INTERCULTURAL COMMUNICATION DIFFICULTIES AND THEIR EFFECTS ON FLIGHT SAFETY

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The study investigates intercultural communication difficulties experienced by international captains during their interactions with Chinese co-pilots in cockpit. Communication is the key for effective team work, while in multicultural team the role of communication is even more highlighted. Many researchers have explored pilot performance is more closely associated with the quality of interactive communication than with the technical proficiency.
The objective of this study is to identify perspectives for calling the attention to the significance of communication challenges encountered by international captains and explore effective strategies to minimize insecure cultural factors due to intercultural communication barriers. This objective is explored through a qualitative research approach with semi-structured interviews in one of the major airlines in China. Thematic interviews were conducted in a face-to-face manner with 19 experienced international captains from varied countries and cultures. Through qualitative content analysis, a significant correlation between intercultural communication difficulties and flight safety was found.

Asiasanat
Intercultural communication difficulties, Power distance, Flight safety, Chinese culture

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Abstract
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1 INTRODUCTION

This study investigates intercultural communications difficulties experienced by international captains during their interactions with Chinese co-pilots in cockpit. The correlation between those communication difficulties and flight safety is one of the focuses of this study. Aircraft safety depends on effective communication to a large extent. Interpersonal communication errors have had a role in approximately 70% to 80% of all accidents over the last 20 years (Sexton & Helmreich, 2000). The statistic of Sexton and Helmreich is supported by Ruffell declared crew performance was more closely associated with the quality of crew communication than with the technical proficiency of pilots.

Furthermore, power distance as one of the cultural factors is assumed to act a crucial role within cockpit communication, hence, be influential in regard of flight management and flight safety. Regarding the fact aircraft accident rates varied among nations and areas, Schultz (2002) further stated although some of the variability is due to national differences in aviation infrastructure, aircraft age and condition, cultural factors help to explain additional variation.

Based on the assumption aircraft accident rates vary much across cultures and nations, which means there are airlines are more likely to be less safe. Hence, the goal of this study is to identify perspectives for calling the attention to the significance of communication challenges encountered by international captains and explore effective strategies to minimize insecure cultural factors due to intercultural communication barriers.

A qualitative research approach is adopted with semi-structured fact-to-face interviews, since the first interest of my research is to gain insights on intercultural communication difficulties personally experienced by international captains. The research questions put forward as follows:

1. What sort of intercultural communication difficulties do international captains report?

2. Do international captains think the communication difficulties between them and their Chinese first officers potentially influence flight safety?

3. What is the role of power distance in cockpit communication between international captains and Chinese first officers? Does power distance affect flight safety through bicultural cockpit communication?

4. If negative correlations exist between communication difficulties and flight safety, how could the threats to flight safety caused by those difficulties be reduced from international captains' perspectives?

Theories and literatures on effective communication (mainly anxiety and uncertainty theory), cultural dimensions (particularly power distance), and cultural factors in aviation communication will be examined and presented in chapter 2. Chapter 3 will focus on research approach, interview procedures, as well as data collection. Data analysis and interview results will be emphysized in chapter 4. Continuously, chapter 5 will involve interpretations on data, conclusions, limitations of the study, and suggestions for further researches.

The study will contribute to the relevant areas on effective aviation communication in the regard of culture and intercultural communication. It is particularly beneficial to the increased overseas pilots in terms of acknowledging the significance of intercultural cockpit communication and sharing corresponding experiences and coping strategies. Last but not least, it is possible the study will help to minimize the risks regarding aircraft accidents by raising the awareness on the importance of intercultural communication and providing suggestions or strategies to cope with related challenges.

2 THEORETICAL FRAMEWORK

2.1 AUM: anxiety and uncertainty management theory

2.1.1 Origin and definition. AUM theory was initially generated by Gudykunst (1988) as an extension of Berger and Calabrese's (1975) uncertainty reduction theory (URT), which then aimed to explain communication between the people from the same culture and ethnicity. Since uncertainty reduction theory (URT) focused merely on cognitive processes, therefore adjustments were required to enlarge URT to intergroup relationships. Anxiety, as affective processes was incorporated into a theory of communication and intercultural adaptation, which focused on anxiety and uncertainty reduction (Gudykunst, 1988). Concurrently, Mitch Hammer and Gudykunst (1988) applied uncertainty and anxiety reduction to illustrate intercultural adjustment and intercultural adaptation. A revision based on 1988 version of the theory and communication competence frame work was introduced by Gudykunst (1993). The 1993 version concentrated on effective communication, anxiety, and uncertainty management. Then the 1993 version was labeled as anxiety/uncertainty management (AUM) for the first time and clearly distinguished itself from URT. By expanding the number of axioms (49 axioms were included, and 11 axioms in cross-cultural variability were added in the meantime), embodying the content of axioms and incorporating mindfulness in effective communication, AUM theory transformed from anxiety and uncertainty reduction to anxiety and uncertainty management. Gudykunst (2005, p. 283) stated the transforming "Unlike the

1988 version of the theory, the 1993 version was designed to be a practical theory (e.g., a theory that individuals could apply to improve the quality of their communication)…as well as focusing on practical application instead of just explaining effective communication, changed the fundamental nature of the theory". A further supplement was conducted in 1995 by unifying ethnical aspects of communicating with strangers and expanding the aspects of cultural variability. Gudykunst also revised the intercultural adjustment version (Gudykunst & Hammer, 1988), and demonstrated the application of AUM in intercultural adjustment training. The most recent display of AUM updated the 1995 version of the theory on interpersonal and intergroup communication effectiveness and was presented in 2005 by Gudykunst.

Anxiety/uncertainty management (AUM) theory is used to explain communication effectiveness in interpersonal (intragroup) and intergroup (intercultural) communication (Gudykunst, 2005). AUM assumes uncertainty and anxiety are fundamental factors influencing the effectiveness of our communication with others in interpersonal and intergroup encounters (Gudykunst, 1995).

One of the major assumptions of AUM theory (Gudykunst, 1988, 1993, 1995) is that anxiety/uncertainty directly influence the effectiveness of communication in interpersonal and intergroup encounters. It is claimed that individuals can communicate effectively to the extent that they are able to minimize misunderstanding by managing their anxiety and uncertainty. If anxiety is very high, individuals will choose simplistic information processing like utilizing stereotypes. If uncertainty is very high, individuals will not have enough confidence to predict or interpret the counterparts' attitudes, feelings, or behaviors (Gudykunst & Nishida, 2001). On the contrary, if anxiety is very low, individuals will lose their motivation to communicate, and if uncertainty is very low, individuals will be overconfident in predicting their

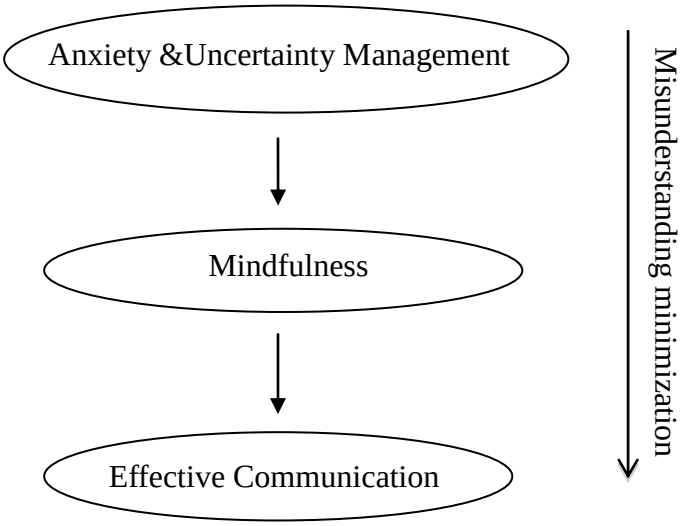
counterparts' reactions (Gudykunst & Nishida, 2001). To conclude, effective communication is impossible to happen under the above situations.

Therefore, effective communication will be achieved only when both the anxiety and uncertainty are restrained in a certain range (not too high or too low). Moreover, some other superficial factors (e.g., self-concept, motivation, social categorization, empathy, identities, and expectations) affect the effectiveness of communication through the two basic causes - uncertainty and anxiety.

To Gudykunst (2005), the key to positive management (to manage people's anxiety and uncertainty to optimum levels) of uncertainty and anxiety is ''mindfulness,'' that is, a conscious awareness of the process of communication and communication behaviors

From my understanding, the ideal model of achieving effective communication presented by AUM can be illustrated by the graph below.

Graph 1 Model of effective communication in AUM



According to AUM theory, a positive correlation exists between uncertainty and anxiety when we communicating with others (Gudykunst & Nishida, 2001). Aside from anxiety and uncertainty usually exist at the same time, researchers found out anxiety will rise when uncertainty increases; and high anxiety can also increase the level of uncertainty (Demerath, 1993; Gudykunst, 1993, 1995, 2005; Gudykunst& Nishida, 2001; Gudykunst & Shapiro, 1996; Turner, 1988). The interplay between anxiety and uncertainty in intergroup communication has been further confirmed through Gudykunst and Nishida's research on interactions between American culture and Japanese culture (2001).

As it has been stated before, AUM is a theory designed to explain communication effectiveness in interpersonal (intragroup) and intergroup (intercultural) communication. For this paper, the focus is put on intergroup (intercultural) communication since the nature of my study is about intercultural communication between international captains and Chinese co-pilots. Gudykunst (1995) distinguished the two ways of communication process by the types of data we utilize in making predictions about other people. There are three kinds of data we use in predicting: cultural (predictions based on regularities in others' behaviors derived from their following cultural norms and rules), sociological (predictions based on others' group memberships and/or roles), and psychological (predictions based on personal information about the individual of whom we are communicating) (Miller & Steinberg, 1975). Therefore, intergroup (intercultural) communication happens when predictions are based mainly on cultural and sociological data (Gudykunst, 1995). Gudykunskt further argued that "the basic processes of communication are the same across cultures, but that our cultures provide rules for how we should interpret the content of communication" (2005, p. 284).

2.1.2 Key concepts in anxiety and uncertainty management. Uncertainty and Anxiety

are critical factors in understanding AUM theory. According to Gudykunst (2005), uncertainty is a cognitive phenomenon while anxiety is the affective aspect.

Gudykunst derived the definition for uncertainty from Berger & Calabrese (1975), who referred the uncertainty we have about predicting and explaining others' attitudes, feelings, thoughts, beliefs, values, and behaviors in both intra- and inter-communications. Some other scholars also believed the world is unpredictable in essence and complete predictability cannot exist (Becker, 1971; Solomon & Pyszynski, 1991; Watts, 1951). Therefore, one may assume that uncertainty as a phenomenon is pervasive in all relations and communications.

The degree of uncertainty is suppose to be varied between interpersonal communication and intercultural communication. The uncertainty level people experience when communicating with others of different groups is higher than when communicating with the members of their own groups (Gudykunst, 1985; Gudykunst & Shapiro, 1996; Lee & Boster, 1991; Stephan & Stephan, 1985; Word, Zanna & Cooper, 1974).

Regarding anxiety, which Gudykunst & Nishida viewed as the affective/emotional equivalent of uncertainty is also one of the fundamental problems we all must cope with (Lazarus, 1991; May, 1977). Some degree of anxiety exists all the time, as long as we communicate with others. Anxiety happens when people feel uneasy, tense, and worried; and when people are apprehensive about what might happen (Stephan & Stephan, 1985).

The anxiety we experience when we communicate with others is based on the anticipation of negative consequences (Stephan & Stephan, 1985). Stephan & Stephan (1985) further indicated four types of negative consequences: negative consequences to our self-concepts, negative behavioral consequences, negative evaluations by others, negative evaluations by members of our ingroups .

Individual anxiety levels differ when communicating with ingroup members and outgroup members. When individuals communicate with members of other groups, the anxiety they experience tends to be higher than when communicating with ingroup members (Gudykunst, 1985; Gudykunst & Shapiro, 1996; Ickes, 1984; Lee & Boster, 1991; Stephan & Stephan, 1985; Word, Zanna & Cooper, 1974). Studies also indicate that the quality of contact can influence the anxiety degree. Having positive contact with people from outgroups can reduce the intergroup/intercultural anxiety (Gaertner, Dovidio & Bachman, 1996; Islam & Hewstone, 1993; Stephan & Stephan's 1985, 1989, 1992).

When we communicate, we attach meanings to messages we construct and transmit to others, and we interpret the messages we receive from others. Communication is a process involving the exchange of messages and the creation of meanings (Barnlund, 1962). Communication has three indispensable factors, which are sender, message, and receiver. An illustration below reveals the process of two-ways communication.

Sender (Encodes) >Message> Receiver (Decodes)> Receiver Becomes Sender and Encodes> Message> Receiver (Decodes) (Zastrow, 2001)

Communication is effective to the extent that the receiver decodes a meaning to the message, which is relatively similar to that the sender was intended to transmit it (Gudykunst, 1993, 1995, 2005). Gudykunst (2005) believed people usually interpret others' messages using their own frames of reference. It happens frequently that people's interpretations are different than their counterparts' intend to express. In extreme circumstances, compliments may be treated as insults and jokes might be interpreted as a put-down (Zastrow, 2001). Effective communication exists when people are mindful since people are able to negotiate meanings with others by being mindful (Gudykunst, 2005).

Effective communication can also be referred to the process of minimizing

misunderstandings (Gudykunst, 1993, 1995).

Barriers that can breakdown the communication process include: noise, static, multiple communications, fatigue, stress, distractions, incomplete message, ambiguous wording, lack of credibility, lack of rapport, think in personal terms, jargon, and boring (Kirby, 1997).

With this basic understanding of effective communication and obstacles in leading to communication failure, taking a look at how these play into the realm of cockpits is important.

The following cockpit voice recorder (CVR) transcripts are from the 1982 crash of Air Florida Flight 90 into the Potomac River in Washington, DC.

(CA- Captain; F/O- First Officer; TWR- Air Traffic Control Tower)

15:59:51 CA It's spooled. Real cold, real cold.

15:59:58 F/O *God, look at that thing. That don't seem right, does it? Uh, that's not right*

16:00:09 CA Yes it is, there's eighty

16:00:10 F/O *Naw, I don't think that's right. Ah, maybe it is.*

16:00:21 CA Hundred and twenty.

16:00:23 F/O I don't know

16:00:31 CA Vee-one. Easy, vee-two

16:00:39 [Sound of stick shaker starts and continues until impact]

16:00:41 TWR Palm 90 contact departure control.

16:00:45 CA Forward, forward, easy. We only want five hundred.

16:00:48 CA Come on forward....forward, just barely climb.

16:00:59 CA Stalling, we're falling!

16:01:00 F/O Larry, we're going down, Larry....

16:01:01 CA I know it.

16:01:01 [Sound of impact] (PlaneCrashInfo.com, 2004)

In the above transcript, the communication between the captain and first officer was a failure. The first officer found something wrong with engine and state issue of something "not being right" three times (in bold and italic letters). After the first two times the statements were neglected, the first officer gave up his persistence. The third "not being right" followed by "May it is". For whatever reason, the captain didn't consider the first officer's concern and continued with the takeoff. The first officer as the message sender, his message was not being received. The catastrophe probably could have been avoided if the first officer voiced his concerns with a more assertive way and was more confident with his own observations and experience.

Mindfulness is a psychological state in which individuals engage in active information processing (actively analyzing, categorizing, and making distinctions) while performing their current tasks (Langer, 1997). Some researchers believe mindfulness is achieved in some extent when individuals are consciously aware about their own communication behaviors (Bellah et al., 1991; Csikzentmihalyi, 1990).

Langer & Moldoveanu (2000) indicated that most of people communicate mindlessly most of time. Some of our behaviors like the way we answer the phone, or kid around with our friends, range from habitual to mindless. Those routine communications work perfectly when we cope with familiar situations, but can cause tension and confusions in intercultural interactions. Langer (1997) summarized three characteristics of mindfulness: creating new categories, being open to new information, and being aware of alternative perspectives. Gudykunst (2005) argued managing anxiety and uncertainty requires people be mindful.

2.1.3 Scope of anxiety and uncertainty management. A schematic AUM theory is presented in the figure below. The figure explains how effective communication is achieved by managing anxiety and uncertainty. Communication effectiveness as the goal is in the rightmost of the frame. Six general categories are summarized from superficial causes of effective communication (not all the superficial causes are represented in the figure). The superficial factors indirectly influence the effectiveness of communication through their direct influent on the abilities in managing anxiety and uncertainty. Gudykunst named those causes as "superfical", which does not mean they are non-important causes. They are only the surface factors in the sense of considering the roles of anxiety and uncertainty in communication process. Being mindful is necessary to achieve communication effectiveness if anxiety or uncertainty is above the maximum thresholds or below the minimum thresholds; and mindfulness can facilitate effective communication when anxiety or uncertainty is between the two thresholds (Stephan, G., Stephan, W & Gudykunst, 1999).

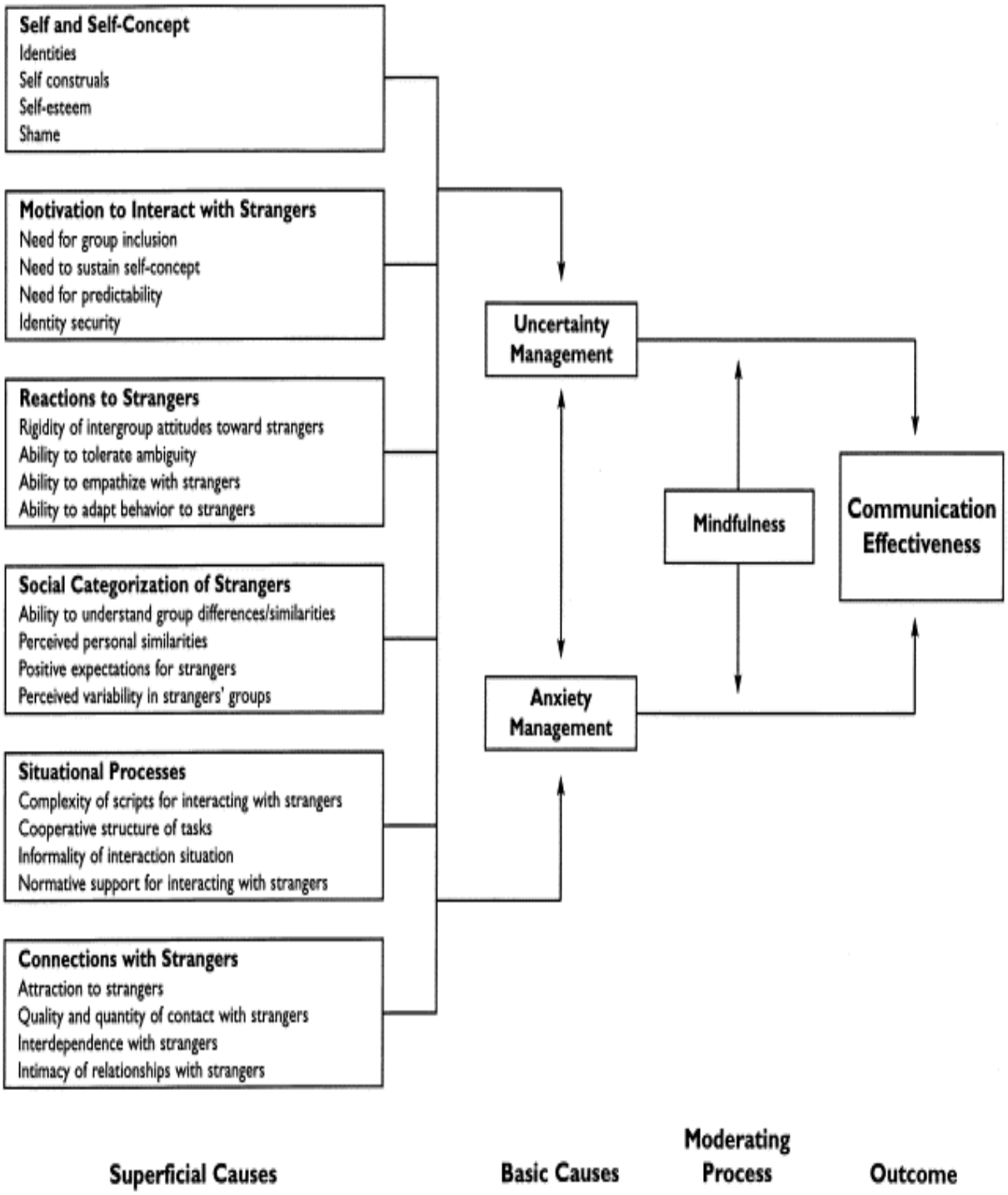
AUM is a rather extended theory with a large number of axioms (47 in total). For reasons of space I will only mention two axioms relate to power status and power distance, which I assume play important roles in cockpit communications between the captains and first officers.

Axiom 26: "An increase in the power we perceive that we have over strangers will produce a decrease in our anxiety and an increase in the accuracy of our predictions of their behavior" (Gudykunst, 2005, p. 301).

