COMPARISON OF CANADIAN AND KOREAN PREADOLESCENT'S ATTRIBUTION PATTERNS AFFECTING INDUCTIVE RULE LEARNING

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ABSTRACT

The primary purpose of this study was to test the attribution theory of motivation cross-culturally by comparing performance and attribution patterns on inductive rule learning in two different cultures (Canadian & Korean) within the framework of collectivism vs. individualism. Two hypotheses were formed: 1) Korean and Canadian students would show differences in attribution patterns following success or failure outcome due to different cultural emphasis. 2) Given the effort attribution of failure, Korean students would perform more accurately on the reasoning task than Canadian students, and given higher ability attribution of success, Canadian students may perform better or at least equally as well as Korean students.

A Total of 120 grade seven students (60 Canadian and 60 Korean) from a middle-class community from Korea and Canada participated in the computerized experimental tasks. The research design involved two culture groups (Canadian and Korean) and three outcome feedback (control, failure, and success) as independent variables, and the number of instances, response rate and accuracy on the inductive reasoning tasks as dependent variables.

Findings of this study indicate that Canadian culture may not be defined as more individualistic than Korean culture. The study results did not provide a clear cut distinction of collectivistic vs. individualistic cultures between Korean and Canadian cultures.

In terms of attribution patterns, both culture groups showed similar patterns, but different from Weiner's theory of motivation, not only effort but also ability attribution influenced positively the accuracy of performance on the subsequent task upon receiving failure feedback.

Given failure feedback, Korean grade seven students performed better, while Canadian counterparts' performance level on the subsequent task deteriorated with failure feedback. Further research on cross-cultural study of attribution theory has been suggested along with educational implications.

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COMPARISON OF KOREAN AND CANADIAN PREADOLESCENT'S CAUSAL ATTRIBUTION PATTERNS AFFECTING INDUCTIVE RULE LEARNING

CHAPTER I. ANALYSIS OF RESEARCH ISSUES AND PROBLEMS

The primary purpose of this study is to identify and explain elements of the cultural differences in a specific psychological domain by comparing cognitive performance in inductive reasoning as related to causal attribution patterns of children from Korea and Canada. Hopefully, the present study can generate empirical evidence bearing on validating the attribution theory of motivation cross-culturally in the context of conditional rule learning within the framework of individualism vs. collectivism.

A. Cultural Factors on Human Cognition and Motivation

Reasoning is a universal ability. However, according to the sociocultural perspective espoused by Vygotsky (1978), people in different cultural contexts reason differently because of different

sociocultural milieu, including social languages and cultural tools such as strategies for processing verbal information.

Culture influences the way humans select, interpret, process, and use information. Culture shapes what we talk about and the meaning of what we say, the way we categorise the world, the way we move about in it, and above all, our motives and intentions in doing so. It is time that culture has a place in psychological theories of cognition and learning (Strauss and Quinn, 1991).

Social scientists have proposed various definitions of culture which differ in important ways, but agree in that culture is both learned and shared (Triandis, Bontempo, Leung, & Hui, 1990). In this study, culture is defined as a set of human-made objective and subjective elements that in the past have increased the probability of survival and resulted in satisfaction for the participants in an ecological niche. Thus, it becomes shared among those who could communicate with each other, because they have a common language and they live in the same time and place (Triandis, 1994).

According to Triandis, multifaceted "culture" can be broken down into two parts, i.e., subjective culture and objective culture. Subjective culture includes elements such as categorizations, associations, evaluations, goals, social norms, roles, beliefs and values, while objective culture refers to things (e.g., tools,

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roads, and radio stations). These subjective cultural elements
include a wide range of topics, such as family roles, communication
patterns, affective styles, and values regarding personal control,
individualism, collectivism, spirituality, and religiosity
(Betancourt and Lopez, 1993), and such as causal beliefs in the
environmental events.

Triandis (1989, 1994) defined three dimensions of cultural
variation: a) the individualistic vs. collectivistic dimension, b)
the tight vs. loose dimension, and c) the simple vs. complex
dimension. He posited that cultural variation in basic values shape
the process by which certain basic aspects of human functioning
develop. A review of the literature shows that one of the most
promising dimensions identified to measure cultural variations is
individualism vs. collectivism. Triandis (1989) made a good contrast
of attributes of people in collectivist and individualistic
cultures. Individualists give priority to their personal goals over
the goals of collectives (e.g., family, co-workers), tend to be high
in distance from in-groups, think themselves of as autonomous,
independent of in-group members, tend to be low in family integrity,
and like to challenge authorities. In contrast, collectivists are
willing to subordinate their personal goals to the collective goals,
tend to share resources with in-group members based on equality or

need rather than equity, feel interdependent with in-group members, tend to have tight family tie, get involved in the lives of in-group members, and tend to obey authorities.

Some cultures impose more norms, rules and constraints on social behavior, while others are rather loose in imposing such constraints. Therefore, the first kind of cultures (tight cultures, e.g., Japan) tend to socialize their children by emphasizing the expectations of the generalized other and little deviation from normative behavior is tolerated, while the latter (loose cultures, e.g., North Americans) either have unclear norms or tolerate deviance from norms. In a tight culture, children are encouraged to behave properly, by doing what everyone else is doing, while children in a loose culture are encouraged to be autonomous and be "themselves".

Associated with higher complexity of culture are urban settlement, many levels of political integration, high population density, numerous levels of social stratification, religious and aesthetic patterns, and technical specialization. Therefore, information and industrial societies tend to have more complex cultures than agricultural societies, and hunting and food gathering societies, in that order. According to Triandis's classification of culture, *Canadian culture can be defined as individualistic, loose,*

and complex, while Korean culture collectivistic, tight, and also complex.

In collectivistic cultures, the self is defined in terms of membership in in-groups which influence a wide range of social behaviours. Emphases in collectivistic cultures are on proper behaviour (i.e., acting appropriately to other people's eyes), conformity, obedience, discipline, reliability, and persistence. Conversely, individualists are emotionally detached from their in-groups and emphasize self-reliance, self-actualization, independence, pleasure, achievement and the pursuit of their own happiness (Triandis, 1994). Thus, the study of causal beliefs from individualistic perspectives can help our understanding of achievement-related processes cross-culturally, so that a more comprehensive grasp of the dimension of individualism vs. collectivism can be facilitated.

Hofstede (1980) found that individualism is very high in the United States and the English-speaking countries in general, as well as in Northern and Western European cultures, while collectivism is high in the countries of Africa, East Asia and Latin America.

B. Background of Attribution Research

Motivational research has been of continuing interest to educational psychologists. Ball (1984) did a content analysis of articles published in the Journal of Educational Psychology from 1910 to 1980 and found that, every second decade, motivation ranked in the top half of categories commanding attention.

In the 1960s, with a more general shift in psychology away from mechanistic behaviors and toward cognition, motivational researchers began to concentrate on human rather than on infrahuman behaviour, dealing with issues associated with success and failure and achievement strivings (Weiner, 1990).

By early 1980s, there was an increasing range of cognition documented as having motivational significance, such as causal ascription (Weiner); more attention has been paid to attribution theory. Many researchers focused on the issues associated with achievement motivation, anxiety about failure, self-esteem and perceptions of control.

Weiner (1990) identified some constructs in motivational research in the 1990s as important, including the cognition of causal attributions, self-efficacy, learned helplessness, the individual differences of need for achievement, locus of control,

and attributional style. Even though a lot of attribution research has been done in the past, it was not until two decades ago that attribution was studied in conjunction with cognitive performance. A basic assumption of attribution theorists is that individuals seek to understand why events have occurred (Weiner, 1986) before further engagement in achievement contexts. This helps individuals determine their relations to those events and their expectations about future events. Overall, the findings suggest that people assume causal responsibility more for their positive performance outcomes than for negative outcomes.

The theory of attribution was first proposed by Heider (1958) who did systematic analysis of causal structure, claiming that people make sense out of a sequence of events by attributing them to certain causes, that is, factors underlying the events in the world. There are a multitude of perceived causes of success and failure. Among them, a few are dominant, including aptitude and acquired abilities, motivational factors such as long-term and immediate effort or attention and concentration, the ease or difficulty of the task, help or hindrance from others, luck, and mood (Weiner, 1986). Inasmuch as the list of conceivable causes of success and failure is infinite, it is essential to create a classification scheme or a taxonomy of causes (Weiner, 1979).

Rotter(1966) and his colleagues proposed the first dimension of internal-external classification of causality, which he labelled locus of control; causes were either within (internal) or outside (external to) the acting individual.

The second dimension of causality was suggested by Weiner and his colleagues (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971), to be stability; the stability dimension describes causes as either stable (constant) or unstable (variable) over time.

The third dimension, initially labelled as intentionality, was re-labelled as controllability by Weiner since causes could be either volitionally controllable (alterable), or uncontrollable (unalterable).

Weiner (1979) presented a theory of motivation based upon attributions of causality for success and failure by identifying the three central dimensions of causal perceptions: locus of control, stability and controllability. A fourth characteristic of causes, initially proposed by Abramson, Seligman, and Teasdale (1978), has been suggested; globality or cross-situational generality, but its status as a basic dimension remains in doubt (Weiner, 1986).

Researchers (e.g., Lee & Lee, 1983) found that in achievement-related contexts the causes perceived as most responsible for success and failure were ability (internal, stable and

uncontrollable), effort (internal, unstable and controllable), task difficulty (external, stable and controllable) and luck (external, unstable and uncontrollable). Particularly many investigations have yielded evidence concerning the contrasting·consequences of ability versus effort attributions on performance evaluation.

Recently, Weiner (1994) provided a conceptual analysis of the voluminous literature exploring social motivation and personal motivation in an effort to integrate them in a unifying theory. Weiner suggested that failure perceived by a student as caused by lack of ability or aptitude ("I cannot") resulted in performance decrements, whereas failure ascribed to the absence of effort (" I did not try hard enough") provided performance increments. Based on the findings from Meyer's (1970) study, Weiner advanced that given failure, the higher the attribution of failure to low ability, the worse the future performance, whereas the higher the effort ascription, the greater the enhancement of performance. That is, lack of effort (internal, controllable and unstable) has more positive effects on achievement striving than does lack of ability (internal, uncontrollable and stable) as the perceived cause of failure. In a broader term, causal controllability and instability, which are substantiated by lack of effort, generate better performance than do causal uncontrollability and stability, which

are embodied within low ability (aptitude). Weiner concluded that

failure due to lack of ability gave rise to affective reactions

(shame and embarrassment) which led to performance decrements, while

failure due to lack of effort raise guilt and improves performance.

Whether this integrating theory of motivation can be applied to

Korean subjects as well as to Canadian subjects is to be evaluated

in this study.

What leads individuals to adopt particular attributional style?

What underlying beliefs about oneself and the world would prime an

individual to interpret events in particular way (Dweck, & Leggett,

1988)? In an attempt to identify the source of attributional styles,

Dweck and Leggett suggest that individuals have implicit theories of

their attributes which orient them toward particular goals (e.g.,

performance goals vs. learning goals), and illustrate how these

goals set up different patterns. I argue that cultural elements,

such as social values and beliefs, might be a source of different

attributional styles along with many other factors responsible for

different attributions among people.

C. Performance Tasks for Attribution Research

Attribution has been studied in a wide range of cognitive performance tasks such as reading (Chapin and Dyck, 1976), arithmetic (Dweck, 1975), and anagrams (Andrew and Debus, 1978). But these tasks may not provide a good testing ground for the attributional theory. It is difficult to measure motivational processes that affect success on these tasks. In my opinion, tasks in attribution research should be complex learning tasks, such as reasoning which provide subjects with enough opportunities to make efforts and to reveal some tractable achievement motivational processes. However, as far as I know, only few attributional studies have been done using reasoning tasks, even though it is frequently such an important part of our daily activities as well as in scientific affairs (Lipe, 1991).

