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DOES AGE MATTER MORE IN KOREA?: A CROSS-CULTURAL STUDY ON THE KÖHLER MOTIVATION GAIN EFFECT

By

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ABSTRACT

DOES AGE MATTER MORE IN KOREA?: A CROSS-CULTURAL STUDY ON THE KÖHLER MOTIVATION GAIN EFFECT

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The present study examined a factor that could contribute to cross-cultural differences in group performance (viz., age composition between group members) within one group motivation-gain paradigm (viz. the Köhler motivation gain, where a low-ability team member works harder in a team where they are the "weak link" than if s/he were working alone; Hertel, Kerr, & Messé, 2000a). Based on a previously conducted cross-cultural study (Seok, Messé, Hahn, & Kerr, 2006) which found age composition between group members (i.e., working with younger partner vs. older partner) might have different meaning in Korean culture compared to American culture, I conducted an experiment which extended the results of the previous study in two ways: 1) it collected actual performance data rather than respondents' intention to perform, as in the prior study, and 2) it competitively tested alternative explanations for an age-of-partner effect in Korea. Both the performance results and subjective ratings of the present study suggested that the age effect in Korea could be explained in terms of participant's felt responsibility in the task performance situation (i.e., Koreans felt more responsibility for the outcome of their group when they worked with a younger partner than an older partner). These results were discussed in terms of the social psychological implications of the deeply rooted Confucianism in Korean society (Koh, 1996). Implications of the results for understanding existing cross-cultural theories were also discussed.

To my parents, Doo-Ryoung and Jung-Ae, my wife, Ji-Hyeong, and my daughter, Ena for their unconditional support and love.

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Chapter 1

INTRODUCTION

In recent decades, many social psychologists (e.g., Fiske, Kitayama, Markus, & Nisbett, 1998; Segall, Lonner & Berry, 1998; Smith & Bond, 1998) have noted profound effects of culture on human behavior, and they have emphasized that the consideration of cultural influence within the domain of social psychology would be vital for a full understanding people's social behaviors. Although these cultural considerations have stimulated active research programs in many areas of social psychology (e.g., self, social cognition), relatively few cross-cultural studies have been conducted in the group performance area. And, with respect to group motivation gains – instances of group members working harder in a group than in comparable individual performance contexts – to our knowledge, the only extant cross-cultural studies are a pair of as-yet-unpublished studies (an experimental and a scenario study) from our laboratory (Seok, Messé, Hahn, & Kerr, 2006; these are described in detail below).

Considering the rapid globalization of the world's economy in recent years, accumulation of knowledge about the effects of culture on performance in teams or groups has become more important. For example, increased workplace diversity due to immigration or multi-national enterprises increasingly brings us in contact with many people from different cultural and ethnic backgrounds. Also, thanks to the rapid development of Internet, we now can work together with any one in the world as a virtual work team member wherever we live (Bell & Kozlowski, 2002; Hertel, Geister, & Konradt, 2005; Hertel, Konradt, & Orlikowski, 2004). To deal with such recent changes

in the workplace, clearly, it would be useful to have more focused empirical research on the relation between culture and team or group work.

The present study examined factors that could contribute to cultural differences within one group motivation gain paradigm – the Köhler motivation gain (Hertel, Kerr, & Messé, 2000a; Köhler, 1926, 1927; Stroebe, Diehl, & Abakoumkin, 1996; Witte, 1989). First, the literature on Köhler motivation gains effects is briefly reviewed in the first section of this introduction. Then I analyze how culture could moderate the Köhler effect based on two previously conducted cross-cultural studies which compared one East Asian culture (i.e., Korea) with American culture (Seok, et al., 2006, an experimental and a scenario study). In the scenario study, Seok and his colleagues (Seok., et al, 2006) found that the degree of family relationship between group members (i.e., working with my brother vs. a stranger) and age difference between group members (i.e., working with a partner at least 6 years younger partner vs. at least 6 years older) have different meanings and effects in Korean culture compared to American culture. I attribute these results to the deeply rooted Confucianism in Korean society (Koh., 1996). Finally, I present the results of a new experimental study which extend the results of the scenario study where performance intentions were the primary dependent variable to the observation of actual performance in Korea and the US.

Köhler motivation gains effects

Classic findings. About 80 years ago, German psychologist Otto Köhler (1926, 1927) conducted a series of applied psychological studies to explore optimal group compositions for certain group working conditions. As a method of his experiment (Köhler, 1926), he asked members of a rowing club in Berlin to do standing curls for as

long as possible lifting 75cm from the floor. In the individual condition, the participant worked with a bar linked through a series of pulleys to a 41 kg weight. In the dyad condition, the weight became 82 kg, and two members lifted their weight together. One particularly noteworthy feature of this task is that in the group trials (i.e., in the dyad trials), after the weaker member had stopped, it was nearly impossible for the stronger member to continue to work. That is, considering that each performer was holding one side of the bar with both hands, it was extremely difficult for one member to do standing curls lifting the 82kg weight alone, regardless of how strong he was. According to Steiner's (1972) taxonomy of task demands, this type of activity can be classified as a *conjunctive task* because, in performing it, a group cannot do better than its least capable member. Using this conjunctive task, Köhler found that the average dyads worked better than one would expect based on the individual scores of the two group members. For example, if the stronger member had an ability to do standing curls 20 times with a 41kg weight individually and a weaker member had an ability to do standing curls 10 times with the same weight individually, their dyad performance with a 82kg weight should be 10 times because of the conjunctive nature of the task (i.e., the weaker member defines the score of the dyad trial). However, for this hypothetical example, the dyad that should have performed no more than 10 times may have actually worked 13 times. This extra performance gain (i.e., extra 3 times) clearly demonstrated that the weaker members of Köhler's dyads pushed themselves beyond their usual performance limits (see Hertel et al., 2000a; also see Witte, 1989). In the follow-up study using a different apparatus (i.e., winch), Köhler (1927) found the same results. Later, this phenomenon was termed

Köhler motivation gain effect by modern social psychologists (Hertel, Kerr, Scheffler, Geister, & Messé, 2000b).

In addition to the above general motivation gain effect, the second noteworthy result of Köhler's (1926, 1927) research was that when the discrepancy between the capabilities of the two dyad members was *moderate* (i.e., when working individually, the weaker member had about 70% of ability as that of the stronger member, or alternatively, the stronger member was about 1.4 times as strong as the weaker member) the motivation gains were maximal. In contrast, motivation losses occurred when group members were nearly equal, and smaller motivation gains were found when the discrepancy between members was greater. This moderation of the overall effect was later termed the *Köhler discrepancy effect* (Hertel et al., 2000b).

Initial replications and moderating factors. Inspired by the Köhler's (1926, 1927) seminal work on group motivation gains, several subsequent studies have been conducted and consistently found reliable motivation gains for weaker coworkers when they performed as a team member under conjunctive task demands (Hertel, et al., 2000a; Kerr, Messé, Park, & Sambolec, 2005; Lount, Messé & Kerr, 2000; Messé, Hertel, Kerr, Lount & Park, 2002; Seok, 2004; Stroebe, Diehl, & Abakoumkin, 1996). In most of these studies, the experiment usually used some kind of persistence task to simulate Köhler's task. In several of these studies, participants were instructed to hold a weight with their arm horizontally above a thin thread cord (strung between supports) or an electric-beam for as long as they felt comfortable in doing so. When participants lowered their arm to the point that their hand hit the cord, this action registered on a computer to record that the trial was over, as well as the time (in seconds) that participants had persisted at the

task. More recently, some researchers (Hertel, Deter, & Konradt, 2003; Wittchen, Schlereth & Hertel, in press) have replicated the Köhler effects using cognitive tasks which required participants to mentally calculate the prices of products or quickly choose appropriate options from alternatives on the computer screen (The present study also used a modified version of Wittchen et al.'s vigilence task). Therefore, it has been demonstrated that the Köhler effects generalizes to various types of task, much like the social loafing effect (Karau & Williams, 1993).

So far, researchers have identified a number of moderators of the Köhler motivation gains and discrepancy effects. Here, I will describe a few of them. First of all, an experiment that was conducted in Kerr, Messé & Hertel's laboratory (Messé, Hertel, Kerr, Lount & Park, 2002) confirmed that knowledge about partner's relative ability could moderate the Köhler motivation gains, much as Köhler (1926, 1927) originally found. In a previous experiment which was done in the same laboratory (Hertel, Kerr & Messé, 2000a), they failed to replicate the Köhler's inverted-U function (i.e., highest motivation gains in the moderate ability discrepancy condition and slighter gains in the small and large ability discrepancy conditions). As an explanation for this failure of replication, they suggested that participants did not have enough knowledge about their relative abilities, unlike Köhler's well-acquainted club members. To investigate this possibility, they (Messé et al., 2002, Exp. 2) manipulated discrepancy by having a confederate enact the role of a slightly, moderately, or substantially better coworker. Therefore, through this manipulation, participants were given explicit and detailed feedback on their partner's relative abilities. And they found that knowledge of a partner's ability did result in the Köhler discrepancy effect – i.e., the results showed that

the largest motivation gains occurred under moderate discrepancy and smaller motivation gains obtained in the small and large discrepancy condition.

Second, also related to the Köhler discrepancy effect, Seok (2004) found that participant's self-efficacy could moderate the Köhler motivation gains and discrepancy effects. He gave participants either high or low task self-efficacy information in order to investigate whether the Köhler discrepancy effect would be maintained or altered. In this experiment, a participant's self-efficacy information was manipulated by providing false feedback based on their previous individual trials. That is, in the low self-efficacy condition, participants were given the information that they were not very likely to perform well in the upcoming trials and the likelihood of their good performance would be 20% compared to well-established performance norms. In the high self-efficacy condition, the likelihood changed to 80% and they were informed that they were very likely to perform well in the upcoming trials. Surprisingly, results suggested that participants showed greater motivation gains overall when they had low self-efficacy rather than high self-efficacy, and the impact of self-efficacy was strongest under a moderate level of perceived ability discrepancy. Also, the results indicated that the Köhler discrepancy effect was more likely to occur when participants had the low rather than high self-efficacy information. This suggested that concerns about one's ability or one's reputation may be involved in both Köhler effects.

Third, Lount and his colleagues (Lount et al., 2000) showed that sex composition of the group could also moderate the Köhler effects. In their study, they found that male participants showed a larger Köhler motivation gains effect when their more capable partner was a female than a male. The value to the group of a good performance should

not have differed with the sex of one's partner, nor should the indispensability of one's good performance. So, this result further suggested that impression management concerns might contribute to the Köhler effects. That is, Köhler effects might be stronger under conditions where people are more concerned with creating a favorable impression to others (e.g., when a poor performance violates sex role expectations; when one has doubts about one's own task ability, as in the low self-efficacy condition of Seok, 2004).

Finally, Kerr and his colleagues (Kerr et al., 2005) suggested that the nature of performance feedback available to the group could also moderate the Köhler effects. More specifically, their results showed that motivation gains would be eliminated if there was not any performance feedback (i.e., if no one, including the experimenter, could determine just who was the stronger or weaker member of each dyad). Also, when there was delayed or restricted feedback (e.g., group members realized that who was the weaker member of the group only after the trial was completed), the Köhler effects were attenuated but were not eliminated.

Explanatory processes. There also have been efforts to investigate why these effects had occurred. For example, Messé et al. (2002, pp. 936-937) speculated about two possible explanations in detail: Indispensability of effort (e.g., Karau & Williams, 1993; Shepperd, 1993; Vroom, 1964) and a goal-setting version of social comparison (e.g., Locke & Latham, 1990; Stroebe et al., 1996). Messé et al. (2002) argued that these explanations are not mutually exclusive, and one or both might underlie the Köhler motivation gain and discrepancy effects. In the indispensability explanation, which derives from the widely accepted Instrumentality X Value approach to explaining people's work activity (e.g., Vroom, 1964), the importance of a weaker worker's

performance for the group's success (or perhaps, for his/her evaluation by fellow group members) is crucial to generate the Köhler motivation gains and discrepancy effects (Messé et al., 2002). When the ability discrepancy between two workers is very small, a slightly less able worker could think that only small amount of extra effort is needed to reach their group's maximum possible performance level. When the discrepancy in ability is very large, the much less able worker would be faced with the realization that he or she could not even begin to approach the very strong partner's potential performance level. Under conjunctive task demands, in which the weaker member sets the limit for team performance, a very large discrepancy between the likely outcome and what might have been (had the weaker member's ability been closer to that of the more able coworker), would likely lower the weaker worker's motivation to work at the task. Thus, in either circumstance (i.e., if the discrepancy in coworkers' abilities is either slight or very large), the weaker worker's sense of indispensability of their effort on group's success is decreased, and accordingly the weaker worker's impetus to try harder should be reduced. In contrast, when the discrepancy in ability between two workers is moderate, the (somewhat) weaker team member could think that his/her extra effort will be very useful and valuable in achieving maximum possible performance level of the group. Therefore, moderate ability discrepancy would be likely to generate the greatest motivation gain (Messé et al., 2002).

