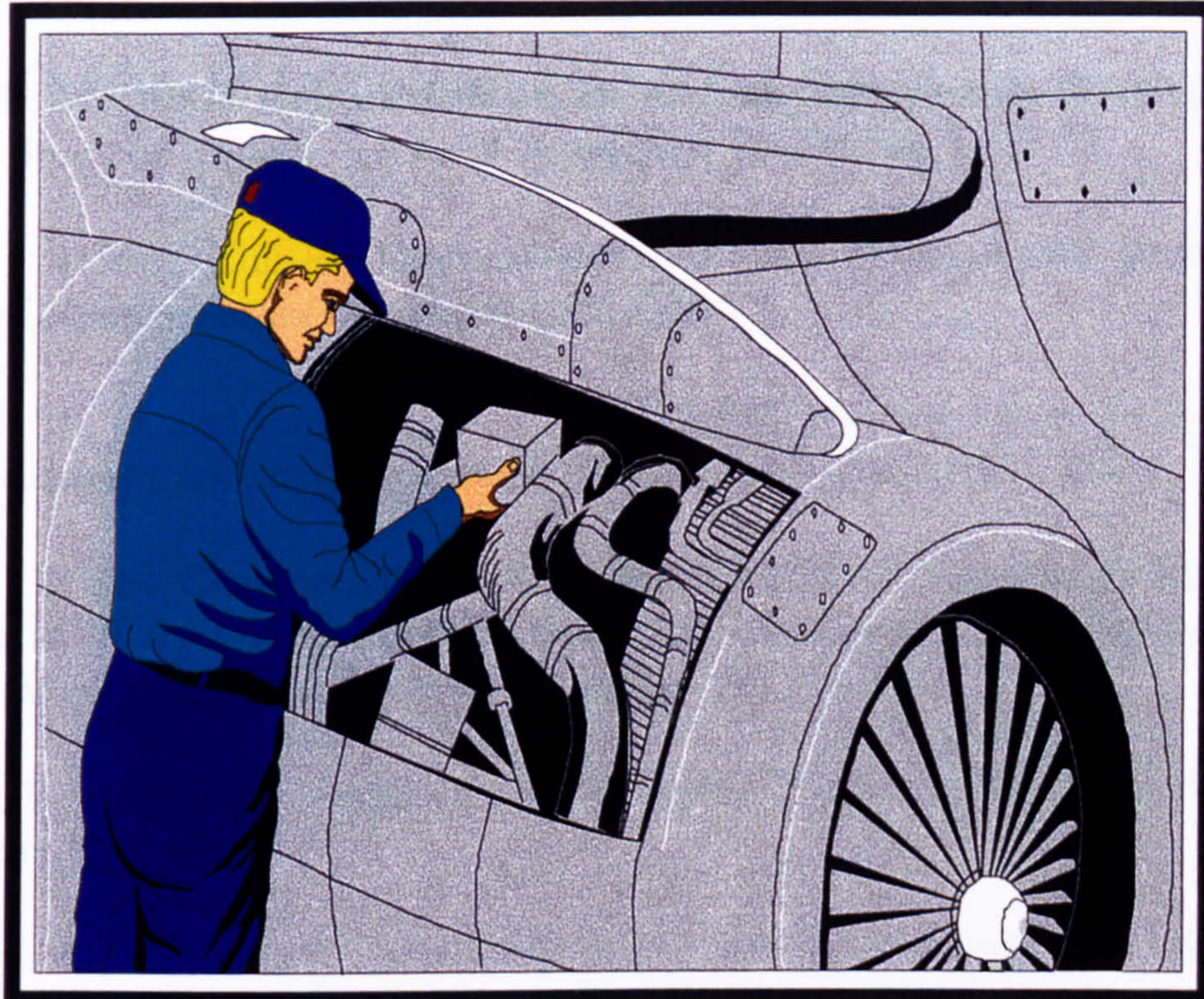
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