Reasoning is a fundamental function of human mind which is a universal ability across all cultures. The study of reasoning has distinguished between two basic kinds of reasoning: deductive and inductive reasoning. Deductive reasoning involves reaching a conclusion based upon assumptions (premises) that are known to be true. In contrast, inductive reasoning is the process by which we draw a conclusion based upon specific happenings. Thurstone (1938)

defined induction as finding a rule or principle. An induction is something that is likely to be true on the basis of past experience, but there is no guarantee that it will be absolutely true (Pellegrino, 1985).

Of the two types of reasoning processes, more tedious and cognitively demanding is the inductive learning task, in which the chance of observing motivational attribution processes is greater than in the deductive reasoning situation. In line with this thinking, inductive tasks are chosen for learning tasks in this study. Almost all of the studies concerning reasoning were conducted in only one culture, resulting in no consideration of cultural elements into the studies (Haygood & Bourne, 1965, Lee, 1984,1985, Margolis, 1994, and Medin, 1989). Viewing from socio-cultural perspective, human reasoning is affected by individuals' sociocultural contexts. Therefore, though reasoning is a basic universal function of the human mind, it is affected by it's environmental contexts.

D. Development of Hypothesis

As we have seen, the influence of culture is obvious in social behaviours, however, "mainstream" social psychologists where the

majority are from the "West" have largely neglected cultural factors

reflected in beliefs, values and norms in their research and

theories (Betancourt, Hardin, & Manzi, 1992), despite the fact that

70 percent of the world's population lives outside of Europe and

North America. As Triandis (1994) has claimed, one of the important

benefits from cross-cultural studies is that it is possible to

differentiate the universal, and the culture-specific aspects of

psychological phenomena. Bond (1983) has argued that the testing of

attribution models in different cultural milieus will either support

claims for universal social and cognitive processes or suggest

cultural factors that must be introduced to generalize the theories

beyond a single culture.

Some researchers have investigated the generalizability of

attribution theories to non-western cultures (Crittenden, 1991;

Stipek, Weiner, & Li, 1989). Stipek et al, based on their study

using college students as subjects, reported that there was little

difference in attribution behavior between the subjects from the

People's Republic of China and the United States. That is, the

subjects from both culture groups emphasized ability and effort as

important factors for success. In failure situations, Chinese

college students still recognized ability as well as low effort as

important factors, while American college students attributed their

failure only to low effort. The scant research on attribution in non-western cultures suggests that Western models may require modification if they are to be useful in other cultures (Bond, 1983).

Recently, there has been an increasing number of cross-cultural studies based on attribution theory. Betancourt and Weiner (1982) examined the cross-cultural generality of an attribution theory of motivation, using subjects from Chile and the United States. They found that the relationship between the perceived stability and expectancy of success was similar for both groups. But the perception of control and the effects of causal controllability were found to be culturally determined. Important elements of the culture, such as values, social beliefs, and norms were suggested to be responsible for influencing perceptions of controllability, causing cross-cultural differences (Betancourt et al, 1982, 1992). Therefore, these cultural elements should be considered in studying attribution processes.

Many of the cross-cultural studies have been conducted on attribution that contrast mainly American with Chinese or Japanese subjects (Blinco, 1992; Chiu, 1986; Crittenden, 1991; Hess, Chang, & McDevitt, 1987; Holloway, 1988; Holloway, Kashima & Triandis, 1986; Kashiwagi, Hess, & Azuma, 1986). Despite the use of subjects from

diverse cultures all around the world as the result of a recent growing interest in cross cultural studies on attribution, very few investigations can be found in the psychological literature that dealt with either Korean culture or Canadian culture (Bae, 1985; Bae, 1991; Bae & Crittenden, 1989; Kim, 1980; Crittenden & Bae, 1994; Schuster, Foesterlung, & Weiner, 1989).

Literature review reveals that people in collectivist cultures (e.g., those of Chinese and Japanese) tend to attribute success to external factors (e.g., help from others) and failure to internal factors (e.g., lack of effort). On the other hand, people in individualistic cultures (e.g., Americans) are most likely to ascribe success to internal (e.g., ability) and failure to external factors (e.g., task difficulty, and luck).

Although most attribution research done in Asia has been couched in a global contrast between Eastern and Western culture, Asian cultures should not be viewed as a unitary whole. Asian societies do exhibit cultural similarities, particularly in contrast with the United States, but not surprisingly, given their range of sociopolitical histories and circumstances, they also vary significantly (Crittenden & Bae, 1994). Therefore, in order to establish the generality of the findings about attribution theory, researchers should investigate them across different cultural

settings, i.e., different cultural groups from collectivism as well as from individualism.

According to Hofstede (1980), Koreans are characterized as collectivists along with Japanese and Chinese, while Canadians as individualists. Triandis (1989), also took Korea as an example of a very collectivistic culture in his argument. However, cultures are constantly changing and in most cases, the change is slow (Triandis, 1994). Korean culture is currently one of the fastest changing cultures in the world, owing to rapid industrialization and globalization. Korea used to be relatively isolated from other cultural influences, until she opened up her door widely to the West after the Korean War. Rapid change and progress in economic growth and technology, increased world-wide trade and travel, and open market policy from the USA introduced Korean people to an enormous exposure to western culture and life style change. This exposure to western culture has been even more dominant especially in the last 10 to 15 years resulting in more trade and travel and more western (i.e., American) entertainment in Korean culture. For example, the mass media in Korea are introducing American cultural elements to Korea as much as, if not more, to the rest of the globe nowadays. Western (mainly American) movies, sports events (NBA, NFL, Major League, PGA and Etc.) and pop music are readily available almost at

the same time as in the country they originate from. The younger

generation, in particular, seems to prefer western music over

Korean, western foods such as Mcdonald's burger and KFC's chicken

over traditional Korean snacks. There is a new word in Korean called

"Shinsedae", which means children of new generation. They tend to

think and behave differently than the traditional ways, as well as

to have different moral and social values.

One cannot help wondering whether Korean culture is in a great

transition period through leaning more toward individualistic

culture, although Hofstede (1980) and others classified Korea into

very collectivistic culture. It may be worthwhile taking into

consideration that Hofstede's survey data were collected in 1968 and

1972, nearly 30 years ago (i.e., one generation ago). Triandis

(1989) argues that *the greater the affluence of a society, the more*

financial independence can be turned into social and emotional

independence. Thus, as societies become more complex and affluent,

they also can become more individualistic. These two major

antecedents of individualism appear to fit the description of ever

so rapidly changing Korean society.

It seems that Korea is fast becoming individualistic,

nevertheless Korea still has collectivistic tendencies, and Canada

is somewhat less individualistic and more collectivistic than the

United States (Lipset, 1990). However, in this study I will use the existing classification of Korean being more or less collectivistic and Canada being relatively individualistic, which has been documented by many researchers. If this cultural distinction is valid, the noticeable differences in attribution patterns as well as in performance should be observed from samples in the two different cultural contexts. It would be of interest to see whether the findings from other collectivistic cultures (i.e., Japanese and Chinese) and individualistic cultures (i.e., American) can be found in Korean culture and Canadian culture, respectively.

Korea is a culturally homogeneous society where modesty, respect for authorities and elders, duty, order, in-group harmony, concerns for correct action and social approval, hard work, self-discipline and persistence are highly valued, resulting from traditional Confucian teachings. On the contrary, Canada is a culturally diversified society where self-assurance, self-reliance, self-actualization, independence, pleasure, achievement, competition, creativity, originality, freedom and the pursuit of individual happiness are highly valued.

Relatively little research on Korean's attributional styles has been generated by attribution theory and its findings are inconclusive. Kim (1980) found Korean adolescents to be as internal

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as their age peers in Canada. Bae & Crittenden (1989), found an attributional style that is internal and neither self-serving nor self-effacing in their study of Korean university students. However, Crittenden & Fugita (1987) have reported that Korean students are more self-effacing and pessimistic in their explanations of the events that happen to them. Yet in another cross-cultural study of five nations (Belgium, West Germany, India, South Korea, and England) with two different social class groups (tax drivers and civil servants), Schuster et al.(1989) suggest that four of the five nations (the Indian sample being an exception) did not differ from one another in their ratings of specific causes on the causal dimensions. It would not be appropriate to generalize the findings of these subgroups to the general populations of the same culture.

To date, no research attempt has been made to compare attribution patterns in the context of cognitive performances cross-culturally, although interest in cross-cultural studies on attribution has been receiving increasingly more attention. Thus, the focus of the present study is on comparing attribution patterns on inductive conditional rule learning in two different cultures, (Korean and Canadian) within the framework of collectivism versus individualism. This is to determine whether and how cultural values

affect motivational processes therefore, leading to influence

cognitive performance in reasoning. Learning tasks in this study are

presumably based on inductive rather than deductive processes. The

tasks involving inductive reasoning will be culture-fair tasks by

using geometric figures of different colors and shapes, which entail

classifications of rule instances into defining positive or negative

instance categories. These research issues can be put and

illustrated as shown in Figure 1.

Figure 1.: Diagram of Research Issues for investigation

Culture
(Canadian vs. Korean)

Attribution Patterns
(Other's and One's
own Performance)
Outcome Feedback
(Control, Failure,
& Success)

**Inductive Reasoning
Performance**
(Conjunctive & Conditional
Rule Learning)
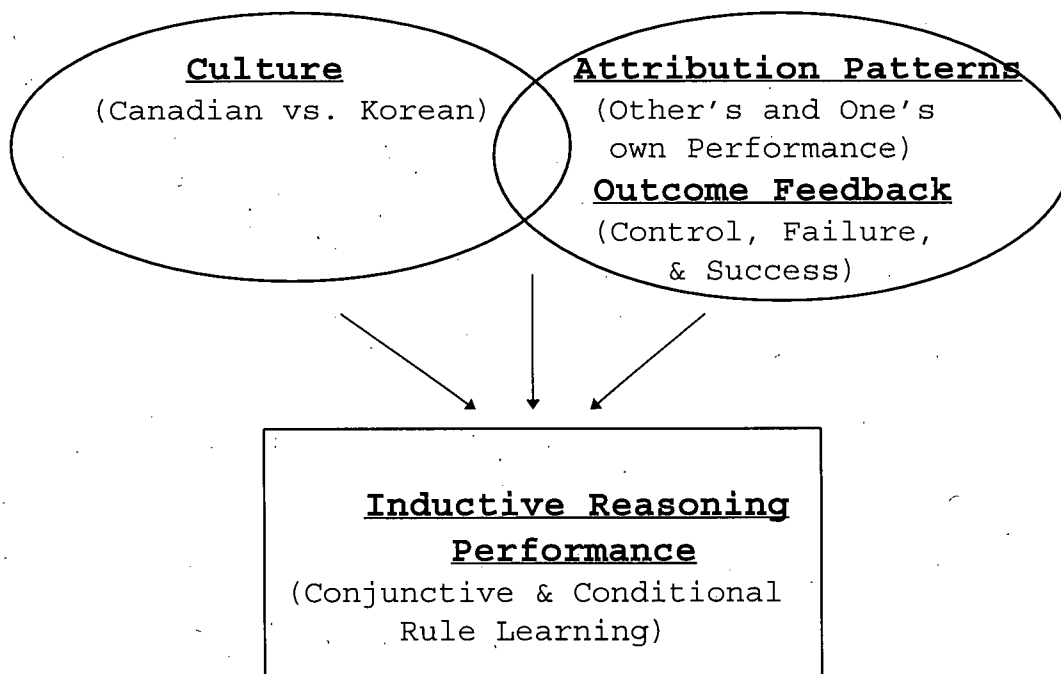
E. Summary of Statements of hypotheses

According to Triandis's (1989, 1994) and others' assertion, it is assumed that people in individualistic cultures tend to give primacy to personal goals over in-group goals, attribute their success to their own ability and emphasize equity in the distribution of resources. In contrast, people in collectivistic cultures subordinate their personal goals to the goals of in-groups, ascribe their achievement to help from others than their own ability and are willing to share resources based on equality and need. Therefore, it would be necessary to examine the validity of the assumption. Descriptively, Canadian subjects are expected to show interest in personal goals and achievements in contrast to Korean subjects who would be concerned with goals and achievements of their in-group (e.g., family, society), under the assumption that Canadian is an individualistic while Korean is a collectivistic culture.