In terms of the goal-setting version of social comparison explanation, it is assumed that the less able coworker uses the stronger partner's performance as a goal-comparison reference (Messé et al., 2002; Stroebe et al., 1996). Therefore, for conjunctive task situations, this explanation always assumes upward social comparison

by the weaker coworker (if the task is valued by the group; Stroebe et al., 1996). When the discrepancy in ability is very small, this small discrepancy could be considered as an easy goal to be reached, calling for little, if any increased effort. Because of this low goal, people would generate only a small motivation gain. When the discrepancy in abilities is very large, consistent with the idea that motivation can be impaired by unrealistic goals (Hinsz, 1995), the weaker coworker is not likely to accept stronger partner's performance as a reasonable comparison reference, and thus, is not likely to put much effort for the task. However, when the difference in ability is moderate, people might consider this performance difference as a realistic and achievable goal and thus increase their effort accordingly (Messé et al. 2002).

In addition to the two original explanations of Messé et al. (2002), Kerr and his colleagues (Kerr et al., 2005) recently proposed two variations: Implicit competition version of social comparison and impression management. First, Kerr et al. (2005) noted that social comparison between group members also elicits implicit competition. That is, the concern that one might be outperformed by a fellow group member (i.e., to be seen as an inferior member compared to his/her partner) may be sufficient to produce the Köhler motivation gains effects. Second, as described in the previous review of Seok (2004) and Lount et al.'s (2000) studies, Kerr et al. (2005) suggested that impression management concerns (rather than objective group performance concerns) might also contribute to the Köhler effects. They noted the possibility that there would be little or no motivation gain when one's performance could not be publicly identified (Kerr et al., 2005).

Given those possible explanations, some researchers (Hertel et al., 2000a; Hertel, Niemeyer & Clauss, in press; Kerr et al., 2005; Kerr, et al, in press-a) have tried to

competitively test the explanations. As the first effort, Hertel and his colleagues (Hertel et al., 2000a, Exp. 2) manipulated task demands (i.e., conjunctive vs. additive task demands) to vary the degree of indispensability of the weaker member's efforts. Whereas the group score in the conjunctive task demands depends on the performance of the less capable member, the group score under the additive task demands was defined by the sum of the both members' performance. Because participants had a partner in both conditions, both conditions provided the same opportunity to socially compare their performance. Therefore, if social comparison were a sufficient explanation for the Köhler effects, there should be the same amount of motivation gains in both conditions. However, because the effort of the less capable group member was more indispensable to the group's success in the conjunctive than the additive condition, if the indispensability explanation were sufficient to explain the Köhler effect, we should observe a larger motivation gain under conjunctive task conditions. Through this procedure, Hertel and his colleagues (Hertel et al., 2000a, Exp. 2) found a significant motivation gain in the conjunctive conditions, but did not observe any gain under additive conditions. Thus, this experiment seemed to support the indispensability explanation and exclude the social comparison explanation (Kerr et al., in press-a).

However, this conclusion was premature because of the contradictory results from follow-up study (Kerr et al., in press-a) that used the comparison between conjunctive and coactive task demands (with coactive task demands, pairs of independent individuals work side by side and there is no interdependence between them). This coactive condition was better than the additive condition for competitive test of the explanations because, unlike the additive condition, there was no task or outcome interdependence between

workers [e.g., and hence, possibility of social compensation or free riding] in this condition). In their Exp. 1 that was designed to test the two explanations, Kerr and his colleagues (Kerr et al., in press-a) identified 3 possible theoretically-informative patterns. First, if the Köhler effects were wholly attributable to the indispensability explanation, they expected no motivation gain in coactive task conditions because there is no such group membership in the coactive condition. Second, if the Köhler effects were wholly attributable to the social comparison explanation, they expected comparable motivation gains in both task conditions (i.e., conjunctive and coactive) because social comparison would be equally possible in both conditions. Finally, if both mechanisms (i.e., indispensability and social comparison) contribute to the Köhler effects, they expected that a significant motivation gain under coactive conditions, but a significantly larger effect under conjunctive conditions, assuming that both mechanisms are contributing additively in the conjunctive condition. As a result of the experiment, they found that the third prediction was confirmed (i.e., both indispensability and social comparison contributed to the Köhler effect).

In this section, I have briefly reviewed research findings and possible explanations of the Köhler effects. Because this area is relatively underdeveloped compared to the well-documented group motivation loss (i.e., social loafing) literature, additional research is needed to identify additional moderators and to competitively test possible explanations.

Culture and the Köhler motivation gains effects

All of the studies on the Köhler effects which were reviewed in the previous section were performed in western culture (i.e., US and Germany). However, based on

several cross-cultural theories that have been developed by psychologists (e.g., individualism vs. collectivism, Triandis, 1989, 1995; interdependent vs. independent self-construal, Markus & Kitayama, 1991), as well as personal knowledge of one East Asian culture (viz., South Korea), I suspected that East Asians and those from western cultures (e.g., the US) would have different characteristics and would behave differently in the Köhler paradigm. For example, Triandis (1995, 2002) has suggested that members of collectivistic culture perceive themselves as a part of their in-group and they more highly value favorable relationships between group members. Therefore, they might be expected to focus on norm of cooperation when they work together. On the other hand, individualists have a self-concept which is less grounded in their groups, and focus on emphasizing their own uniqueness. Because individualists have a tendency to evaluate their social relationships with profit and loss perspective, they are also more likely to become competitive when they work together with others. In the same vein, Markus and her colleagues (e.g., Markus & Kitayama, 1991) have suggested that members of East Asian cultures are more likely to construe the self as an interdependent self, where primary goals are to 'fit in,' to maintain harmony within one's social groups, and meet consensual standards of excellence. Members of Western cultures, on the other hand, are relatively more likely to hold an independent self-construal, for which primary goals are to establish one's uniqueness, satisfying personal standards, and enhance the self through various means (including performing better than others).

These distinctions suggest that a contrast of Western and East Asian cultures may moderate the Köhler effects, but in a complex way. My colleagues and I (Seok, et al., 2006) reasoned that the indispensability mechanism (i.e., concern with not letting down

the group and/or satisfying one's obligations to the group) should be relatively more important for collectivists or those with an interdependent self-construal. On the other hand, the social comparison mechanism (i.e., concern with achieving as favorable social comparison with others as possible) should be relatively more important for individualists or those with an independent self-construal. This reasoning predicted that in addition to the main effect for task demands demonstrated in previous studies (Kerr et al., in press-a; Kerr, Seok, Poulsen, Harris & Messé, in press-b) 1) under the conjunctive conditions, collectivists or those with a more interdependent self-construal should exhibit stronger motivation gains than individualists or those with a more independent self-construal, and 2) under coactive conditions, individualists or those with a more independent self-construal should exhibit stronger motivation gains than collectivists or those with a more interdependent self-construal.

To test the above predictions, my colleagues and I conducted a cross-cultural study on the Köhler motivation gain effect (Seok, et al., 2006). The study utilized a 2 (culture: US versus Korea) X 2 (sex of the participant: male versus female) X 3 (work condition: individual control versus conjunctive versus coactive) between subjects factorial design. College students in the US (n = 153; 76 men and 77 women) and Korea (n = 143; 72 men and 71 women) worked in same-sex conjunctive/dyads, coactive pairs, or as individual controls at the arm-lifting task. Following the standard blind translation procedure (Brislin, 1986), all instructions were translated (and back-translated) from those used in several previous Köhler studies in the US (e.g., Kerr et al., in press-a; Kerr et al., in press-b; Seok, 2004). After correcting for fatigue effect using the individual control conditions and participants' individual trials (i.e., trial 1 and 2), overall

motivation gain scores in dyad trials (i.e., trial 3 and 4) were computed. Means and 95% confidence intervals for all conditions are presented in Figure 1.1. As we had found in several prior studies (e.g., Hertel et al., 2000a; Messé et al. 2002), there were robust Köhler motivation gain effects under conjunctive conditions in this study (i.e., greater persistence in the conjunctive dyads than in individual controls). Also, we found significant motivation gains under coactive conditions even though the magnitudes of the motivation gains tended ($p < .08$) to be smaller than those of the conjunctive conditions (at Trial 4, this difference was significant). Related to our interest in cross-cultural comparison, the most surprising finding of this study was that culture did not moderate the motivation gain effects in either of the work conditions. That is, Korean participants did not show significantly stronger motivation gains than participants in the US under either the conjunctive or coactive work conditions. Therefore, these results and our predictions did not correspond.

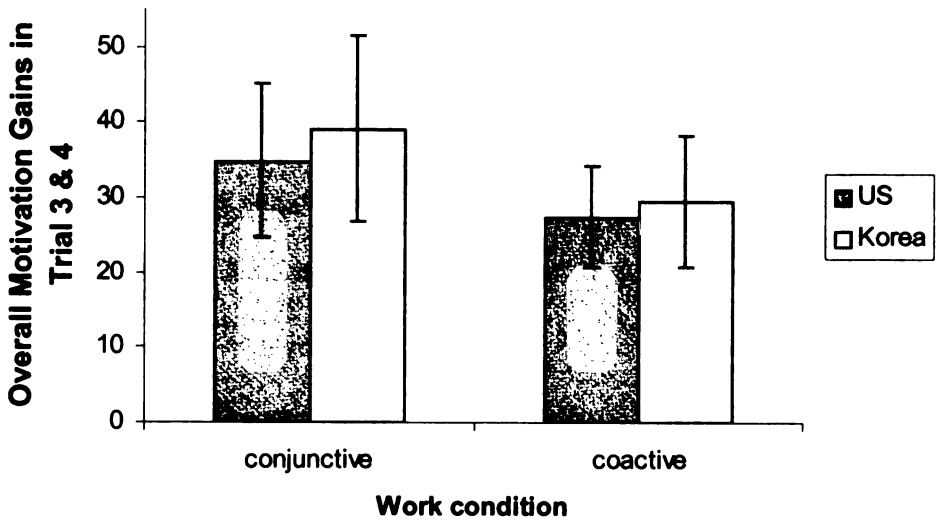

Figure 1.1 Motivation Gain for the Average of Trial 3 and 4 by Condition.

These results appeared to contradict the relevance of East Asian versus Western cultural differences in individualism/collectivism and self-construal for the Köhler effects. However, they were inconclusive for at least two reasons.

First, it is possible that the situational demands of the Köhler effects are compelling (regardless of culture) – that is, the effect is so strong that it swamps cultural differences in attitudes and values. The robustness of the effect in both cultures is consistent with this possibility.

Second, although there may be reliable whole-culture differences between Koreans and Americans in such variables as individualism and collectivism or self-construal, the differences between our Korean and American samples on these variables may have been quite small or non-existent. Because we had no direct measure of such variables in our first study, this cannot be checked directly.

Third, it is quite possible that there were not enough cues that participants in the conjunctive condition could consider their partners as their ingroup members. Leung (2001; Leung & Bond, 1984) has argued that collectivists were willing to work hard and would like to sacrifice themselves for their work group, but only if they regarded it as an ingroup. Thus Leung suggests that it may well be that culture matters for motivational phenomena like the Köhler effects, but only when participants consider the people in their work group to be members of a salient reference or ingroups (e.g., family, friends, those coming from the same province). Our study used ad hoc lab groups of strangers whose members had minimal contact and knowledge of one another. Thus, perhaps culture would matter much more if the work groups were more meaningful and important to its members, or at the least, if there were meaningful relationships between group

members (Han & Choe, 1994). This interpretation would lead us to ask "what relationships and group memberships are likely to have a markedly different meaning or significance in the two broad cultures of present interest (i.e., US vs. Korea)?"