Axiom 43: "An increase in cultural power distance will produce an increase in the sharpness of the stranger-ingroup distinction drawn for relationships involving unequal statuses" (Gudykunst, 2005, p. 309).

Figure 2 A Schematic Representation of AUM Theory

Gudykunst (2005, p. 292)



2.1.4 Purpose and application of anxiety and uncertainty management. AUM theory is applicable to improving the effectiveness of communication by providing clear implications

and can be used to design theory-based training programs to help trainees improve their communication or adjust to new cultures (Gudykunst, 2005). AUM theory provides direct implications in improving the quality of communication with others. Effective communication requires people to mindfully manage anxiety and uncertainty in a decent level so that to make accurate predictions and explanations on other's behavior. Gudykunst (1993, 2005) also mentioned the ways of achieve mindful were: create new categories for others; be open to new information; be aware of how others interpret messages.

Other techniques derived from AUM theory, like describing other's behavior rather than interpreting or evaluating and choosing different behaviors according to contexts rather than insist our personality characteristic (e.g., uncertainty orientation, tolerance for ambiguity), are insightful perspectives in improving the effectiveness of communication. I suppose AUM theory provides a significant framework to improve cockpit communication between international captains and Chinese first officers.

2.2 The role of power distance in cockpit communication failures

2.2.1 Hofstede's cultural dimensions. Cultural dimensions used to differentiate national cultures are based on one of the most influential empirical study conducted in the late 1960s and early 1970s from more than 117,000 IBM employees working in 72 countries. Hofstede (1980, 1991) concluded four dimensions in explaining national cultural differences: individualism-collectivism, uncertainty avoidance, power distance, and masculinity-femininity. Long-term orientation as the fifth dimension was added later in 2001 after extended studies on various sources for another 16 countries.

Hofstede's cultural dimensions provide a fundamental framework in understanding cultural differences at a national level. A large amount of studies, especially those in communication, have applied Hofstede's dimensions.

Though Hofstede's dimensions have became controversial under the criticisms from some scholars (McSweeney, 2002; Spector et al., 2001), I suppose Hofstede's work as its' in-depth and insightful with wide information and valuable suggestions provided has benefit the people or organizations deal with cross-culture issues. Hofstede (2001, 2006) showed significant relationships between national scores and other national level variables. Many other studies also suggested Hofstede's dimensions still serve as reliable and useful frameworks in intercultural research (Kirkman et al, 2006; Van Oudenhoven, 2001).

2.2.2 Power distance and Chinese culture-a culture with high power distance. Power, status, and inequality are fundamental issues of any society. The power distance dimension deals with the fact that all societies are unequal, but some are more unequal than others (Hofstede, 1980, 1991). Power distance expresses the attitudes of different cultures toward these inequalities amongst people. Power distance is defined as "the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally" (Hofstede, 2001: 98).

Hofstede (2001) points out that in low power distance countries the dependence of subordinates on superiors is limited, that is, interdependence between boss and subordinate; while in high power distance countries there is a considerable dependence of subordinates on superiors.

In societies with low power distance, the power relations between subordinates and

superiors are consultative and democratic; the emotional distance is relatively low, people in the higher rank are easy to approach and comfortable to be with by lower ranking people (Hofstede, 1991). On the other hand, in societies with high power distance, people accept power relations that are more autocratic and paternalistic; the emotional distance is relatively large, which means subordinates rarely expect a close relationship and seldom contradict with their superiors (Hofstede, 1991).

Power distance also deals with the attitude toward hierarchy. In cultures with low power distance, people relate to one another more as equals regardless of formal positions; in cultures with high power distance, People acknowledge the power of others simply based on where they are situated in certain formal, hierarchical relationships (e.g., parent-child, teacher-student, boss-subordinate, and customer-vendor). Comparable features of high and low power distance are illustrated in the chart below.

The score of power distance in China is higher than most of other countries and regions in the world. With a high score of 80, power distance in China also substantially exceeds other far east Asian countries whose average score is 60 (Hofstede, 1991). The high power distance score indicates a high inequality of power distributed in China. There are only a few countries (e.g., Russian, Malaysia, Philippine, Mexico), who hold higher rankings than China in terms of power distance.

2.2.3 Power distance in anxiety and uncertainty management theory. There are 2 axioms in Anxiety/uncertainty management theory that concern power and power distance. Gudykunst began to relate power with AUM by discussing the concept of power. Power is the ability to influence others (French & Raven, 1959). During our communications with others, lack of power leads to anxiety and cognitive biases, which provide sources to inaccurate

predictions (Fiske, 1992; Fiske, Morling, & Stevens, 1996; Goodwin, Operario, & Fiske, 1998).

Axiom 26: "An increase in the power we perceive that we have over strangers will produce a decrease in our anxiety and an increase in the accuracy of our predictions of their behavior" (Gudykunst, 2005: 301).

Axiom 43: "An increase in cultural power distance will produce an increase in the sharpness of the stranger-ingroup distinction drawn for relationships involving unequal statuses" (Gudykunst, 2005: 309).

Power distance as one of cultural dimensions concerns people's attitude on the distribution of power and hierarchy. Gudykunst (2005) considered the members of high power distance cultures experience greater anxiety and uncertainty in communication process than the members of low power distance cultures, because a sharper distinction exists between low- and high-status communicators in high power distance culture than in low power distance culture.

2.2.4 Power distance in organization. In organizations, the power distance dimension concerns the distribution of power/ status and the way people perceive the distributions, therefore, it is "the extent to which an individual accepts the unequal distribution of power in institutions and organizations" (Clugston et al., 2000: 9).

In organizations, power distance concerns the way organizations are structured, and how people in these organizations view hierarchical structures. In an organization with small power distance, the organizational structure tends to be horizontal and the differences are less apparent and important between superiors and subordinates (Merritt, 2000). A close, open,

and friendly relationship is encouraged regardless of the different positions or levels. However, in a high power distance culture, or dominated organization, the organizational structure is hierarchical and differences are clear between people in high ranking and low ranking. Visible signs for people at the top of hierarchy can be bigger offices or cars, even separate cafeteria.

Power distance influences the degree of delegation that will occur, and the level at which decisions will be taken. People in low rankings are easier to be involved in decision making process, which is always decentralized in high power distance cultures (Mearns & Yule, 2009). Superiors in high power distance cultures are accustomed to wield and exercise power; and subordinates are expected to be passive and follow superiors' orders (Mearns & Yule, 2009). Therefore the cultural dimension of power distance has underlying impact on organization culture.

In general, organizations in low power distance societies (e.g., Finland, USA, Sweden) benefit from an environment of empowerment, acceptance of responsibility, and encouragement of innovation. While staffs of organizations in a high power distance culture dominated societies (e.g., Asian countries, Latin American countries) are strict rule followers and more disciplinary, which can accelerate the efficiency of projects.

2.2.5 Power distance and cockpit communication types. As what we have discussed before, power distance as one of the cultural dimensions has fundamental influences on society and individuals. Speaking from a macro-level, power distance can affect national characteristics, social status, and organization cultures. Observing from a micro angle, power distance has impact on everyday's communications through influencing the level of anxiety and uncertainty. Former researchers also explored the close relationship between power distance and flight safety. To be more specific and to explore more detailed, I suppose it is

necessary to examine the communication types between captains and first officers in the cockpit and the impact of power distance on using different communication types for captain and first officers.

Intra-cockpit communication between captains and first officers exhibits differences in terms of both the communication patterns and communication content. The nine aircrew communication categories including commands, observations, suggestions, statements of intent, inquiries, acknowledgments, replies, non-task related, and uncodable communications were based on the findings of previous aircrew communication studies using interviews with subject matter experts, and behavioral observations of operational aircrews (Foushee, Lauber, Baetge, & Acomb, 1986; Foushee & Manos, 1981; Jensen, 1986).

Commands are often used to communicate information about specific tasks to be accomplished, its timing, and relative priority compared to other tasks (Jensen, 1986). Commands serve as a means to communicate information related to the division of labor and delegation of duties. Although either the captain or the first officer can issue commands, commands are typically initiated by the senior pilot or the captain. Compared with commands, suggestions are mild ways of distributing assignment. Suggestions are recommendations for a specific course of action (Foushee, Lauber, Baetge, & Acomb, 1986) or the introduction of an idea for consideration (Jensen, 1986) from one crew member. Statements of intent are normally initiated from the cockpit, and keep other crew members informed about the current flying task, therefore, it can be viewed as an information sharing process, which enhances the team spirit by addressing them “as a whole crew”. Inquiries are information seeking behaviors designed to obtain assistance from others and are generally in the form of a question. Inquiries are critical in indicating the effectiveness of aircrew performance and have been theorized to be indicative of either effective (Foushee, Lauber, Baetge, & Acomb, 1986) or ineffective

(Jensen, 1986) aircrew performance. In many cases acknowledgements are used by crew members to inform each other that a particular communication was received, and followed by other observations or inquiries. Compared to acknowledgments replies may contain a more detailed response to the communications that preceded it. Non-task related communications include all social and emotional communications exhibited between crewmembers, which include incidents of embarrassment, tension release, humor, or frustration. Previous research (Foushee & Manos, 1981; Foushee, Lauber, Baetge, & Acomb, 1986; Jensen, 1986) has suggested that non-task related communication constitutes only a small percentage of the total interactions demonstrated by aircrews in simulated scenarios. However, non-task related communication in the cockpit between captains and first officers reveals the intimacy of the two parties, which can make contributions to effective intra-cockpit communication.

Most of the researchers studying cockpit communication reach the same conclusion that captains generally prefer commands and initiated more commands and inquiries, whereas first officers in the cockpit initiate more observations and use hints to get action from captains (Fischer & Orasanu, 1999; Foushee, Lauber, Baetge, & Acomb, 1986; Jensen, 1986; Kanki et al., 1987).

Foushee et al (1986) investigated the patterns of communication for aircraft captains and first officers in a commercial fixed-wing setting, and found that though first officers demonstrated significantly higher rates of communication, the dominant part of communication types are observation as well as statements of intent. The study by Foushee et al (1986) also demonstrated that more suggestions were offered by the captains than the first officers. The different preferences in using different communication types lead to a one-way flow of communication from captains to first officers.

According to Fischer & Orasanu (1999), more commands and fewer hints are delivered

by captains, compared to first officers. Furthermore, the expressions adopted by captains are more forceful too. For instance captains used phrases such as “Turn thirty degrees right” overwhelmingly when issuing a command (Fischer & Orasanu, 1999).

As we discussed, people with less power in high power distance cultures seldom contradict their superiors and expect to be told what to do; and the superiors are autocratic and are encouraged to exercise the power they hold. High-and low-power distance exist in all cultures, but one tends to predominate according to situations and contexts. The literatures examined about intra-cockpit communication types indicate apparent influences of power distance on captains and first officers. The study of Merrit and Helmreich (1996) indicated power distance holds potentially significant influence on pilot’s behaviour. The status of captains and first officers draw a distinctive power distance between them. Captains had no fear of using assertive expressions, because they are the ones with more power than their counterparts. The first officers, on the contrary, they cooperate with their superior who is in a higher status and normally more senior. Therefore, the most mitigated alternative way of expression —hint, which is the hardest kind of request to decode and the easiest to refuse was frequently chosen by first officers, especially the first officers have been cultivated in a high power distance culture.

2.2.6 Power distance and flight safety. Most of the pilots, no matter which country, are trained or travel overseas as part of their jobs. The working language of pilot is English. Pilot as an occupation is considered as one of the most high-technology and modernized occupations. Aviation communication is considered to be high regulated with minimization of bias and national characteristics (Merritt, 2000).

The result of the empirical study by Merritt (2000) disproved the prevailing views toward

pilots and aviation communication. Merritt (2000) found the power distance score of pilots are higher than Hofstede's PD country score in 19 countries. The findings indicate first officers are more afraid to disagree with captains than the average level within subordinates and superiors. Pilots in all the 19 countries perceive themselves working in autocratic environments rather than consultative ones (Merritt, 2000).

Voluntary and active participations among team members are the prerequisite for a positive and safety culture (Reason, 1997). However, the preferences of utilizing different communication types we discussed before exhibit the tendency of cockpit communication to be a one-way communication between captains and first officers.

According to Van Dyne and LePine (1998), the nature of voice is challenging and offending. People oriented in high power distance culture accept and expect the apparent differences within hierarchies. Superiors tend to maintain the power distance and wield the power; subordinates are expected to be passive and order follower. The obligation to fulfil the role expectations binds first officers not able to be active participants and assertive advisers. That means, a conflict exists within the two roles of first officers—the "good" subordinates and the professional pilot.

First officers who possess high power distance will attach great importance to dutifulness, loyalty, and deference when deciding to express or to against any opinions toward captains, therefore, the obligation of being "good" first officer can weaken the concerns towards flight safety. To be specific, if a first officer give his/her priority to accomplish the role of being a "good" subordinate instead of point out his/her concerns in an emergency, a flight accident could occur at any minute. The emotional requirement at fulfilling the role of being subordinates and the fear caused by challenging nature of voice hold back articulate voice from first officers regardless of their professional duty.

2.3 Communication in aviation and cultural diversity in cockpit

2.3.1 The importance of communication in aviation and aviation safety.

Communication is widely known to have a crucial role in almost every human activity. In the context of aviation, communication is essential as well, particularly because it influences aviation safety. Addressing the important role of communication in aviation, Nevile states that: "communication is especially critical, because it is typically through communication that other human factors are actually realized or made possible across members of a crew, such as information gathering and sharing, planning, leadership, decision-making, and identification and management of errors and problems" (2006, p. 2). Thus, communication in aviation is not only significant but also complex.

This paper will focus on communications in the cockpit between international captains and Chinese first officers. The flight cockpit, where two or three persons stay (captain and co-pilots), is the core area on board. Not only do the captain and pilots need to manage flying, but they must also conduct crew interaction and interaction with Air Traffic Control to ensure safety and efficiency. The cockpit communication content compromises task acknowledgement, order delivery, problem enquiry, and so on. In particular circumstances, communication loads are far more than routine. The following example illustrates the complexity of cockpit communication under particular circumstances.

Ratwatte was the captain of a flight on the way over from Dubai and a lady in the back was having a stroke. The flight was close to Helsinki when it happened. Ratwatte said to the first officer "we have to go to Helsinki". Once that choice was made, the most important of all

is that he had to talk—to the passengers, to the doctors, to his copilot, to his superiors back home in Dubai, to ATC at Helsinki. It is safe to say that in the 40 minutes that passed between the passenger's stroke and the landing in Helsinki, there were no more than a handful of seconds of silence in the cockpit. What was required of Ratwatte was that he communicate, and "communicate not just in the sense of issuing commands but also in the sense of encouraging and cajoling and calming and negotiating and sharing information in the clearest and most transparent manner possible" (Gladwell, 2008, p. 189-191).

It is shown communication has played an important role in the case above. Ruffell (1979) reached a similar conclusion to Gladwell in a landmark full-mission simulator study, which showed that crew performance was more closely associated with the quality of crew communication than with the technical proficiency of pilots (1979). A dialectical viewpoint has presented by Ruffell about communication and technical flying proficiency, that is, effective communication can overcome some negative consequences caused by inadequate technical flying proficiency, but rather the contrary, that good "cyclic & pedals" skills cannot overcome the adverse effects of poor communication (1979). Appropriate communication is necessary in the cockpit, and aviation safety is threatened by communication errors. Therefore, communication is crucial in order to ensure the safety and efficiency of flight.

Aviation researchers emphasize that over 60% of aircraft incidents are caused by human error (Billings & Reynard, 1984; Carroll & Taggart, 1986; Cooper, White & Lauber, 1980). The failure of crews to communicate effectively is one common type of error. According to the Aviation Safety Reporting System of NASA (National Aeronautics and Space Administration), over 70% of the first 28,000 reports received were found to be related to communication issues (Connell, 1995). In the Billings and Reynard's report (1984), over 70% of reported aircraft incidents contained evidence of ineffective communication, which

contained messages that were not originated; messages that were inaccurate, incomplete, ambiguous, or garbled; messages that were untimely; and messages that were misunderstood.

Furthermore, intra-cockpit communication is commonly recognized as the key in the whole aviation communication. Concordant with the data above, studies by NASA on aircraft accidents (Cooper, White & Lauber, 1980; Murphy, 2001) found that pilot error in the cockpit was more likely to reflect failures in team communication and coordination than deficiencies in technical proficiency. The following accidents were results of intra-cockpit ineffective communication.

> In 1990, Colombian Avianca pilots in a holding pattern over Kennedy Airport told controllers that their 707 was low on fuel. The crew should have stated they had a "fuel emergency," which would have given them immediate clearance to land. Instead, the crew declared a "minimum fuel" condition and the plane ran out of fuel, crashing and killing 72 people. In 1993, Chinese pilots flying a U.S.-made MD-80 were attempting to land in northwest China. The pilots were baffled by an audio alarm from the plane's ground proximity warning system. A cockpit recorder picked up the pilot's last words: "What does 'pull up' mean?" In 1995, an American Airlines jet crashed into a mountain in Colombia after the captain instructed the autopilot to steer towards the wrong beacon. A controller later stated that he suspected from the pilot's communications that the jet was in trouble, but that the controller's English was not sufficient for him to understand and articulate the problem. On November 13, 1996, a Saudi Arabian airliner and a Kazakhstan plane collided in mid-air near New Delhi, India. While an investigation is still pending, early indications are that the Kazak pilot may not have been sufficiently fluent in English and

was consequently unable to understand an Indian controller giving instructions in English. (*Aviation Today*, 2004)

2.3.2 Cultural diversity and intercultural communication in cockpit. Globalization of air travel is leading to a multicultural mix of crew. As more countries develop their own aeronautical infrastructure, fielding, and maintaining air service, diversity seems destined to balloon (Schultz, 2002). With differing ethnic and national backgrounds, pilots' communicative styles also differ. Studies indicate that certain cultures' communication approaches actually affect aircraft accident rates. Schultz (2002) stated aircraft accident rates can be very different across nations and cultures— as much as eight times higher in some cases.

The mix of multicultural crew members and the cultural differences between crew members can lead to communication difficulties and misunderstandings. In case of a flight mission that inquires effective coordination and communication, it is more difficult if two pilots from completely different cultural background. Verbal and nonverbal communications may be decoded differently, especially in high-load, high-anxiety working environment. Therefore， there is an urgent need to analyze the role of intercultural communication functioned among aircrew members and in cockpit.

Communication is the key for effective team work, while in multicultural team the role of communication is even more highlighted. The increasing cultural diversity has turned the aviation industry into a multicultural environment all over the world. In the past 20 years, almost all of the commercial airline companies recruited experienced foreign pilots. In terms of cultures, the cockpit culture is more diverse than the past in the aviation industry of China.

Aviation accident rates vary dramatically between third world countries and industrialized nations, Africa, Latin America and Asia experiencing more accidents than North America and west Europe. Schultz (2002) stated although some of the variability is due to national differences in aviation infrastructure, aircraft age and condition, cultural factors help to explain additional variation.

In his book The Story of Success, Gladwell (2008) also achieved similar conclusions to James, and proposed that the most important factor related to flight safety is not the vehicle, neither maintenance nor time, but culture. Gladwell (2008) illustrated the importance of culture by two aircraft accidents —Colombian Avianca Flight 52 and South Korean Air Flight 801. In the accident of the Korean Air Flight 801, the captain made a mistake and the first officer was not able to speak up because of his culture origin. The first officer was not able to raise his own opinion assertively. The communication pattern he chose is hint, which is the most easy to refuse and omit. Lower-ranking crew members are frequently unsuccessful in getting the attention of a higher status crew member or in getting senior crew members to change their decisions or actions under safety critical situations. The reason behind has much to do with the Korean culture, which hierarchy is inviolable and with a relatively high Power Distance. Korean airlines experienced more plane catastrophes than almost any other airlines. In terms of air crashes, there were no lacks of standard planes or proper-trained pilots in Korea. The traditional Korean culture is the hidden reason since it is impossible for Korean captains and Korean first officers to fly as two equal individuals. However, Gladwell referred Boeings and Airbuses are modern and complex airplanes which will work perfectly in low power distance cultures instead of high power distance cultures (2008).

Maintaining safety in high risk engineered environments like space or aviation is a team effort which depends crucially on the team members' ability to monitor and, if necessary, to

challenge each other's performance (Fischer & Orasanu, 1999). According to Fischer and Orasanu, failures to provide necessary information due to cultural issues from first officers are not infrequent even in culturally homogenous teams (1999). Fischer and Orasanu (1995) also mentioned that members of different cultures have been found to vary in their attitudes toward leadership, conceptions of the organization, structure of professional interactions and to follow distinct conversational norms. All the differentials lead to communication difficulties, like conflicts and misunderstandings, in particular when problems arise that threaten safety.

Findings like these indicate that we need a better understanding of how crew members could interact effectively when others have made some mistakes. Moreover, the pilot's cultural origin is indeed crucial as well. The goal of this study is to identify effective intercultural communication strategies for calling the attention to intercultural difficulties and misunderstandings between captain and first officer in rank and culture, and getting action on those problems.