For conjunctive inductive reasoning task, provided that the two culture groups are representative of respective populations at similar levels of schooling and socio-economic make-up of neighbourhood (i.e., both being the upper-middlle class), there may not be any significant difference in the performance level between Korean and Canadian students. It should be the case in view of the

fact that the task involved is a culture-fair task dealing with only geometric figures which carry little or no cultural biases.

Based on the literature review of attribution theory and different cultural contexts, *it was hypothesized* that Korean and Canadian subjects would show differences in attribution patterns following success or failure situations examined in the study because of the different cultural values, norms and causal beliefs. Specifically, in Korean context, cultural emphasis is placed on hard work, self-discipline, persistence, social approval and traditional inward looking of oneself when evaluating the consequences of behaviours and performances. In contrast, in Canada, emphasis is placed on ability, independence and competition.

On the basis of the hypotheses stated above, it was predicted that: 1) Korean subjects would likely attribute their success as well as failure in inductive reasoning tasks as defined earlier, to internal, controllable factors (e.g., effort), and that 2) Canadian subjects would likely ascribe their success to internal factors (ability, effort) and failure to external factors (task difficulty or bad luck). More specifically, given in the context of reasoning performance that requires subjects dealing with the influence of ability, effort, task difficulty and other uncontrollable factors, Koreans would attribute their low level performance as well as their

high level performance to lack of/ making lots of efforts. In contrast, Canadians would ascribe their low level performance to task difficulty or bad luck and high level performance to ability. Also, because of the different cultural values and cultural emphases between Korean and Canadian cultures, it was predicted that the shifts in causal attribution from others' performance (objective attribution) to one's own success or failure (self attribution) performance might occur.

Further, *it was hypothesized* that the Korean students who attribute their low performance (failure) to *lack of effort* (controllable), would perform more efficiently than the Canad0ian students who attribute the low performance to other factors than effort (e.g., ability, the task difficulty or bad luck), when performing on the conditional criterion task after getting a manipulated feedback on their own performance. It was also hypothesized that when a subject ascribes success to *higher ability*, his/her subsequent performance would not be affected much. However, a subject who attributes success to *making effort* would likely perform better on the subsequent reasoning task. Therefore, it was predicted that given the effort attribution of failure, Korean subjects would perform more accurately on the reasoning task than Canadian subjects, and that given higher ability attribution of

success, Canadian subjects may perform better or at least equally as well as Korean subjects.

CHAPTER II. METHODOLOGY

A. Subjects and Design

Subjects : A total of 120 Grade 7 students from two culture groups (Korean and Canadian) were identified in a suburban community. Each cultural group consisted of 60 children, with equal numbers of male students (30) and female students (30).

Canadian subjects in public schools were drawn from a middle-class community in Delta, British Columbia. Korean counterparts were sought from a public school in a middle-class suburban area called Jam-sil of metropolitan Seoul. Even though it is extremely difficult to ensure the same degree of manipulation of the independent variables, attempts were made to maximize similarity between two cultural groups with respect to comparable characteristics of school populations such as socio-economic status, as well as to maximize homogeneity of each group. However since all the subjects were randomly selected from school, and all the experimental tasks were carried out in a natural classroom setting to prevent students from

perceiving heightened pressure to make extra efforts, there were 2
Canadian students of Asian origin.

Research Design : The present study has two factors, culture
and outcome feedback. The first can not be manipulated but were
based on the sampling scheme to be used. The second factor is the
treatment of performance outcome feedback in terms of success,
failure and control following the experimental subjects' completion
of the first task, which could also function as a warm-up task. In
addition, the culture factor has two levels, Canadian and Korean,
and the outcome feedback factor has three levels; success, failure,
and control.

To test the hypotheses formed in Chapter I, altogether 5 sets
of tests and tasks were utilized. These tasks were provided in two
phases; the first phase being pre-experimental tests such as
objective attribution test and culture type classification test, and
the second phase being two experimental inductive learning tasks
(conjunctive and conditional) and self attribution test. All the
tests and tasks were computerized and the subject' responses and
response time were automatically recorded by computers.

Sixty students within each group were delivered randomly to one
of the three treatments, "success", "failure" or "control" outcome

feedback upon completion of the warm up task of inductive reasoning based on a bi-dimensional conjunctive classification task (i.e., Red Circle). The outcome feedback, success or failure, was given with no contingency on the performance on the first reasoning task (to be elaborated upon below).

Therefore, this research design can be described as a 2 (culture: Canadian vs. Korean) x 3 (feedback condition: success, failure, control) factorial design. The experimental design layout is shown in Table 1.

Table 1. Experimental Design

Phase I Pre-Experimental Tasks			Phase II Inductive Reasoning Tasks				
Culture	Objective attribution task	Culture Type Task	Conjunctive Non-verbal Task(Task2)	Self attribution task		Conditional Non-verbal Task(Task4)	
Canadian	60	60	60	Control	20	Control	20
				Failure	20	Failure	20
				Success	20	Success	20
Korean	60	60	60	Control	20	Control	20
				Failure	20	Failure	20
				Success	20	Success	20

Dependent Measures = (a) number of instances to criterion
(b) response rate
(c) accuracy

B. Test and Task Materials

<u>Pre-experimental Measure (Objective causal attribution test)</u>: In
order to identify each student's attributional orientation and to
check whether Canadian and Korean students have different
attribution patterns on other people's success or failure
situations, a new scale of causal beliefs which was developed and
construct-validated by Lee & Lee (1983) was used prior to the
presentation of the experimental tasks. This scale was originally
written in English and was translated into Korean along with all the
other tasks in this study, in agreement with three native Koreans
including the researcher. Back translation was not necessary due to
the straightforward nature of the tasks to be translated into
Korean. It is thought that students' individual differences in
attribution pattern would aid our understanding of the effect of
situational performance outcome feedback, when they are performing
on inductive reasoning tasks. The scale as such consisted of 12
items (situations), 6 of which provided the context of success
scenarios and the other 6 provided that of failure scenarios. The
half of the items (6) were generated from women and the other half
from men as agents of each situation to prevent gender biases from
occurring. Students' attributional patterns could be revealed by the

paired comparison method (Torgerson, 1975), from which each

student's score on the perceived four causal factors: ability,

effort, task difficulty and luck could be derived. For each

situation, four causal statements were provided corresponding to

these four salient causal factors.

For example, in one of the six Success scenario,

Q. Sally did very well on the spelling test. Why do you think this
   happened?
   a) She is good at spelling.(ability)
   b) The spelling test was easy.(test difficulty)
   c) She studied a lot for the test.(effort)
   d) She was lucky.(luck)

These four alternatives were presented pairwise in all possible

combinations yielding six paired comparisons for each situation,

altogether amounting to 72 pairs of statements. The 6 pairs were

randomly sequenced within each situation in order to minimize any

systematic response biases, and the success and failure situations

were alternated in order of presentation (Lee & Lee, 1983).

Subjects' task was to choose one of each pair of four response

alternatives (i.e., a, b, c, d above).

Culture Type Classification Test by Selected Features (Goal Pursuit,

Success Attribution, Resource Sharing): To help confirm the validity

of the assumption based on literature review that Korean culture is collectivistic while Canadian is individualistic, a culture type classification questionnaire was administered to the subjects of both cultural groups. Three critical features (goal, attribution, and resources) of culture were selected from Triandis's (1994) cultural elements to make up 3 questions of the questionnaire. Each question has four response alternatives matching 4 cultural level constructs of egocentricity representing the exclusive-self of individualism (Lee, 1994), individual, family and society. For each question item 4 response alternatives were paired in all possible combinations yielding six pairs. Subjects were asked to make preference judgements over 18 paired comparisons by choosing one from each pair.

The following is a question on Goal pursuit.

1. Jack is 19 years old and is selecting his major at UBC. He wants to go to medical school and become a doctor. Why do you think Jack wants to be a medical doctor?
    a. Jack wants to live a comfortable life in the future.
    b. Jack wants to be somebody.
    c. Jack wants to bring glory to his family.
    d. Jack wants to help those less fortunate in society.

This test was designed in English first and translated into Korean for Korean subjects. All the nouns (e.g., Jack, UBC) were replaced with appropriate Korean pronouns.

Conjunctive Inductive Reasoning Task: As mentioned earlier, all the learning tasks involved inductive reasoning rather than deductive reasoning. The reason for this was that inductive reasoning was thought to be cognitively more demanding than deductive reasoning so that it gave a better chance to observe motivational attribution processes. Also, learning tasks in this study were culture-fair tasks using geometric figures, which can be carried out without translation. The only text that needs translation was the instructions which were provided with redundancy and context to maximize linguistic equivalency between English and Korean.

The first inductive rule learning as a reasoning task was constructed by the use of tri-dimensional geometric designs. It was essentially a rule-learning variant of the Brunerian (1956) conceptual rule formation task, where two dimensions of color and form, each with 3 attribute valued, (i.e., color: red, yellow, blue; form: circle, square, triangle) geometric figures on a design would be made relevant to classifying each figure into positive (Yes) or negative (No) rule instance group. Subjects were asked to find the

rule by means of classifying the instances into two categories. The rule involved was a conjunctive (AND) one of color and form (i.e., Red Circle was a positive instance, while all the other colored shapes were negative). The rule instances were displayed continuously in a set of 18 colored shapes on computer screen on at a time with a rectangular border around each design. As soon as the subject made a response choice on each instance, the feedback was provided automatically on the screen whether they made a correct choice or not. Subjects continued to work on the task at her/his own pace until s/he reached the mastery criterion, i.e., 18 consecutive correct answers. The number of trials and the total time taken to master the rule were recorded by the computer.

This task served two purposes: (a) as a warm up task. and (b) as the basis of delivering outcome feedback (success, failure or control) for subjects' self attribution.

Self Attribution Test: One third of the subjects was given "success" (better than the average) outcome feedback, another third "failure" (below the average), and the final third "control" (just the average) outcome feedback at random with no contingency on their actual performance on the first inductive task (conjunctive rule finding).

Upon delivery of outcome feedback, a questionnaire of post-task attribution asking the subject to identify his or her own reasons for the performance outcome was administered. Specifically, four options corresponding to four causal factors for each "success"/ "failure" were provided.

a) I am always good/bad at this kind of game (ability).
b) The game was easy / difficult to me (task difficulty).
c) I have made my best effort/very little effort working on this game(effort).
d) I just happened to have played this game very well /have a bad luck with this game today(luck).