As many cross-cultural psychologists in Korea (e.g., Cho, 2003; Choi, Kim, & Choi, 1993; Hahn, 1994, 2003; Han & Shin, 2000) have noted, a particularly distinctive feature of Korean culture compared to Western cultures is the Confucianism that is broadly embedded in Korean society. (For a brief review of Confucianism, refer to Oldstone-Moore, 2002, or Tamney & Chiang, 2002, pp. 1-7; for a more detailed review, refer to Shun & Wong, 2004, Tu, 1989, 1993 and Yao, 2000). Confucianism was introduced into Korea from China over 2000 years ago. Then, it became a dominant philosophy in Korea especially through the Choson dynasty (1392-1910), and its strong influence on Koreans' thoughts and behavior persist in contemporary Korean society (Duncan, 2002; Kim & Park, 2006a; Koh, 1996; Palais, 2002). According to the Korea Gallup survey summarized by Koh (1996), the percentage of Koreans who identified themselves as religious followers of Confucianism was less than 1% (i.e., 2 out of 400 respondents). However, when they were asked whether they have Confucian values and perform Confucian practices in their everyday life (e.g., filial piety and loyalty, ancestral memorial ceremonies, seniority deference, or participation in clan meetings), 91.7% of respondents (i.e., 367 out of 400 people) confirmed that they have these Confucian values and perform these practices regardless of their own religion. (In this sample, percentages of Protestants, Buddhists, Catholics, and people with no religion were 26.25%, 19.25%,

5%, and 47.25%, respectively.) This is clear evidence that Confucianism values are influential in Korea as a philosophy in everyday life rather than a religion.[1]

Among the many teachings of Confucius, one of the most important teachings is his world view that proper hierarchical order exists in all things in the cosmos including human society. Confucius thought that peace and harmony in the world could be achieved through this social order—if each person knows his or her appropriate roles in society and takes the responsibilities corresponding to their roles (i.e., fulfill required obligations and duties; Kim & Park, 2006b, pp. 39-40). To summarize this social order in family and society, Confucius provided moral principles which prescribe how people should behave in five basic human relationships (McNaughton, 1974; Tu, 1998) – 1) There should be righteousness and justice in the relations between sovereign (i.e., ruler) and subject; 2) There should be love (i.e., intimacy or proper rapport) between father and son; 3) There should be separation of function (i.e., division of labor) between husband and wife; 4) There should be proper hierarchical order between the younger and the older; 5) There should be faith and trust between friends. Here, each relationship entails mutual duties and responsibilities from the people involved. For example, parents are responsible for their children's education and care, and children respect and obey their parents and feel responsibility for the care of their parents when they became old. Also, the elder has responsibility for the younger and in return, can expect respect from the younger (Oldstone-Moore, 2002, pp. 55-56). In addition to these general moral principles in human relationships, Confucius supported self-cultivation (i.e., self-disciplined study), strong familial loyalty and ancestor worship. Also, he strongly believed that good family

[1] Koh (1996, p. 192) also argued that it is very difficult or nearly impossible to identify a person as Confucian or non-Confucian because Confucianism is not an organized religion.

relationships are the key to reforming society, and thus reforming government (Tamney & Chiang, 2002).

These teachings of Confucius have permeated through Korean society by training at home and more formal school education, and as a result, provide a foundation to several important aspects of culture in Korea, such as a family-oriented culture (Kim & Park, 2006a) and an age-sensitive culture. Although acceptance and practice of traditional family-oriented culture has been attenuated due to growing emphasis on the nuclear family, even nowadays, it is not difficult to find family-oriented characteristics in modern Korean society (Kim & Park, 2006a; Park & Cho, 1995). For example, because most Korean families attach great importance to family lineage and kinship, many Korean families still keep genealogy tables or clan register books which record their family tree, and ancestor worship ceremonies are practiced in most families every year (Yim, 1998). Also, influenced by the Confucianism which views social relations as an expansion of family relationship, many older Koreans still do not hesitate to publicly admonish young people, including strangers, if they think the youngsters are behaving improperly.

Age-sensitive culture is also very peculiar in Korea. Following one of the moral principles in Confucius's five basic human relationships (i.e., There should be proper hierarchical order between the younger and the older), Korean children learn to respect and obey their parents and older family members at home in their early childhood. Also, as an older sibling, they are taught to assume responsibility for their younger siblings. Many Korean parents teach their children not to start eating a meal until the oldest person or head of the family (e.g., grandfather) begins to eat to show their respect to the elder. This teaching has expanded to other settings of society (Kim & Park, 2006a); for example,

in a company's dinner meeting, many employees in a Korean company think it would be rude if they start to eat a meal before the CEO of the company starts to eat. From the standpoint of Westerner, it might be seen as rather bizarre, but this is why many international investment consultants want their customers to learn about such aspects of an age-sensitive culture before they undertake their business in Korea. Sometimes, this age-sensitive culture produces negative effects, especially when age and social status are not congruent (e.g., older freshman interacting with younger sophomores in a college setting; older newcomer vs. younger person with seniority in a company). It is not uncommon to hear the news that some college students has been hurt in a university welcome party due to fistfight related to age conflicts (e.g., a younger sophomore demands more respect when they discuss something or when they are doing some social activities, but an older freshman refuses to grant such respect because he/she is older than the sophomore.)

As we have seen in the previous paragraphs, Korean society has several very distinctive characteristics compared to Western cultures, especially in terms of family relation and age sensitivity. Therefore, my colleagues and I thought that these two aspects of intermember relations in a work group might well produce cultural difference in group performance. To explore this question, we conducted a scenario study (Seok, et al., 2006) that directly manipulated two coworker relationship cues – family relation and age difference – in a hypothetical business situation. In this study, we expected that Koreans would work harder than Americans when they are paired with their family members because of strong family-oriented culture in Korea. However, for the age effect, we did not propose any specific predictions because either direction might be possible; 1) in

Korea, participants might work harder when they are paired with older partner because younger participants might feel obligation to work harder than the elder due to the prerogatives of age in an age-sensitive culture (e.g., an older person deserves deference and respect), or 2) in Koera, participants might work harder when they are paired with younger partner because older participants might feel higher responsibility to work harder than the younger due to the obligations of age in an age-sensitive culture (e.g., an older person is supposed to take care of younger ones).

A scenario which was used in the study was designed to examine how culture might influence the intention to work hard when one was the less capable member of a group working under conjunctive task demands (as in the prior study), but in groups where the relationships between members varied in culturally significant ways. In the scenario, based on the task developed by Hertel, Deter, and Konradt (2003), a participant and his/her partner were supposed to work together as co-workers in a computer equipment and furniture company. In this company, the employees' (i.e., the participant and his/her partner) task was to process an order according to their customers' preferences on computer systems and furniture. To process those orders more effectively, the participant handled the computer equipment part and his/her partner handled the furniture part. Because an order was not fully completed until both parts were processed, the task of this study had conjunctive task demands. Under this conjunctive task demand, the participant discovered that in a given work period, the partner was completing an average of 27% more furniture-module orders than he/she was completing computer-equipment orders. Specifically, the participant was told that he/she had completed 400 orders but his/her partner had completed 508 orders in a typical week, and that the

resulting weekly group outcome was 400 orders, due to his/her relatively poor performance under the conjunctive task demand (to see the verbatim scenario, refer to Appendix A).

As we did for the instructions of the previous experimental study, all types of scenarios were translated (and back-translated) and mistranslation was checked following the standard blind translation procedure (Brislin, 1986). Also, we used a gender-neutral Korean name in the Korean version (viz., Ji-Su), just as we had used a common, gender-neutral name (viz., Pat) in the English version.

After presenting this generic situation, we asked participants to imagine their business partner as having each of the following four relations with them and asked to respond to the questionnaire (defined by a 2 [relationship to partner] X 2 [age of partner] design with repeated measures on both factors): Pat was 1) the participant's younger brother who is at least 6 years younger than the participant (i.e., Younger Brother), 2) a stranger whom participant does not know and is at least 6 years older than the participant (i.e., Older Stranger), 3) the participant's older brother who is at least 6 years older than the participant (i.e., Older Brother), 4) a stranger whom participant does not know and is at least 6 years younger than the participant (i.e., Younger Stranger). The presentation order of these 4 relationships was counterbalanced across participants.

Therefore, the basic design of the study was a 2 (culture: US versus Korea) X 2 (sex of participant: male versus female) X 2 (relationship: brother versus stranger) X 2 (age of partner: younger versus older) design with the last two variables being within-subject factors. One hundred and forty five university students in the US (n = 145; 67

men and 78 women) and one hundred and sixty students in Korea (n = 160; 79 men and 81 women) completed the study.

As a primary dependent measure, we asked participants to estimate their likely level of effort in the future with a 7-point scale (1 = quit working altogether, 7 = work as hard as I possibly could). In order to examine whether the relationship or age-of-partner variables interacted with culture, we conducted a 2 (culture: US versus Korea) X 2 (sex of participant: male versus female) X 2 (relationship: brother versus stranger) X 2 (age of partner: younger versus older) analysis of variance, with repeated measures on the last two factors. From this analysis, two interaction effects emerged that were particularly interesting in terms of the cross-cultural context. First, the results revealed that there was a significant culture X relationship interaction effect ($F(1, 297) = 3.89, p < .05$), indicating that US participants' intention to work hard ($M = 5.68, s = 1.02$) was greater than Korean participants' ($M = 5.32, s = 1.13$; $t(300) = 2.93, p < .01, d = .33$) when they imagined that they were working with their brothers. However, much as we found in the prior experiment, US participants' intention to work hard ($M = 5.58, s = 1.05$) was not significantly greater than Korean participants ($M = 5.41, s = 1.06$; $t(299) = 1.34$, *ns*) when they imagined that they were working with strangers (see Figure 1.2).

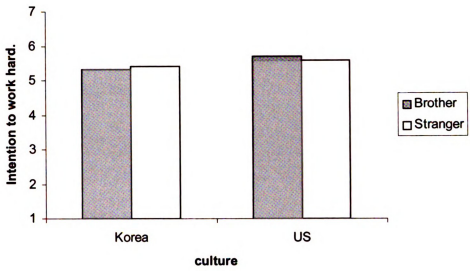

Figure 1.2 Intention to work hard by culture and relationship conditions.

Second, the results revealed that there was a significant culture X age-of-partner interaction effect ($F(1, 297) = 11.95$, $p < .01$), indicating that US participants' intention to work hard ($M = 5.51$, $s = 1.01$) was greater than Korean participant ($M = 5.05$, $s = 1.11$; $t(300) = 3.77$, $p < .001$, $d = .43$) when they imagined that they were working with older partners. However, US participants' intention to work hard ($M = 5.75$, $s = 1.09$) was not significantly greater than Korean participants' ($M = 5.68$, $s = 1.10$; $t(299) = .54$, *ns*) when they imagined that they were working with younger partners (see Figure 1.3).

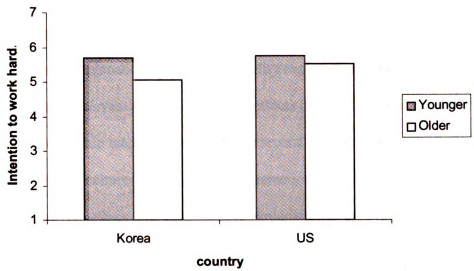

Figure 1.3 Intention to work hard by culture and age-of-partner conditions.

Surprisingly, the above results on the relationship effect were considerably different from our initial expectation, based on the family-oriented culture in Korea. That is, culture did matter more when partner was a family member (i.e., brother) as we expected, but the directions of this effect were opposite to our expectations. That is, Koreans work less, not more than Americans when partners were their brothers. When we consider studies that people in collectivist cultures are more likely to focus on their in-group goals than personal goals (Triandis, 1990) and importance of family in Koreans' life (Kim & Park, 2006a), this result was obviously unforeseen.

For the results on partner age, Koreans showed much higher intention to work hard when they are paired with younger partner. Therefore, these results seemed to support the notion that older participants might have relatively more responsibility for the group's task performance in Korea, based on the age-sensitive culture.

Given these surprising but interesting results, my colleagues and I considered three possible explanations for the pattern of results (i.e., an evaluation apprehension explanation, a status explanation, and a responsibility explanation). While the first explanation might be relevant to both interaction effects (i.e., culture X age-of-partner and culture X relationship interaction effects), the second and third explanations are more relevant to explain the culture X age-of-partner interaction effect than the culture X relationship interaction effect. The first possible explanation is the *evaluation apprehension* explanation. Considering the widespread family-oriented culture in Korean society and paternalism[2] (Aycan, 2006; Kim, 1994) that usually accompanies family-oriented culture, Koreans might have been more likely to think that their family members or older partners would be more likely – compared to strangers or younger partners – to understand and excuse their poor performance. Therefore, this anticipation could have caused them to work less hard.

The second possible explanation will be called the *status* explanation. For people in collectivist and hierarchal cultures like Korea, it may seem more appropriate for the higher status person in a group to perform the more pivotal role in attaining a group goal. In other words, it could be seen as inappropriate or even an offense to a high status person if a low status person were to outperform him/her. Also, it is more likely in collectivist culture than individualist culture that a difference in age becomes a source of status difference, such that the older worker has higher status than the younger one. Therefore, Korean participants might not work as hard as they possibly could to avoid violating these expectations when they paired with older people.

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[2] Webster's (1975) defines it as "the principle or system of governing or controlling a country, group of employees, etc. in a manner suggesting a father's relationship with his children." (Aycan, 2006, p.446)

The third possible explanation will be called the *responsibility* explanation. As I mentioned earlier, Koreans are taught that the younger should show obedience to the elder and the elder should take responsibility for the younger. Considering this age-sensitive culture in Korea, younger people might assume that their older partners had relatively more responsibility than a younger partner for their group's outcome. Therefore, younger people might have reduced their effort because of the attenuated responsibility. Essentially, this explanation puts greater emphasis on the absolute and/or relative obligations of one's partner (a relative or an older person) to oneself and/or the group than on one's own obligation to the collective (the focus of our original hypotheses) in the Korean culture.