2.3.3 Crew Resource Management (CRM). Crew resource management was developed as a response to the causes of aircraft accidents, which followed from the introduction of flight recorders and cockpit voice recorders into modern jet aircraft. Information gathered from these devices has suggested that many accidents result not from a technical malfunction of the aircraft or its systems, nor from a failure of aircraft handling skills or a lack of technical knowledge on the part of the crew; it appears instead that they are caused by the inability of crews to respond appropriately to the situation in which they find themselves. For example, inadequate communications between crew members and other parties lead in turn to a loss of situational awareness, a breakdown in teamwork in the aircraft, and ultimately to a bad decision or series of decisions which result in a serious incident or a fatal accident.

The importance and utility of CRM in promoting safer and more efficient aircraft operations have now been recognised world-wide. “Combating mitigation has become one of the great crusades in commercial aviation in the past fifteen years…And Aviation experts will tell you that Crew Resource Management is the success of this war on mitigation as much as anything else that accounts for the extraordinary decline in airline accidents in recent years” (Gladwell, 2008, p. 197).

CRM training is now a mandated requirement for commercial pilots working under most regulatory bodies worldwide, including Civil Aviation Administration of China (CAAC). CRM is concerned not so much with the technical knowledge and skills required to fly and operate an aircraft but rather with the cognitive and interpersonal skills needed to manage the flight within an organised aviation system (“Civil Aviation Authorities”, 2006). CRM aims to foster a climate or culture where the freedom to respectfully question authority is encouraged, especially ones with traditional hierarchies, so appropriate communication techniques must be taught to supervisors and their subordinates, so that supervisors understand that the questioning of authority need not be threatening, and subordinates understand the correct way to question orders.

Issues of culture were recognized and addressed, especially the differentials in national cultures. Empirical studies have challenged the feasibility and efficiency of CRM as “one size fits all” training (e.g., Merritt, 2000). Airlines in many nations have developed CRM in a culture-sensitive and more congruent way to suit their national cultures (Helmreich & Wilhelm, 1998). Airlines around the world awared that simply importing a course from the United States was not likely to produce desired changes in behaviors of pilots (Helmreich, Merritt & Sherman, 1996).

Many airlines teach a standardized procedure for copilots to challenge captains if he or

she thinks something has gone terribly awry. ("Captain, I'm concerned about..." Then, "Captain, I'm uncomfortable with..." And if the captain still doesn't respond, "Captain, I believe the situation is unsafe." And if that fails, the first officer is required to take over the airplane.)

Cockpit voice recordings of various air disasters tragically reveal first officers and flight engineers attempting to bring critical information to the captain's attention in an indirect and ineffective way. By the time the captain understood what was being said, it was too late to avert the disaster. Todd Bishop who is a CRM expert developed an assertive statement procedure for first officer supposed to follow:

1. Opening or attention getter - Address the individual. "Hey Chief," or "Captain Smith," "Bob," or whatever name or title will get the person's attention.

2. State your concern - Express your analysis of the situation in a direct manner while owning your emotions about it. "I'm concerned that we may not have enough fuel to fly around this storm system," or "I'm worried that the roof might collapse."

3. State the problem as you see it - "We're only showing 40 minutes of fuel left," or "This building has a lightweight steel truss roof, and we may have fire extension into the roof structure."

4. State a solution - "Let's divert to another airport and refuel," or "I think we should pull some tiles and take a look with the thermal imaging camera before we commit crews inside."

5. Obtain agreement (or buy-in) - "Does that sound good to you, Captain?" (“Crew Resource Management”, n.d.).

In addition, it is affected by the mode of speech employed and the linguistic context in which the transaction takes place. In this context, individual styles, body language, grammatical styles and speech act patterns all have their part to play. Because of these complexities, crew members need to be aware of and sensitive to the nuances of effective communication and those elements which constitute a barrier to effective communication, especially for the crew teams consisted by cultural diverse crew members. Moreover, the above instructions of CRM are not easy for people from specific culture with high hierarchy, as they may require significant changes in interpersonal communication dynamics ("Civil Aviation Authorities", 2006).

3 METHODOLOGY

3.1 Research questions and qualitative research

To gain insights on perspectives from international captains on the intercultural communication difficulties they experienced when they communicating with their counterparts in cockpit, the following four research questions are put forward:

1. What sort of intercultural communication difficulties are?

2. Do intercultural communication difficulties between international captains and Chinese first officers potentially influence flight safety?

3. What is the role of power distance in cockpit communication between international

captains and Chinese first officers? Does power distance affect flight safety through bicultural cockpit communication?

4. If negative correlations exist between communication difficulties and flight safety, how could the threats to flight safety caused by those difficulties be reduced from international captains' perspectives?

The four research questions are key focuses during the process of my interview. In order to obtain rich and detailed data, an open interview guide was prepared, which includes aspects relate to language, cultures (national culture, aviation culture, organization culture), hierarchy, and power distance.

Qualitative research, compared to quantitative research, underlines understandings and explanations of the different aspects of our social world and the ways they are. Qualitative methods are "an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to term with meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world" (Van Maanen 1983 cited in Frey et al., 2000, p. 262)**.** Instead of focusing on measuring phenomena or developing general principles, the first interest of my research is to gain insights on intercultural communication difficulties between international captains and Chinese first officers. Moreover, my research questions aim to find out different perspectives toward intercultural communication difficulties and the relationships between such difficulties and flight safety, rather than discover objective findings or formulate guiding laws. Therefore considering the different characteristics of both qualitative and quantitative research methods, a qualitative research approach suits my interests better.

Semi-structured interviews have been characterized with conversational focused two-ways of communication or, with what is called by Marshall and Rossman (2006),

interactional exchange of dialogue with features, such as thematic, topic-centered, narrative approach, and informal style.

In order to require detailed descriptions on cockpit intercultural communication difficulties in depth, semi-structured interviews were adopted for flexibility in referring questions and topics. Hence, the openness of semi-structured interview provides freedom to participants to express their opinions in their own ways. Furthermore, as a research method with an interactive approach, semi-structured interviews allow unprepared themes to emerge, to be picked up and to be discussed. As Miles and Huberman (1994) stated, manifested semi-structured interview ensures relevant contexts can be brought into focus so that situated knowledge can be generated.

The interactive nature of semi-structured interviews enables complex issues to be discussed thoroughly. Furthermore a relatively less intrusive interview manner is also generated from the natural interactive approach of semi-structured interviews. Consequently, a greater possibility is created for discussions on sensitive or non-positive topics like communication difficulties.

3.2 Data collection and interview procedure

The research was conducted in a Chinese airline company with a course of 3 weeks. From convenience motive, I would like to adopt a fictitious name for the airline here, which is Skylette. Skylette is one of the major airlines in China. There are approximately 1500 pilots currently working in Skylette. Among the 1500 pilots, 150 pilots are international pilots from 30 countries. A large amount of international pilots are from South America (Mexico and Brazil are big exporters). The second largest group of international pilots is East Europe. Only

2 international pilots are first officers, which implies the other 148 pilots are all captains.

There were 17 face to face interviews conducted in aircrew resting rooms. Among the 17 interviews, 16 took place in a one to one manner; 1 interview was conducted with three interviewees. The interviews were audio taped under participants' permissions. All 19 interviewees are international captains from 11 countries. These countries are Romania, Bolivia, Korea, South Africa, Russia, New Zealand, Italy, Brazil, Mexico, Georgia, and the United States. I had not set any restrictions on the duration of interview. The time periods of the interviews varied individually from 20 minutes to 1 hour and 40 minutes. The youngest participant was 32 years old; and the oldest was 52 years. Most of the participants had more than 10 years working experience as pilots. A majority of them had overseas working experiences before they worked in China. Detailed personal data of all participants are demonstrated clearly in the chart below.

Table 3 Personal information of interviewees

	Nationality	Age	Years in China	Years being pilots	Other overseas working experiences and Years	Received intercultural communication trainings
C1	Romanian	32	2.5	8	None	None

C2	Bolivia	52	5	14	Japan, 4	None
C3	Romanian	33	2.5	10	US, 3	None
C4	Korean	49	3	19	None	None
C5	South African	42	12	20	Korea, 5	None
C6	Mexican	40	2	20	America, 16	None
C7	New Zealand	44	3	18	Dubai, 7	None
C8	Italian	41	5	7	None	None
C9	Korean	44	3	20	None	None
C10	Russian	38	3	18	UK, 9	None
C11	Brazilian	35	5	12	Europe, 5	None
C12	Mexico	49	3	23	None	None
C13	American	43	4	18	Europe, 8	None
C14	Mexican	41	2	17	None	None

C15	Mexican	36	1.5	14	None	None
C16	Brazilian	44	1.5	20	None	None
C17	Korean	47	2	19	None	None
C18	Georgia	52	9	29	None	None
C19	American	48	3	24	None	None

During my interviews, I brought up research questions as interview questions first (the research questions have been asked in a more natural and daily way). Then I asked different related questions which concern those aspects I mentioned above to different participants according to their responses for the previous research questions. During the first 5 interviews, issues surrounding working attitude/style and familiarity level emerged frequently from participants' description. Therefore, I included those two into my interview guide as well. I have not set a fixed sequence about asking questions, I brought up my questions when I felt it was an appropriate time. However, generally speaking, shallow questions like do you like the city or do you enjoy your work were asked before sensitive questions on communication difficulties.

According to the four research questions, four main sections have been divided in terms of interview questions. Each of the four sections is developed by revolving the corresponding research questions as centers. Section 2 and 4 are simpler than section 1 and 3. Research question 2 only requires answers of yes or no; therefore, I simply formed interview question

by adjusting the research question into a more personalized way. For instance, I express my question by asking "do you think those difficulties you have mentioned can influence flight safety?" Section 4 is also simple, since it is not necessary to dig into details or form related and varied interview questions, since the aim of this research question is to pool ideas and suggestions from international captains.

For the more complicated section 1 and 3, I would like to elaborate on them here. The first research question aims to find out about communication difficulties between international captains and Chinese first officers. Enquiring about difficulties is probably not appropriate as an initial interview question. Interviewees can be hesitant to talk about negative issues in the very beginning with a strange person. I, therefore, asked questions related to general aviation communication. Those questions includes: (a) could you describe the types of communication between you and first officer during a flight? (b) How do you perceive intercultural communication in cockpit? (c) What do you think the cultures (aviation culture, national culture, organizational culture) in your working environment?

After the ice breakers, I normally bring up my key question which is also research question 1, that is, are there any intercultural communication difficulties between you and your co-pilots? Responses to the key question were quite varied and depend on individuals. Some interviewees stated communication difficulties exist and supplied elaborate responses. Some of interviewees did not think there is any intercultural communication difficulty in cockpit.

A series of follow-up questions concerning language, organization culture, national culture, working attitude, frequency of contact, and so on were asked after the key question. The follow-up questions compromises: (a) what do you think Chinese first officers' English level in terms of working language are sufficient? (b) what do you think about your company

and your working environment? Anything need to be improved in your opinion? (c) do you feel lonely or being isolated as a foreigner in this airline? (d) do you think it will be better if the first officers you work with are your fellowmen or people from countries that culturally close to you? And will that contribute to work efficiency and flight safety? (e) do you think you share a same/similar working style and working attitude with your Chinese first officers? What kind of working style/attitude should a pilot has in your opinion? (f) how close are you with your Chinese workmates?

The third research question is about the role of power distance in the cockpit and its' influence on flight safety. I usually describe the term of power distance by illustrating the hierarchical relationship between captains and first officers before asking questions related to power distance. The interview questions in this section are： (a) how do you perceive the hierarchy distance between you and Chinese officer? (b) which one do you think exists between you and your Chinese co-pilots, a high power distance or a low power distance? (c) do you think different cultures influence people's understandings toward power distance? If so, what is the difference between you and your Chinese first officers? (d) during flight management, do you think your Chinese co-pilots are able and willing to speak up their opinions, especially their disagreements to you, well and enough?

Several interview techniques were applied during interviews, especially toward those interviewees who tended to be very quiet, reserved and cautious. So repetitions are created on purpose, which means I ask the same questions in different ways. For instance, after I ask "are there any communication difficulties between you with your co-pilots", the same question is enquired again by asking "have you experienced any misunderstandings during your work with your co-pilots" (these two questions are not in succession). Another technique, which is very helpful is that I always ask my participants to give specific examples for their responses.

Some of my interviewees are very reserved and cautious people. They can be really quite or refused to say anything for certain questions. I want to show my respect to their choice and do not push anymore, but in meantime I really want to get their ideas. Therefore I change questions into more situational topics but would still relate with the original questions. I suppose those seemingly casual but carefully planned questions can bring interesting responses. For example, in order to get some of the interviewees' perspectives on their co-pilots' English level, I use backup questions like "do you mind that the two first officers speak Chinese to each other?" Back up question for exploring organization culture can be "do you enjoy working here?" There are also backup questions relate to power distance, but from an angle of asking familiarity degree between captains and first officers. The questions compromise of: (a) do you chat with your co-pilots? (b) who begins the conversation normally? (c) do you have the willingness to open up a talk?

3.3 Data analysis

To identify and model meanings latent in qualitative data, content analysis has been widely used to analyze data, like interview transcriptions. Content analysis has been adopted in my research since it is "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.1278).

My coding scheme was developed both deductively and inductively. Based on previous literature study and interview guide, I generated an initial list of categories with 10 themes which were language barriers, Chinese first officers' English level, cultural barriers, cultures and cultural adaption, organization culture, confrontation avoidance, hierarchy distance, flight safety and communication difficulties, trainings and working style/attitude.

Later on, the subsequence coding process was created as open as possible and took place in the manner of constantly comparing the current transcript with previous ones, to allow the emergence of new categories and their properties. Transcripts were carefully examined and annotated by readings. A cluster of coding units to those 10 initial themes were found, selected and grouped. Meanwhile, fresh themes and corresponding coding units were marked and added to theme lists. At this stage, themes were formulated exhaustively so the large scales of data are able to be classified and utilized to the utmost degree. Since it is impossible to classify coding units into their unique corresponding themes, coding units were assigned to multiple themes. Categories, themes and coding units will be defined and elaborated on later in order to show the way that they are internally as homogeneous as possible and externally as heterogeneous as possible (Lincoln &Guba, 1985).

The theme list was modified continuously as new themes emerge during the course of analysis. Miles and Huberman stated that inconsistency may occur due to researchers' changes in understandings and attitudes toward coding rules and/or themes over the time (1994). Thus, after the whole data was coded, rechecks were conducted to guarantee the consistency of the coding. Since it is not easy to classify one coding units or sub themes under a unique theme, few of themes include overlapping properties. At last the iterative coding process resulted in a coding scheme with 5 main categories and 17 themes, which as shown in the table below.

Table 4 Categories and themes

4.1 Language barriers

4.1.1 Speaking Chinese in cockpit

4.1.2 Chinese first officers' English levels

4.1.3 Differences between English speaking captains & Non-English speaking captains

4.1.4 Representations of Language barriers

4.1.5 Language barriers: Flight safety under emergency/non-normal situations

4.2 The role of power distance in cockpit

4.2.1 Confrontation avoidance as a consequence of high power distance and the relationship between it and flight safety

4.2.2 Power distance and language

4.2.3 Power distance and culture

4.3 Culture and cultural differences

4.3.1 The differential in the roles pilots posed themselves in a flight

4.3.2 Different attitudes toward aviation regulations

4.3.3 Different work motivations between international captains and Chinese first officers

4.3.4 Working culture and flight safety

4.3.5 Affective aspects related to disparities on working culture and working attitudes/styles

4.4 CRM and aviation trainings skylette airline

4.5 Recommendations from international captains: suggestions and coping strategies

4.5.1 Suggestions on Trainings and CRM

4.5.2 Coping strategies on power distance

4.5.3 Coping stradgies on language barriers

4.5.4 Punishment system/culture as a potential threat to flight safety

To demonstrate how I derived and made sense of themes from raw data, a few of themes and their coding units as well as relationships within themes will be manifested in following paragraphs.

Participants are from various countries with many different first languages. Since English is the official language in aviation and the cockpit, therefore, cockpit communication between international captains and Chinese first officers is usually the case that two or three non-native English speakers communicate with English. Hence, during interviews, a large amount of discussions occurred around language, particularly language barriers between participants and Chinese first officers. The first theme in the graph above is “language barriers”, which was coded with the following extracts.

C3 directly pointed out language issues in the first moment when asked to response a question “do you have any communication difficulties during your work with Chinese first officers?”.

> C3：Communication difficulties...//mhm// Everything comes out of language (…). I told you. So from the language problem, there are many other things come along. If I can tell you some information in our own language, for example, you will understand me completely. For me, English is not my first

> language. Many people think English is a foreign language. It's not, for me, it's a Latin language, like Italian. It's completely different from English, like you are Chinese and you speak English. I'm a Romanian and I speak English. It's very difficult to use third language to communication between ourselves. There will be many problems.

In response the question of "do you think your first officers express their general opinion enough", another international Captain demonstrated reasons for language being an obstacle in their communications with Chinese first officers.

> C7: Some of them do. Some is not. The more senior first officer, if they speak in quite good English, then they know how to say something like that to...I think a lot of is that the junior first officer, if they don't speak English quite well. Then it's difficult for them to suggest something or to recommend something.

The coding process was conducted under the principles of Owen (1984). Themes were noted when three criterion emerged: recurrence, repetition, and forcefulness. For instance, the theme of "Chinese leadership in cockpit" was coded with contents shown below. Those extracts below have similarities in emphasizing differentials of leadership between China and the west. Both participants also considered Chinese captains to have more power according to their understandings of Chinese leadership. The discrepancy of them is that C13 underlines teaching and learning relationships between captains and first officers, while C14 stresses the hierarchical distance and first officers' role in the cockpit.

> C13: The leadership style is very different from the Chinese leadership. I have crew member told me that they will never ask questions to a Chinese captain, because he will yelling at me. From my understanding of the leadership in china, if you are the captain, you are here, everyone in the...all the crew members beneath you. You are the first person, everybody does what you want. It's Chinese style. This is from what I've heard. In USA, or in western countries, the captain's job is...really...the captain is seen as a teacher. The captain should do as little as possible. He is seen as an expert, but he has everyone else to do the job. And take care of thing, and he helps when need to help. And it's leadership style; basically it's kind of western style leadership.

> C14: It's about the Chinese captains. They probably believe that we are the same as Chinese captains. But we are completely different, the treatment to the people, to the first officers. Of course, for us, first officers are the people are going to help you. And he is well prepared as you to make sure there will no troubles. It's not just like you have 3 bars, and you are down. No, it's not like that. It's not like I'm an astronaut, and you are flying a...a kite. That's the huge difference between the Chinese captain and us.

4 RESULTS

In this chapter, the findings from data analysis are presented according to the five main categories and 17 themes. Several themes are overlapping and correlated with each others to some extent in regard of some particular subjects. A table (see table 5) is provided in order to display distinctly on how the findings response research questions in this paper before detailed analysis.

Table 5 Research questions with its' corresponding categories and themes

Research question 1 aims to find out if intercultural communication difficulties exist and what they are.	4.1.1 Speaking Chinese in cockpit 4.1.2 Chinese first officers' English levels 4.1.4 Representations of Language barriers 4.3.1 The differential in the roles pilots posed themselves in a flight 4.3.2 Different attitudes toward aviation regulations 4.3.3 Different work motivations between international captains and Chinese first officers 4.3.5 Affective aspects related to disparities on working culture and working attitudes/styles
Research question 2 explores whether	4.1.5 Language barriers: Flight safety under emergency/non-normal

intercultural communication difficulties potentially influence flight safety.	situations 4.3.4 Working culture and flight safety
Research question 3 focuses on the role of power distance and the relationship between it and flight safety.	4.2.1 Confrontation avoidance as a consequence of high power distance and the relationship between it and flight safety 4.2.2 Power distance and language 4.2.3 Power distance and culture 4.4 CRM and aviation trainings skylette airline
Research question 4 is about how the threats to flight safety cause by those difficulties could be reduced from international captains' perspectives	4.5 Recommendations from international captains: suggestions and coping strategies 4.5.1 Suggestions on Trainings and CRM 4.5.2 Coping strategies on power distance 4.5.3 Coping stradgies on language barriers 4.5.4 Punishment system/culture as a potential threat to flight safety

4.1 Language barriers

Issues relate to language were largely and frequently referred to in the course of the whole process of interviews. Over half of interviewees mentioned language barriers when they were asked to describe communication difficulties with their Chinese workmates. Moreover, language obstacles were depicted as the essential communication difficulty which can generate some other difficulties according to many of the international captains.

> C11: it's always the same case. If I very need something, I try to change the way of expression. If I really need something, I have to find the way to express myself. The language is the issue. I think 99% of the difficulties are caused by language.