As for control group, in which each subject received a average feedback (i.e., your score is just about the average) with no contingency on the performance on the conjunctive inductive task, a different questionnaire was given to control for the effect of outcome feedback of success or failure on the consequent performance task. Specifically, four options for control group were as follows.

a) I like this game very much. ,
b) I like this game somewhat.
c) I like this game a little bit.
d) I like this game very little.

Inductive Conditional Reasoning Task: The second inductive reasoning task was constructed the same way as the first inductive reasoning

by employing two tri-dimensional geometric designs which vary in terms of color, form the figures except for that the rule students had to find was a conditional one (IF..., THEN...) instead of conjunctive one. Therefore, the task was defined as a conditional rule learning task by making color and form as relevant (i.e., IF it is Red, THEN it must be Circle). It was presented as classification of varying geometric designs into two response categories, positive (Yes) or negative (No) instance groups by the conditional rule. Each student performed on the task until s/he found the rule to help her/him get 18 correct responses in a row.

All the instructional materials for the experiment were originally written in English, then they were translated into Korean for Korean subjects.

C. Apparatus

All four tasks were computerized using Microsoft QuickBasic Version 4.5, and presented to subjects with color computers. For Korean data collection, a computer lab equipped with 30 PC terminals of 486 IBM compatible at the public school site in Seoul, Korea was used. As for the counterpart Canadian school, a computer lab at the elementary school site in Delta, BC, equipped with 15 operating

286 IBM PS 2 computers was used for the experiment. Also paper and pencil was provided to aid memory in mastering the first and the second inductive rule learning tasks.

D. Experimental Procedure

The same experimental procedure was used in each culture. As a class of students arrived at the computer laboratory at each school site, the research, and the experimenter of the same ethnic group using the same language as the subjects welcomed the subject's participation in the project. And the experimenter gave a short description of the process to the subjects and ensured that the subject had computer keyboarding skills and understanding of the task procedure in terms of concrete actions on each of inductive tasks. Prior to running experimental sessions, the new scale of causal beliefs (other-attribution) was given on computer screen individually to both cultural groups. Sixty students in each cultural groups were asked to make preference judgements over 72 paired comparisons by choosing one from each pair. This attribution test was followed by culture type classification test. No feedback was given for neither tests.

After completing the culture type classification test, each student was allowed to go on to the next task, the conjunctive rule learning task. A short instruction for the first inductive task (conjunctive rule learning task) was given just before displaying rule instances, one at a time on computer screen in their native languages, respectively. Subjects were told the number of dimensions and attributes of each dimension, and they had to develop the conceptual rule by themselves (Lee, 1985). Each subject operated the computer at her or his own pace while getting a feedback on each rule instance on the computer screen whether the answer they gave for the particular instance was the correct one or not. This procedure was continued until the subject reached the mastery criterion of 18 correct answers in a row. Subjects were encouraged to respond as fast as they could although there was no limit in time to complete the task.

Upon completion of the conjunctive rule learning task, students were provided with a feedback on the performance, i.e., above the average, below the average or just the average (success, failure or control) in a random order of three conditions. Shortly after the feedback, each subject was asked to answer a questionnaire of causal attribution on her/his own performance (self-attribution) by choosing one of four statements, each of which represented four

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dominant causes of attribution (e.g., ability, task difficulty, effort, and luck).

Finally, students were given another inductive learning task, very similar to the first one, except that this time the rule they had to find to arrive at the mastery criterion was a conditional one instead of a conjunctive one. Almost identical instruction as the one for the first inductive task was given with a caution saying that this is a slightly different and more challenging task. Subjects were notified of the terminal performance criteria, i.e., 18 consecutive correct responses on the second inductive task as well as on the first inductive task. Subjects' response time on all the tests and tasks was recorded on the computer automatically with built-in timing device. The time for completing the experiment ranged from 12 to 53 minutes. Most students took 20 to 30 minutes and the average time for finishing the experimental tasks was 24 minutes.

Subjects were also provided with a sheet of paper and a pencil to aid them in terms of memory, while trying to find a rule dealing with geometric figures in the first and the second inductive reasoning tasks.

E. Measurements and Analysis

The primary dependent variables included the number of instances required for the mastery of the conjunctive reasoning task and the conditional reasoning task as well as response rate and accuracy.

Subject's objective attribution responses were observed using the new scale of causal beliefs, and post-task self-attribution responses were described and compared across two culture groups. The effect of objective causal attribution patterns on conjunctive rule learning (Task2), and the effect of conjunctive rule learning and self causal attribution patterns on conditional rule learning (Task4) were analyzed by the analysis of variance, combined with the analysis of interaction between causal attribution scores and inductive reasoning performance, and finally analysis of covariance.

Data collected and stored in 3.5" diskettes were downloaded into 486 IBM computer for analysis. SPSS for Windows Version 6.0 was used to carry out the analysis.

CHAPTER III. RESULTS

The results of this study are presented in this chapter in six sections: (a) culture type differences of Canadians and Koreans grade 7 preadolescent, (b) predictive relations between the causal attribution and inductive reasoning, (c) cultural group differences in objective causal attribution in patterns and simple rule inductive reasoning performance, (d) shifts in causal attribution from objective to self performance attribution, (e) interaction analysis of self attribution on reasoning, and (f) outcome feedback and culture group effects on reasoning. As stated in Chapter I, the primary purpose of this study was to identify and explain elements of the cultural differences in a specific psychological domain by comparing cognitive performance in inductive reasoning as related to causal attribution patterns of children from Korea and Canada.

All statistical tests were carried out using the data collected through computerized learning program at the conventional Type I error of 0.05. Criterion measures used were the number of instances to the mastery (Inst), response rate (Resrat: measured by dividing the total amount of time to reach the mastery by total number of

instances), and accuracy (Accura: measured by dividing the number of correct responses by total number of instances). Before the analysis was made, the number of instances (Inst) and Response rate (Resrat) were transformed using the power function of "-.011", and "-1.318", respectively, to stabilize heterogeneous variances across two cultural groups. There were no gender differences in terms of simple conjunctive task and conditional task. Therefore, gender was dropped in the final data analysis.

A. Culture Type differences of Canadian and Korean Grade 7 Students

In chapter I, based on the culture classification theory proposed by Triandis et al. (1988) and Hofstede, the assumption was made that Korean culture was collective as compared to Canadian culture, which was presumed to be relatively individualistic. To help determine if the presumed differences in the culture type between Korean and Canadian cultures, a culture classification test was administered. The test contained three critical constructs of culture (goal pursuing, success attribution, and resources sharing) as identified by Triandis (1994). Each of the three constructs was converted into a question with four choice statements, each representing four cultural levels: egocentricity, individual,

family, and society. The four choices for each construct question were presented in all possible pairs producing six pairs of choices for each question. The Task was to choose one of the two statements from each pair. Within each construct item, for any one of the four given cultural levels, the maximum number of choices a subject could make was 3 and the minimum number of choices was 0. Therefore, the scores across the four levels for each construct are ipsative.

Table 2 shows the observed mean scores of the three cultural constructs (goal pursuing, attribution of success, and resource sharing) by four cultural levels.

As can be seen from Table 2 and Figure 2, there were differences between Canadian and Korean subjects in terms of the three critical cultural constructs (goal pursuing, success attribution, and resources sharing) on the four culture levels (egocentricity, self, family, and society). ANOVA test results show that Canadian and Korean subjects differed significantly in each of the three critical cultural constructs on all four cultural levels.

Specifically, Korean subjects are *more egocentric* than Canadian subjects in all three cultural constructs, i.e., in goal pursuing (1.53 *vs.* 1.43), resource sharing (0.97 *vs.* 0.83), and particularly in success attribution (1.87 *vs.* 0.58), $F_{(1,118)} = 62.344$, $P<.000$ (*MSe*=.7925). However, Canadians are *more individualistic* than

Koreans in goal pursuing (1.70 *vs.* 1.08), $F_{(1,118)}=13.304$, *p<.000*

(*MSe=.857*), but Koreans are *more individualistic* in resource sharing

(1.43 *vs.* 1.78), $F_{(1,118)}=4.989$, *p<.027* (*MSe=.737*), while both culture

groups remain the same in success attribution (·2.30 *vs.* 2.22).

Table 2. Observed Means of Cultural Orientation (Preference) Scores by Culture Groups

(N=120)

Cultural Level	Egocentricity			Individualism			Family			Society		
Context	G	S	R	G	S	R	G	S	R	G	S	R
Canadian	1.433	.583	.833	1.700	2.300	1.433	.867	1.483	2.150	2.000	1.633	1.583
Korean	1.533	1.867	.967	1.083	2.217	1.783	1.100	1.050	1.917	2.283	.867	1.333
Aggregated Mean Scores by Four Culture Levels within Each Group (Rank order of Aggregated Mean Scores)												
Canadian	2.849 (4)			5.433 (1)			4.500 (3)			5.216 (2)		
Korean	4.367 (3)			5.083 (1)			3.967 (4)			4.483 (2)		

Cultural constructs: G=Goal Pursuing; S=Success attribution; R=Resource Sharing.
Numbers in parentheses are rank orders within each culture group.

Figure 2: Cultural Preference
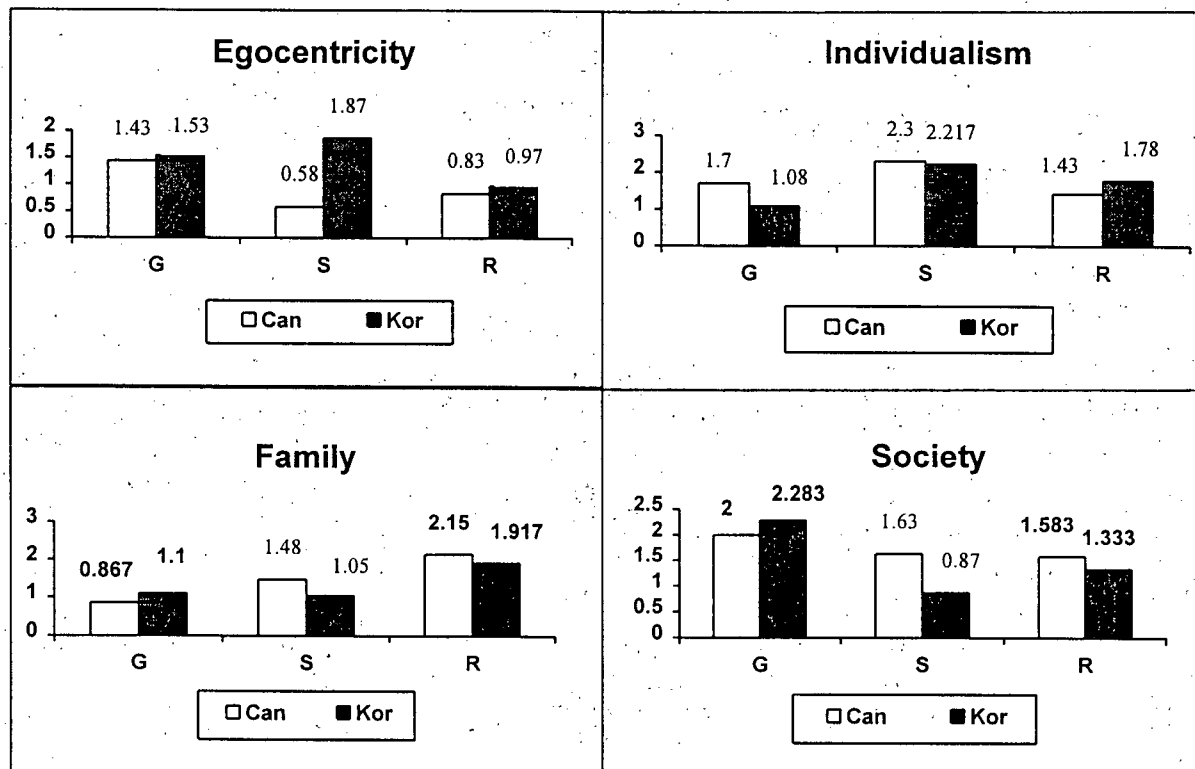
In addition, Canadians tended to be *more family-oriented* than Koreans in success attribution (1.48 *vs.* 1.05), $F_{(1,118)}=18.212, p<.000$ (*MSe*=*.626*), while both remaining about the same in goal pursuing (1.10 *vs.* 0.87) as well as in resource sharing (2.15 *vs.* 1.92). Similarly, Canadians are *more society-oriented* than Koreans in success attribution (1.63 *vs.* 0.87), $F_{(1,118)}=12.446, p<.001$ (*MSe*=*.820*), while both Koreans and Canadians remaining about the same in goal pursuing (2.28 *vs.* 2.00) and in resource sharing (1.58 *vs.* 1.33)

Findings from the culture classification test showed that Canadian subjects were more individualistic in pursuing goals and more family-and society-oriented in attributing their success than Koreans, while Koreans were more egocentric in attributing their success, and more individualistic in sharing resources than their counterparts. As can be seen from the aggregated mean scores of Table 2, Canadian and Korean subjects were, overall, similar to each other in terms of individualistic and society-orientated culture levels, with Canadian subjects being more so than Korean subjects.