These three explanations are consistent with the results of some subjective measures that were collected at the same time in the scenario study (Seok et al., 2006). First, in line with the *evaluation apprehension* explanation, Koreans estimated significantly less criticism or disappointment was likely from brothers or older people than strangers or younger people when they worked together in a Köhler context (i.e., conjunctive task, partner outperforming one). Similarly, they estimated that their brothers or older partners would understand their situation to a greater degree than strangers or younger partners. Also, Koreans felt a lesser degree of guilt with outperforming brothers than outperforming strangers. These results on subjective measures indirectly support the evaluation apprehension explanation.

Second, the *status* explanation was also supported, albeit rather indirectly, by some other subjective measures. That is, although all participants were less embarrassed with being outperformed by an older partner than a younger partner, this tendency was

relatively bigger in Korea than the US. Also, subjective measures on performance satisfaction revealed similar results. Although participants in both cultures showed greater satisfaction on their performance when they worked with an older partner than younger partner, this tendency also was bigger in Korea than the US. Clearly, these subjective measures did not directly assess the "anxiety about outperforming one's partner" motive underlying the status explanation; in the present study, I assessed this variable more directly.

Third, some other subjective measures also supported the *responsibility* explanation. When Korean participants were working with older partners, they felt lesser degree of obligation to increase their performance and felt less importance of performing well. Also, these younger participants were less worried about company's profits or their performance results when they paired with older partner. These results on subjective measures indirectly support the responsibility explanation.

The present study

The above scenario study has several limitations in interpreting the results. First, we measured performance intention, not actual performance. Thus, I need another experimental study to see if the performance intention effects are replicated for actual effort. Second, the scenario study was not designed to competitively test the alternative explanations for moderating effects of culture considered in the previous section. Here I report a follow-up study in which I tested these alternative explanations directly and competitively.

Together with these limitations, there might be some other points to consider in proposing the design of the present study. First, related to the feasibility of the proposed

study, it would be very difficult to ask participants to bring their brothers (or some other family member) to the laboratory. Also, even if we use online task performance method (i.e., participants are not required to be present at the same time in the laboratory), it would still be very difficult to convince a participant that some relative (e.g., his/her brother) is connected in the Internet simultaneously with the participant. Second, while not all alternative explanations are clearly relevant to the culture X relationship interaction, all 3 explanations are all plausible for culture X age-of-partner interaction. Thus, I judged it most reasonable to manipulate the age-of-partner variable to test these alternative explanations.

Therefore, the purpose of the present study is a) to replicate the culture X age-of-partner interaction effect which was shown in the scenario study with actual effort as the dependent variable, and b) to provide more direct and competitive tests of the alternative explanations.

To replicate the culture X age-of-partner interaction effect in conjunctive work condition, the design would be a 2 (culture: US versus Korea) X 2 (sex of participant: male versus female) X 2 (age of partner: younger versus older) + 2 (individual control in each culture) design. However, in order to competitively test those alternative explanations, I need a variable that makes different predictions for each explanation. I suggest that the ability discrepancy variable can achieve this.

The concept of discrepancy in ability is not novel in motivation gains research. As described in the previous section on the Köhler motivation gains effects, Köhler's (1926) results showed that under the conjunctive task demands, the dyads did worse than their average member when there was either a very little or a very large discrepancy in the

abilities of the dyad members, whereas for moderate levels of ability discrepancy, the dyads did better than the average member. As I described in the previous section, this effect was termed the *Köhler discrepancy effect* (Hertel, et al., 2000b) and has been replicated in a few studies (e.g., Messé et al, 2002; Seok, 2004).

In the present study, I used only small and moderate discrepancies as levels of the ability discrepancy variable, a range in which discrepancy should be positively linked to effort. Therefore, the experimental design of the present study became 2 (culture: US versus Korea) X 2 (sex of participant: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) + 2 (individual controls in each culture) design.

Using this design, I first of all expected a main effect for ability discrepancy with a larger motivation gain in the moderate discrepancy condition than in the small discrepancy condition (see Figures 1.4 - 1.6; also see Messé et al., 2002). And, replicating the scenario study, I also expected an age-of-partner main effect for the Koreans (with a weaker or no such effect for the American sample). Therefore, I stated two hypotheses based on the above predictions.

Hypothesis 1: ***The effect of ability discrepancy on motivation gain.*** Motivation gain will be larger in the moderate discrepancy condition than in the small discrepancy condition in both cultures.

Hypothesis 2: ***The moderating effect of culture on the effect of partner's age on motivation gain.*** Motivation gain will be larger in the younger partner

condition than in the older partner condition in Korea, while this effect will be weaker or absent in the US.

The novel prediction here is that this strong Korean age effect should be moderated by ability discrepancy, but differently depending on which alternative explanation is correct. Let us consider the predictions that each explanation makes. First, if the *evaluation apprehension* explanation is correct, I expect that the performance difference by age-of-partner in the moderate discrepancy condition should be larger than the performance difference by age-of-partner in the small discrepancy condition. And also, I expect that this dissimilarity in performance difference will create significant interaction (refer to the Figure 1.4). This is because the evaluation apprehension explanation suggests that Koreans anticipate a less harsh evaluative reaction to poor performance from an older partner than a younger one. If the discrepancy is small, then since I am performing nearly as well as my partner, no partner (of any age) would be likely to evaluate me very harshly. Thus, the effect of partner age difference should be small. It is when discrepancy is larger ("I am doing much less than my partner") that one might expect more disapproval from one's partner, and hence, it is here that age-related expectations should matter more.

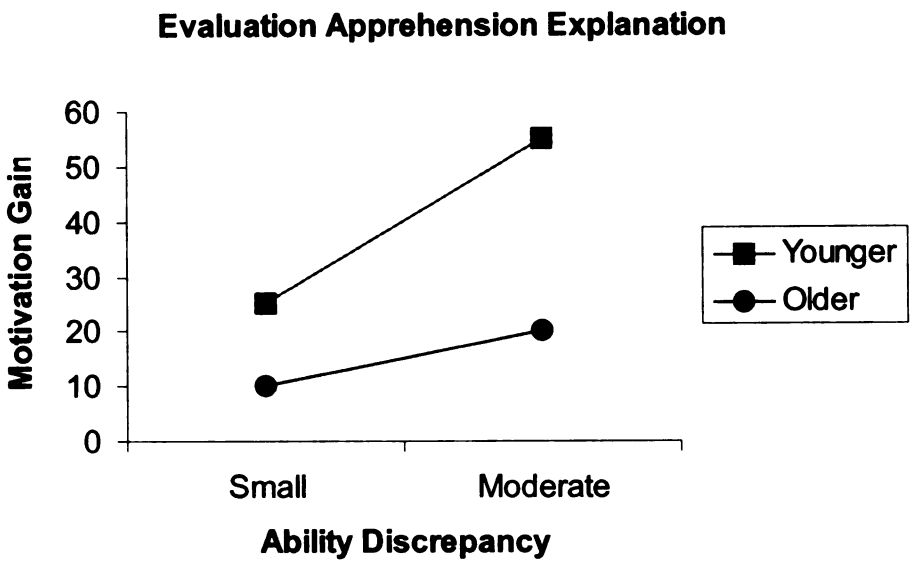


Figure 1.4 Performance Prediction by the Evaluation Apprehension Explanation in Korea.

The clearest contrast to this evaluation apprehension prediction comes from the *status* explanation, so let us consider it next. If the status explanation is correct, I expected the opposite pattern; that is, that the performance difference due to age of partner in the small discrepancy condition should be larger than the performance difference due to age of partner in the moderate discrepancy condition. And also, I predict that this dissimilarity in performance difference will create significant interaction (refer to the Figure 1.5). The reason why is that this explanation suggests that Koreans want to avoid challenging the higher status of their older partner by maintaining a clear difference in performance (i.e., performing less well). But it is precisely when the discrepancy in performance is small that such a challenge is most likely. On the other hand, when the discrepancy is sufficiently large (i.e., moderate), the partner is clearly

superior and hence, there should be little concern about good performance being seen as a threat to the partner's status.

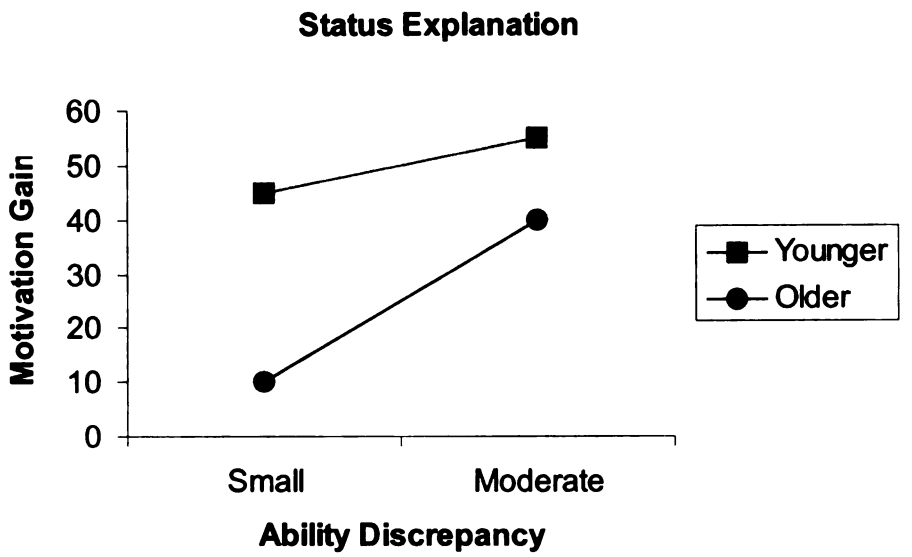


Figure 1.5 Performance Prediction by Status Explanation in Korea.

Finally, let us consider the *responsibility* explanation. The key issue is "will the discrepancy between me and my partner affect how responsible each of us is for the group's success?" One possibility is that greater discrepancy with conjunctive task demands means that I am more responsible for the group's success; if so, then I would make the same prediction as for the evaluation apprehension explanation (see Fig. 1.4). That is, if discrepancy is small, my partner and I are about equal in ability, performance, and responsibility to the group. Age related differences in felt responsibility should be minimal. Whereas if my partner is much more able than I am and we are working on a conjunctive task, I am clearly more responsible than s/he for improving the group's performance. So, age-related expectations might be expected to moderate this process

(i.e., "yes, I am more responsible, but not as much more if my partner is older"). But another possibility is that in Korea, the greater responsibility of the old for the young is applied fairly universally, regardless of the task or of differences in ability (with only some extreme exceptions—e.g., the older person is infirm and clearly less able). If this were the case, an older partner would be seen as more responsible (and to a similar degree) regardless of how large the discrepancy of ability. If this were the case, then the responsibility explanation would predict no Age X Discrepancy interaction effect (see Fig 1.6).

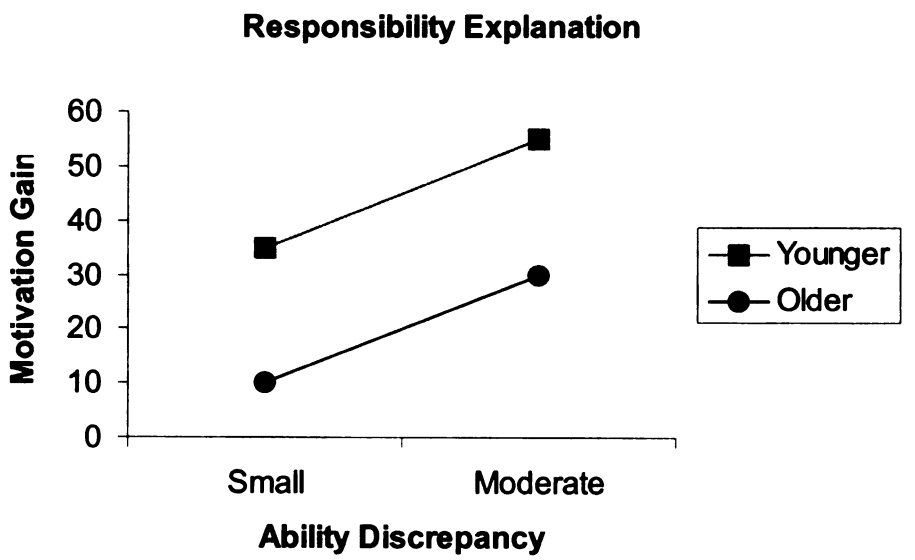


Figure 1.6 Performance Prediction by Responsibility Explanation in Korea.

Based on the above discussion, I stated the 3 sub-hypotheses for the interaction of partner's age and ability discrepancy.

Hypothesis 3a: ***The validity of the evaluation apprehension explanation in Korea.*** If the *evaluation apprehension* explanation is correct, there will be a significant interaction of partner's age and ability discrepancy which is characterized by larger performance difference by partner's age in the moderate discrepancy condition than the small discrepancy condition in Korea.

Hypothesis 3b: ***The validity of the status explanation in Korea.*** If the *status* explanation is correct, there will be a significant interaction of partner's age and ability discrepancy which is characterized by larger performance difference by partner's age in the small discrepancy condition than the moderate discrepancy condition in Korea.