> C3: Communication difficulties //mhm//. Everything comes out of language. I told you. So from the language problem, there are many other things come along, right? If we can fly with our fellowmen,

> for everybody, it's easier. Of course, If I can tell you some information in our own language, for example, you will understand me completely. For me, English is not my first language. Like you are Chinese and you speak English, I'm a Romanian and I speak English. It's very difficult to use third language to communication between ourselves. There will be many problems.

Regarding the issue of language barriers, C8 took a comparative view to stress working with Chinese first officers was particularly challenging compared to working with the co-pilots from other countries.

> C8: I have to tell you, I feel more comfortable with Italian or foreigner, because we can communicate in a same language. And there is no barrier. With Chinese, as I told you before, communication is good until a certain point. And after they got tired of speaking English, and they start to speak Chinese more and more often.

4.1.1 Speaking Chinese in cockpit. As C8 brought out a fact that the Chinese first officers tend to speak Chinese with each other in the cockpit, more information were found during the interviews that Chinese first officers also speak Chinese with other crew members, even with the air traffic control towers. Presuming the issue of "speaking Chinese" can be influential in the cockpit intercultural communications between Chinese first officers and international captains, however almost two thirds of the international captains claimed they were not bothered in response to the question "Do you mind if your two first officers speak Chinese during work in cockpit?" Furthermore, besides 3 participants, all of them added, they do not mind as long as the Chinese first officers speak Chinese in non-task related situations.

> C1: well, if they are have small chat about non-aviation staff. Then I don't mind not having the information translated. If there is information about our flight, I would like the information to be translated. But generally not, it will be ridiculous for them to stay silent for hours, not saying anything, or if they said something to translate every word. But I know some captains are bothered. They'd rather to have all the conversation in English. I admit it's...When I was a captain in Romania with foreign first officers. Every time there was another Romanian flew [/from/] the flight. I would ask him to speak English as a courtesy for the first officer. But I can understand that English level is not as good as it is in Europe. So I can understand that it is ridiculous to ask everybody to speak English.

> C3: No. Not really. I know some other //mhm// personally not that much. But if they speak Chinese

> when we have things to do, yes, it bothers me. But if they talk personal stuff, I am not, for me, personally.

> C5: I don't mind. We are come to their country. The company is Chinese. But if it relates to flight and aviation safety, yeah, of course I would like to know, because the captains have to know what's going on.

Regarding the other three captains, who did not distinguish work related interaction from general communication in the issue of “speaking Chinese” and did not consider the issue as significant to flight safety; two of them showed self confidences in their flying skills and yielded plentiful trust to their Chinese first officers.

> C6: I've been involved in aviation for almost twenty years. Fly operation, even if they speak in Russian, Germany, anything, I know what's going on. Even you don't speak anything to me. when the first officers speak Chinese, I don't mind. Sometime the more experienced Chinese first officer, he's explaining something in Chinese to the less experienced one. I knew they are doing that. They are pointing out the system. For me, it doesn't bother at all.

> C4: For me. It's ok. But I know for some foreign captains, they don't like it. But I'm ok. If the matter is very important, they always ask me. And I can decide. If they don't ask me, that means there is no importance. So I'm ok. And if they don't tell me, I can catch the situation. If something wrong, I can ask them what's wrong. yeah, but...If they speak only English, that will be better.

The other respondent further emphasized aviation tasks can be even accomplished without language skills, for the reasons that flying procedures are fixed as Standard Operation Procedures which allows international pilots working together with no concerns in English skills.

> C16: We have a simulation this morning, and our instructor is a Chinese. So look back to your question about English. The instructor hardly speaks English. And we have 4 hours working with him. And the work was what has to be done perfect. And there is no language barrier. Because in aviation, there is one common language, it's called Standard Operational Procedures, based on that, you can work with Chinese, Mexican, and French, whatever you want.

In contrast to the point of views from the majority mentioned above, few of interviewees insisted their stances in believing “speaking Chinese” in the cockpit can be bothered due to two considerations. One is “speaking Chinese” is destructive in flight safety.

> C7: So to answer your question about do I mind if they speak in Chinese. I do, because in a day if I make a decision and I’m not 100% sure, they start to talk Chinese to each other. And they might be discussing something: I think the captain is wrong, I think he should do this. But I will never know. So it is a problem.

> C14: well, as least for me, if in the cockpit. Yes, I mind, of course, because of security. Sometimes you carry two first officers, and they speak in Chinese all the time. And you know nothing what they..

> C19: Yes, I do. I normally don't say anything about it. But especially something is happening, which is not a normal part of flight, you know, and then they start talk back and forward. And I would like what did you guy say? Why didn't you tell me? This is supposed to be a three way conversation, not two. Not between you. Because the other guy, he is brand new. He doesn't know anything. He is just there to watch, then learn. So he won't make any decisions. If there is anything should be discussed, it should be between me and the real first officer. So sometimes, it's very difficult.

Another point of critique is “speaking Chinese” is not allowed in either the regulations of the airline or the general rules of aviation. The following extracts indicate some international captains’ displeasures in Chinese first officers due to the violations of rules. This gives hint to another communication hindrance, that is, the disparities of attitudes toward aviation or working regulations which in addition are further discussed in the chapter of Culture and Cultural differences.

> C7: And it is also a procedure, you know. We have a //mhm// critical area, so when we descend through a certain latitude, from then on, everybody must speak English. You cannot go the toilet anymore. You cannot have your dinner anymore. Below 10,000 feet, we must focus and concentrate on the descending airplane and landing airplane. But above 10,000 feet, we are allowed to talk in native language. So the first officers are also allowed to talk in Chinese.

> C14: So now, if two guys are going to fly with foreign captain, all the communication, even between them must be in English, because it's sometime very difficult. But they don't care the rules.

> C19: And they are told not to do it. Do not use Chinese. But it never happens. I mean it always...they never not speak. And some of the guys, the new guys, their English are terrible. And I have to speak very slowly. I know that if I speak very slowly, they might understand. If I say quickly, I'm gonna have to say it again. I've know that.

Though plenty of understandings were shown to Chinese first officers on the issue of "speaking Chinese", still many of the respondents manifested that it will be better if English would be the only language in the cockpit. Moreover, shunting the concerns on communication difficulties on behavioral perspective and negative effects may be triggered by "speaking Chinese", from some of the international captains' side; emotions behind the phenomenon seemed disgruntled and helpless as in the extract displayed below.

> C12: The thing is that...It will be very good if everything is in English. The rest of the world is everything in English, except china. That's the thing. If you fly to Japan, even the Japanese companies, they talk English in the radio. Why? Because English is the universal language in aviation, except here.

From the statement of C12, compared to other countries in the world, the aviation industry in China was emphasized as particularly unsatisfactory in the concern of adapting English as working language. On the subject of "Speaking Chinese", the cognitive notions of international captains were acknowledged. Nevertheless, I deduce from the descriptions of C12, emotional status and affective changes are necessary and worthy to explore since they are of great important in the communication difficulties and flight safety. Hence questions, like "How do you feel when they speak Chinese" and "Do you feel isolated when your first officers talking with each other in Chinese" were put forward during interviews.

Half of participants did not think it was a big challenge and did not feel isolated. However, most of them added and emphasized that only if the interactions are non-work related, they will not mind and will not feel isolated. Furthermore, some of them claimed again, it will be better if everything can be in English.

> C2: No. No. No. Not at all, I feel very cozy here in this airline. That's why I like here. I feel like a part of family, you know, your kids, or whatever, don't like to talk with you. It's not a problem. You still be a part of the family, you know. You don't have to be angry about that. Nothing. Don't bother me at all. Nothing.

> C3: No. Not really. I know some other...//mhm// personally not that much. But if they speak Chinese when we have things to do, yes, it bothers me. But if they talk personal stuff, I am not. For me, personally, but during flight, I usually don't like the observer to bother the first officer, because we have things to do. But when they are free, let's say, free of doing anything. That's ok. I don't mind much.

> C4: No. I don't feel that. I'm totally ok. But many foreign captains from other countries, they feel like that. They feel they are isolated. That's why they don't wanna hear Chinese in the cockpit. In my case, I'm totally ok. I don't feel isolated. Yeah, but If they speak only English, that will be better. I think so.

> C5: No. It's normal in a group is when two people speak same language. I will understand. If there are one Chinese and a Brazilian, I will speak in Portuguese. This is normal in any situation. It's much easier for them to communicate. Maybe I will say I'm sorry I would speak Portuguese if you don't mind.

Then the other group of participants who believed they do feel isolated, among them, a brief but very strong statement—"you don't feel isolated, you are isolated" was raised by C15 during the only interview with three interviewees. Besides another two captains in response to the questions, C7 and C1 elaborated several very specific situations about when they feel isolated, frustrated. The situations stressed job related issues and possibilities on communication breakdowns, which would damage flight safety.

> C7: Yeah. It does. But on the other hand, I also understand that the first officer don't speak English so well. So for them, to have a normal talk to another person in English, it's not easy for them. It is easier to talk to the observer, to the other guy. So they can feel relax as well, enjoy the flight as well. And yes, sure, that also means I am isolated and excluded from what's going on. They may be talking about something. It quite often happens, for example, the flight attendants call us and said can you organize a wheelchair for passenger in Chinese. Even though we briefed, and I said if there is any operational requirement, please make sure that you can do that in English. So wheelchairs, or extra catering, or whatever, you know, maybe they need to doctor to come meet the airplane, whatever. But they normally...because it easier for them to do these in Chinese. And quite often, they will call the airport where we flying to, a destination, and try to organize a wheelchair. And I have no idea, for example, that they wanted the wheelchair in the first place. So suddenly they ask, captain, we need a wheelchair. And I will do we, we need? Ok. I didn't know. So things like these, well, you know as a captain, I don't care if they need one wheelchair or ten wheel chairs, but they should...If they don't give me information. My job is basically demand the whole flight safely. And that means everything would be. If I don't know the situation, then... You know, I'm isolated.

> C1: Yeah, that's the first one. Another one is that a lot of time, it's mainly because of this communication problem. If there is a problem for me to communicate with the //mhm//, the entire group, and it's a bigger problem for me to communicate with the ground staff. So in case if something is not normal, I'm not speaking about emergency, but...I don't know...if the crew needs more food for the passengers, there is a delay and have to do something. Then I will feel completely isolated because flight attendant tell the first officer, the first officer call the ground staff directly because of the lack of English, because of there is not enough time for them to translate everything.. I am like outside. Then it's a bit frustrated. It's like they translate in a very short...you miss the details. Then it can be a bit frustrating because eventually if something wrong, the captain also carries the blame, although you cannot control everything. But you...

In another special line of thoughts, a few of international captains supposed the feelings of being uncomfortable or being isolated are not necessarily to be connected with Chinese first officers' behaviors. C6 referred self-adjustment strategy by saying "Well, I feel isolated as much as I want to feel, because I mean in China, not many Mexicans in China." Whereas C1 believed language barriers are not the unique source for the uneasy emotional statuses in the cockpit.

> C1: Yeah, but let's imagine everybody speaks a same language. You cannot expect everybody to be in a same discussion. Even if they speak in English, they could have spoken about their own hobbies right? So anyway you will be isolated, or you have chosen not to listen. So it's really not a problem.

4.1.2 Chinese first officers' English levels. As some interviewees referred to, one of the

reasons for Chinese first officers to speak Chinese in the cockpit is that most of the Chinese first officers are not fluent English speakers. Thus, gaining an overview on the language skills of Chinese first officers is indispensable since language barriers were considered as the biggest communication difficulties in the data of this study. Therefore, the respondents were asked to describe English levels of their Chinese workmates.

The overall response is rather varied among international captains. Some participants expressed the belief that the overall English level of Chinese first officers is not satisfactory. On the other hand, according to those international captains, the English skills among Chinese first officers are not even as well.

> C3: The English level, I have to admit, not for everybody. But 80-90% is not a great English level. I try to communicate as much as possible. But the communication is not good because the lack of English, the English level of most of the first officers is not acceptable. There are some first officers speak English very well. They had their trainings in Canada or American. They speak English very well. There are some not that great. They can speak little English, like communication English with ATC, and very little talk with we are talking now, like the conversational English, very little.

> C14: you want the truth? 99% is not ok. For the English level, if you take those guys to a test outside of China, they cannot pass it. They are probably 3, some of them are 3. I heard that be around 5 guys, the level of the English is very high. I personal took about F3 or F4, because we only fly with those guys. We don't fly with F1 or F2. Well, sometimes, but just as a joined crew. But most of the guys, they don't speak English as required by ICAO, which is at least leel 5, right?

> C15: actually I don't know the full Chinese first officers. I only fly with F2, and only who passed the English test can work with foreign captains. I cannot say, the English level of Chinese first officers is somewhat, because I just fly with the...but Chinese and Korean are the same...well, some first officers, their English is fluent, not bad, even better than me. But some first officers, still have a little bit difficulty to express, still he is speak English in Chinese way, just translate into English.

> C18: yes, of course, the level is different. Some guys used to graduate from US, Australia, Europe. They speak better English than the guy graduated here. The level is quite different.

Notwithstanding with the response of C14 above, C18 stated “the English level. Actually

it fits, fits the requirement." Aside from emphasizing the irregular tendency of Chinese first officers' English skills, some other significantly different comments compared to the above extracts, indicated the language skills of Chinese first officers are good enough and sufficient for accomplishing aviation tasks.

C11: well. Some of them, they have very very good English. I would say 70% is good.

C5: It's enough to get along. Of course, it could be better. But we have to deal what we have. We can do...It's not in a same standard. Some speak more and better, and some is not very well. But this is part of captain has to adapt to the environment and make the best of it. It's basically sufficient for the job. The English is the small technical English. And they already have courses about the technical...not the normal conversation. And most of the first officers, I would say that might 80%., they do their course out of China, for example, in Australia, United States, maybe Canada also. And they...I don't have the real number, but I guess two years to study. Because the company get them from university and then send them to Australia, Canada, and they pass their pilot licenses. Two years is good for them to speak good English. And yeah, some of them speak English quite ok.

C6: It is sufficient, because English aviation language is short and small. If you talk to me about aviation, we will talk the same language, like you talk to the radio; pretty much you talk only numbers. It's so easy to communicate in aviation. If we have a conversation, it depending on the topic, how deep we need to know. So for the flight, their English is enough.

C19: Sufficient for the work. Like I said, some of them are very good. And some are very basic. You have to use very basic terminology.

C10: in general, those first officers who fly with foreign captains, I think are sufficient. Some of the first officers, they have very good English. Some of them, maybe not as good as those…because they've done their study abroad. And they came here. They haven't done communication in English for a long time. So when start to fly with us, they are a little bit rusty maybe. as they spend more time, they became better and better. The same when I was working in Russia. When I came to UK. I got a job in UK. Start flying there, communicating with the...among the cockpit, my English was very low. But as...I improved a lot.

C2: //mhm// yes. I think they can work a little bit more on that. But so far is good. Because you know, since I've been here for 5 years, everything improves so fast and very much, because at the beginning it's very difficult to speak English with flight attendants. Now maybe all of them speak.

In contrast to the point of views “sufficient to work”, which some participants (C5, C6 and C19) insisted aviation English are basically terminologies so the English skills are not essential prerequisites in working. C7 and C3 noticed a divergent way, though aviation English are simple and basically constructed by terminologies. However, to accomplish aviation tasks, a certain conversational and contextual level of English is still required. Hence the required English skills should exceed the level of merely exchanging terminologies, and were expected to achieve to a smooth two-ways conversational level. Therefore, for some Chinese first officers, the low level of English skills becomes one of the difficulties in the interactions with international captains.

> C7: Not always good. No. probably about 40% can speak good English. They know the SOPs reasonably well. They know them, but they may not able to do that well because their English. And then some of the words they try to say is not perfect or not correct.

> C3: Not really. Yes, because you can use standard terminology like reading the book in a certain amount of time. But If I want to explain a procedure, I don't...//mhm// for example, today we are flying the flight, this Boeing. If I want to explain a procedure because you have to use plain language, it's not standard phrase or reading the book. Because I have to explain to you what we are going to do today. This is not reading a book. This you use plain language, not that great most of the time. There are very good first officers, very nice and with good English. But not everybody as the same English level, so a little bit disappointed on that area. Everything comes out of language. I told you. Maybe in China, English is not such a learned language in China in the past, maybe just past a few years, so people just started to learn English in a few years. Actually I tell you, the English here, the first officers they've only maybe learned for 3 or 5 years. They don't have much time to practice. So...There are some guys speak English quite well, but small amount of people.

4.1.3 Differences between English speaking captains and non-English speaking captains. From the examined data, the issue of language barriers is acknowledged as a prevalent obstacle in the cockpit communications. Therefore, assuming communication will be easier for those international captains whose first language is English is reasonable. C13 and C19, as native English speakers, drew a parallel line with the assumption, and described a situation with more difficulties for captains whose first languages are not English in the

intercultural communications with Chinese first officers.

> C13: I can't speak for many people because I don't see much the first officers' work with other foreign captains. But with me, I can get out of the obstacles, because I'm a native English speaker. And as a native English speaker, I can translate the Chinese English, the Chinglish, to //mhm// usually what the first officer say to me. If I fly with somebody speak chinglish, I can understand what they mean. The challenge, the real challenge to foreign captains, is for who speak English as second language. Let's take an example, like a captain from Mexico. His native language is Spanish. However he speaks English in cockpit. He came from a company in Mexico. They probably spoke Spanish all the time, maybe sometimes on the radios. They come here to china. They have the challenge of speaking English all the time themselves, not just talking to air traffic control in the radio in English, but talking to the crew in English. And when they communicate with another non-native English speaker, like a Chinese person, If the Chinese person speak chinglish. The non-native English speaking foreign pilot sometimes doesn't understand what they are saying about, or the opposite is true. A lot of people speak Spanish, but the structure of Spanish is very much different from English structure. So when someone speaks Spanish, who normally speak Spanish. He is speaking English. Sometimes they will speak Spanish English, or Spanglish. So Chinglish and Spanglish. So you have one pilot speaks Chinglish and one speaks Spanglish. It's very difficult for them to understand each other. So I mean most pilots can figure out, so culturally, you know, I don't much know cultural difference, but language differences. So for me, it's not so bad. But if you talk to some other foreign captains who are non-native speakers, they probably will tell you a lot of challenges they have, because usually you learn the standard form of language. When you hear someone speak chinglish or Spanglish, or French English or German English, it becomes a little difficult for people don't understand the...if they are from two different countries. So I think a Chinese first officer will have more difficult with the non-native English speakers than an English captain. So communicating usually is not a problem for me.

> C19: well, difficulties for understanding. So for a lot of co-pilots I've worked with. Some of them...we all have different types of accent. Like the Brazilians work here, their accents are very strong. Sometimes I don't even understand what they are saying. So those guys, they have a very tough job trying to speak a second language, and then also to be able to interpret all the other different dialects. Most of time, if you just take a basic communication, everything is ok. Sometimes it's very difficult to talk with...You know, the slangs. They will have no idea what you are talking about. Even the controllers are the same way. You have to use very very basic terminology. Some of the guys are very very good. But some are not.

4.1.4 Representations of language barriers. As C19 mentioned earlier, though for native English speakers, communicating is easier compared to non-English speaking captains, there were still problems, like difficulties in interpreting accents and a necessity of consciously awareness in using simple and standard English. But for the captains whose first languages are not English, more difficulties can emerge. Some representations of language barriers, particularly those as the threats to the flight safety, are concluded from the data and

presented here. According to C1, a matter of misunderstandings can occur due to language barriers.

> C1: There were situations when I said something, then first officer understood something else. Or he said something, and I understood something else.

Moreover, besides misunderstandings, message missing or communication breakdowns are reported by some international captains.

> C1: Another one is that a lot of time, it's mainly because of this communication problem. If there is a problem for me to communicate with the //mhm//, the entire group, and it's a bigger problem for me to communicate with the ground staff. So in case if something is not normal, I'm not speaking about emergency, but...I don't know...if the crews need more food for the passengers, there is a delay and have to do something. Then I will feel completely isolated because flight attendant tell the first officer in Chinese, the first officer have to call the ground staff. I am like outside. Then it's a bit frustrated. It's like they translate in a very short...you miss the details. Then it can be a bit frustrating.

> C6: yes, yes, of course. One example could be when I do briefing. I say this is what we are going to do, and this is the maximum landing way, this is the approach. And I finished. and the first officer looked at me and said what. Of course there is something missing, but it not going to affect the flight.

On the subject of language barriers, as the issue of “speaking Chinese”, another issue was recurrent and stressed constantly, that is the tendency of the Chinese first officers to “pretend understand” in the interactions with the international captains. Furthermore, the issue of “pretend understand” according to some of the participants “can lead to bad situations” in the regard of flight safety. Moreover, it becomes a significant challenge for the international captains, because “they have to confirm their communicating to their crews.” Certainly, the lack of English is not the single cause for the Chinese first officer to “pretend understand”, but correlates to Chinese culture as reported by many participants.

C3: I ask you something, you don't understand. But I don't know that you don't understand. But you still answer just be polite. For example, I ask did you understand what I say, and you said yes. But you actually don't understand. But you want to be polite. This happens a lot with first officers. And this can lead to bad situations.