B. Predictive Relations between the Causal Attribution and Inductive Reasoning

A question was posed as to whether students' pre-task causal attributions of other's hypothetical performance outcomes (success or failure) affect their performance in inductive reasoning. In order to answer this question, an interaction analysis was made of Conjunctive Rule Learning (task 2) performance (transformed, transformed Resrat2, and Accura2 as dependent variables) as a function of Culture groups as an independent variable, and 6 causal attribution scores (2 dropped to deal with the ipsative nature of the scores).

The results of the interaction analysis showed that none of the four success and four failure causal attribution scores differentially predict (interact with) Task 2 performances in terms of Inst2, Resrat2, and Accura2. Therefore, it was decided to see if objective attribution scores of others' success and failure situations could be used as statistical control variables (covariates). To this end, ANOCOVA was performed on transformed Inst2, Resrat2, and Accura2 as dependent measures, with culture groups as the independent factor, the 6 attribution scores (ability, task, and effort for success as well as for failure situations) of

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each student as covariates. Univ. $F_{(1,112)}$ tests of all regression coefficients indicated that none of the 8 attribution scores predicted simple inductive reasoning performance.

On the basis of the aptitude treatment interaction analysis as well as ANOCOVA analyses, it can be concluded that students' pre-task objective causal attribution of others' success and failure outcomes influence neither Canadian nor Korean students' simple inductive reasoning performance. Accordingly, students' objective causal attribution scores and conjunctive rule learning (Task2) performance measures were subjected to separate ANOVAs in order to determine culture group differences between Canadian and Korean children. These differences are addressed in the following section.

C. Culture Group Differences in Objective Causal Attribution in Patterns and Simple Rule Inductive Reasoning Performance

<u>Cultural Group differences in Objective Causal Attribution</u>: To determine individuals' causal attributional orientation and to check to see whether Canadian and Korean students have different attribution patterns on other people's performance situations, a causal attribution task was administered before the experimental tasks.

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It was hypothesized in chapter I that Korean students would be more likely attribute their success as well as failure to internal, controllable factors, such as efforts, due to the cultural emphasis on hard work, self-discipline and persistence. In contrast, Canadian students would ascribe their success to internal factors such as ability or effort, and failure to external factors such as task difficulty or bad luck.

The Objective Causal Attribution Task (i.e., attributing other people's success or failure situations) which was composed of 12 hypothetical situations (six success and six failure), was administered to all the subjects. For each situation, four causal choices corresponding to the perceived four causal factors (i.e., ability, task difficulty, effort and luck) were presented pairwise in all possible combinations, resulting in 6 paired comparisons. A total of 72 pairs for the 12 situation items were given for students to choose one out of each pair. Therefore, the maximum number of choices a student could make was 3 and the minimum number was 0 for each situational item. In other words, the maximum number of answers a subject could choose for any one of four given causal factors was 18, and the minimum was 0 within the six success situations (this was the case for the six failure situations as well). The observed means of 8 causal attribution scores derived are shown in Table 3.

Table 3. Observed Means of Aggregated Causal Attribution Scores by Culture Groups

		Causal Factors			
	Situations	Ability	Task Difficulty	Effort	Luck
Canadian (N=60)	Success	11.167	6.417	13.867	4.550
	Failure	9.633	8.933	13.067	4.367
Korean (N=60)	Success	10.750	6.267	14.950	4.033
	Failure	7.833	8.700	14.867	4.600

AN ANOVA procedure was run with culture group as the independent variable and the eight types of aggregated attribution scores (ability, task difficulty, effort and luck) as dependent variables.

As can be seen from Table 3, test results showed that Canadian and Korean subjects differed in causal attributions of others' success or failure situations. Specifically, given success situations, Koreans attributed others' success more to effort (14.95 vs. 13.87), $F_{(1,118)}=4.440$, $p<.037$ (MSe=7.930) than Canadians. Two culture groups did not differ significantly in ascribing others' high performance to ability, task, and luck. On the other hand, given failure situations, Koreans perceived lack of effort as the cause of low performance more than Canadians did (14.87 vs. 13.07), $F_{(1,118)}=10.574$, $p<.001$ (MSe=9.192), whereas Canadians attributed

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failure to low ability more often than Koreans (9.63 *vs.* 7.83),

$F_{(1,118)}=8.930$, $p<.003$ $(MSe=10.883)$.

Simple Rule Inductive Reasoning Performance

Simple rule inductive task (Task 2) was a culture-fair learning task. The mastery criterion was 18 consecutive correct responses. The result of this analysis will test the hypothesis formed in Chapter I regarding the first inductive Task; it was predicted that there would be no significant difference in the performance level between Canadian and Korean students since the task involved was a culture-fair task. To test this hypothesis, ANOVA was made on the basis of data on Task 2 with the number of instances (Inst2), response rate (Resrat2), and accuracy (accura2) as the dependent variable and culture group as the independent variable. Summary data in terms of means and SDs are presented in Table 3a. Transformed data values are presented in the parentheses due to the heterogeneity of observed within-group variance.

It was found from Table 3.1 and Figure 3 that Canadian subjects tried fewer instances (48.23 *vs.* 69.08), and spent more time on each instances (4.50 *vs.* 2.34 seconds) than Korean subjects in order to learn the culture fair rule.

	No. of Instances to Mastery (Inst2)		Response rate (Resrat2)		Performance Accuracy (Accura2)	
Group	Mean	SD	Mean	SD	Mean	SD
Canadian	48.233 (.960)	26.068 (.006)	4.501 (.442)	4.135 (.507)	.854	.077
Korean	69.083 (.957)	43.940 (.007)	2.341 (.607)	1.705 (.578)	.862	.072

Figure 3: Culture effects on Conjunctive Rule Learning Performance
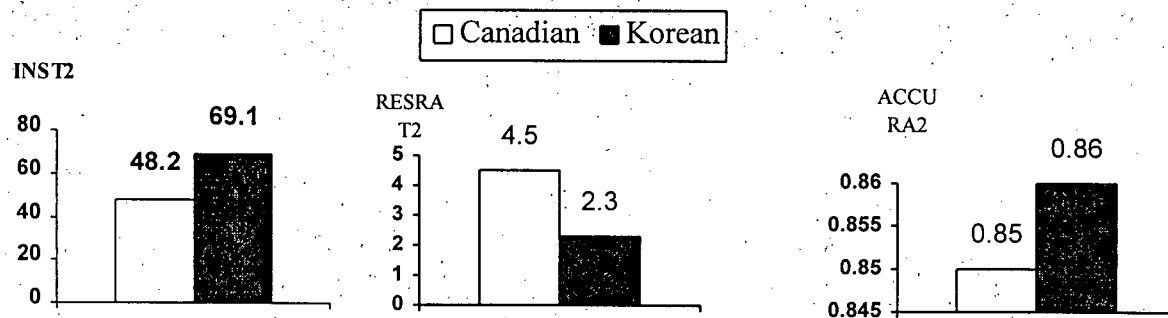
ANOVA results indicate that the difference in the number of instances is statistically significant, $F_{(1,118)}=8.011$, $P< .005$ $(MSe=.00004)$; the significance of the difference in response rate was on the borderline, Univ. $F_{(1,118)}=2.761$, $P<.099$ $(MSe=.2955)$. These p values were somewhat reduced from .002, and .000 for the untransformed original data of Inst2 and Resrat2, respectively, when transformed data for Inst2 and Resrat2 were used. In terms of accuracy, there was no difference between Canadian and Korean subjects. In conclusion, both culture groups showed more or less the

same accuracy of response in the performance on non-verbal inductive reasoning task, while Canadians tried fewer instances and spent more time per rule instance than their Korean counterparts.

D. Shifts in Causal Attribution from Objective to Self Performance Attribution

Two causal attribution tests were administered. The first one, objective attribution test (i.e., attributing others' performance outcomes) was given to all the subjects in both culture groups before Task2 (conjunctive rule learning). The second one was given only to the subjects in success and failure conditions as soon as the subjects received their outcome feedback, which was given to the subjects, independent of their actual performance levels on Task2. The subjects were asked to choose one of the four causes for their success or failure (ability, task difficulty, effort, and luck). The purpose of administering these two tests was to determine whether there was any difference in causal attribution patterns between Canadian and Korean students, as well as to see whether there was any shift in attribution patterns from when attributing others' performance to when attributing their own performance.

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A cross-tabulation of the responses to the Objective Causal

Attribution test with the responses from the Self-Attribution test

was shown in Table 4.

Table 4. Pre- vs. Post- Performance Causal Attribution Patterns by Culture Groups

Canadian Subjects' Causal Attribution Pattern										
Other people's success attribution	Personally Experienced Success					Other people's failure situation	Personally experienced Failure			
	Ability	Task D.	Effort	Luck	N		Ability	Task D.	Effort	Luck	N
Ability	0	1	2	1.5	3.5	Ability	0	0	0	0	0
Task Difficulty	1	0	0	0	1	Task Difficulty	1.5	0	0	0	1.5
Effort	1	2	9	2.5	14.5	Effort	2.5	1	9	6	18.5
Luck	0	0	0	0	0	Luck	0	0	0	0	0
N	2	3	11	4	20	N	4	1	9	6	20
Korean Subjects' Causal Attribution Pattern										
Other people's success attribution	Personally Experienced Success					Other people's failure situation	Personally experienced Failure			
	Ability	Task D.	Effort	Luck	N		Ability	Task D.	Effort	Luck	N
Ability	.5	0	0	2	2.5	Ability	0	1	0	0	1
Task Difficulty	0	0	0	0	0	Task Difficulty	0	1	1	1	3
Effort	3.5	0	10	4	17.5	Effort	0	2	10	3	15
Luck	0	0	0	0	0	Luck	0	0	1	0	1
N	4	0	10	6	20	N	0	4	12	4	20

Table 4.1 Shifts in causal attribution from Pre- to Post- performance

Pre-Task Attribution Pattern (Other's Performance)

	Canadian Students	Korean Students	Canadian Students	Korean Students
Situation	Success	Success	Failure	Failure
Expected Cause	High Ability	Lots of Efforts	Task difficulty/bad luck	Lack of Efforts
Observed Primary Cause	Lots of Efforts	Lots of Efforts	Lack of Efforts	Lack of Efforts
Observed Secondary Cause	High Ability	High Ability	Low Ability	Task Difficulty

Post-Task Attribution Pattern (One's own performance)

	Canadian Students	Korean Students	Canadian students	Korean Students
Situation	Success	Success	Failure	Failure
Expected Cause	High Ability	Lots of Efforts	Task difficulty/ bad luck	Lack of Efforts
Observed Primary Cause	Lots of Efforts	Lots of Efforts	Lack of Efforts	Lack of Efforts
Observed Secondary Cause	Good Luck	Good Luck	Bad Luck	Task difficulty/bad luck

In table 4 and 4.1, subjects' objective attribution patterns were derived from using their *most prominent choice responses* in the test. When a subject's objective attribution scores had a tie between two scores (e.g., 12 for effort, and 12 for ability), 0.5 was given to both attribution scores instead of choosing one over another.