Hypothesis 3c: ***The validity of the responsibility explanation in Korea.*** Depending upon which of two plausible versions of the *responsibility* explanation is correct, either there will be a significant diverging-fan interaction of partner's age and ability discrepancy in Korea (similar to that anticipated in *Hypothesis 3a*) or there will be no such interaction.

While the evaluation apprehension and status explanations seem to make relatively clear predictions, the responsibility explanation does not. Still, a discrepancy in ability manipulation should assist in narrowing the range of plausible explanations (e.g., no interaction is most consistent with responsibility explanation; significant interaction with a diverging fan is consistent with evaluation apprehension and possibly with responsibility explanation; but significant interaction with a converging fan is only consistent with status explanation; refer to the Table 1.1).

Table 1.1

Possible Results of the Present Study and Their Interpretations.

Explanation	Possible Patterns of Interaction		
	Diverging (Figure 1.4)	Converging (Figure 1.5)	No interaction (Figure 1.6)
Evaluation apprehension	Yes		
Status		Yes	
Responsibility	Yes		Yes

To supplement the analyses of performance, I will also collect subjective ratings relevant to the 3 explanations (as in the scenario study). These include a) anticipated partner evaluation, b) anxiety over challenging the status of one's partner, c) presumed responsibility of self and partner.

Recall that partner age still mattered to Americans in the scenario study, only less than to Koreans. My explanations were focused on the special importance of age in Korea, but if the results of the scenario study are precisely replicated in the present experiment (i.e., Partner Age also matters in US), I will still need to explain what is happening among the American sample. If the same explanations apply (but in muted form), then I would expect a similar pattern (but muted) in the US sample. On the other hand, it is possible that one explanation accounts for the Korean performance results, while quite another accounts for the American. In such a case, the Age X Discrepancy interaction will be further moderated by Culture (i.e., the Culture X Age X Discrepancy

interaction should be significant). I will do an overall omnibus analysis (i.e., the full 2 X 2 X 2 ANOVA), but assuming that I replicate the significant Partner Age effect in Korea, I also plan to do a focused analysis on the Korean sample to provide direct tests of the 3 explanations for that culture group.

Chapter 2

METHOD

Participants

A total 422 male and female undergraduate students from the US and Korea participated in this study to partially satisfy a psychology course research requirement. In the US, 285 students from a large public university in the midwestern area participated in the study. Among them, 25 participants were removed because of unacceptably high task error rates (i.e., less than 35% of performance correct answer rate in any of the two work sessions), and 20 participants were removed because of expression of strong suspicion about the experimental procedure or cover story. Therefore, in the US, a total 240 students were used for analysis (in the US, n = 240; male = 116, female = 124). Average age was 19.56 and 19.13 for male and female students, respectively.

In Korea, 135 students participated in the study. Among them, 4 participants were removed because of high error rates (i.e., less than 35% of performance correct answer rate in any of the two work sessions), and 7 participants were removed because of strong suspicion of the experimental procedure. Also, two performance outliers were removed in Korean sample. The criterion that I used here was a Z-score greater or less than 3 which should only be observed in 4 cases out of 1000 observations (McClelland, 2000, p. 397; Stevens, 1986, p. 14). Therefore, in Korea, total 122 students were used for analysis (in Korea, n = 122; male = 85, female = 37). Average age was 23.80 and 22.32 for male and female students, respectively. It should be mentioned that it was impossible to balance the number of males and females in Korea because of enrollment patterns in psychology

classes and the fact that other studies had already depleted the supply of female participants.

Design

The experiment utilized a 2 (culture: US versus Korea) X 2 (sex of participant: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) + 2 (individual control in 2 cultures) between subjects design. Sessions were conducted with up to three participants. Each participant was randomly assigned to one of the nine conditions in each culture. The performance dependent variable was number of orders completed by an Internet travel agency in the modified version of the cognitive vigilance task which was used in Wittchen and her colleagues' study (Wittchen, Schlereth & Hertel, in press). The task had some advantages over Hertel et al.'s (2003) experimental task which became the basis for the task used in the scenario study. Because the task of this study is simpler than Hertel et al.'s task, it can remove cognitive demands and better to avoid a ceiling effect. More importantly, the Köhler effect has already been replicated using the very similar task in Wittchen et al.'s (in press) study. This task is explained in detail in the following section.

Experimental Task

The experiment used a modified and reprogrammed version of the vigilance task that was used in Wittchen, et al. (in press). In this task, participants' job as a member of the travel agency "MilesAway" was to complete hotel package offers by computer according to incoming customer requests. The hotel package consists of two categories (i.e., room and board), and a participant must take into account the customers' requests and choose the cheapest available alternative for the category where the customer has not

expressed a preference. (To see an example and instructions for the task, refer to Appendix B.)

During all work sessions, the number of completed (i.e., handled) inquiries of a participant was simultaneously presented on the screen. Also, the positions of the options in each category were randomly changed, but the prices of each option were not changed. That is, in the room category, double room, single room, apartment and bungalow were changed their positions randomly, but the price of each room was always the same (i.e., $1500, $1750, $2000, $2250, respectively). In the board category, overnight stay, half-board, full board, and all-inclusive were changed their positions randomly, but the price of each board option was always the same (i.e., $400, $530, $660, $790, respectively; refer to Appendix C and E). During the (second) group work session, participants additionally received information at regular intervals (i.e., after every 4th customer request) about their partner's (alleged) previous performance at this point of the work session. This feedback suggested that the partner was always slightly or moderately superior depending on the ability discrepancy condition.

Procedure

Experimental procedure was identical in both cultures except, of course, for using different languages. On the date of their experiment, up to 3 same-sex participants arrived at the waiting area for their session. After bringing them into the laboratory, the experimenter told them to sit any one of three cubicles that were placed side by side and divided by partitions. In each cubicle, there was a computer, allegedly connected to the university server with LAN (local area network) cable. After reading and signing the consent form, the experimenter told participants that they were not allowed to talk with

each other during the session. Also, they were informed that they would use ear plugs to simulate a comfortable office environment. This procedure was included to ensure that a participant could not hear others' mouse clicking sounds which could affect his/her own performance. After putting the ear plugs, participants were asked to follow the instructions on the computer screen. From then on, all instructions, work sessions, and questionnaires were administered via the computer. During the rest of the session, the experimenter was sitting on the other side of the room to be available for any questions.

On the first computer screen, participants were asked where they were logged in for the study and they were given five choices including names of a middle school, a high school, two universities, and a company. Even though the answer for this question was obvious, the purpose of this question was to increase participants' believability in an ostensible online connection by giving them an impression that several people with different age range were logged on for the study at the same time. Therefore, this question served as a basis for the experimental manipulation of the partner age variable which will be described later.

On the next screen, participants had to type their name and age. The ostensible reason for this procedure was to record their data properly, but later this information was used for manipulation of the 'age-of-partner' variable.

Then, the task was explained in detail by the computer, and participants were given 3 practice trials. In the practice trials, participants received an error message if they committed a mistake. To proceed to the next screen, either they had to give correct responses or they had to call the experimenter for help. This procedure made sure that all participants learned how to perform the task.

To increase the meaningfulness of the task, it was explained that 4 participants would be randomly chosen at the end of this project and each would be paid 15 cents per correct order (up to a maximum of $ 50). Also, to emphasize the importance of both performance quality and quantity, participants were told that the exact amount they could receive would depend on both the speed and accuracy of their work. Then, participants performed their 1st work session as an individual (To see an example of the performance screen, refer to Appendix C.). Each of the two work sessions in this experiment lasted 10 minutes but no information about trial length was given to participants to prevent them from timing themselves. During the 1st work session, participants always were given the updated number of inquiries they had already handled. However, this number did not tell them whether the offers they made were also correct.

All participants had the same procedure until they finished performing the 1st work session. However, on the following screens, participants were given different information depending on their work condition (i.e., Individual control vs. conjunctive).

After performing the 1st work session as individuals, participants in the conjunctive dyad work conditions received information about how the next session (i.e., group work session) would be conducted. (Participants were not told exactly how many work sessions were left.) Participants were informed that they would work in a team with another person (i.e., his/her partner), who is working on another computer as a second employee of the travel agency, MilesAway. Then, participants were given instructions on the partner selection procedure. Participants were informed that the present study would be conducted online with volunteer participants in several locations (i.e., some middle schools, high schools, universities and companies, etc.) at the same time. Also, they were

told that they would work with their partner via Internet connection and their partner could be a person who is either currently present in this laboratory or who is in different location. It was explained that we did not want anyone paired with someone they know, and since sometimes people who know one another come to the study together, they would be paired with someone at a different location (not present in the lab). On the next screen, computer displayed the participant's name and age along with the names and ages of 7 participants that were purportedly randomly chosen by computer out of 12 participants who participated at the same time from several different locations (refer to Appendix D; in this example, participant's typed name was "Emily Gordon"). Information of the 7 people, excepting the participant's, was preprogrammed. As we did in the scenario study (Seok et al, 2006), for partner's name, we used gender-neutral names in both cultures (viz., Ji-Won Lee for the Korean version and Pat Roberts for the English version). The ages of the 7 fictitious participants were distributed in the following ways; The youngest fictitious participant's age was **11 years younger** than the real participant's age, but age 12 was used as a minimum because participants might not believe they are paired with a boy or girl under 12 years old (for example, the youngest fictitious participant's age became 12 when the real participant's age was 19). The oldest fictitious participant's age was **11 years older** than the real participant's age and I did not set any maximum age for this. The reason why I did not give symmetrical distribution of age is that we wanted to focus on the qualitative difference within the limitation of plausibility (i.e., I did not want a participant to have an elementary student as his/her younger partner). Also, there was a fictitious participant whose age was the same as the real participant's. Four remaining fictitious participants were 1 year younger, 1 year older,

6 years younger and 5 years older than the real participant, respectively. On the next screen, participants were told that for the remainder of the work sessions the computer would randomly choose their partner from the 7 participants who were on the previous screen. Then, the youngest fictitious participant was selected as a partner for participants in the younger partner age condition and the oldest fictitious participant was selected as a partner for participants in the older partner age condition.

After the partner selection and age-of-partner manipulation, participants in the conjunctive work conditions received information about how the remaining work sessions would be conducted. Participants were informed that their partner would be responsible for putting together travel packages while they were still responsible for putting together hotel package offers. As participant's hotel package contains room and board alternatives, the travel package offers consist of two alternatives as well: how far the customer is willing to travel and the means of transport. Also, participants were informed that the travel inquiries were from the same customer as the hotel inquiries, and handling the two kinds of inquiries would be equally difficult for them and their partner. Then, conjunctive nature of the task was explained by giving the following information: " In the next session, unlike the last session, only those customer inquiries that both of you handle correctly will count toward your performance total (and maximum pay). That is, offers will only count towards the team score if both parts of the inquiry - hotel and travel - are handled correctly. A correctly arranged travel package will not result in a point if the hotel package for that customer was not arranged correctly, and vice versa! So, for example, if your partner has handled ten inquiries correctly, but you have only handled five correctly, your team will be credited with only five correct offers. The other

completed offers of your partner would be lost (that is, not count toward the team score). For every completed offer (with both hotel and travel package offers correct), your team will receive 30¢. As mentioned earlier, four winners will be determined in the coming lottery. You and your partner are entered jointly in the lottery as a team; thus, there will be two winning teams selected in the lottery. If your team is one of those winning teams, you and your partner will split equally the amount you earn while working together as a team (plus you will each receive whatever you earned individually during the first session)."

Then, participants were informed that during the 2nd (group) work session they would also receive information about the performance of their partner in addition to the number of inquiries they handled. Since the partner's performance information would be shown after every fourth offer participants complete, participants were given information about how many inquiries their partner has handled at the same point in time.

Unlike the conjunctive participants, participants in the individual control condition did not have the partner selection procedure and instructions about upcoming group performance. They were just be given the same instructions as they had for the 1st work session (i.e., brief information about the financial incentive and emphasis both on the quality and quantity of performance). To hold the rest time constant across individual control and conjunctive conditions, participants in the individual control condition waited a comparable amount of time (viz. 120 seconds) between work sessions as it took participants in the conjunctive dyad conditions to receive instructions.

In the conjunctive conditions, the ability discrepancy variable was manipulated throughout the 2nd (group) work session by showing the partner's ostensible performance

level, after the participant completes every fourth offer (refer to Appendix E; In this example, partner's pre-programmed name was "Pat Roberts"). In the **small** ability discrepancy condition, partner's performance was always 1 or 2 more than participant's. The computer randomly determined whether a partner would receive 1 or 2 more than participant's performance. For example, partner's performance was 53 or 54 when participant's performance was 52. However, in the **moderate** ability discrepancy condition, I utilized somewhat different schedule to manipulate the moderate discrepancy. I considered the possibility that participants might be discouraged and give up task performance if they receive moderate discrepancy feedback (e.g., 1.4 times their own performance) continuously (i.e., participants might think that they cannot overcome the gap if, as their own cumulative performance increased, the gap between their performance and their partner's steadily increased, regardless of their effort level). To avoid this possibility, I gave relatively bigger discrepancies at first (ratios between 1.50 and 1.39 across the first 7 feedback occasions; see Table 2.1) and thereafter, keep the absolute difference in performance around 11 offers (viz., 11 ± 1, with the variation around 11 randomly determined). This results in a gradual decrease in proportional discrepancies later in the group work session (refer to Table 2.1), and a gradual increase and then plateau in absolute discrepancies across the full session. Even though I used the variable schedule, this schedule should preserve the characteristics of moderate discrepancy to produce the maximum motivation gain (Witte, 2002).