C1: It's might be the Chinese culture, they are very, let's say, //mhm//, respectful to the, to the leader. So even if they don't understand, they pretend they understand. So there can be some communication problems. They say yes and they smile. You think they understand. But it happens they don't. Let's say. It would be disrespect to say no.

C13：I may say, I may provide the first officers with instructions. And the first officer may say: ok, oh, ok. But actually he doesn't understand what I'm saying, because he's afraid of making any problems. He's afraid I will angry or upset or whatever. He's afraid something bad will happen or whatever. Again, in American culture, we like people to say: I don't know what you are talking about. This is very...again, it's not...we don't get angry...we try to fix problem. Here the first officers who are not sufficient with English...they will pretend. So, for example, I have a first officer, and I say to him. We only have two pilots in the cockpit, so if we are flying, and we have to take a break. I want a crew member to come to the cockpit. So there always two people in the cockpit. So there is a problem, the other crew member can either help the first officers or can help to control the door. If there is a problem, like with the hijack. most people don't know that most of the hijacks are occur when the pilots are taking a break. I may tell...I usually give this instruction. And once a time, I had a first officer says ok. And during the flight he says I have to take a break, and I said ok, call another crew member over here. And he says ok. And he left the cockpit and closed the door. So when he came back, I asked why you didn't call another crew member. And he says what you mean. I've change the way to ensure they can understand. So I will have to ask questions, like I will ask the first officer, when you want to take a break, you will leave the cockpit or you will call another crew member to replace you. So my technique is to ask a lot of questions to my crew members. So I think the challenge for foreign captains, is that they have to confirm their communicating to their crews.

4.1.5 Language barriers: flight safety under emergency/non-normal situations. From the above analysis on language barrier, it is able to conclude language barrier as one of cockpit communication difficulties, closely connected with flight management. As this paper aims to find out if communication difficulties potentially influence flight safety, emergency situations in flight management become an inevitable aspect accordingly. Fortunately all my participants had not experienced genuine flight emergencies. Thus, the subject of emergency this paper intended to discuss here is expanded to including non-normal flight management situations. From the descriptions of the respondents, plenty of them mentioned a crucial role of English skills within the non-normal flight management situations. Furthermore, a majority

of those interviewees assumed language barrier as one of communication difficulties is a menace to flight safety under emergencies or non-normal situations.

Discussion continued with C3 after he had referred “pretend understand” issue above (see p.15). When asking what if “pretend understand” issues happen under emergency situations, C3 commented as follows.

> C3: That could lead to big problem. I have some friend...we have the problem we talked...yes...But actually they don't understand. They push the wrong button, and stuff like that. So this can lead to big problems.

As C7 addressed the challenges he encountered in the communicating and working with Chinese first officers, he described elaborated situations on how language barrier as one of communication difficulties can influence flight safety.

> C7：The problem is then that I found that, because I’m flying the F2 officers, when it comes to emergency or problem. We have emergency response menu in the airplane, calls QRH, quick response handbook. So for example, if the engine is on fire during takeoff, we have to take action according to this book. That will be the problem, big problem starts. Because then, of course the level, the stress level increases, with any increase of stress level, your IQ goes down. That's normal. Then the problem is then they forget English. What I found quite often as well is they will pick up the Chinese version of the book and open the page and start reading from there. But I said you cannot use that menu, because I cannot check what you are doing, because I cannot read Chinese. You must use the English QRH. This is where the problem starts. The normal standard, when everything is standard, everything is OK. Then the English level is sufficient to do the job. But when anything out of the ordinary happens, or any emergency, I basically hope that's not going to happen, because you know, it will be very difficult. That's one of the thing worries me a lot over here. A lot…Not really emergency, thank god. You know the airplane is very big airplane these days, and very reliable. But I have had to divert for example. The issue is if you have a language problem probably what you are trying to ask…Even that action, because it has to be very coordinated action, otherwise the airplane...doesn't work very well. So I have to give my commands, to raise the flaps, to put the landing gear back up again, and everything else. It all happens very fast. And it has to happen in the right order. I have to do, this is called go around or missed approach. And I have to do a few of those, because of the weather of here, because of the wind is too strong or something else like that. And that is when you lose the first officer, they will be gone. That's partly to do with the experience because maybe it's the first time they do go around. Again stress level goes up, IQ goes down. It's normal. So I say: gear up. And they don't understand me. Then I have to say: G-E-A-R! U-P! Not yell at them, but at least give them to focus that what I need to do, you know. Then they will: ok, yeah, ok. And you see they are back in the look again as we call of...So as I said, if everything goes ok, there are ok. But if a simple thing like go around, will, you will, you can lose the first officer, yeah, definitely.

In the above extract, C7 justified his emphasis on "when everything is standard, everything is ok" and considered the lack of decent English is a significant factor of which expose flight to danger. By the same token, C12 and C14 made the point of view in presenting their communication difficulties they faced under emergencies or non-normal situations.

> C12: we will have problems, because like I said, they can do a job based on they do every day. But once you get out of that, and do an emergency, their language, they are gonna get stuck…When everything is normal, everything is normal. But if you have an emergency, even the controllers, they tend to, if have nothing to do with what they do every day, they get stuck. Your situation is you are the captain, but everything is in Chinese, except when they talk to you in English. But your information about what's going on on the rest of the plane is completely off. It's not like in American. In American, everything is in English. Even though my country, we talk Spanish. But you always know what's going on the rest of the airplane. It's very...that's why you have to very aware what's going on. Otherwise, you can get conflicts with the rest of the airplane.

> C14: But if something goes wrong…There is a kind of, you know, envelope. And if you take them out of the envelope, or this confidence part, they are done.

In addition to majority's beliefs on a negative correlation of language barrier and flight safety, C5 and C16 added Chinese first officers are capable of operating planes under emergencies or non-normal situations.

> C5: We all trained for this. As I said it's all technical English. I never experience real emergency occasions. But I think we already trained a lot in simulations. and they are trained every year.

> C16: they would handle it with emergency procedure, because they know the procedures. They probably will speak Chinese to ATC, and they will translate the information to me. And yes, their English maybe difficult for them to form a perfect or even full sentences. But by speaking terminologies, even it is a broken sentence. you know what he means.

Moreover, a distinction which was drew by C6, in contrast to the distresses of some participants in losing the support of Chinese first officers under emergencies; he emphasized the dominant characters as captains, in commanding emergency managements.

C6: So emergencies that could happen. That's could be a big deal…In this particular case. I think, in my personal view, I think the training for first officer, it is quite good. And it's having the emergency. And how we handle the emergency, it's not gonna depends on the first officer's experience. It's gonna depends pretty much on me. Because if I have the enough knowledge about all of the system on the aircraft. I can just direct, when to this, when to do this. That's what we will handle; I'm not expecting the first officer to tell me what can we do. And that will be different.

I: As long as they give you enough information?

C6: If they don't have the information, we'll just read from the handbook.

4.2 The role of power distance in cockpit.

The analysis on language issues, particularly the issue of "pretend understand" projects a glimpse of another significant dimension of this paper, the power distance in cockpit communications.

When the role of power distance was analyzed in the data of this study, an overall response is that the international captains perceived indicated a certain degree of power distance exists in cockpit universally. Nevertheless, degree of the power distance varied from different countries, cultures, airlines; it even differs in different flights as well. In that regard, some of international captains further pointed out the distance should not be high.

C1: I think this is universal. There is generally a very thin line between, not only in China, all over the world, that between, the first officer is afraid of saying something and the first officer is over confident and would say something about everything. This is what captains should try to establish the line. Generally, no, but it really depends on the captain. There is a CRM, this aviation communication process. There is a concept of having a line in the captain's level of authority and first officer's level. The line shouldn't be lower than captains' authority, because he has to be higher. It doesn't have to be very steep also then the first officer will say nothing, the captain will be flying alone. I think it's just like in a family, that the husband don't allow the wife to express anything. Then you will make a lot of bad decisions. But if they can say anything about everything, then there is a problem that the husband is wrong, they can debate about it. At least you will have the conversation.

> C18: It's normal. No matter where you are from and where you fly. It's normal. It's normal, the captain make the decision. But the distance should not...the captain should be high, but not very much high; otherwise there will be very huge gap.

> C7: We have in aviation, what we call it command gradient. So the captain normally sets on the left of airplane and the first officer in the right side. So the gradient, the authority gradient, should be something there. If the gradient tilted to the side of first officers, then something wrong, because then the first officer is more in charge of the airplane. And better, it should always be that the captain has to be in charge of the airplane. If you are a very strong captain, you say: do this, do that. Then the gradient is very steep. But if you say: hei, look, why don't we do this, what do you think. Then the gradient is very shallow. But there has to be a right balance there.

Considered the degree of the power distance in this airline, a phenomenon was described by C5, Chinese first officers are afraid to express their opinions not to mention disagreements. This tendency of avoiding conflicts is further discussed in the following chapter. Though the technologies and resources of modern flights are very advanced and reliable, C5 stressed the essential status of communication in cockpit and role of power distance in it. Hereby, the issue of hesitance in speaking up demonstrates the situation where a high power distance exists in cockpit, as mentioned by C1 above, “it doesn't have to be very steep also then the first officer will say nothing, the captain will be flying alone.”

> C5: You know, normal in aviation environment, we call that CRM. CRM has been developed for years. It's a very important tool that we use in aviation to communicate with people. And CRM has been developed for years and first it is captain resource management, then it's crew resource management, so more people, first officer and crew attendants. Because the technology is also getting better on the airplane, we can pick up a telephone and ring somebody over here and say I need some help. So that CRM is now become company resource management. So it become bigger and bigger. But all that still means that we have to communicate with each other. And not be afraid to say: hei captain, I think we should do this or I think you are making mistake. Here in China, that is your culture is very difficult for the first officer to stand up and say I think you are wrong. And so, you know if I do something and I have a little bit of doubt about what I’m doing. And I think not 100 percent certain. The problem then is I cannot ask. I've tried to ask my first officer and say what do you think. But he will never say: I think you are wrong, captain.

4.2.1 Confrontation avoidance as a consequence of high power distance and the

relationship between it and flight safety. When depicting their communication challenges which participants confronted with Chinese first officers in cockpit, the issue of confrontation avoidance was mentioned recurrently from different perspectives. Furthermore, on the regard of gaining insights to the role of power distance and its' association with flight safety, questions like "Do you think your Chinese workmate are able to speak up their opinions? Well and enough?", "Do you think your Chinese first officers are expressive enough in the concern of flight management?", and "Do you think your Chinese first officers afraid to express their opinions? How about disagreement?" were discussed in the interviews Two presumptions I had made by asking the international captains those questions: one was a high power distance exists between the international captains and their Chinese first officers; the other one was confrontation avoidance is one of consequences of the high power distance. Though the assumptions not adhered by all respondents, they roughly expressed part of views on it when most of them depicted their challenges they encountered in cockpit.

Along with the comments made by C2, "Depends on the first officer. There is so much different kind of personalities they have…Some of them are very open to discuss some issues. And some of them are not so open. In general speaking, I cannot put all of them in one bag", half of the participants assumed the issue of confrontation avoidance is an individual matter, which essentially depends on the personalities of the Chinese first officers.

> C2: If the character of the person, maybe how their parents like them or something like that. Because some of them are very open, you know, you can talk with them everything. And some of them are very close.

> C19: I don't think so. There are some...maybe a little bit shy, and the other...all people are different. When you talk to people, some people are very open, some people are very aggressive, and some people are very shy. But //mhm// it depends on the person. It's very individual. The type of personality…

Nevertheless, few of the respondents justified Chinese first officers performed proper and satisfying in the regard of expressing their opinions on flight management.

> C4: I think they speak their opinion very well about flight. That's one of the best situations for flying in China. Very nice. The Korean first officers, maybe afraid express his ideas, sometimes. Chinese first officer don't afraid that. Maybe Chinese first officer will be more afraid to speak to Chinese captains. But not for me and for other Korean captains. I heard from many Korean captains the Chinese first officer express their opinions very well. So that is very good for the flight safety.

> C5: I think they express good, If something wrong with the flight. If it really happening, captain should take the advice and follow. I don't think they are afraid.

Besides another significant point of views were asserted by few of the international captains who acknowledged the tendency of confrontation avoidance is prevalent among most of the Chinese first officers. Moreover, the issue of confrontation avoidance "is bad in aviation" and worries some international captains a lot. Among those participants, some of them further described the distinctive working styles or attitudes toward dissention between them and their Chinese first officers (the disparities were displayed in the chapter of 4.3.5).

> C12: Sometimes, yes. For most of the guys, yes, especially if you are doing something wrong, they don't tell you. That's bad in aviation. That's called CRM, because the fact that I'm the captain doesn't mean I know everything. He should point out if I do something wrong. They are too shy.

> C7: Sometimes it worries me a lot, yes. Because part of the culture here in China is the first officer here, they are afraid of to say something to Captain, even if the captain is wrong. We are human being. I can make mistake as well. You know, unless you are 100 percent sure about what actually what you are going take, you will never know if that is a correct action. Because you don't give that input from other people. You know, if I ask the first officers, for example, what do you think? You know, if you have a passenger that is very sick. You know I'm not a doctor, I'm flying the airplane. You try to get all

> the information together and make a good decision, like do we keep going or do we divert somewhere where where the airport is very close. Now they will never tell me: captain, you should do a divert. They will basically say: your decision, captain. You are the captain.

Furthermore, considered the high power distance can be a great threat to flight safety, some of participants showed their great torments on it.

> C18: Though CRM has been developed for years. And it's a very reliable tool. But all that still means that we have to communicate with each other. And not be afraid to say: hei, captain, I think we should do this or I think you are making mistake. Here in China, that is your culture is very difficult for the first officer to stand up and say I think you are wrong. And so, you know if I do something and I have a little bit of doubt about what I'm doing. And I think not 100 percent certain. The problem then is I cannot ask. I've tried to ask my first officer and say what you think. But he will never say: I think you are wrong, captain. So that is a big problem.

> C7: I think there is a bigger difference between the Chinese culture, that simply because, when I listen to the stories from first officers here, basically they have no input when they fly with Chinese captain. They basically say do this, do this...what I told you before the command gradient, the Chinese captains' command gradient is very steep. So the flow of information is very difficult. It's not just over here. It's been other accident around the world, that airplane is crashed because the first officer didn't say anything. Like in Indonesia, was it in the last year? The airplane ran over the runway, because the airplane was going way too fast. The captain was not slowing down, and the first officer knew this, but he didn't say anything. And why not, as a pilot, as a professional guy, you should see the airplane is going too fast. There is no way we can land at this speed. We are going way too fast. The first officer didn't say anything. It's a cultural thing. Another example is in Korea many years ago. When the wing hit the tail of airplane, and instead of stopping the airplane, Oh my god, I hit the airplane and admitting that you've made a mistake and let's stop. What they do, they put more power on and and try to push through the whole thing. So now two airplanes were completely damaged, just because of the culture that they could not admit at the time that they were wrong, and they should stop and do something about it. But it's like not lose the face, they just keep pushing. It didn't happen, it wasn't me. This attitude is very dangerous.

4.2.2 Power distance and language. In the regard of exploring reasons on confrontation avoidance issue, some international captains expressed their point of views that confrontation avoidance is not necessarly correlated with the high power distance, but it also has to do with linguistic confidence.

> C3: Yeah. They express if they have the English possibility. Sometimes, no, because of the language problem, sometimes they cannot express what they want to say or what they want to say.

> C7: Some of them do. Some is not. The more senior first officer, if they speak in quite good English, then they know how to say something. I think a lot of is that the junior first officer, if they don't speak English quite well. Then it's difficult for them to suggest something or to recommend something. Sometimes the first officer, if they never lived aboard, their English is not as sufficient as the first officers, who lived in USA or Australia; again, they don't want conflict. Again I try to have the open communication.

An interesting comment from C18 indicated confrontation avoidance and language interact as both cause and effect. Hereby, not only the less linguistic confidence accelerates confrontation avoidance, but also confrontation avoidance affects expressions linguistically in cockpit. Besides “not speak up”, which is a form of high power distance, C18 manifested adopting indirect expressions embodies the high power distance in cockpit as well.

> C18: You see that you see quite often, what they again, revert back to cultural issue. For example, we are flying at this level, and I want to climb to this level. I want to go from this level to this level. So I ask the first officer: can you ask the traffic control, can we go to this level? So what the first officer do, he asked the radio: can we climb higher? And I said: no, that's not what I asked you to, I said can you ask them can I fly to this level. Those sorts of thing, again, revert back to cultural issue. Because now the first officer is less senior that the air traffic controllers and he cannot ask for something specific, he has to ask in a general way. It's the same as me saying I would like to stay in touch with you as a posture I may say can I have your phone number. It's very specific and very general.

4.2.3 Power distance and culture. Concerning the subject of power distance and culture, the issue of “pretend understand” was brought up and perceived as the consequence of Chinese culture, which people are rather respectful to leaders. Nevertheless, the reasons for “pretend understand” are lack of English skills or rooted in Chinese culture, or a combination of both, the issue itself was considered as a big communication problem and great threat to flight safety.

> C1: It might be the Chinese culture, they are very, let's say, //mhm//, respectful to the, to the leader. So even if they don't understand, they pretend they are understand. So there can be some communication problems. They say yes and they smile. You think they understand. But it happens they don't. Let's say. It would be disrespect to say no.

> C3: When I was in Romania, people usually do not pretend they understand or give positive answers...actually never happened to me. But people usually say no, and I will say again. It's more clear. Here is different. This is one big problem. Maybe this is come from culture, part of.

Another finding from some interviewee is, the Chinese first officers are culturally reluctant to give negative responses.

> C14: I think that's the Chinese culture. If you ask something, and they say ok, ok. And they bring you something different. But you said ok, and you understood. And if you ask the taxi driver, do you know this place, and they say yes, and they took you somewhere else. But they said yes, ok.

> C15: I think they like to say yes. They are somehow, do not like the negative. I don't know. In some part…But for Korea captains, it's not so...so many big differences from Korea culture. Almost same as oriental culture, but still, even we are closed countries. There are still many differences from Korea and china.

Paralleled with the comments of C3, "their culture is afraid of being wrong. And they just don't say anything. I'm afraid of being wrong, so I'd not say anything at all", few of participants expressed their concerns on confrontation avoidance by differentiating Chinese culture as a rather particular culture in the world.

> C7: The culture as far as I understand here in china, that had to be told what to do. And they will not initiate something many times. They will say: I am the less superior, so I must wait for the instruction.

> And you see everywhere over here. That is one thing. Even the management as well. Even if we write a suggestion to them in email and say: listen, everywhere in the world, they do this, here in China, you guys do this, so you know, do you think it's a good idea to change what we do to, sort of we do the same as most the airline do around the world. As a suggestion, I quite often write back: ok, thanks for your good idea, captain. And that's it. And I think why. Because they have to go to their superior and say: hei, this foreign captain recommended we do this. And so it has to go up from one seniority level to the next seniority level. And that doesn't work in Chinese culture unless this guy tells this guy to do it, and then the situation will change. I make the recommendation to my manager and my manager has to go a senior manage. Forget it. It's not going to happen. I've seen so many times, so many times.

Moreover, nearly all the international captains considered themselves as very open to suggestions or disagreements, nevertheless, rooted with a traditionally high hierarchical culture, it seems arduous for the Chinese first officers to cross the formidable cultural barricade and to express as assertively and sufficiently as what the international captains' expected.

> C15: Actually they need to be more aggressive to express their opinion. That's maybe kind of oriental culture, because they think captain is in a higher level position. And captain must know more and better than him. So they are hesitate to advice, say something aloud. But they should speak out, when he think something is wrong. I always encourage them. If you feel anything strange, please advise me. That's why you called first officer, nobody can a perfect pilot from the beginning. Please tell me if you think something is wrong.

> C8: Every briefing I do, I say to the crew: if you have any opinion or you know if I miss something, or if you have any idea, please let me know. They say: ok, ok. But you can tell there is a cultural barrier. They will maybe think 10 times before they open their mouths and say something.

4.3 Culture and cultural differences

During the whole process of the interviews, significant differences in working culture and working style were characterized and considered as another source in generating communication difficulties by many participants. The disparities were symbolized in two manners: one is the roles pilots posed themselves in aircrafts; the other one is the attitudes toward some general aviation regulations. In addition, many international captains asserted

the distinctive motivations of choosing pilots as careers between them and their Chinese first officers. Moreover, they also believed the motivations of being pilots can influence the working attitudes in a large extent.

One captain explained the differentials between Americans and Chinese by comparing the different mindsets when confronting conflicts.

> C13: Culturally the American culture, we like confrontation. We like to disagree. We like when someone says: no, it's not right. Or we like when someone says: if there are two different opinions. We are ok with conflicts. One of the problems I've had here, culturally I think the Chinese people they don't like confrontation. Americans believe that: there is a problem. Let's solve the problem, then we happy again. It's over.