Subjects' self-attribution patterns turned out to be different from those in the Objective attribution test. Under success conditions, Canadians (11/20) as well as Koreans (10/20) attributed their high performance to making effort. Similarly, under failure conditions, Canadians (9/20) as well as Koreans (12/20) held lack of effort as responsible for their low performance. The differences in attribution patterns between the two culture groups were too little to require any statistical test.

It was found that subjects from both culture groups attributed their success or failure differently from when attributing other people's performance. Specifically, after experiencing successful performance on the Conjunctive rule learning task (Task2), Canadian students' objective causal attribution score of effort (14.5/20) was somewhat reduced (11/20), partly giving away to good luck (4/20) as a secondary cause of success. Similar to Canadians, Korean's effort attribution (17.5/20) of others' successful performance was reduced

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to effort (10/20), and good luck (6/20), only more so compared to Canadians. After experiencing personal failure on the Task 2, Canadians' predominant effort attribution of others' failure situations (18.5/20) were spread out across effort (9/20), luck (6/20), and ability (4/20). While Koreans' attribution patterns had changed similarly to those of their counterparts, it was only to a lesser degree, i.e., objective effort attribution score (15/20) was reduced to (12/20), and luck (4/20) as well as Task difficulty (4/20)emerged as secondary causes of their personal failure on the Task2.

In sum, both Canadian and Korean children predominantly believed that effort was the primary cause to the performance outcome when attributing other people's success or failure. However, after experiencing personal success, Korean subjects gave credit to their good luck as a secondary cause more often than Canadian subjects while maintaining making effort as a primary cause to their success. After experiencing personal failure, Canadians blamed having bad luck more often than Koreans while both culture groups believed lack of effort was responsible for their failure in the simple rule learning Task.

E. Interaction Analysis of Self Attribution on Reasoning

In order to answer a question as to whether students' post-task causal attributions (i.e., attributing their own performance outcomes (success or failure) affect their performance in the subsequent inductive reasoning, An analysis of Conditional inductive reasoning (Task4) was made using Culture groups and their attribution of performance outcome (i.e., ability, task, effort, and luck)as independent variables, and transformed Inst4, transformed Resrat4, and Accura4 as dependent variables.

The results of the interaction analysis showed that none of the success and failure attribution choices differentially predict Task4 performances in terms of Inst4, Resrat4, and Accura4. In other words, Univ. $F_{(1,76)}$ test results indicated that neither two way (culture group* attribution, and feedback condition* attribution) nor three way (culture*condition*attribution) interaction was significant. Observed means of conditional inductive reasoning performance (Task4) were presented in Table 5 with transformed scores in the parentheses.

Combined adjusted means of success and failure for culture groups showed that the difference in response rate between Canadian and Korean (3.641 *vs.* 2.175 seconds) was significant, $F_{(1,76)}=10.41$,

p<.002 (MSe=.00145). That is, Canadian subjects spent more time on each instance than Korean subjects in order to learn the culture fair conditional rule.

Table 5. Means of the Number of Instances(Inst4), Response Rate(Resrat4) and Accuracy (Accura4) of Conditional Inductive Performance (Task4) by Culture Groups (N=120)

Culture Group	Task4	Control	Failure	Success
Canadian	Inst4	48.800 (1.719)	86.750 (1.860)	63.700 (1.798)
	Resrat4	3.910 (.935)	3.970 (.937)	3.313 (.929)
	Accura4	.818	.743	.803
Korean	Inst4	80.750 (1.845)	63.250 (1.785)	62.900 (1.793)
	Resrat4	2.020 (.964)	2.050 (.965)	2.302 (.955)
	Accura4	.725	.812	.776

Therefore, it was decided to see if self-attribution scores of success and failure situations could be used as statistical control variables (covariates). ANOCOVA was used, with culture groups as the independent factor, 3 attribution choices (ability, task, and effort) of each student as covariates, and transformed Inst4, transformed Resrat4, and Accura4 as dependent measures. Test results showed that attribution choices influenced the subsequent task performance in terms of accuracy, $F_{(3,73)}=2.804$, *p<.046 (MSe=.007)*. Specifically, regression analysis results indicated that *effort*, and *ability* attribution choices predicted Conditional rule learning (Task4) performance in terms of *accuracy* of responses; *beta*

coefficient=-.294, t(73)=-2.24, p<.028, beta coefficient=-.243, t(73)=
-1.97, p<.053, respectively for effort, and ability.

On the basis of the ATI analysis as well as ANOCOVA analyses, it can be concluded that students' post-task causal attribution of their own success and failure outcomes influence neither Canadian nor Korean students' subsequent conditional inductive reasoning performance under different outcome feedback conditions. However, regardless of culture group (Canadian and Korean) or treatment condition (success and failure), their *effort* attribution and *ability* attribution influence the *accuracy* of performance on the subsequent task. That is, students in both cultures who attributed their high or low performance of the preceding task to effort (internal, controllable) or ability (internal, stable) performed more accurately on the conditional reasoning task (Task4).

F. Outcome Feedback and Culture Group Effects on Reasoning

We have noted that subjects' self-attribution did not influence differentially their subsequent task performance under different feedback conditions. Knowing that, separate ANOVAs were made using transformed Inst4, transformed Resrat4 and Accura as dependent variables, and culture groups and outcome feedback conditions as

independent variables, to see whether there was any interaction

between culture group and outcome feedback. First, main effect of

culture group (Canadian vs. Korean; 3.73 vs. 2.12 seconds) was found

highly significant, only for the response rate, Univ. $F_{(1,114)}=15.089$,

$p<.000$ $(MSe=.00152)$. No main effects of the outcome feedback

conditions were found significant. As can be seen from Figure 4,

while there was no significant interaction of culture group with

control vs. success outcome feedback, there was a significant

interaction of culture group with control vs. failure feedback, for

the number of instances , Univ. $F_{(1,114)}=8.259$, $p<.005$ $(MSe=.0244)$, and

for accuracy, Univ. $F_{(1,114)}=16.689$, $p<.000$ $(Mse=.0078)$.

Based on the test results, it can be stated that Korean

subjects spent significantly less time per each rule instance of the

conditional reasoning task than Canadian counterparts. The outcome

feedback had a differential effect for Canadian and Korean subjects.

Figure 4: Joint Effects of Culture and Outcome Feedback on
Reasoning: Control vs. Failure vs. Success
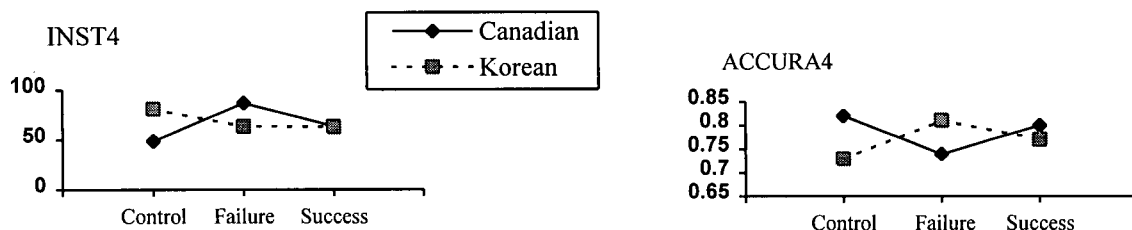
Specifically, given failure feedback, Koreans completed the inductive reasoning task with significantly fewer trials and better accuracy, as compared to the performance of control feedback condition. In contrast, Canadians needed significantly more trials to reach the mastery and their accuracy rate decreased under failure feedback compared to control group.

To examine the predictive relation between Performance on simple rule learning (Task2) and performance on conditional rule learning (Task4), ANOCOVA with 3 covariates (Inst2, Resrat2, and Accura2) was used. Regression analysis results showed that only Resrat2 of the conjunctive task (Task2) was the significant predictor for the conditional rule learning performance (Task4). Therefore, another ANOCOVA was run with transformed Inst4, transformed Resrat4, and Accura4 as dependant variables, and the earlier response rate (Resrat2) as a covariate.

Regression analysis results indicated that response rate of Task2 predicted Conditional rule learning (Task4) performance, *beta coefficient=-.337, $t_{(113)}$=-3.73, p<.000* for the number of instances to the mastery of Task4, *beta coefficient=-.562, $t_{(113)}$=-7.310, p<.000* for response rate, and *beta coefficient=.181, $t_{(113)}$= 1.99, p<.049* for accuracy. After being adjusted for Response rate of the conjunctive rule task (Task 2), the interaction effect of culture group with

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control vs. failure feedback condition on conditional reasoning

performance (Task4) remained still significant, for the number of

instances, $F_{(1,113)}=7.854$, $p<.006$ $(MSe=.0218)$, and for accuracy on

Task4, $F_{(1,113)}=16.167$, $p<.000$ $(MSe=.0077)$. This means that Canadian

students needed more rule instances with lower accuracy under the

failure feedback condition, relative to the control group; while

Korean students needed fewer instances with higher accuracy under

the failure feedback condition, relative to the control group. Also

the main effect of culture group (Canadian vs. Korean; 3.14 vs. 2.71

seconds) for the response rate was reduced, Univ. $F_{(1,113)}=4.206$,

$p<.043$ $(MSe=.0010)$. Nevertheless, culture group effect was still

significant for Response rate. No main effects of the outcome

feedback were found significant most likely due to the significant

interaction between culture group and outcome feedback condition.

G. Summary of the major findings

1. <u>Culture Type Classification</u>: Canadian students and Korean

students are similar to each other in the individualistic and

society-orientated culture levels, with Canadians being more

distinctive than Koreans. In the respect of egocentricity and

family-orientation, the two group are opposite in that Koreans are more egocentric and less family-oriented than Canadians.

2. <u>Relations between the Causal Attribution and Inductive Reasoning</u>: Both Canadian and Korean pre-adolescents' objective causal attribution patterns, given others' success and failure situations do not influence their simple inductive reasoning performance.

3. <u>Cultural Group Differences in Causal Attribution and Simple Rule Inductive Reasoning Performance</u>: First, Canadians and Koreans differed in causal attributions of others' success or failure situations. While both Canadians and Koreans perceived exerting effort was the major cause to the performance outcome, Koreans attributed other's success to effort more often than Canadians and other's failure to lack of effort more often than Canadians. In contrast, Canadians attributed other's failure to low ability more often than Koreans.

Second, the two culture groups differed in terms of Conjunctive inductive task (Task2) performance. Canadian subjects reached the mastery criterion with a fewer number of instances (Inst2) and slower Response rate (Resrat2) than Koreans, but not differently in

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terms of performance accuracy. That is, Koreans needed more rule instances to master the inductive reasoning task and responded faster than Canadian counterparts.