Table 2.1

Moderate Discrepancy Manipulation Schedule.

Performance Of Participant	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72 .....
Performance Of Partner	6	11	17	23	29	34	39	43*	47*	51*	55*	59*	63*	67*	71*	75*	79*	83*.....
Ability Ratio	1.50	1.38	1.42	1.44	1.45	1.42	1.39	1.34	1.31	1.28	1.25	1.23	1.21	1.20	1.18	1.17	1.16	1.15 ....

* For actual Ss, the feedback will be within ± 1 of this value.

After the 2nd work session, participants in the conjunctive conditions were asked 8 questions directly measuring the proposed 3 possible explanations related to the culture X age-of-partner effect. To measure anticipated partner evaluation related to the *evaluation apprehension* explanation, participants were asked the following three questions: "How much did you feel that your partner would accept and excuse you even if you performed poorly during the 2nd work session?" (*EA1*; 1 = not at all, 9 = very much), "How much did you feel that your partner would reject and criticize you if you performed poorly during the 2nd work session?" (*EA2*; 1 = not at all, 9 = very much) and "How much were you concerned about your partner's criticism if you performed poorly during the 2nd work session?" (*EA3*; 1 = not at all, 9 = very much). Second, related to the *status* explanation, to measure anxiety over challenging the status of one's partner, the following two questions were asked: "How uneasy did you think that your partner might feel if you had outperformed your partner during the 2nd work session?" (*S1*; 1 = not at all, 9 = very much) and "How much did you feel that it would be fine for your partner to

do better than you during the 2nd work session?" (*S2*; 1 = not at all, 9 = very much). Third, related to the *responsibility* explanation, the following three questions were asked to measure presumed responsibility of participants: "How much responsibility did you feel personally for the performance outcome of your group during the 2nd work session?" (*My responsibility*; 1 = not at all, 9 = very much), "How much responsibility did you feel that your partner had for the performance outcome of your group during the 2nd work session?" (*Partner's responsibility*; 1 = not at all, 9 = very much), and "Who do you think was most responsible for the performance outcome of your group during the 2nd work session?" (*Relative responsibility*; 1 = I was completely responsible, 5 = We were equally responsible, 9 = My partner was completely responsible).

Participants in the conjunctive condition were also asked 16 questions probing emotional responses in the situation. The questions included were as following: "I was embarrassed in this situation", "It was important to perform well in this situation", "I liked the job", "I felt strong sense of obligation to increase my performance", "I felt guilty", "I was resentful", "I worried about my performance results", "I worried about my company's profits", "I was satisfied with my performance", "I liked My partner", "I was embarrassed by My partner", "My partner will look down on me", "My partner will feel ashamed of me", "My partner will scold me for my poor performance", "My partner will understand my situation", and "My partner (is) disappointed in me".

Then, some manipulation check questions were administered. First, to check the age-of-partner manipulation, participants were asked to recall and type their partner's age (i.e., How old was your partner? If you are not sure, please guess). Second, to check the ability discrepancy manipulation, participants were asked to estimate their partner's

performance level. Because this estimation might be different depending on their own performance, I asked the same question three times, varying participant's hypothetical performance level. Specifically, I used 74, 105, and 136 as participant's hypothetical performance levels. The reason why I chose these values was that the average performance was around 105 in the previous study which used a comparable task (Wittchen et al., in press). The actual question was like this; Suppose you had completed *74* offers. How many offers do you estimate that your partner would have completed in the same amount of time? (Type in your estimate in the box below.)

I estimate that my partner would have completed ____ offers.

Finally, for a suspicion check, participant typed their answers on the screen using their keyboard. Two suspicion check questions were like these; 1. Please describe, in your own words, the purpose of this project (Please type with keyboard in the box below). 2. Was there anything about the experiment that you found to be odd or confusing? (Please type with keyboard in the box below).

Upon the completion of the study, participants were given debriefing information about the study and were dismissed.

Chapter 3

RESULTS

Manipulation checks

As I described in the method section, participants were asked to recall their partner's age as a post-experimental question. If they still remember their partner's age with accuracy even after finishing the dyad trial (viz., the second work session), this could indicate that participants were attentive to or have kept in mind their partner's age during performing the task. Thus, in order to ascertain if the age-of-partner manipulation was successful, a 2 (culture: US versus Korea) X 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) ANOVA was conducted on responses to this question. In this analysis, only two effects were significant: the age main effect and the culture X age interaction effect.

The age main effect confirmed that differential levels of partner's age were successfully manipulated. That is, estimated age in the older partner condition (M = 30.80, s = 5.36) was significantly greater than that of the younger partner condition (M = 12.74, s = 2.03; $F(1, 254) = 1299.44$, $p < .001$, $d = 4.46$, effect-size r = .91). The significant culture X age interaction effect reflected two artifacts: 1) the difference in participants' real age between two cultures (i.e., average age of participants in the US was 19.34 and 23.35 in Korea), and 2) minimum limits in age manipulation. That is, because I set the minimum boundary of partner's age at 12, the difference in estimated age of partner in the younger partner condition between two cultures was not considerable (i.e., M = 12.34 in the US and M = 13.49 in Korea). However, this culture simple main effect in the older

partner condition was considerably big (i.e., $M = 29.18$ in the US and $M = 33.87$ in Korea) because there was no such upper boundary. There are at least two reasons why there was a difference in real age between two samples. First, whereas majority of participants in the US subject pool were freshmen, the Korean subject pool was opened to every student who took psychology courses. Second, the two to three-year mandatory military services for Korean males is usually served between sophomore and junior year; thus, male college students in Korea tend to be a bit older than in the US.

For an ability discrepancy manipulation check, participants were asked to estimate their partner's likely performance level at the same point in time based on three hypothetical own performance levels (i.e., 74, 105, and 136). A 2 (culture: US versus Korea) X 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) MANOVA was conducted on responses to these three questions to see if the ability discrepancy manipulation was successful. Results revealed that only the discrepancy main effect was significant for all three questions. That is, when hypothetical performance level of participants was 74, the estimated partner's performance level in the moderate discrepancy condition ($M = 83.67$, $s = 14.44$; recall that the manipulated difference [asymptotically on average] was 11) was significantly greater than that of small discrepancy condition ($M = 75.22$, $s = 15.65$; $F(1, 254) = 15.57$, $p < .001$; where the manipulated difference was 1.5). For the remaining two questions, these differences also were significant; When the participant's hypothetical performance level was 105, the moderate ($M = 113.97$, $s = 22.14$) vs. small ($M = 104.16$, $s = 14.07$) difference was significant ($F(1, 254) = 13.15$, $p < .001$); also for a participant's performance level was 136, moderate ($M = 144.69$, $s = 18.43$) vs. small (M

= 134.38, s = 18.20) difference was significant ($F(1, 254) = 15.16$, $p < .001$). Therefore, discrepancy manipulation also was successful.

Performance measures

Before presenting the results on performance measures, it should be mentioned that the presented results are all based on the performance quantity (i.e., how many orders participants completed regardless of accuracy). There were three reasons that I focused on only performance quantity. First, the analyzed results with both performance quantity and quality were nearly identical. Second, I thought that performance quantity should have been most closely related to participants' motivation because the task of this study was very simple (i.e., does not require any complicated mental calculation). Third, I already removed participants who had exceptionally high error rates (more than 65%), indicating that they either did not understand or follow the task rules. So, I was sure that remaining participants all basically knew how to do the task and their committed errors could still reflect their motivation or effort.

Fatigue or practice effect correction using the individual control condition. As explained in the method section, whereas participants in the individual control condition individually performed the cognitive task twice, participants in the conjunctive conditions performed the first trial as an individual and the second trial as a member of a dyad. In order to estimate and later control for any effects of task fatigue or boredom (which would cause performance to decline across trials) or practice (which might cause performance to increase across trials), a 2 (culture: US versus Korea) X 2 (sex of participants: male versus female) X 2 (trial) analysis of variance (ANOVA) with repeated measures on the last factor was conducted on performance scores in the individual

control condition. In this analysis, the only significant effects were the culture and the trial main effects. First, a significant culture main effect ($F(1, 88) = 5.49$, $p < .05$) indicated that overall Korean participants ($M = 172.66$, $s = 24.32$) performed better than American participants ($M = 155.48$, $s = 26.36$, $d = .68$, effect size r = .32) across two trials. It is unclear whether this reflects cultural differences in skill level (e.g., in computer use), general willingness to exert effort in a psychology experiment, or intrinsic interest in the specific present task. Second, a significant main effect of trial ($F(1, 88) = 192.93$, $p < .001$) indicated that participants' performance increased from the first trial ($M = 148.64$, $s = 26.79$) to the second trial ($M = 173.15$, $s = 28.78$, $d = .88$, effect size r = .40) due to combined effects of fatigue and practice. It appears that the advantages of experience and practice outweighed any effects of fatigue or boredom; hence, I will henceforth simply refer to practice effects. Finally, no interaction effects related to the trial variable (i.e., culture X trial, sex X trial, culture X sex X trial) were significant. The latter results suggested that I could use a single overall correction for practice effects because these effects had a comparable magnitude regardless of culture or participants' sex. However, there was a non-significant but noteworthy trend on the culture X sex X trial interaction effect ($F(1, 88) = 2.40$, $p = .125$). Although this effect was not significant, it suggested the possibility that I might end up neglecting small but meaningful culture X sex differences in practice were I to use a single, overall correction. Therefore, I concluded that using separate correction functions according to culture and sex might be more desirable to accurately estimate and control for participants' practice effects.

To correct for fatigue or practice effects, I utilized the following procedure (see Hertel et al., 2003, and Wittchen et al. in press, for similar procedures). First, I calculated the ratio of change between Trial 1 and Trial 2 in the individual control condition. As I mentioned above, I computed these ratios separately for males and females in each culture to reflect their practice effects as precisely as possible. Thus, for males in the US, this ratio was 1.1936 which obtained by dividing 175.38 (i.e., performance in Trial 2) by 146.93 (i.e., performance in Trial 1). These ratios were 1.1782, 1.1112, and 1.1669 for females in the US, males in Korea, and females in Korea, respectively. Thus, the trend on the sex X culture X trial interaction reflected a somewhat smaller practice effect for Korean males. Then I corrected the performance of Trial 1 for practice for each participant in the conjunctive conditions by multiplying their performance in Trial 1 by this ratio. For example, if a hypothetical American male participant performed 150 in the first trial, his estimated practice-corrected performance on Trial 1 was 179, obtained by multiplying 1.1936 to 150. Essentially, this procedure should boost Trial 1 performances to match Trial 2 performances, eliminating the differences between trials due to practice. Finally, I estimated the amount of motivation gain by subtracting this estimated Trial 1 value from the actual performance of Trial 2 in all conjunctive conditions. In the above hypothetical example, if his Trial 2 performance were 185, the amount of motivation gain was 6 by subtracting 179 from 185. Positive scores on this measure should reflect increases in performance, which I attribute to increased task motivation, above and beyond those to be expected from practice alone; conversely, negative scores would indicate some decline in task motivation.

All of the following analyses on the conjunctive dyad conditions were based on these corrected data.

Analyses of motivation gains. In order to test proposed hypotheses, a 2 (culture: US versus Korea) X 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) ANOVA was conducted on the corrected motivation scores. In this analysis, one main effect and three 2-way interaction effects were statistically significant: the sex main effect and the culture X sex, culture X age, and culture X discrepancy interaction effects. Detailed descriptions of these effects and other noteworthy results are summarized below.

First, the overall motivation score (i.e., the grand mean) across all conditions was not significantly different from zero ($M = 1.37$, $s = 15.26$; $p = .60$). This non-significant result was unexpected, given the robust Köhler motivation gains observed in previous studies using physical persistence tasks (e.g., Kerr et al., in press-a, in press-b; Seok, 2004; Seok et al., 2006, Exp. 1) and more complex cognitive tasks (e.g., Hertel et al., 2003), including essentially the same task with which Wittchen et al (in press) observed a robust Köhler motivation gain with German participants. However, in all of these prior studies the ages of work partners were roughly the same as of the participants, either because both were recruited from the same (student) participant pool and met in the task, or because no explicit demographic information was provided about the partner (who was ostensibly always recruited from the same pool as the participant). As I show below, although there is not an overall motivation gain, there is under certain experimental conditions.