Another distinction stressed by some interviewees as significant in the aspect of working culture and working style is, the Chinese first officers are very reluctant to rise up their suggestions and seldom to contribute their inputs, which can cause big problems according to the extract shown below.

> C7: So if there is a decision to be made, the first officers will say: we have a big delay because of military exercise, what is your decision? And I said: what do you mean my decision. This is a crew decision what we are going to do. So then I naturally go back to the first officer: what do you think we should do? You have all information. What would you do? And they will say: it is your decision, captain, your decision. For them it is always the captain. What I used to is, well, let's think about all possibilities, what is the best option...That's the culture of, as I understand the Chinese aviation ground, which is very different from, let's say, western aviation culture. We like to have the input from everybody to make the best decision. So that's the big problem.

4.3.1 The differential in the roles pilots posed themselves in a flight. As mentioned earlier, one symbolic the disparity in working culture between international captains and Chinese first officers is the positions they pose themselves in flights, particularly the status

they considered themselves within the relationships of them and flight passengers.

C5 believed part of the jobs as pilots is to provide the best service to customers. The motivation of taking care of passengers is to make sure comfortable and safe flights, which in contrast is completely different from Chinese first officers' working styles derived from the descriptions below.

> C5: The fact that we looked the passengers as the people pay our salary so I want to give them the most comfortable flight. You know, look after them, it's like you go to the restaurant. Somebody brings your dinner and he is like would you like this, would you like a dessert or something, where if somebody throw the menu to your table and doesn't ask you question, and not ask the meal, and do you enjoy your meal. These differences like this. So we like to look after passengers. I haven't seen that many times here in china. The only motivation to ask passengers to turn the seat belt on is they could be punished for if they don't do it. But my motivation is hey, be careful, you might get injured, you might be hurt, and you know to turn the seat belt on. So you do get this different motivation to do things. The Chinese culture is more based on if I don't do it I will be punished. My motivation and the western motivation is more like I want to provide the best service. This happens all the time. it comes from motivation. I see from many things, like for example, we have arrived that destination. It's 35 degrees outside. The first officer said ok, I finished my job now because the airplane is here. So he turned off the air conditioning of the airplane off and he's really to go. And I said hang on, but you have 150 passengers sitting in the airplane that want to get off and yes, they would like to enjoy the air conditioning until the last passenger is off the plane. So leave the air conditioning on please. And they like: but we finished. No, we are not finished yet. It's a different customer service. As we say. I always ask the first officers who do you think pays your salary? The company does. And where do you think the company gets their money? You know, silence. What do you think all these people in the back do when they go on the line? They buy tickets. These are the people pay your salary, so you need to look after them. This is the big difference. To them, it is just about me. This is what I found about Chinese pilots many times, what do I get out of the job. And I am told to fly this airplane from A to B. And as soon as I am in the B. my job is finished and I go. They don't care about everybody sitting in the back. It's a different. I don't know. It's a culture thing.

A particular but interesting comment made by C8, who described how a military mentality of the Chinese pilots influences their working culture; and how a circulation of this military mentality passed from old generations of Chinese pilots to the young Chinese first officers. In addition, this military mentality are further displayed and analyzed in terms of its' associations with flight safety in the chapter of 4.4.

> C8: You know Chinese pilots initially they are military pilots. They are wonderful people, but the military mentality. They don't have civilization mentality. From my understanding, the pilots is doing service for the passenger. They actually pay our salaries. But for some Chinese pilots, they are the commander of the airplane. Those people, I just let them in the airplane, because I am a very good man and I let them in the airplane. But I am the boss. So they feel like they are the boss of the airplane. And they have the attitudes toward the passengers. And these pilots, those senior ones, deliver the message to their first officer. If their first officers are independent with their minds, they can think about it what is true and what is not. But the first officers here, especially very young first officer, sometimes they are not so independent with thinking. And they just follow what they see those military guys as example, and they just follow the example. Not all the first officers like these, but some of.

4.3.2 Different attitudes toward aviation regulations. In the previous chapter about representations of language, few of participants had mentioned the tendency of Chinese first officers speaks Chinese in cockpit, which violates aviation regulations. By the same token, many remarks were made from respondents on the same issue of neglecting aviation management regulations (e.g., CRM and SOP), airline rules or dress code and so on. Some of the participants expressed their discontent explicitly on the communication difficulties caused by this issue.

> C9: I don't mind if they want to smoke in cockpit. I don't mind. But according to the company regulation, it's not allowed. But Chinese culture, every smoking pilot, they want to smoking every flight.

> C7: A little example is like, what I found many times in the first officers now. If you walk around the airplane, you must wear reflective jacket, ok? For safety. How many times do you think I have to remind the first officer to put his on? Almost every time. So I ask: you know you must wear, why don't you do it? And they like: //mhm// I forget. And now you are making excuses.

Besides ignoring minor regulations like smoking and dress code mentioned above, by comparing Chinese first officers with foreign, especially western pilots, some of international captains further emphasized the neglecting attitudes of the Chinese first officers toward aviation management regulations, particularly CRM and SOP.

> C10: I've attended three schools in Europe, one in Switzerland, one in Belgium, one in England. And basically the policy almost the same, even if you are Swiss or German or you are British. And the policy and the way of thinking, almost the same, the things in paper, and CRM, everything. For here, some flow the policy and some just find their own ways to follow it. Yeah, like this is not good, and my way is better.

> C7: What is more consistent with the foreign pilots, is they strict to the SOPs. As much as they say, the Chinese pilots do it as well. Lot of stories I've heard over here is that the Chinese captains don't do this.

> C7: They skip the details. A lot of details. That's what I heard a lot. I've been a passenger on this airline from time to time with Chinese captains. As a pilot, you can never relax; even you sitting in the back, you always think what do they doing in the front. And for example, they push back, I know they have to start this engine first, then they start that engine, and they have to configure the airplane for takeoff. So I know how long these things take and I knew what they need to do. But I've seen this engine being started, and they already start in testing forward. And then they still start the engine while they are already moving. I was thinking they are not following the SOPs. And that's the big difference to western pilots, you don't have to have the or else. Not necessary. So I'm not saying flying skill of western pilots is better than the Chinese. But I'm not saying that. I'm saying that it's naturally comes to us to follow SOPs and to want to a very professional job.

4.3.3 Different work motivations between international captains and Chinese first officers.

Many international captains explained the motivations of choosing pilot as careers are different from them and some of the Chinese first officers. Consequently, different motivations create different working attitudes, which in turn affect the communications and work relations between the international captains and the Chinese first officers in cockpit.

Over half of the international captains told they became pilots because they dreamed to be. However, in contrast, the majority of the Chinese first officers became pilots because it is a well-paid profession. Then the motivations for their daily work are "they have to fly from A to B" as C7 mentioned below. Working attitudes with a lack of respect and concern generates from such motivations. Futhermore, distintive motivations and working styles supply ground to infest communication difficulties in cockpit according to the following extracts.

C3: Here working culture is //mhm// 180 degrees opposite from what I used to. Why? Maybe because people here become pilots from different reasons. In my country, for example, me, I become pilot because I went to flight school. I wanted to do this. I loved it before I started to do. Here people will offer the job, like maybe you are doing medicine before, and they change to pilots, because it's nice money. It travel a lot. And then the respect to the job is different. You can sit here and watch, some people well dressed, some are not. Maybe you become the one that you really wanted to do the job. You will see everyday everything is perfect on him. And he speak nicely, he knows a lot to do. Maybe lots of pilot here, they don't like the job. Yeah, this is my personal belief.

C7: What I see over here is some first officers, they are not interested in aviation at all. Some of the guys, I flew with the guys, and I talked to them. You know he is a qualified vet, and it's like...what are you doing in an airplane? So he said: I finished university, my parents looked at the bill, the total cost in the university, and looked how much can I earn as a vet and how much can I earn as a pilot. I'm sorry, my son, you are going to be pilot. But the problem is the guy is not interested in aviation. And you can tell, the guys just, don't care. Their motivation is like I have to be there, I have to go to A from B.

C10: I think there are a lot of differences. But a lot of things involved in that. It depends on the way they work, they way they do things, and the way they taught. The motivation is very important, because I think 90% who work in aviation, in whole Chinese aviation. They came to do this job not because this is what they dreamed about, but because this is the good chance for them to get good job. So some of them, they do the job because they just do it properly. Some of them just do it because they have to do it. Some of them like to do it eventually. Maybe they never dreamed to be pilot, but when they start, they actually like it and they keen to learn. Of course, it's much easier to talk to that person, you know, pass the knowledge if they ask question. I'm not pushing anyone to learn anything, but...you can see the differences, how they perceive the job, and how they do things.

On the other hand, according to C7, as a captain he has to adjust his working style when confronting different Chinese fist officers who with different motivations and working attitudes.

C7: Totally different. They don't have any interest, and even trying to do a good job. They are like, I'm not interested in doing a good job. I just want to go a hotel. I just want to get back home, and I don't want to do anymore. And compare that to someone interested in aviation, they will try to do a better job. They will try to think ahead what else do we need to do, how can I help the captain, and try to think the safety of the flight. That's a big difference. The motivation to be there is different as well, totally different. In a day, I have to do as well, I try to treat them as same. If I'm flying a guy that not motivated to be there. I basically need to tell them a little bit more what they can do, like can you give me the new weather in Beijing, can you find this, can you do this. I have to ask them rather than they come to and say: hey, captain, would you like the weather on Beijing. So I have to push them a little bit more.

4.3.4 Working culture and flight safety. Aside from the point of views presented previously, that motivations can influence communication and working relationships between Chinese first officers and international captains, C13 proposed some comments from another notable angle. He believed the Chinese first officers who became pilots without interests in it, are easy to disregard the challenges and difficulties of being pilots. Hereby, those Chinese first officers will get panic easily when confronting challenges, which can threaten flight safety directly.

> C13: There is huge differences, here in china, in this business. A lot of people in china, they don't even know you can have a career as a pilot. Most of the people don't know that. They don't even think about. And then you found out about it, like a lot of the young Chinese pilots here. They found out about this job when they finished their college, when this airline came to their college, and said you can go to work in an office and 2000RMB a month or you can make 20000RMB a month here. The problem with that is, because flying is a very difficult profession. It's very stressful. It has a lot of challenges. I started my day at 2 am. I have a longer work day than someone in an office. It's also more stressful, because in an office, if you make a mistake, maybe your boss yells at you or maybe you just have to do it over again. But if we make a mistake here, we can damage the airplane, we can hurt people. If I make a mistake in training, I can lose my job. They will say you didn't pass your training, go home. This can be very stressful. This is the reality of this business. And those first officers who only think, this is great money, this is great, and I'm going to do it. But they think it's gonna be a job that they work from 8 in the morning till 5 in the afternoon instead of from 4 in the morning until 8 in the evening. And they find out they have to be away from home five days out of the week. So after a year, they will think this is crazy, I hate this. And then they are in the airplane, if something goes wrong with the airplane, if there is a rainstorm, or snowing, they get very uncomfortable, what makes difficult with them is that they feel this way because they are not flying because they love flying, they are flying because they love money. They like the money. But in USA, it's different, everybody knows about this job. Normally to be a pilot in USA, they are pilots because they like flying. So equipment broken or weather is bad, the western pilots will be like, ok, this is challenge, but I like it. Let's manage to solve it.

Continued with the previous topic "The differential in the roles pilots posed themselves", C7 noticed some Chinese first officer leaves planes before passengers due to a lack of professional or client-oriented spirit. Moreover, according to C7, leaving plane before passengers may put passengers in danger, and violates the "safety first" principle of aviation.

> C3: You can, sometimes, here the first officer leaves the plane before the passengers, which is completely wrong. You don't leave until the last passenger is out. Something might happen, for example, something catches a fire. 2 or 3 guys will have no idea what to do. The captain and first officer should be there. If you leave the plane, who is gonna to take those guys out?

Another view put forward by C7 about internal threats, described Chinese first officers are easy to get tired since Chinese culture encourages people to stay up late.

> C7: Threat management is, has to do with, the threats that can occur when you flying. We have external threats and internal threats. Things like weather, airport. Things like we cannot do anything about. Internal threats I think is cultural issues, communication issues, you know, whether you had enough rest. If you are not tired, things like that. This is another issue in china as well. When quite often, if you have a first officer, not long after takeoff, they are sleepy. Do you have two days off? Yes, I have two days off. So this is your first day come back. Why are you tired? How can you tired. Chinese culture, you know, you see many times here, they have stay up till 2 o'clock in the morning. You have dinner outside at 1 or 2 o'clock in the morning. These issues, of course you are going to tired 7 o'clock in the morning when we have to take off. Again, it's cultural thing. I'm not saying right or wrong. I'm just saying what happens over here. And I see these so many times. Those guys as soon as 5 minutes in the air, they fall asleep.

4.3.5 Affective aspects related to disparities on working culture and working attitudes/styles. According to some respondents, there is a vacancy of professional attitudes among the Chinese officers in details like dress code. When described the differences in working culture or working attitudes, the majority of international captains had more or less expressed their disappointments. Additionally, a few of participants presented their concerns and sentiments more explicitly.

> C7：If you deal with these issues every day, the first officers come here to work dress like this, you know, no bars on. Where is your tie? It's warm today, it's 35 degree today. So what? You are here as an image. You are representing the company. When you walk through the terminal, do you think passengers want to see the first officer looks, you know, not ironed shirt, and shoes are dirty. Do you think that is a good image to the passengers? They don't care. It's what I'm saying, the motivation is different. Do I worried things like this? Yes I do. It annoys me. I'm not saying I'm the best pilot around the good pilots. But I care about these things as professional. It's similar to if you want professional service form a…a lawyer, you except to get a nice letter, and everything looks professional. That's the different. Unfortunately I've found it hard to find over here. This is just talking about the culture and what happened and what happened in the airline over here.

> C7: Every time I discuss this with them. It's like a logical thing. I see that you bring a umbrella today, because it's raining here. so why cannot think that if you are going to Harbin, where is minors 23, why don't you bring your thick jacket with you? If something happens, how can you help your passengers without a jacket under minors 23? So things like, I found very frustrating. So that's why, I'm almost finished my three year contract, and that's why I had enough. Like most of foreign captains over here, it's just, because it's just gets too much. And sometimes you come to work, it's you leave your wife and kids behind, and I've got some kids like seven years old. When I come to work, I expect to come with professional people. And when I come to work, unfortunately I deal with another six or seven years old, they were just wear uniform. They just need to be told every time what to do. It makes my job hard. Some foreign captains here, they were like, we don't care. But I do, and I cannot change my mentality to not care. I have to care. That's how I was grown up. That's why in my previous airline, that you must care, you have the responsibility. That's why you have four bars. I'm not sure about here in china. If you cause an accident, the passengers can sue you and take you to court. It's happened before around the world where the captain has been personally taken to court and face murder charges, because he killed somebody in a crash. So maybe I'm a little bit extreme. I don't know. But I don't necessary worried about that, but part of my motivation to make sure that I don't end up in a court. Nobody can sue me. And I don't know if they have the same motivation over here. I doubt.

4.4 CRM and aviation trainings in China and skylette airline

A general consensus reached by the international captains is, aviation training (particularly CRM) is a crucial aspect in the concern of cockpit communication and flight safety. In addition, C3 considered CRM as the most important tools and resources in terms of cockpit communication, it assists captains in dealing with power distance as well.

> C3: When I was in school with CRM trainings, we were taught not to be //mhm// aggressive and to listen to everything, with all the information gathered from everybody. Maybe that's the thing. I knew most of foreign captains ask opinions from first officers. we are used to gather opinions. When you have five opinions, see which one is better. Then you can solve the problem better, actually because it's a group thing not individual.

During the discussions with participants, CRM were referred frequently. However, a majority of international captains are not satisfied with some of the Chinese first officers' operations in CRM. As aviation trainings, particular CRM, are regarded as decisive cockpit communication tools and resources, many international captains noticed a significant difficulty originates from the low level of CRM during flight management in cockpit. Hence, the low operation level of CRM is presumed as a great threat to flight safety.

> C3: So CRM here is not that well operate because people don't know how to use it. It's still at the beginning. I don't know here the pilots whether they understood CRM, what does it mean and how to use the procedure? I don't know whether they understood what is it for. For us, CRM is a big problem actually as a foreign pilot. Maybe for Chinese crew, only Chinese captains and Chinese first officers, it is better. I don't know. But with foreign pilots, it's more difficult with CRM. And comes from the language, and combine the culture thing. It can be very difficult. Actually the biggest problem in the aviation world is CRM problem. People didn't use it sufficiently.

> C14: and one of the main things with these barriers language is that, the most important thing in cockpit is CRM. Here in china is, CRM is very low. CRM is very poor. And in emergency, it's very poor. It's the most important thing. Sometimes, it's very difficult.

On the other hand, some interviewees pointed out one of the possible reasons on why the level of CRM in dissatisfied is, the aviation trainings (including CRM training and TEM training) are not well taught in this airline.

> C7: You know both CRM and TEM are not taught over here. There is no wonder they don't know how to communicate. They say they teach CRM courses. But I've been to a few of CRM courses over here because every two years we have to do a refresh course and CRM. And what they teach over here, I was like, are you kidding me? Is that it? Nothing basically. CRM is a huge subject. It forms the basic way of communicating with each other in flight deck. They don't teach this. It's a problem.

> C10: CRM is the most important part of communication in the airplane. Everything that goes around the airplane, communication in, communication out is about CRM. So it's a very important tool. And if that tool is not taught over here…They don't teach you how to use it. It's a big problem. And threat and error management is something not taught here. If you talk to a guy, do you know TEM? Don't even know what it is.

Furthermore, another challenge in the trainings associates with the issue of high power distance which was mentioned by C7. He claimed a military pilot mentality was passed through generations of Chinese pilots because many aviation instructors are ex-military pilots

in china and in Skylette. In turn, according to C7, the military mentality which is not adequate for commercial flight, affect flight safety in a rather negative way.

> C7：And you see over here, quite often, I try to teach the first officer about how to fly the airplane more efficiently. But they said, captain, if I do that with a Chinese captain, he will punish me. Because the way they get trained here is so different. They wait the captain to tell them what to do because of this old mentality. Unfortunately you still see that over here, a lot of the training guys are the ex-military fight pilots' mentality. Part of problem here in China and this airline, is that a lot of the trainings are done by old military ex-air force pilots over here. They have a very old fashioned understandings and beliefs in how a pilot should act. And this is not new, to give you a little bit background. You know the Vietnam War? They have a lot of fight pilots in American. And a lot of were fighting in Vietnam. And when that war finished, they went back to American and they went to fly commercial with passengers. The problem was that suddenly they have two pilots, and those days, most of airplane was flew by three pilots. One captain, one first officer and one engineer. And suddenly if there were problems, because the captain was from a military fight airplane, he thought he has to make all the decisions. He has to do everything himself. So he excluded all these other guys. Even though they have great resources are available, CRM resource. But he didn't use those resources because his training was military training. And in military training says if you are a military fight pilot, you must do everything yourself. And it was continental airlines in American who first developed CRM and said this is not acceptable, because the first officer is also experience pilot, and he cannot say anything to the captain. So these are the guys who first developed CRM and said you must communicate with your other crew members. So then if you have a problem, then the training was: ok, I'm the captain, I make the final decision, and I make the final responsibility. But in order to get all the information to make the right decision, I have to use all my resources. And this is the training all about. There is a younger mentality and there is a different, why here in this airline, there is a difference between the Boeing airplane and airbus. Airbus airplane is relatively new to china, therefore all the instructors and everybody who has experience on this airplane is from a new generation. The Boeing airplane has been around many many years already. And therefore the training and instructors are from an old mentality. And that's why even in this airline, there is a big difference between Boeing and airbus airplane. It's all related back to your culture, your training, and where originate from. That's part of the problem here definitely. I've spoken to my friends who's flying the airbus here, and they don't have as much problems as we have on the Boeing, for pilot origin, you know. So you will find, in terms of how much we complain, there are maybe less complains from the guys that flying airbus over here for that reason.

In contrast to the mainstream suspicions, it is interesting to see few of international captains, especially who are from Korea and South American, held positive views on the aviation trainings of this airline and China.

> C4: This airline is improved very very good developed. Everything, the training, that's very good. Not only for language skills, for everything. You know, flying skills, communication skills, they care...we call CRM. It focus on professional communication. You have to take care of those flying skills and combine with communication. It's like not only about communication.

> C9: Here in China, they have very good training these years. Especially not only in China, it's all over the world. Because at beginning, not only Korea, not only China. But everything is changing, improved. The culture is not, you know you're not living together. You just work together with good CRM, good training, secure, everything.

4.5 Recommendations from international captains: suggestions and coping strategies

4.5.1 Suggestions on Trainings and CRM. When asking in what aspects you think need to be improved in skylette airline, C3 commented all the things should be improved but stressed CRM as the first issue needs to be progressed.