4. Shifts in Causal attribution from Objective to Self Attribution: Both Canadian and Korean children predominantly believed effort was the primary cause of the performance outcome when attributing other people's success or failure. However, in the self attribution test, after experiencing personal success, Korean subjects gave credit to their good luck as a secondary cause more often than Canadian subjects while maintaining making effort as a primary cause of their success. While both culture groups believed lack of effort was responsible for their failure in the simple rule learning Task, Canadians blamed having bad luck more than Koreans after experiencing personal failure. Therefore, it was concluded that subjects in two culture groups showed by and large similar attribution patterns in the objective and self-attribution tests. While both culture groups recognized effort as the key to good performance as well as to poor performance, after experiencing personal success or failure, Canadians as well as Koreans showed reduced effort attribution and increased luck attribution. This was

the case with Canadians, given failure feedback, and with Koreans,
given success feedback.

5. Outcome Feedback and Self attribution Effects on Conditional
Reasoning: Both Canadian and Korean children's attribution of the
preceding task performance outcome (i.e., success or failure) did
not influence differentially their subsequent performance on the
conditional reasoning task. But, in general, their effort
attribution definitely, and ability attribution somewhat influence
the accuracy of performance.

6. Outcome Feedback and Culture Group Effects on Reasoning: In
general, Koreans studied the examples of the conditional rule
significantly faster than Canadians. Further, Koreans needed
significantly fewer examples to mastery and their accuracy of
responses increased under failure feedback condition as compared to
that under the control condition, whereas Canadian needed
significantly more examples to mastery under failure feedback and
their accuracy level of performance decreased.

Koreans' relatively faster (i.e., impulsive response)
responding mode was observed and originated from the initial simple
inductive reasoning task performance (Task2). Thus, when their

earlier response rate was used as a covariate, it significantly predicted the number of examples to mastery, and response rate as well as accuracy on the conditional criterion task (Task4). It means that Koreans' greater need for the number of examples to mastery than Canadians stemmed from their impulsive response mode, which was evident in the preceding simple inductive task performance.

CHAPTER IV. DISCUSSION AND CONCLUSION

A. Summary of the Findings As Empirical Evidence

Culture type classification: The findings from the present study provided only partial support for the assumption that Canadian culture is relatively individualistic as compared to Korean culture, which was assumed to be collectivistic. In general, Canadians and Koreans are similar to each other in the individualistic and society-orientated culture levels, with Canadians being more so. Specifically, Canadian students showed a tendency to be more individualistic in goal pursuing, and more society-oriented in success attribution than their counterparts, whereas Koreans tended to be more individualistic in resource sharing than Canadians. In the egocentricity and family-orientation, the two culture groups are opposite in that Korean students are more egocentric, and less family-oriented in attributing their success than Canadian students.

Attribution patterns: Canadians and Koreans showed by and large similar attribution patterns in the objective (i.e., attributing

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other people's success or failure situations), and self-attribution (i.e., attributing their own experience of success or failure situations) tests.

When attributing other people's hypothetical success or failure, both culture groups perceived exerting effort (an internal, and controllable factor) was the primary cause of the performance outcome. However, Koreans attributed others' success and failure to effort more often than Canadians, while Canadians attributed others' failure to low ability (an internal, stable, and uncontrollable factor) more often than Koreans.

After experiencing their personal success or failure, while maintaining effort as a main cause of success and failure, Canadians as well as Koreans showed reduced effort attribution and increased luck (an external, and uncontrollable factor) attribution. It is noteworthy that this was the case with Canadians under failure feedback, and with Koreans under success feedback. These findings, in general, support the predictions regarding Korean students' attribution patterns, but not about Canadian students'. It was expected that Canadians would attribute their success to an internal, uncontrollable factor (ability), and failure to external factors (task difficulty, or bad luck).

Overall, both culture groups showed similar attribution patterns in that they both believed effort was the main reason for the performance outcome, whether it was others' or their own performance.

Attribution of outcome feedback and inductive reasoning: Both Canadian and Korean students' pre-task objective causal attribution patterns (i.e., attributing others' success or failure performance outcome) did not influence their simple rule learning performance. Further, students' post-task causal attribution of their own success or failure outcomes did not influence their subsequent conditional inductive reasoning performance under different outcome feedback conditions, either. However, their effort attribution strongly influenced the accuracy of performance, while ability attribution somewhat influenced the accuracy of performance on the subsequent task. In other words, students in both cultures who attributed their good or poor performance of the preceding task to effort (an internal, unstable and controllable factor) or ability (an internal, stable, and uncontrollable factor) performed more accurately on the conditional reasoning task (Task 4). These findings, overall, lend support to the predictions made in Chapter I in that subjects who ascribe their performance to effort would perform better on the

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subsequent reasoning task. However, different from what was predicted was that Canadians as well as Koreans ascribed their good and poor performance to effort.

<u>Culture effects on simple rule reasoning performance</u>: Canadian and Korean students differed in their performance on simple rule learning task (Task 2). Canadian subjects required fewer rule instances and spent more time per rule instance than Korean subjects in mastering a rule whose content was culture-fair. However, as predicted, both culture groups showed more or less the same level of performance accuracy on the simple inductive reasoning task.

<u>Culture effects on conditional reasoning performance</u>: Both culture groups' performance on the conditional rule learning task (Task 4) was similar to each other, except for the response rate. Korean subjects spent much less time (i.e., impulsive response) for each rule instance of the conditional reasoning task than Canadian counterparts to acquire a conditional rule.

Koreans' relatively faster (i.e., impulsive response) response rate on the simple rule learning task predicted the number of examples to mastery as well as response rate on the current criterion task. In other words, Koreans' greater need for more rule

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instances to mastery than Canadians stemmed from their impulsive response mode, which was more evident in the preceding simple inductive task performance.

Joint effects of culture and outcome feedback on reasoning: Joint effects of culture and outcome feedback were found on Canadian subjects as well as on Korean subjects who received failure feedback. Under failure feedback condition, Koreans learned a conditional rule with much fewer trials and better accuracy, relative to the control feedback condition. In contrast, Canadians required more trials to learn the conditional rule and their performance became less accurate after experiencing personal failure as compared to that of the control group.

B. Discussion

The results for culture type classification did not provide a clear distinction between collectivistic and individualistic cultures, as found in other typical cultures (Triandis, 1994). The assumption that Canada is an individualistic culture and Korea is a collectivistic culture was not validated from the data collected for this study. As expected, Canadians showed more individualistic

tendency in pursuing goals. However, different from what was expected was that Canadians are more family-oriented, while Koreans are as much individualistic as Canadians and more egocentric than Canadians.

Considering that the less difference was observed in cultural orientation between Canadian and Korean than what was assumed in this study, it was not surprising to find out two cultural groups showed by and large similar attribution patterns in the objective- as well as self-attribution test. Unlike the findings from cross-cultural studies with typical individualistic and collectivistic cultures (i.e., American vs. Japanese), both Koreans and Canadians recognized the importance of efforts in success situations as well as in failure situations. Those findings from other cross-cultural studies of attribution theory appear to be supported in this study, only when we consider the secondary cause of performance outcomes. That is, people in individualistic (in this study, presumably Canadian) culture tend to blame external factors for their failure (i.e., bad luck), while people in collectivistic culture (e.g., Korean) attribute their success to external factors (i.e., having good luck). But the degree of difference in attribution patterns between Canadians and Koreans was not significant.

A few plausible explanations for the findings regarding the similarities rather than differences in cultural orientation and attribution patterns between Canadian and Korean students can be sought. First, younger generations in Korea nowadays, are so much under Western cultural influences that they share similar values with other Western cultures than with traditional Korean culture which are more evident among older generations. Second, another explanation for the similarities between Canadian and Korean subjects is that grade 7 children have not yet internalized cultural norms and values, respected more highly and as desirable in a particular culture, quite as much compared to adolescents (e.g., college students) under the influence of more than readily available Western culture.

In terms of performance in inductive reasoning, data appear to support the hypothesis that both culture groups would show the same level of performance. Overall, Korean students' rather impulsive response mode seems to be responsible for the performance differences in inductive reasoning tasks between Canadians and Koreans. There also seems to be a trade-off between the number of trials and response rate. It can be argued that Korean students' faster response rate might be reflection of ever so rapidly changing culture in modern Korea. Specifically, people in Korea tend to be

very interested in getting quick results in everything nowadays. They want to make big money quickly, become richer quickly, have a country more industrialized, more globalized, and developed so fast, that many traditional values are deserted quickly, especially by younger generations who view these values as not more applicable to constantly changing modern Korean society.

According to Weiner's integrating theory of motivation (1994), lack of effort (internal, controllable and unstable) has more positive effects on achievement striving than does lack of ability (internal, uncontrollable and stable) as the perceived cause of failure. The findings of this study are compatible with Weiner's theory in that subjects who attributed their failure to effort, independent of culture groups, performed more accurately on the subsequent task. However, subjects who attributed their failure to low ability in both cultures also performed slightly more accurately on the subsequent reasoning task than subjects who showed different attribution patterns.

Data also indicate that not only effort but also ability attribution seems to have positive effects on the subsequent performance whether performance outcome is good or bad (i.e., success or failure situations). It is not clear why ability attribution somewhat improved rather than decreased performance on

the subsequent task upon receiving failure feedback. There is both less theoretical clarity and less empirical evidence regarding the effects generated when failure is due to causes that are internal yet uncontrollable, such as low ability (Weiner, 1994).

One possible explanation on ability attribution having positive effects on performance among grade 7 children can be sought out from the findings of earlier motivation studies. Namely, the extent that effort level influences ability perceptions among children can be different from young adults. It is certainly prominent among young children that effort is seen as a cause for increases in ability (Blumenfeld, Pintrich, Meece, & Wessels, 1981; Dweck, 1983; cited in Covington & Omelich, 1984). Covington & Omelich further concluded based on the findings of other research that by the high school and college years, students perceive ability as a relatively fixed, immutable entity which is not increased by effort. In such a view, since the subjects for this study were grade 7 children, it might be argued that they perceived ability as not so fixed that it had the similarly positive effects as effort attribution on their next task performance. This argument, however, needs further verification through measuring perceptions of basic causal factors (i.e., ability, effort, task difficulty, and luck) with subjects of different age groups.

Regardless of attribution patterns that subjects showed under failure conditions, Korean subjects exhibited better performance in the conditional rule learning. In contrast, Canadian subjects' reasoning performance decreased in terms of the number of trials and accuracy, after failure experience. These findings provide support for the prediction made in Chapter I, that Korean subjects would perform more accurately on the conditional reasoning task, given the effort attribution of failure. They also seem to indicate that Canadian subjects' performance in the subsequent inductive reasoning suffer from failure outcome feedback on the preceding task, while Korean subjects' performance level increased after receiving failure feedback. An explanation for these differences in performance between Canadian and Korean students after failure experiences can be traced to different cultural values between the two countries. While Canadian culture encourages children to be independent, self-reliant, self-assured and creative from the very young age, therefore, no strict sense of guidance or help from other people is as readily available as in Korean culture. In Korean cultural context, children are encouraged to be obedient, modest, self-restrained and self-controlled. Words related to self-control such as self-restraint, self-discipline, self-abandonment, self-accusation, self-actualization, self-command, self-government, self-

improvement, etc. are frequently used across all the different classes of Korean society, signifying how much emphasis is put on self-control in Korean culture. Thus, it might be the case that to Korean students, failure situations are perceived as more easily alterable or improvable if they make more efforts. Maybe, this highly valued concept of self-control in Korean culture can be accounted for the different performance between Canadian and Korean students when they deal with failure situations, despite the fact that both culture groups recognized effort as the main determinant of the performance outcome. In other words, Korean students appear to view making efforts, to certain degree, as more controllable than Canadian children do.