Second, a significant main effect of participants' sex indicated that males (M = 3.49, s = 15.50) performed better than females (M = -1.33, s = 14.56; $F(1, 254) = 9.75$, $p < .01$, $\eta^2 = .03$). However, this main effect was qualified by a significant culture X sex interaction effect ($F(1, 254) = 6.24$, $p < .05$, $\eta^2 = .02$). Means and 95% confidence intervals for all conditions are presented in Figure 3.1. Tests of simple effects revealed that sex effect was significant only in Korea. That is, whereas Americans had no performance difference between males (M = 1.58, s = 16.44) and females (M = .36, s = 11.19; $F(1, 254) = .23$, *ns*), Korean males (M = 6.09, s = 13.83) performed significantly better than Korean females (M = -6.55, s = 21.42; $F(1, 254) = 11.45$, $p < .001$, $d = .70$, effect-size r = .33). Note that among Korean males, there was a significant motivation gain, although not among any other culture X sex condition.

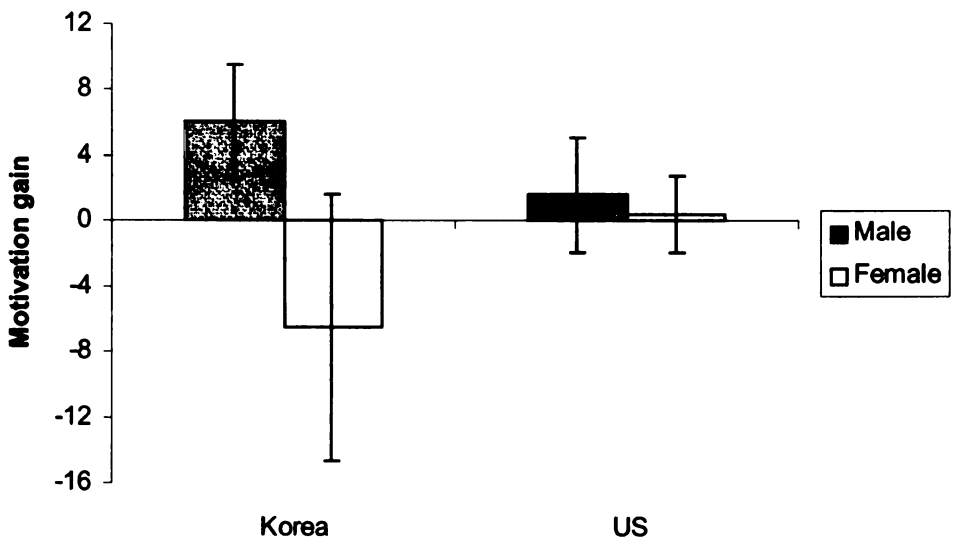


Figure 3.1 Motivation Gain by Culture and Sex of Participants Conditions.

Third, hypothesis 1 stated that motivation gain would be larger in the moderate discrepancy condition than in the small discrepancy condition in both cultures. The non-

significant main effect of ability discrepancy across culture ($F < 1$) indicated that participants were not uniformly affected by manipulated discrepancy. However, it is necessary to examine this effect in each culture because the culture X discrepancy interaction effect was significant ($F(1, 254) = 5.61, p < .05, \eta^2 = .02$). Means and 95% confidence intervals for all conditions are presented in Figure 3.2. The simple effects analysis showed that discrepancy manipulation had the expected effect in Korea but not in the US. That is, whereas Americans had no performance difference between small ($M = 2.55, s = 13.99$) and moderate discrepancy ($M = -.65, s = 13.88$; $F(1, 254) = 2.13$, *ns*), Koreans performed significantly better when they received moderate ($M = 5.89, s = 16.58$) vs. small ability discrepancy information ($M = -2.01, s = 17.68$; $F(1, 254) = 6.96$, $p < .01$, $d = .46$, effect-size r = .22). Therefore, hypothesis 1 was partially supported.

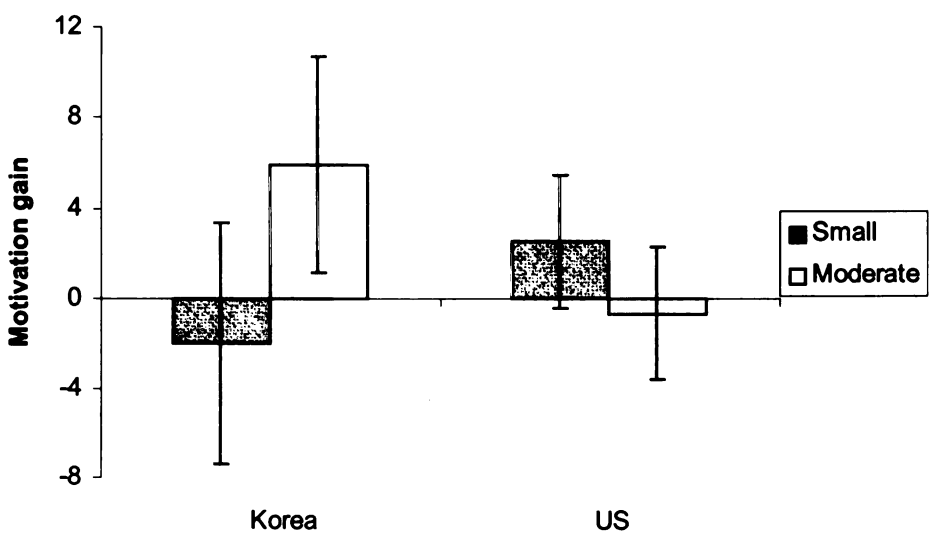


Figure 3.2 Motivation Gain by Culture and Ability Discrepancy Conditions.

Finally, there was a significant culture X age interaction effect ($F(1, 254) = 9.85$, $p < .01, \eta^2 = .03$). Means and 95% confidence intervals for all conditions are presented in

Figure 3.3. The analysis of simple effects revealed that age-of-partner effect was significant only in Korea. Namely, Korean participants worked harder with younger partner (M = 7.04, s = 13.72) than with older partner (M = -2.84, s = 19.52; $F(1, 254)$ = 10.72, $p < .01$, d = .59, effect-size r = .28). This result supports the hypothesis 2 which predicted larger motivation gain with younger partner than with older partner in Korea. In contrast, American participants worked harder with older partner (M = 2.78, s = 14.23) than with younger partner (M = -.80, s = 13.60) although this difference was not significant.

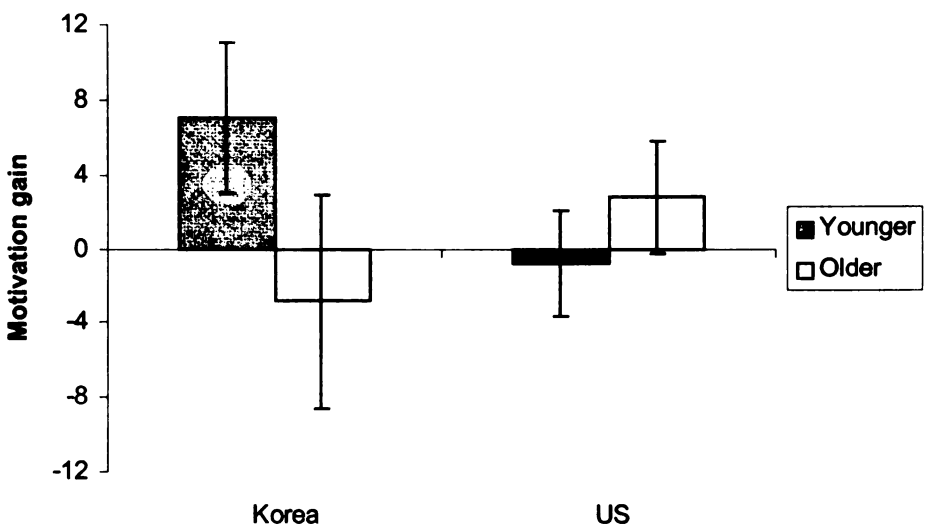


Figure 3.3 Motivation Gain by Culture and Age-of-partner Conditions.

So, the basic pattern found in the scenario study was replicated here—partner age was strongly related to effort in Korea but not in the US. Hence, it is only among the Korean participants that an age-of-partner effect occurred needs explanation. To this end, I proposed three possible alternative explanations to explain the comparable results of the scenario study and used ability discrepancy variable to competitively test those

alternative explanations in the present study. In that discussion, I predicted which explanation is most appropriate depending on the pattern of interaction (refer to the Table 1.1). Although there is the slightest hint of convergence in Figure 3.4 below, the clearly non-significant age X discrepancy interaction effect (p =.405) from a 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) ANOVA on the Korean sample indicated that the age effect could be explained with the responsibility explanation in Korea (compare the Figure 1.6 with the below Figure 3.4). Therefore, the performance results of this study are most consistent with hypothesis 3a, that is, with the responsibility explanation.

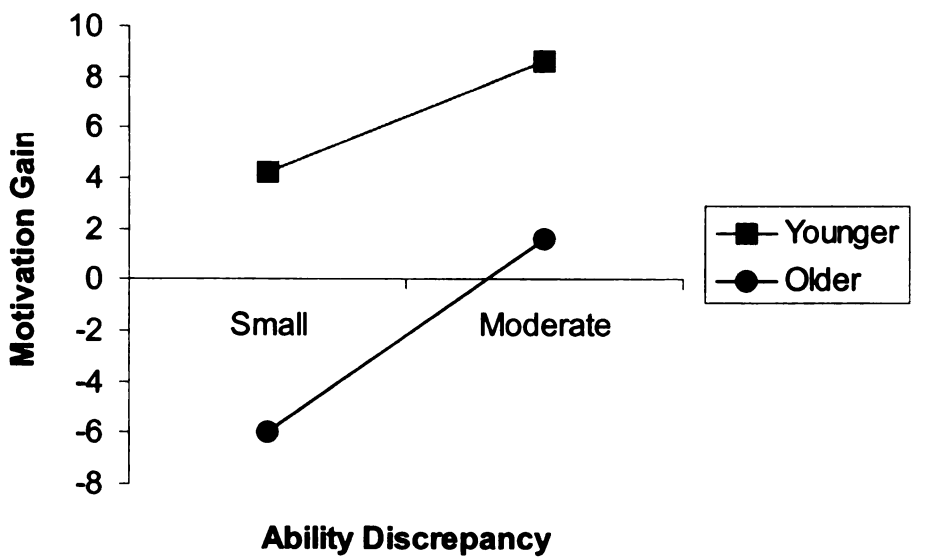


Figure 3.4 Motivation Gain by Age and Ability Discrepancy Conditions in Korea.

Subjective measures

As mentioned in the method section, participants in the conjunctive conditions subjectively responded to 8 direct questions about the 3 potential explanations for

Korean's sensitivity to partner age, as well as 16 additional questions about the participant's and partner's likely emotional responses in the situation. Since my immediate challenge is to explain the Korean participants' sensitivity to their partner's age, in my initial analysis, I focused solely on that sample.

To review, the three explanations for the effect of partner's age on Korean participants' performance suggested, respectively, that Koreans: a) feel less vulnerable to a negative evaluation for poor performance from an older partner than from a younger partner (the *evaluation apprehension* explanation), b) feel more uncomfortable about outperforming an older partner than a younger partner because to do so would violates the normatively prescribed hierarchy (the *status* explanation), and c) feel less responsible when they work with an older partner than a younger partner because cultural norms require the older to take more responsibility than the younger, all else [including ability] being equal (the *responsibility* explanation). As shown above, the performance data offered best support for the responsibility explanation. Here, I examined dyad members' subjective reactions under the conjunctive task demands to see if any of the explanations were supported.

First, for the *evaluation apprehension* explanation, three direct questions ("How much did you feel that your partner would accept and excuse you even if you performed poorly during the 2nd work session?" [*EA1*; 1 = not at all, 9 = very much], "How much did you feel that your partner would reject and criticize you if you performed poorly during the 2nd work session?" [*EA2*; 1 = not at all, 9 = very much], and "How much were you concerned about your partner's criticism if you performed poorly during the 2nd work session?" [*EA3*; 1 = not at all, 9 = very much]) were asked to measure whether age

manipulation may have altered participants' general evaluation apprehension about their performance. Computing the inter-correlations between these questions revealed that *EA2* and *EA3* were highly correlated with each other ($r = .70, p < .001$) but not with *EA1* ($r = .15$ and $.11$ with *EA2* and *EA3*, respectively). I had assumed that all three questions would tap a single, unitary evaluation apprehension variable. However, the inter-correlation between those items indicated that concerns about a partner's likely rejection and relief about the partner's acceptance were nearly independent constructs, even though I merely reversed the wording of one question (*EA2*) to create a new question (*EA1*). In light of this, I examined two variables, an anticipated positive partner reaction (viz. *EA1*) and an index of anticipated negative partner reaction (viz. average of *EA2* and *EA3)*. I conducted a 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) MANOVA on these two evaluation variables; the SPSS MANOVA also automatically does univariate analyses on each measure (see Table 3.1). The important result, of course, is whether partner's age affected either of these variables. These analyses showed that partner's age had no effect on either the negative or positive evaluation apprehension of participants ($F < 1$ for both), nor did age enter into any significant interaction effects. (There was also a marginally significant (p=.056) Discrepancy X Sex interaction effect, but it does not bear on the validity of the EA model, and hence, will not be discussed here.) Therefore, there was no evidence in either performance data or subjective data confirming the evaluation apprehension explanation in Korea. In addition, I examined the data of American participants on the same measures (i.e., *EA1* and average of *EA2* and *EA3)*. Much like

Koreans, they showed no evidence of confirming the evaluation apprehension explanation.