> C3: All the things. Starting from, respect the CRM. For example, I have a problem. Maybe this not comes from culture. Maybe like I ask them not smoke in cockpit, and they say yes, and when you return, they start to do what they want to again. Maybe because they used to the way of their, to do things. I don't know. The reasons I don't try to find anymore, I just adapt it. Everything is new for me, so…

One of the international captains recommended the airline should utilize international captains' experiences and specialties in training young pilots, which not only benefits young pilots, but also can enhance the connections between the international captains and the company.

> C13: The company, you taking these young pilots, twenty years old. And they have one or two years flying experience. And the flying experience they have is in an environment where everything is very highly controlled. And you have captains, pretty young. They are in their late twenties and early thirties. And you have guys like me. I've been flying for 23 years. I've been a pilot teacher for 21 years. But the company will not utilize my expertise to help these guys. They are afraid that I may make mistake while helping these guys. Now the company has very strict policy. The airplane I fly, I

> fly the airbus. The first officer is never, never allowed to take off or land the airplane. Never, never, if they fly with Chinese captains, they can take off or land, but with foreign captains, never, never. It's interesting because I've taught pilots take off airplanes for over 20 years. I can tell you right now, I can bring you to the airplane, and thirty minutes teach you how to land, safely. But the company doesn't, they don't see the benefit of utilizing a group of foreign pilots you have. Years of years experiences in flying in very challenging weather conditions, very challenging conditions in many kinds of different airplanes, to help, to help the young pilots.

> C13: The foreign will feel more connected to the company, if the company actually asks us for our help. But they don't want to. They just want us to fly the airplane, the way they want. Most of the foreign pilots I've talked to, they will feel like the company wants them here until the company starts asking them for help. I would feel much better, if the company came to me and say will you teach these pilots, will you teach these first officers, will you help our work with the pilots. What do you think we can do to make things better?

Aside from technical trainings, language trainings are recommended by some of the participants as well.

> C15: The airline start flying outside quite late and growing fast. So before that, it's kind of small airline. It's need time to change. Because people just...but they maybe they have to teach us Chinese or teach them English. We both need those. So I think it will be great to have Chinese and English lessons.

4.5.2 Coping strategies on power distance. To deal with the power distance or "the gradient" as mentioned by C1 in the following extract, few of participants mentioned their main strategies as captains are to adjust and maintain the gradient in a desirable level. In addition, nearly all international captains commented on this issue, considered themselves as open to discussions or disagreements.

> C1: It really depends on the captain, his attitudes, his expressions, and what they expect to do. And also depends on the experience. I fly with, you familiar with grading system here with the first officers here? If four, is senior, if one, just beginning. I am always with F2 first officers, and that means they don't have a lot of experience. So my command gradient has to be a little bit steeper than if I'm flying

with F4. A 4, I can trust him a little bit more to do the job. I don't have to look everything that they do. But F2 first officer I have to watch everything that they do, because they may make mistake. And it's my responsibility, so the job of the captain has to be flexible and, and the authority gradient and recognize who you are flying with a senior first officer or a guy who is very new the airplane. Things like that. So it's normally my job.

C6: I think, in our environment, it's all depends on the person who is in charge. And I will set up a situation like I'm the boss, you do what I say, don't ask questions. They will be less reluctant to say anything. But I set up an open environment, and use CRM skills to make sure we are a team. Then it will be different.

C10: Here the cultural things come to play, very specific to this part of world, the Asian culture, where they respect each other is very important to superior. So maybe the first officer not to say anything to the captain, because they are afraid of him. That might be the problem. I think, in our environment, it's all depends on the person who is in charge. And I will set up a situation like I'm the boss, you do what I say, don't ask questions. They will be reluctant to say anything. But I set up a open environment, and use CRM skills to make sure we are a team. Then it will be different. I think there is culture involved. Let's say compared to western culture, you have to respect the captain, and the captain is the boss sometimes. But I mean you can't only blame the culture. It's not the right //mhm// It's more depends on the personality of the person who is in charge of the airplane.

C4: You have to keep your authority, right? But the gradient, it could be very steep, and could be just normal. Yes, I'm the captain, I'm responsible. But if you say something, I'll appreciate what you say. But of course, you have to respect me. And if I see there is something, the gradient is changing, to the other direction. That's where maybe you have to, maybe, step in and just again, explain in a nice way.

4.5.3 Coping stradgies on language barriers. In the previous chapter of language barriers, many international captains expressed an ideal state in cockpit, is "everything is in English". However, to deal with the reality that English is not well spoked by every Chinese first officers, one of the interviewees described he asks Chinese first officers to communicate with air traffic controllers in Chinese under non-nomal flight situations, since it saves time in making decisions. Although in the end, he also stressed indirectly in the same way that the ideal situation is everyone can speak decent English.

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C19: //mhm// only a few times, I have problems. I just let the first officers to talk Chinese to the

> controllers, because it's easy for them to communicate in their own language. More quickly to make the decision, and then have them tell me what the controller says. Sometime I do that. I like everything in English, because I want to know what being said and what being told to do. So they...the controller may tell you turn right and descend to a latitude, and you get confused with the first officer tell you turn left. So it's always not difficult, not even dangerous, but not as the safest. There is a chance of a breakdown of communication. What you heard, and what you thought you heard, and what you tell me.

Another technique be recurrently referred in the regard of coping language barriers, is international captains need to slow down their speaking speeds when communicating with Chinese first officers.

> C1: In real flight. There were situations when I said something, then first officer understood something else. Or he said something, and I understood something else. But I have two or three time simulated training session with Chinese first officers. And we slow down the pace a little bit, and then it's ok. I believe that in the cases of emergency situation. We should very pay attention to make everything very slow, because if we hurry up or if we do it with a normal speed, some problem may occur. So I think the speed should be turn down a bit.

> C13: I think I've learned since I've arrived here and I've speak English much more slowly now than I did 3 years ago when I arrived here. That just helped. You can say something once slowly or you can say something rapidly five times.

One more remark about this issue is, some participants mentioned they utilize non-verbal communication tactics (e.g., observing body language, utilizing pause, or eye-contacts), which are beneficial in coping with language barriers. Moreover, some international captains emphasized the benefits of inviting suggestions from Chinese first officers as well.

> C7: I basically look at body language that works no matter in which culture. You can see if the person understands what you say or if they pay attention. If I can see that they are not paying attention, I just stop. And then they will realize I stop talking and they are like: are we finished? Well I stopped because you were not paying attention. Then suddenly they pay attention again. So I use these verbal and nonverbal communications to make sure that they pay attention, because we need to work as a

> team. And I always tell part of my briefing is did you understand everything and do you have any questions or suggestions. So I invited them, if you have any other suggestion, did I miss something, maybe something I didn't think out and you did think about it, just tell me. You know this is CRM about. So you try, but not easy.

> C10: By their eyes. And I'll try to repeat if it is an important message. If it is not, I will just let it be. It depends on the topic. If I'm asking the question, and it's not related to safety or anything, so I just...if it is safety related, I will definitely clarify, use another word.

Additionally C13 made a reference to some tactics focus on rephrasing, repeating, and asking plentiful questions in order to confirm his messages has been well received and understood by the Chinese first officers.

> C13: So I've change the way to ensure they can understand. I will have to ask questions, like I will ask the first officer: when you want to take a break, you will leave the cockpit or you will call another crew member to replace you. So my technique is to ask a lot of questions to my crew members. So I think the challenge for foreign captains, is that they always have to confirm their communicating to their crews.

4.5.4 Punishment system/culture as a potential threat to flight safety. Resulting from the data on recommendations of improving flight safety, two of international captains responded at once that the punishment system in skylette airline should be abandoned, because it constrains Chinese first officers' flying performance and in turn affects the flight safety to some extent. The possible correspondent between punishment system and flight safety were further demonstrated in the extracts as follows.

> C5: They are very afraid getting punish from the company. They are more afraid that. Because in China, there are lots of rules that if we don't comply, they get fines, they're fined. And for the Chinese pilots, it's more difficult for them, because we have only contracts with 3 years here. So after three years, we never know after that. But for them, they are committed to the company for a whole life. So

for them, they really afraid to, let's say, something happen, that will be down grade, and lots of fines. Yeah, something happens, they are really afraid. Let's say, in the flight, tiny problem can make them jumping.

C13: The other thing that hurts the company, I think it's all in china, it's not just here. It's the punishment culture. If the pilot makes a mistake early in the course of a flight, he will think I have to tell my leader my mistake, and I will get punishment, and it will cost me several thousand RMB for this mistake. Now he is in the beginning of the flight, and he is flying to somewhere else. And all the while he's flying the airplane, he's think about the mistake he made early in the flight and distract him from flying airplane properly because he's so afraid what going to happen, and he can't concentrate on the airplane. In the USA, pilots are only punished if they deliberately break the rules, if they deliberately do something wrong. If they make a mistake, no big deal. Did you learn something about it? Yeah, I learned something. Good, have a nice day. But here for some reason, your boss will lose face if he doesn't punish you. What kind of a boss are you? Your worker made a mistake, and you didn't punish him. You are a terrible boss. But here you can get trouble with all kinds of things. That restricts. That's a very huge cultural barrier for western pilots.

5 DISCUSSIONS AND CONCLUSION

5.1 Discussion

Interpretations on data of this study are evolved around research questions and will be presented in follows.

5.1.1 Perceived intercultural communication difficulties and the correlation between them and flight safety.

Research question 1 and 2 aim to find out communication difficulties experienced by international captains, and to examine the roles of those communication difficulties in cockpit in terms of flight safety.

Communication was noted by nearly all the participants as crucial in aviation. Moreover, while acknowledging the importance of communication, few of the participants further

addressed cockpit communication is the key in guaranteeing flight safety, which supports studies by NASA on aircraft accidents (Cooper, White & Lauber, 1980; Murphy, 2001) pilot error in the cockpit was more likely to reflect failures in quality of team communication and coordination than deficiency in technical proficiency. To draw attentions to a more concrete case, one of my observations from crew resting room in Skylette airline, may serve the best to illustrate the importance of communication in aviation and its' fatal role in regard of flight safety. The crew resting room is the place for crews to stay before or after their departures or arrivals, therefore crew relevant matters, like entry/ departure flight information or meeting arrangement were displayed constantly on a screen in the room. During my interview process, there was one warning about a serious accident happened with an international flight from Shanghai to Moscow. The flight route takes 9 hours and 48 minutes, the calculated fuel is 71159kg and the fuel consumption will be 53525kg. The first officer mistook the calculated fuel and fuel consumption and informed ground personnel to refuel the flight. The captain omitted the checking on fuel storage. Again another first officer who responsible for auditing ground issues, signed fuel bill and failed in finding the problem. In the preparedness of taking off, the second first officer imported all the flight data and all the three in cockpit did not verify the amount of the fuel and weight of the flight. 20 minutes after taking off, CDU (central display unit) rang alarm "use reserve fuel", the crew found the mistake finally, and decided to land in alternate airport to refuel.

The case above not only shows the significance of communication in the regard of flight safety, but also to some extent confirms the explanation on aviation accident by Gladwell (2008) that typical accident involves a series of consecutive human errors, and the complex combination of all those errors that leads to disaster. Moreover, according to Gladwell (2008) those errors are ordinarily related to teamwork and communication rather than technical maneuver. As was pointed out the essential role of communication, with respect to previous

studies, the present empirical study explores the cockpit communications in a more complex context-a cultural diverse cockpit communication between international captains and Chinese first officers in order to get a glimpse on "how pilots fail to coordinate" (Gladwell, 2008, p.184), to be specific, what sort of intercultural communication difficulties are and how they potentially influence flight safety.

Regarding the communication difficulties, the relevant interview results are range from language barriers to cultural differences, from disparities of working culture and/or attitude to organization culture, confrontation avoidance and aviation trainings (including CRM). Power distance and the consequences of it were also recurrently referred as communication difficulties by interviewees. However, considered power distance and the relationship between it and flight safety are the great focuses of the research question 3, it is better to separate them to next chapter for a deeper discussion.

To start with language issues, which in case of cockpit communication difficulties, was presented as the biggest challenge and the origin of many other difficulties by a dominant number of the international captains. Language barriers were further addressed from the perspective of flight safety, particularly under emergencies and/or non-normal situations. The cockpit communication content compromises task acknowledgement, order delivery, problem enquiry, and so on. In particular circumstances, communication loads are far more than routine. Therefore, the anxiety as one of both key factors of achieving effective communication, increases under emergencies or non-normal situations, if we refer to Stephan & Stephan's (1985) definition of anxiety: anxiety happens when people feel uneasy, tense, and worried; and when people are apprehensive about what might happen. According to some interviewees, the lacks in sufficient English skills and the tendencies to "pretend understand", accelerated by a high level of anxiety under emergencies and/or non-normal flight management situations, are big threats to flight safety through the impacting to

communication, which defined by Gudykunst (1993, 1995, 2005), is effective to the extent that the receiver decodes a meaning to the message, which is relatively similar to that the sender was intended to transmit it. In the Billings and Reynard's report (1984), over 70% of reported aircraft incidents contained evidence of ineffective communication. To exemplify this point of view, from previous literature studies, a few aircraft accidents caused, or at least happened partly due to language barriers are reported here.

> In 1993, Chinese pilots flying a U.S.-made MD-80 were attempting to land in northwest China. The pilots were baffled by an audio alarm from the plane's ground proximity warning system. A cockpit recorder picked up the pilot's last words: "What does 'pull up' mean?"
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> In 1995, an American Airlines jet crashed into a mountain in Colombia after the captain instructed the autopilot to steer towards the wrong beacon. A controller later stated that he suspected from the pilot's communications that the jet was in trouble, but that the controller's English was not sufficient for him to understand and articulate the problem.
>
> On November 13, 1996, a Saudi Arabian airliner and a Kazakhstan plane collided in mid-air near New Delhi, India. While an investigation is still pending, early indications are that the Kazak pilot may not have been sufficiently fluent in English and was consequently unable to understand an Indian controller giving instructions in English. (Aviation Today, 2004)

Fortunately, none of my participants experienced genuine emergencies. Nonetheless, the following excerpt elaborated well of how language barriers influences flight safety under emergencies.

> C7：…when it comes to emergency or problem, we have emergency response menu in the airplane, calls QRH, quick response handbook. So for example, if the engine is on fire during takeoff, we have to take action according to this book. That will be the problem, big problem starts. Because then, of course the level, the stress level increases, with any increase stress level, your IQ goes down. That's normal. Then the problem is then they forget English. What I found quite often as well is they will

> pick up the Chinese version of book and open the page and start reading from there. But I said you cannot use that menu, because I cannot check what you are doing, because I cannot read Chinese. You must use the English QRH. This is where the problem starts. The normal standard, when everything is standard, everything is OK. Then the English level is sufficient to do the job. But when anything out of the ordinary happens, or any emergency, I basically hope that's not going to happen, because you know, it will be very difficult. That's one of the thing worries me a lot over here. A lot.

Nevertheless, the interview results related Chinese first officers' English skills are varied a lot among the participants. Only one consensus reached by the participants is that the level is quite different from person to person, for the first officers who received their trainings abroad are better than those first officers graduated domestically. Regardless the mentioned consensus, their views swing from "99% is not ok" to "it fits the requirement" when reporting the English levels of their workmates. Indeed the participants of this study are from various countries with very different languages and cultures, which in turn influence their expectations, standards of professionalism and the related perspectives. It seems from the data that most of the international captains from Korea and South American claimed more positive responses than the international captains from Europe and English speaking countries. However, based on the limited samples and contextual information of this presented empirical study, I reserve my interpreting and any conclusion on the relationship between the disparities of nationalities and the subject of Chinese first officers' English levels. Though it does not mean that the varieties in countries and cultures are not significant and relevant, such variables are discussed thoroughly later in regard of culture and cultural differences, which allows us to take into account the variables and have a more nuanced and precise insight into what could make the difference between these 19 interviewees.

Furthermore, In regard to language barriers in cockpit, Chinese first officers were perceived as having the tendencies to speak Chinese with each other. The patterns of communication for aircraft captains and first officers in a commercial fixed-wing setting investigated by Foushee et al (1986) found that first officers demonstrate significantly higher rates in observations as well as statements of intent, while captains demonstrate commands

and suggestions dominantly. The different preferences of captains and first officers in using different communication types lead to a one-way flow of information from captains to first officers. Moreover, the speaking Chinese issue may cause a higher communication conflicts in cockpit as C19 described (see 4.1.1 p. 49), the Chinese first officers discuss issues in Chinese when some non-normal situations occur, which not only depict a absolute breakdown in the communication chain, but also lead to more tense between the two parties in cockpit since it may appear irreverent from the eyes of the international captains. In this regard, nearly all the international captains expressed an underlying strong wish that it will be better if everyone can speak English and/or decent English. Considering the importance of relationship between captains and first officers, it may hypothesize that "speaking Chinese" provide condition for weakening the relationship between them. The significance of the relationship between pilots and co-pilots is indirectly expressed through the study of Gladwell (2008) that the 44% of the aircraft accident involve the pilots have never flown together before.

On the other hand, in concern of effective communication and working climate in cockpit, CRM relevantly emphasized that it is every crew member's responsibility to be aware of the significance of good working climate and to put accordingly appropriate behaviors into practice, since "emotional climate" is considered to advance the effectiveness of communications on the flight deck through creating a positive tone individually and collectively ("Civil Aviation Authorities", 2006).

Concluding from the related reports to language issue, besides the low English levels of their counterparts, challenges to international captains include difficulties in interpreting accent and necessity of consciously awareness in using standard forms of English. Furthermore, consequences of language barriers described by the interviewees have seemed to be summarized by Billings and Reynard (1984) that evidences of ineffective communication contains messages that were not originated; messages that were inaccurate, incomplete,

ambiguous, or garbled; messages that were untimely; and messages that were misunderstood.

Among all the messages in cockpit, there is one type of message characterized as the hardest to decode and the easiest to refuses was chosen by first officers. The interview results show and also support other studies (Fischer & Orasanu, 1999; Foushee, Lauber, Baetge, & Acomb, 1986; Jensen, 1986; Kanki, Lozito, & Foushee, 1987) about first officers in cockpit tend to initiate and use indirect expressions and/or hint to suggesting or stating issues to their superiors. Several aircraft catastrophes confirmed the consequence of using indirect expression and/or hint can be fatal. Pointing to reasons behind the phenomenon, one way to explain this could link to cultural origins, more specifically, power distance, which will be elaborated in the next chapter.

With regard to the role of culture in cockpit communication, Helmreich and Sexton (1995) seem to summarize the general results from the interviews with the international captains when they mentioned members of different cultures have been found to vary in their attitudes toward leadership, conceptions of the organization, structure of professional interactions and to follow distinct conversational norms. Contextually, in this empirical study, the interviewed international captains consider that cultural differences results in working attitudes/motivation, professionalism, and organization lead to communication difficulties, like conflicts and misunderstandings, are significant behaviorally when problems arise that threaten safety and affectively weaken the relationships between the international captains and the Chinese side no matter the Chinese first officers or the airline (see 4.3 p.63). The findings are congruent with the study conducted by Helmreich and Wilhelm (1998) it is more difficult if two pilots from completely different cultural background in case of a flight mission that inquires effective coordination and communication, since verbal and nonverbal messages may easy to be decoded differently, especially under high-load, high-anxiety aviation working environments. Furthermore, concerning the effectiveness of communication in intercultural

context, uncertainty and anxiety theory reaffirm that individuals can communicate effectively to the extent that they are able to minimize misunderstanding by managing their anxiety and uncertainty; moreover, the uncertainty/anxiety level people experience when communicating with others of different groups is higher than when communicating with the members of their own groups (Gudykunst, 1985; Gudykunst & Shapiro, 1996; Lee & Boster, 1991; Stephan & Stephan, 1985; Word, Zanna & Cooper, 1974).

Chinese culture and Chinese first officers were described as reluctant to give negative response when mentioning issues related to culture or cultural differences (see 4.2.3 p.69). To explain this point, Fisher and Orasanu (1999) relevantly emphasized that in order to save another crew member's face, speakers tend to adopt indirect expressions which compared to situations are less face-threatening. Another perception raised up in terms of Chinese culture is the "stay up" culture, the consequence of which is considered as one of internal threats to flight safety (see 4.3.4 p.77), and has confirmed by Gladwell (2008) pilots have been awake for 12 hours or more at the time of accidents, by the same token, the circumstances when they are tired and not able to think sharply, take up 52 percent of aircraft crashes.