C. Internal Validity Of the Experimental Findings

Whenever possible, tasks for the experiments were adapted from existing tests with proven internal validity. For example, the Objective Attribution Test was adapted from a task used by the Lee & Lee (1983) in their study and was construct validated by the authors with statistical analysis (multi-dimensional unfolding technique), and the non-verbal (culture-fair) Inductive Reasoning Tasks were

also adapted from tasks employed and validated by Lee in his study (1985).

Every attempt was made to control for extraneous sources of the experiment. All tests and tasks were given on computer and all subjects were provided with the same instruction. All the subjects were at the same grade level, i.e., grade 7 and they were randomly assigned to three conditions (success, failure or condition). Therefore, if there were any individual differences between groups prior to the experiment, they should be randomly distributed across three condition groups. However, since the experiment was carried out in an actual classroom settings in two different countries, there was a potential threat to the internal validity of the findings. Differences in learning environments, such as classroom atmospheres, classroom sizes, between Korean and Canadian groups, might have affected students' performance. In addition, 8 to 10 Canadian subjects had difficulty running the experimental diskettes because of difficulty adapting computer disk operations to the network operation environment, during the presentation of the causal attribution task. Since the only initial reading of the first attribution task was involved, no serious flaws crept into collected data. This, however, might have affected the level of concentration and enthusiasm for the subsequent tasks. The two samples were drawn

from the two cultures based on the comparable similarities (e.g.,

middle class suburban community with small or no minority

populations in a metropolitan city) observed by the researcher.

However, we can not completely rule out background characteristics

of students in terms of socio-economic level as causes of the

observed group differences in reasoning performance between

Canadians and Koreans since we did not directly assess them in other

ways.

D. Generalizability of the Present Findings

The present cross-cultural study was conducted using grade 7

subjects from two schools which served middle class suburban

communities, i.e., Delta, B.C. from Canada and Jam-sil, Seoul from

Korea. The ideal experiment would involve measuring the achievement

of children who are randomly assigned to Korean or Canadian schools,

while holding all other variables constant. Strictly speaking, there

is no way of getting such a representative sample of each culture.

Therefore, as Mayer and Tajika (1993) put it, until someone invents

a foolproof procedure, there must be room for a diversity of

methodological and theoretical approaches in cross-cultural

research. With this note in mind, the findings of this study can be

generalized to a subgroup culture of grade 7 students from middle class suburban communities in Canada and Korea. The findings of this study are compatible with other research which reported that Korean college students' attributional style was relatively internal (i.e., attributing good and bad events to internal factors). Also it was neither egotistic (i.e., internalizing their success and blaming their failure on external causes) nor self-effacing (i.e., attributing good events to external, bad to internal factors) with a slight tendency to offer self-effacing accounts after success (Bae, 1991; Bae & Crittenden, 1989; Crittenden & Bae, 1994). The findings of this study are also similar to Kim's (1980) study in that Korean adolescents were found as internal as their age peers in Canada. However, Triandis's (1989, 1994) conceptualization of individualism vs. collectivism model was not supported by data from this study.

E. Conclusion

In the present study, data were collected to see whether there is cross-cultural differences in attribution patterns of performance outcomes as well as in inductive reasoning performance between Canadian and Korean students, due to different cultural elements such as values and norms within each culture. Several conclusions

follow from the analysis of the results. First of all, the findings

of this study indicate that we can not claim Canadian culture is

more individualistic than Korean culture. In some aspects (e.g.,

goal pursuing), Canadians are more individualistic, but in others,

Koreans are more egocentric, as opposed to the prediction derived

from Triandis's culture classification theory. This may be the

result of the strong Western influence in modern Korea.

Secondly, both culture groups showed similar attribution

patterns, but, different from Weiner's theory of motivation, not

only effort but also ability attribution influenced positively the

accuracy of performance on the subsequent task. It is not clear why

ability attribution somewhat improved performance on the subsequent

task upon receiving failure feedback in this study.

Thirdly, Korean grade 7 students performed better under failure

conditions, while Canadian counterparts' level of performance on the

subsequent task deteriorated with failure feedback. I argue that

this might be caused by different emphasis on different cultural

values in the two cultures (e.g., strong emphasis on self-control in

Korean culture).

It is difficult to generalize these empirical findings to other

subgroups in the same cultures. Nevertheless, based on the

population from which I have drawn samples, I conclude that the

findings of this study can be generalized to grade 7 students from middle-class suburban communities in a metropolitan city in two cultures (i.e., Canada and Korea). However, since little is known about Korean and Canadian students' attribution patterns, more research of attribution theory should be conducted using different age groups of both culture groups.

As useful as Triandis's individualism vs. collectivism culture classification theory is, the theory did not provide a clear-cut distinction between Korean and Canadian cultures. With rapid social and economic changes around the world, especially in Asian countries, cross-cultural researchers should incorporate measuring current cultural levels of the particular cultures of interest, rather than base their study on the existing distinction between individualistic vs. collectivistic cultures. Because the cultural distinction may not be valid anymore for the culture a researcher is studying, especially not for certain subculture groups (e.g., younger generations). For example, we could have obtained quite different results from this study, if the study was carried out with subjects from older generations or in a remote rural area rather than in middle class urban area. Also, if the culture classification theory is to be useful for all culture, it may need some modification or add some aspects which can capture newly created

differences in values and perceptions across generations and across

societal sector with fast changing culture. It is noteworthy that

Hofstede's (1980) data were collected in a multinational corporation

in about 30 years ago, and personnel of the multinational company

may not be representative of other members of the culture.

Further research on cross-cultural study of attribution theory

needs to be done in order to increase the generalizability of

attribution theory. It would be interesting to see whether similar

results to this study can be obtained from studying other

collectivistic and individualistic cultures (e.g., Vietnam vs.

Britain). In addition, further studies on the attribution theory

with different developmental age groups (preadolescents vs.

adolescents) within a culture or cross-culturally may shed some

light on clarifying and refining the generality of the attribution

theory of motivation.

F. Educational Implications

The causal attribution process appear to be a significant

determinant of learning and performance in the classroom (Weiner,

1972). The findings from the study imply that failure outcome

feedback tends to deteriorate Canadian students' task performance,

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while it has a positive effect on Korean counterparts. According to Weiner (1994), communications of anger and punishment from others will prove more effective than sympathetic feedback and the absence of reprimand. Maybe, teachers in Canada can help students learn better by giving negative feedback as well as positive feedback in classroom depending on their performance levels, instead of providing positive feedback on the performance all the time.

There are increasing demands on educators to produce higher levels of literacy and mathematical skills for the children of future high tech generations. Simultaneously, educators will have to deal with the unprecedented degree of diversity in classrooms due to globalization. Educators in B.C. face the same challenges now and in the years to come. The findings from this study can help teachers develop curriculum for the rapidly increasing number of Korean children whose parents recently immigrated to Canada. Education is valued as one of the most important things in life among Koreans. When they immigrate to Canada, these recent immigrants feel completely helpless as parents because of language barriers and cultural differences. Informed teachers with the aid of culture-sensitive curriculum, may help otherwise overwhelmed new immigrant Korean children learn better in their new environment.

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APPENDICES

APPENDIX A: Objective Causal Belief Scale

1. Sally did very well on her French spelling test. Why do you think she did well?
   a. She is good at spelling.
   b. The spelling test was easy.
   c. She studied a lot for the test.
   d. She was lucky.

2. Ken did very poorly on his math test. Why do you think he failed?
   a. Ken was not good at math.
   b. The math test was too difficult for everyone.
   c. Ken was careless.
   d. Ken just had bad luck that day.

3. Why did the instructor say Tony's work was very good?
   a. He is a very bright student.
   b. The homework problem was easy.
   c. He worked very carefully on his assignment.
   d. The instructor was in a good mood.

4. Anne got a poor grade on her report of modern history. Why do you think that the instructor didn't like her paper?
   a. Anne isn't very good at writing reports.
   b. The assignment was too difficult for everyone.
   c. Anne didn't spend enough time working on the report.
   d. The instructor was in a bad mood.

5. Nancy solved a difficult math problem. Why do you think she solved it?
   a. Nancy is good at solving math problems.
   b. The problem in fact was a very easy one.
   c. She worked on it for a long time.
   d. Just by chance, she found the solution.

6. Bill could not solve a new puzzle. Why do you think he couldn't do it?
   a. He is not good at solving puzzles.
   b. The puzzle was a very difficult one.
   c. He gave up too soon.
   d. Some of the puzzle pieces were missing.

7. Why do you think that John is the captain of the baseball team?
   a. He is the best baseball player on the team.
   b. It is his turn to be the captain.
   c. He practises a lot to improve his baseball skills.
   d. The coach likes him.

8. Kelly's friend was climbing up a tree and fell down. Why do you think this happened?
   a. She is not good at climbing up a tree.
   b. It was difficult to climb because the tree was very slippery.
   c. She was not very careful that time.
   d. It was an accident.

9. Suzie's college band won the first prize in the festival. Why do you think they were the winners?
   a. All band members are good musicians.
   b. The other bands weren't very good.
   c. All the band members practised very hard.
   d. The judges just happened to like the song they played.

10. Scott's hockey team lost their last game by a score of 12 to 2. Why do you think this happened?
    a. They are not a very good team.
    b. The other team is the best in the league.
    c. They did not have enough practice before the game.
    d. They had bad luck.

11. David's college basketball team won a close game last week. Why do you think they won the game?
    a. The coach gave them very good training.
    b. The other team was not a very strong team.
    c. The team practised a lot before the game.
    d. They were lucky.

12. Jane's college band played very poorly at the Christmas concert. Why do you think this happened?
    a. Most band members were not good musicians.
    b. They were playing a very difficult piece of music.
    c. They did not practise enough before the concert.
    d. Some of the band members were not feeling well that day.

APPENDIX B: Culture Type Classification Test

Instruction: Before you work with a couple of learning games, we'd like you to answer some questions. Answering them will take you several minutes to complete, depending on your response time. You will be asked to express your opinion about paired statements. All you have to do is to indicate your preferred choice by pressing a required key on the computer keyboard. Are you ready?

Statement 1: Jack is 19 years old and is selecting his major at UBC. He wants to go to medical school and become a doctor. Why do you think Jack wants to be a medical doctor?

    a. Jack wants to live a comfortable life in the future.
    b. Jack wants to be somebody.
    c. Jack wants to bring glory to his family.
    d. Jack wants to help those less fortunate in society.

Statement 2: Jane is a second-year college student majoring in journalism. She was recently nominated as the Young Writer of the Year by the Canadian Young Writer's Association. What do you think is the most important factor for Jane's success?

    a. Jane always wanted to defeat others and be recognized as the best.
    b. Jane spent a lot of time practising story-writing.
    c. Jane's family supported her.
    d. Jane's instructor did a good job teaching her.

Statement 3: John is a first-year student at SFU. His mother is working two jobs to support his education. He just won $10,000 cash in a random lucky draw organized by a major car company. What do you think John should do with the money?
    a. John should keep the money to himself and spend it on what he had always wished for.
    b. John should open a personal bank account and deposit the money under his name.
    c. John should give half of the money to his mother.
    d. John should give half of the money to the Disabled Children Society.