Indeed, the comments from the international captains are not free of contradictions, culture are perceived as decisive by some participants, also are claimed as one of minimum factors by few of the interviewees. When asking the international captains general questions about the role of culture or cultural difference in cockpit, nearly half of the international captains did not provide direct responses but more or less suggest national culture is not influential much because professional culture is highly emphasized in the field of aviation, which is contrary to the statement by Merritt "national culture exerts an influence on cockpit behavior over and above the professional culture of pilots. (2000, p.283)" However, more and more data related to culture and cultural differences were put forward during comprehensive discussions along with subjects such as working attitude/style, working culture or

organizational environment, though the terms adopted by participants were not culture or Chinese culture but Chinese “mindset”, “mentality”, or “way of thinking” ,etc. In this regard, the dominant interviewees’ discourses are generally focused on the lack in professionalism, less respect to regulations or CRM and less motivated from the side of the Chinese first officers. The three negative attributions were further cited as the challenges for the participants to cope with, and all the more, the threats to flight safety. The results at this point in accordance to what has been recurrently and conventionally assumed by previous researches (Gladwell, 2008; Merritt, 2000; Schultz, 2002; Helmreich, Merritt, & Sherman, 1996) flight accident rates vary dramatically across nations and cultures, a significant line has been drawn between third world countries and industrialized nations. Certain cultures’ communication approaches could be related to the rate of aviation accidents, likewise cultural differences impact flight safety and certain cultures attribute safety whereas some cultures, like Chinese culture, could be detrimental to flight safety at some stage.

Aside from affirming cultural differences’ impacts on flight safety, the extract below achieve a similar point of view at the end, culture does make differences in cockpit.

> C4: we have two foreign first officers here in this airline. You can see the difference, one maybe more lay back, and another more serious to authority. But I don't say the Japanese first officer will not tell me if he thinks something is wrong. I think he will tell me because it's the first officers should understand the concept of CRM. If he doesn't understand, of course, he won't say anything, because...but again, he might be afraid of losing the job or whatever. I think the cultural thing, could play a very big role.

From the above extract, it is obvious to acknowledge C4 attempted to stress other influential factors toward flight safety. It is difficult for the interviewees to make any absolute conclusions on this subject, since they themselves seem to be confused the challenges they encounter are originated from culture or personalities of individual. However, according to most of the participants there are less challenges they experience with the Chinese first officers who received trainings abroad than those received trainings in china, not only in the

aspects of language, but also in the concern of working attitude and professionalism. Hereby, based on this empirical study, one may tempted to think, culture with its competence in influencing or changing those Chinese first officers' perspectives and/or way of thinking, could be one of influential factors in flight management/safety.

Unanimously, excepting culture, additional variations like aviation progress, aviation infrastructure, aviation environment in particular areas are vary accordingly with national differences, for instance, a prevalent phenomenon was found by the participants, for the Chinese first officers, the motivation of choosing pilots as careers is not because they are interested in it but because it is a well-paid profession. One way to explain this phenomenon could be assume that commercial aviation is still a young industry, which has grew and expanded rapidly in the past 30 years. In contrast, in industrialized countries, where commercial aviation as a mature industry and pilot as a fairly old profession, more people choose to become pilots by reason of they are interested in it instead of tempted by profit. Surprisingly, the disparity in working motivation was not reported by any previous study to my knowledge, however, were seen as not only a great obstacle for the international captains in working with Chinese first officers, but also potential threat to flight safety (see 4.3.3 p. 76).

5.1.2 Power distance and flight safety.

Power distance as pointed out in interviewees' accounts and in Merrit and Helmreich's (1996) study empowers significant influence on cockpit communication through affecting the behaviours of pilots. The tendency of avoiding confrontation as described by the international captains points to Fishcher and Orasanu (1999), pilots from non-Anglo prefer authoritative superiors who take whole control of aircraft and inform other crew members what to do (see 4.2.1 p.65).

Chinese culture according to power distance index of Hofstede characterized as a high power distance culture where from descriptions of Mearns and Yule (2009) superiors are accustomed to wield and exercise power and subordinates are expected to be passive and follow superiors' orders. One may argue pilots who accustomed in working in high-technology and modernized environment may adapt to universal aviation culture rather than being impeded by national cultures. Contrary to what has been conventionally assumed, research conducted by Merritt(2000) concludes pilots perceive themselves working in autocratic environments. By examining power distance score among pilots, Merritt further implies the score is higher than Hofstede's PD country score, in other words, co-pilots are more afraid to have conflict with captains than the average level within subordinates and superiors in a country. Concerning this subject, the interview results reveals a high power distance between the international captains and Chinese first officers as well when the participants describing their first officers' behaviours. Nonetheless, many interviewees' accounts support the fact that these kinds of behaviours are not at all related to cultural origins, and also correlated to the personality of each individual Chinese first officer. Moreover, instead of detach the cultural variation; discussions on this subject are indeed necessary in order to find common and adequate ways of working together between the two parties

Chinese first officers have been perceived as having the tendencies to avoid conflict, which symbolized in their behaviours including they seldom initiate suggestions or involve themselves in decision making process even when they are invited to, they have the tendencies in pretending understand interactions with the international captains, and they tend to use indirect expressions with superiors. Considered power distance influences the degree of delegation and the level at which decisions will be taken (Mearns & Yule, 2009), one may assume that People in low rankings are easier to be involved in decision making process, which is always decentralized in high power distance cultures. The fact that an unequal power

relationship in the cockpit can be contradictory to the role as first officers—"must be able to act as both an assertive individual and as a subordinate in a team atmosphere" (Code of Federal Regulations, 2004), particularly for the first officers from cultures with a high power distance. The contrary or the "basic dichotomy" as Baron (2010) referred confirms the study of Van Dyne and LePine (see p.25) and alternatively explains the tendency of confrontation avoidance among the Chinese first officers. Raising a different standpoint to superiors can be difficult even offensive for some people; speaking up assertively in front of superiors can be offensive and unimaginable in some culture. However, not speaking up means put hundreds of lives on gambling tables. On the other hand, the different communication strategies due to power distance between the international captains and Chinese first officers are perceived as one of difficulties when some of the international captains mentioning the challenges they encountered. In this regard, the differentials reported by the participants match the argument of Weisz, Rothbaum and Blackburn (1984) confronting and speaking up one's own behalf are the normative and preferred means of addressing a problem in individualistic culture. Some of the international captains, particularly the ones origin in west or English speaking countries, seem to experience more difficulties and suffer much in their communications with the Chinese first officers. Some of the participants shown great worries on the issue the Chinese first officers never speak up their opinions, especially under the circumstances when the participants have tried their best to create an open environment. The concerns from those international captains focus on flight safety, which "might suffer from the fact that insubordinates may not have the ability to speak up when they should or are unwilling to make inputs regarding leaders' actions or decisions (Baron, 2010)."

As one of consequences of high power distance, confrontation avoidance is considered as detrimental to flight safety to a large extent from several interviewees' accounts. As one may recall, Reason (1997) mentioned the prerequisite for a positive and safety culture involves

voluntary and active participants of team members, supported by Gladwell (2008) the flight-deck is designed for operations of two people, safe operation requests cooperation of one person checking the other, or both willing to participate.

Among many air accidents, to recall one could give an insight on how cultural behavior within a flight can result a tragedy.

> The airline concluded after the accident that airplanes in perfect flight condition, aircrew without physical limitations and considered of average or above-average flight ability, and still the accidents happened…The Avianca Flight 052 January 1990 a 707 departed Colombia on track to New York. At New York there was one missed approach and then the aircraft crashed on a second attempt 15miles out from fuel exhaustion. Firstly the captain showed signs of high uncertainty avoidance and individualism, he was committed to his course of action (New York) he did not stop to consider the fuel used in the holding patterns or an alternate destination due to the weather or fuel situations. The flight engineer and First Officer showed traits of high power distance, aware of the fuel situation the engineer only communicated with the steward about the state of urgency and although the GPWS sounded 15 times during the first approach the first officer voiced no concern.
>
> The first officer sees himself as a subordinate. It's not his job to solve the crisis. It's the captain's—and the captain is exhausted and isn't saying anything. Then there's the domineering Kennedy Airport air traffic controllers ordering the planes around. The first officer is trying to tell them he's in trouble. But he's using his own cultural language, speaking as a subordinate would to a superior. He should have stated they had a "fuel emergency," which would have given them immediate clearance to land. Instead, he declared a "minimum fuel" condition. The controllers, though, aren't Colombian. They're low power distance New Yorkers. They don't see any hierarchical gap between

themselves and the pilots in the air, and to them, mitigated speech from a pilot doesn't mean the speaker is being appropriately deferential to a superior. It means the pilot doesn't have a problem and the plane ran out of fuel, crashing and killing 72 people (Gladwell, 2008).

5.1.3 Suggestions and coping strategies from international captains. Indeed, it is probably impossible to eliminate the accidents accelerated by ineffective communication, culture disparities and/or variations like power distance. However, it is beneficial to gathering suggestions and coping strategies in order to minimize risks in the context of intercultural cockpit.

Adjusting power distance and maintain it in a desirable level is a way to decrease negative attribution. The power distance or the “gradient” referred by C1 (see 4.5.2 p. 83) should not be steep in order to create and encourage open discussion and working environment. To maintain a very fine balance, proper strategies recommended from the results contain stressing team cooperation from time to time, inviting suggestions continuously. As suggested by some experienced pilots in the study of Gladwell (2008) calling each other by their first names between captains and first officers is insisted by some airline, which helps to mitigate the hierarchy relationship. However, the high power distance would not always attributable to cockpit communication, but also the interplay of organization culture. According to the literature research, the command style of captains, is based on a perception of what the organization expects from each individual crew member since the communication process profoundly influenced by organization culture. In this regard, from descriptions of the international captains, Skylette airline still maintain an autocratic preferred of management style. It is reported suggestions or voices of people in low ranking were seldom be delivered to top and considered in decision-making process. As foreign pilots, some of the participants

manifest they do not feel themselves as much connected to the company as the Chinese pilots (see 4.5.1 p. 82). To exemplify this point, a "love and hate relationship" revealed by C7 is shown in the extract below, which well represents one line of thinking on the relationship of the international captains and the company:

> C7: We have our own foreign pilot section. Sure they tell us they need us, they want us over here. The same time you also get the feeling that we are only needed for as long as they need us over here, and the moment that they don't need us over there, they will like: see you later. Don't get me wrong, because we know that we have the contract. And we are contracted pilot. We don't expect anything more. So the fact we the foreign pilot section and we have the charismas party. And they do think for us. We appreciate that. But we also know the moment they don't need us anymore, so...it's definite love and hate relationship. And you know you have a meeting with managers. We basically, where we stand, we know they want to keep us in distance. We are needed as long as they really need us. It's different. It's very different. China is very very different. I don't know other Asian countries, so I can't comment on Korea. That's you know, if you have a scale, all the people around the world are like this, but you come to china. It's suddenly, it very different. If they made a contract for us, you must stay here for ten years. And I think many people would just say: forget me. So we are pretty happy with the three years contract. It's long enough for you to see if you like this country, and then decide stay here. But it's also short enough to say if I don't like here, I have another 8 months, I'm out here.

Culture and/or cultural disparity have been seen not only as obstacle between foreign workforce and Chinese side, but also a strong correlation between cultural variations and aviation trainings, particularly CRM trainings. The effectiveness of CRM will be achieved only when an organizational culture encourages subordinates to participant properly and actively, as Civil Aviation Authorities (2006) define confirms the mentioned point of views. On the other hand, aviation trainings are influenced both in content and approach of delivery by national culture according to Merritt's (2000) argument, which is accordance to interviewees' accounts. The fact emerge from interview results CRM, as the most significant tool and resource of aviation communication is not well operated by the Chinese first officers (see 4.4 p.78). As a consequence it could be explained that CRM trainings were not well taught in both content and approach of delivery; training instructors with old and military mentalities (many of them are ex-military pilots) were considered transfer such mentalities to young generations of Chinese pilots.

The unsatisfied situation of training indirectly refer to the research of James (2002) receiving trainings in Taiwanese Air Force can be counterproductive during crisis, since Taiwanese culture emphasize rules and hierarchy. Indeed, considering the Chinese first officers who receive their trainings abroad are the group of Chinese first officers considered as “good” and/or “professional” by the participants and the disappointment shown by a few of participants when mention more and more Chinese pilots are trained domestically, one can assume the significant influential role of aviation trainings in fostering behaviors of pilots, which in turn to interplay with communications in cockpit. Concerning the impact of culture in pilots’ professional performance, Merritt (2000) believed standard CRM training fails in considering cultural differences and pilots from different cultures should be trained differently by concerning the both national culture and aviation communication repertoires, which can be achieved for instance pilots from cultures with high power distance should be encouraged in the aspects of greater flexibility, more discretionary decision-making, and greater sharing of work duties and responsibilities.

5.2 Conclusion

The presented paper has investigated intercultural communication difficulties and the correlation between it and flight safety in cockpit communication, which involves international captains and Chinese first officers. Aside of general intercultural communication difficulties, the main goal of this study also focused on power distance and the potential influence of it on flight safety. To conclude, nearly all of the international captains in this study did experience intercultural communication difficulties during their interactions with Chinese first officers in cockpit. Language barriers, culture and/or cultural disparities (including power distance), and differentials in working attitude/behaviors due to aviation trainings are main obstacles experienced by the participants during the intercultural

communications with Chinese first officers. It also turned out that such communication difficulties are significantly influential to flight safety. Indeed, the voices of the international captains have varied to a large extent. Nonetheless, a dominant number of them more or less directly or alternatively expressed their challenges when working with Chinese first officers and concerns on flight safety related to such challenges.

Thus, one may conclude the results of this paper are congruent with previous studies that state the indispensable role of culture in terms of flight safety, which in no circumstance could be overlooked. Very remarkably, though the significance of culture (particularly national culture) and/or cultural differences in aviation were emphasized by abundant studies, it is still seldom to find out researches concern on intercultural context involves diverse crew nationalities. Therefore, the presented paper fills the gap based on all the marvelous achievements of previous related studies.

When discussing the factors affecting intercultural communications, Language barrier is unanimously considered to be the main challenge for the international captains. Contrary to expectations, two subjects—"speaking native language" and "pretend understand", which never appeared in related studies came out and were claimed as significant representations of ineffective communication. "Speaking Chinese" in cockpit between two Chinese co-pilots is described as prevalent in the airline, though it is forbidden in both airline rules and aviation regulations. Aside from the fact that the low English skills of many of the Chinese first officers impede them from using English as the only language in cockpit communication, another way to explain this pointing to the circumstances when considering Chinese culture as collectivist culture where in-group people are better treated by bending rules if necessary. From the international captains' side, great understandings were shown, and many of them do not seem to be bothered under one prerequisite that task related topics should be discussed in English. However, in a small working place like cockpit, "speaking Chinese" in nature means

excluding the international captains in terms of communication. Then, it is easy to understand why nearly all the participants achieved one consensus that they prefer everyone to speak English and decent English. Therefore, In the meanwhile, great concerns on flight safety, especially under emergencies/non-normal situations, may be threatened by the issues of "speaking Chinese" and "pretend understand" also appeared recurrently from the interviews.

As it was referred previously, the perceived communication difficulties are not separated with each other. The interplays between language issue and culture aspect are frequently presented, to name a few, the tendency in using indirect expressions is closely correlated with Chinese culture, where subordinates are expected to be obedient and suggestions or disagreements are easily to be decoded as challenges. Furthermore, the issue of "pretend understand" is relevant to the Chinese culture with a high power distance and can be treated as one way to avoid confrontation. Both the presented empirical study and relevant studies revealed the damages caused by confrontation avoidance. Moreover, many aircraft accidents happened in the circumstance when the first officer failed in express his concerns as assertive as he should.

Another surprising finding in this study was how the flight operation can be affected by the motivation of pilots when they choosing their careers. The Chinese first officers who choose their professions from financial considerations, which takes up a majority of the whole group of Chinese first officers in Skylette airline, were reported as lack of professionalism and can be easily get anxious or panic when some non-normal situations happening.

What became obvious from the study was that CRM and aviation trainings were emphasized by the international captains. Moreover, one aspect in urgent need to be improved in Skylette airline is the aviation trainings, particularly CRM trainings. The content and the approach of the trainings were largely influenced by an old-fashioned military mentality due to the fact that many of the training instructors are ex-military pilots. One participant has

suggested international captains as many of them are experienced pilots should be utilized as remarkable resource in the aviation trainings of the company. Indeed, to utilize international captains as trainers seems to be not only beneficial to the outcome of trainings but also a stronger correlation can be enhanced between the international captains and the company. Though such decisions can be only made from top to down, it still worthy to be mentioned and stressed. From the suggestions and coping strategies recommended by the international captains, it is also worth noting that the punishment culture or system in the airline were perceived as detrimental to the flight management and/or flight safety. This finding was supported and emphasized in previous studies punishment culture/system intimidates pilots from reporting events/error, in other words, neglects to prevent a possible accident chain (Helmreich &Merritt, 1998). In addition to the threat errors may not be reported at the very first moment, the punishment system/culture has been discovered to distract pilots' attentions from work to worries on the consequent punishment they would receive.

Returning to the research questions, the study illustrated that intercultural communication difficulties truly being a detrimental factor of flight safety through interactions between international captains and Chinese co-pilots. The intercultural communication difficulties lie in barriers due to language, differentials of culture, and disparities of working style/attitude. Additionally it needs to be said that the exposed difficulties and/or challenges are never independent factors but interweave with each others. Furthermore, in order to minimize the risks of ineffective communication leading to accidents, corresponding suggestions and coping strategies to the mentioned difficulties were explored from the side of international captains. Sharing information and experience with those international captains who many of them had involved in aviation more than decades and had extensive overseas experiences not only facilitates effective cockpit communication but also provide guides and/or techniques to the increasing number of international pilots working in culturally diverse cockpits.

5.3 Limitation of the study and implications for further studies.

One limitation due to the scope of the study which is a small-sampled qualitative research is obvious. Thus, generalizations on intercultural communication difficulties and the correlation of them and flight safety are unable to be drawn based on this research. Notwithstanding the findings of the study are significant in offering insight into the complexity and synthesis of intercultural difficulties interweave with national culture, power distance, professionalism, and language. Data from the side of Chinese co-pilots is lack since the object of this study focuses on international captains and their perceptions on cockpit difficulties or challenges. There is, therefore, a definite need for a joint study including both the international captains and Chinese co-pilots; so comparisons on perceived difficulties can be included and all the more provide a deeper insight into the context and practical implication.

In regard of the participants who are from rather diverse countries and cultures, which largely influence their expectations on working partners, organization cultures and professionalism; so the perceptions of the participants varied and even contradictory with each other. Limited by the small scope of the research, this study reserve absolute conclusions on comparing various views from participants with different cultures, for instance, to concluding Korean captains experience less intercultural communication difficulties than American captains. Hereby, two implications for further studies to investigate in the regard of intercultural context are: one is focus on international captains with homogeneous nationality and/or culture so that comparisons on cultures can be taken easily and explored deeper; the other one is it would be interesting to include several cultures and compare them to investigate if work efficiency related to culturally closed pilots or vice verse, however, for this purpose a significant samples of participants are definitely necessary.

It needs to mention the study results were influenced, at least to some extent, by the

uneven English skills of the participants, which was noted obviously from the course of interview. Participants who from English-speaking countries or had extensive working experience in west (Europe or some English speaking countries), without restrictions of language, are more expressive than those who are from Korea or South American. In contrast, the captains from Korea or South American, at some stages, were observed as having the willingness to express but struggling with expressions in the meanwhile. Moreover, those captains who were not confident about their English tend to use simple and short expressions instead of elaborating. Hereby, the total interviewee's accounts were taken up largely by the discourses from native English speaking captains or captains with extensive overseas experiences. The results from the interviewees, especially those related to culture and/cultural differences, are lean over to western perspectives. From such concerns, one may suggest conducting interviewees in native languages of the interviewees is highly recommended.

It is a fact that females are absolute scarce in the specific occupation of pilots, this study fails to present even any voice from females. After all, regarding the minor status of female as pilots, and if we take for granted that flight deck and aviation culture is more masculine, it would be very interesting to examine female pilots' perspectives, approaches, and their difficulties and/or challenges toward cockpit communication.

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APPENDIX: INTERVIEW GUIDE AND THEMES

- Personal information of interviewees, and related working and training experiences: nationality; age; years of being pilot; years being in China; overseas working experiences; (intercultural) communication trainings received.
- General perceptions of China, the airline, and Chinese first officers
- In regard of cockpit communication, what they perceive the quantity and quality of interactions between international captains and their Chinese first officers.
- What perspectives they hold on the role of culture in their professions or in cockpit.
- How they deal with the cultures, if national cultures and aviation culture were assumed to exist in cockpit.
- Whether international captains find a need in adapting themselves to Chinese culture or their workmate's way of thinking. What they think about cultural adaptations among the three cultures.
- Perceived (intercultural) communication difficulties when communicating with Chinese first officers.
- Real cases they experienced and found to be challenging to cope with when communicating with Chinese first officers
- What they perceive the English skills of their Chinese first officers.
- Whether working with fellowmen or people culturally closed can contribute to effective communication.
- Perceived reasons behind communication difficulties or challenges.
- Perceptions on power distance/hierarchy in cockpit. Whether Chinese first officers are active enough in participating flight management or expressive sufficiently in terms of suggestions or disagreement.
- Their views on organizational culture; how international captains think about the company and the relationships of them and the airline.
- The disparities and similarities between international captains and Chinese co-pilots.
- Suggestions and coping strategies on perceived difficulties on communication, cultural differences, working attitudes/styles, and organization cultures.