Table 3.1

Analyses of Subjective Measures on the Evaluation Apprehension Explanation

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	EA1	26.802(a)	7	3.829	.829	.566
	Avg_EA2and3	37.156(b)	7	5.308	1.402	.215
Intercept	EA1	1166.306	1	1166.306	252.376	.000
	Avg_EA2and3	1520.419	1	1520.419	401.581	.000
Age	EA1	.007	1	.007	.002	.969
	Avg_EA2and3	2.756	1	2.756	.728	.396
Disc	EA1	.030	1	.030	.007	.936
	Avg_EA2and3	4.505	1	4.505	1.190	.278
Sex	EA1	1.032	1	1.032	.223	.638
	Avg_EA2and3	2.886	1	2.886	.762	.385
Age * Disc	EA1	8.411	1	8.411	1.820	.181
	Avg_EA2and3	.004	1	.004	.001	.973
Age * Sex	EA1	3.217	1	3.217	.696	.406
	Avg_EA2and3	3.127	1	3.127	.826	.366
Disc * Sex	EA1	5.362	1	5.362	1.160	.284
	Avg_EA2and3	14.158	1	14.158	3.740	.056
Age * Disc * Sex	EA1	5.623	1	5.623	1.217	.273
	Avg_EA2and3	7.305	1	7.305	1.929	.168
Error	EA1	392.811	85	4.621		
	Avg_EA2and3	321.817	85	3.786		
Total	EA1	1860.000	93			
	Avg_EA2and3	2166.500	93			
Corrected Total	EA1	419.613	92			
	Avg_EA2and3	358.973	92			

a R Squared = .064 (Adjusted R Squared = -.013)
b R Squared = .104 (Adjusted R Squared = .030)

Second, for the *status* explanation, two direct questions ("How uneasy did you think that your partner might feel if you had outperformed your partner during the 2nd work session?" [*S1*; 1 = not at all, 9 = very much] and "How much did you feel that it would be fine for your partner to do better than you during the 2nd work session?" [*S2*; 1 = not at all, 9 = very much]) were asked to measure whether age manipulation may have affected participants' anxiety about possibly exceeding their partners' performance. The first item locates the anxiety in the partner (my partner will be upset); the second item locates the anxiety in the participant (I would be upset). Because the inter-correlation between these questions was moderately high ($r = .42, p < .001$), I calculated average of the two items and performed a 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) ANOVA on this measure (see Table 3.2). The results showed that partner's age had no effect on participants' anxiety about possibly exceeding their partners' performance ($F < 1$). Also, no age related interaction effects were significant (all $Fs < 1$). Just to be thorough, when I conducted the same analysis separately on each item (i.e., *S1* and *S2*), no effect was significant related to partner's age. Therefore, there also was no evidence in either performance data or subjective data confirming the status explanation in Korea. In addition, I analyzed the data of American participants on the same measures (i.e., *S1, S2* and average of *S1* and *S2)*. Again, Americans showed no evidence of confirming the status explanation.

Table 3.2

Analyses of Subjective Measure on the Status Explanation

Dependent Variable: Average of S1and S2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	12.881(a)	7	1.840	.469	.855
Intercept	1397.167	1	1397.167	355.846	.000
Age	.006	1	.006	.002	.968
Disc	1.515	1	1.515	.386	.536
Sex	7.678	1	7.678	1.956	.166
Age * Disc	.130	1	.130	.033	.856
Age * Sex	.044	1	.044	.011	.916
Disc * Sex	3.789	1	3.789	.965	.329
Age * Disc * Sex	.005	1	.005	.001	.971
Error	333.737	85	3.926		
Total	1990.500	93			
Corrected Total	346.618	92			

a R Squared = .037 (Adjusted R Squared = -.042)

Finally, for the *responsibility* explanation, three direct questions ("How much responsibility did you feel personally for the performance outcome of your group during the 2nd work session?" [*My responsibility*; 1 = not at all, 9 = very much], "How much responsibility did you feel that your partner had for the performance outcome of your group during the 2nd work session?" [*Partner's responsibility*; 1 = not at all, 9 = very much], and "Who do you think was most responsible for the performance outcome of your group during the 2nd work session?" [*Relative responsibility*; 1 = I was completely responsible, 5 = We were equally responsible, 9 = My partner was completely responsible]) were asked to measure whether age manipulation may have changed participants' perceived relative responsibility for their performance. Inter-correlation between these questions revealed that the correlation between absolute responsibility

items (i.e., *my responsibility* and *partner's responsibility*) was moderately high ($r = .42$, $p < .001$), even though these two items were conceptually different. Also, the two items did not have any relation with the *relative responsibility* item ($r = .01$ with both *my responsibility* and *partner's responsibility*). To further check whether these absolute responsibility ratings might be useful to assess relative responsibility, I created another index of relative responsibility from these two absolute responsibility items by subtracting responses on *my responsibility* from responses on *partner's responsibility*. Then I calculated correlation between this new index and the direct measure of *relative responsibility*. There was virtually no correlation between these two relative responsibility indexes ($r = .002$). These analyses suggested that the absolute own and other responsibility measures were either not sensitive enough or had some validity issues (e.g., they might tap stable individual differences in responsibility [e.g., conscientiousness] that made them of little value in assessing the relative responsibility the participants perceived for their partner vs. themselves). Therefore, I focused on the single, direct measure of *relative responsibility*. Hence, I conducted a 2 (sex of participants: male versus female) X 2 (age of partner: younger versus older) X 2 (ability discrepancy: small versus moderate) ANOVA on this measure (see Table 3.3). First, the significant discrepancy effect ($F(1, 85) = 4.70$, $p < .05$, $\eta^2 = .004$) in this analysis indicated that Korean participants felt more personally responsible (relative to their partner) when the ability discrepancy between coworkers was moderate ($M = 4.06$, $s = 1.33$) than small ($M = 4.80$, $s = 1.13$). This result is expected for a conjunctive group task and is also congruent with the significant ability discrepancy effect with performance measures in Korea (refer Figure 3.2). More importantly for the present discussion, the

results showed that partner's age had a significant effect on the participants' perceived relative responsibility. That is, Korean participants felt more personally responsible for the outcome of their group (relative to their partner) when they had a younger partner (M = 4.02, s = 1.39) than an older partner (M = 4.80, s = 1.05; $F(1, 85) = 4.11, p < .05, \eta^2$ = .003). Again, this result is consistent with the performance data that showed larger motivation gains with a younger partner than an older partner (refer Figure 3.3). Also, note that this perception of reduced responsibility with an older partner was not moderated by how discrepant the two teammates' performance was (Age x Disc interaction is not significant), which is consistent with the version of the responsibility model that assumes that the age-related expectations are rather general, and apply regardless of what additional responsibility differences there are due to other factors (such as the demands of the task). Therefore, both the performance data and subjective data confirmed predictions of the responsibility explanation in Korea. To be thorough, I examined the data of American participants on the same measure (i.e., *relative responsibility*). Reflecting the no age related effects in the performance data, Americans showed no effect related to the partner's age on this measure.

Table 3.3

Analyses of Subjective Measures on the Responsibility Explanation

Dependent Variable: Relative Responsibility

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	25.676(a)	7	3.668	2.459	.024
Intercept	1429.148	1	1429.148	958.050	.000
Age	6.136	1	6.136	4.113	.046
Disc	7.004	1	7.004	4.695	.033
Sex	.817	1	.817	.548	.461
Age * Disc	1.856	1	1.856	1.244	.268
Age * Sex	1.221	1	1.221	.819	.368
Disc * Sex	.099	1	.099	.066	.798
Age * Disc * Sex	.536	1	.536	.359	.551
Error	126.797	85	1.492		
Total	1960.000	93			
Corrected Total	152.473	92			

a R Squared = .168 (Adjusted R Squared = .100)

Given these results on *responsibility* explanation, I then checked the possibility that the relative responsibility variable might mediate the relationship between partner's age and performance. Unfortunately, this relative responsibility (i.e., a possible mediator) did not have a significant unique effect on the performance (i.e., DV; the correlation between these variables was -.07, ns). Therefore, this measure fails to meet one of Baron and Kenny's (1986) necessary conditions for establishing mediation.

All the analyses above were conducted with the 8 items specifically tailored to tap the subjective responses suggested by the three alternative explanations. However, some of the other variables that had been included on the post-experimental questionnaire could also tap these subjective responses. For example, the item "My partner will look down on me" or the item "My partner will scold me for my poor performance" might

well tap participant's apprehension about partner evaluation (observed correlations with EA2 and EA3 range from .52 to .57). So, to be thorough, I examined all 16 of these measures to see if any showed a significant Age of partner effect. None did. Hence, items which, on their face, might tap evaluation apprehension or status anxiety produced the same null Age effect as the direct measures of these variables. Note that none of these 16 variables correlated very highly (maximum $|r|=.27$) with *relative responsibility*, the one variable that did produce an Age effect. So, consideration of these additional items does not alter or qualify the conclusions of the preceding analyses.

Chapter 4

DISCUSSION

The present study had two objectives. The first objective was to see if the culture X age interaction effect that was observed in the scenario study (i.e., intention to work hard was greater with a younger partner than an older partner under the conjunctive task demands, and this tendency was stronger in Korea than in the US; refer Figure 1.3) could be replicated in actual group performance. In the present study, I did replicate this interaction effect with actual performance, such that the Koreans worked harder with a younger partner than with an older partner, but the Americans did not show any performance difference depending on their partner's age. It should be mentioned that Americans showed relatively small but significant age effect in the scenario study but this effect disappeared using actual performance as a dependent measure. Therefore, the results of the present study suggested that, at least in the Köhler paradigm, partner age matters in Korea but not in the US.

The second objective of this study was to investigate why Koreans might be more sensitive to partner's age than the Americans, as suggested by the results of the scenario study. For this purpose, I proposed three possible explanations (viz. Evaluation apprehension, status, and responsibility explanations) to account for the results based on Confucianism which is deeply rooted in Korean society (Koh, 1996). The evaluation apprehension explanation reflected the possibility that Koreans might expect an older person to be more likely to forgive or excuse a younger partner's poor performance than the other way around (i.e., a younger person excusing an older partner's poor

performance). The status explanation focused on the possibility that Korean participants might not work as hard as they possibly could to avoid violating an implicit status rule (i.e., it seems more appropriate for the high status person in a group to perform a pivotal role in attaining a group goal) when they paired with older people. The responsibility explanation reflected the possibility that Korean participants would expect an older partner to be more responsible for the group's outcome than a younger partner. The performance data of the present study best supported the responsibility explanation. That is, if for Koreans, age generally and automatically leads to a presumption that they are more responsible when they are older members of their group and they are less responsible when they are younger members of their group, then in my study I expect no age X ability discrepancy interaction effect and the performance data in the present study supported this null effect (see Table 1.1). Subjective measures also suggested that these performance results could be explained by participants' perceived responsibility not by evaluation apprehension or status anxiety among Koreans. That is, there was evidence in the subjective measures that participants felt relatively more responsible when their partner was younger and relatively less responsible when their partner was older, but there was no evidence that they felt less evaluation apprehension or more status anxiety with an older partner.

Although both performance and subjective data suggested the responsibility explanation might be most plausible in Korea, this interpretation must acknowledge that the direct measure of relative partner responsibility did not pass a standard test of mediation—it was not significantly related to the performance criterion variable. This is consistent with some non-mediational process. For example, partner age might

independently alter perceived responsibility and (through some other mediational route) performance. However, I think there might be at least two other reasons that could have contributed to the failure to confirm mediation statistically. First, because participants rated the responsibility question after knowing their performance results (i.e., participants were the weaker member of the group), they might have distorted their felt responsibility that they had perceived during the group trial to rationalize or excuse their poor performance. For example, not to take responsibility for the group's poor performance, relatively older participants (in younger partner condition), who actually worked harder but could never overtake their partner, might have rated that their younger partner as somewhat more responsible, even though they were older member of the group and actually felt more responsibility during the group trial. Such rationalization would undermine the validity of the relative responsibility measure. Second, it is also possible that at least some Korean participants were not consciously aware of beliefs about relative responsibility after or even during the group trial and later failed to report it, although a sense of responsibility really affected their performance. Because of this lack of awareness, there might have been no link between the responsibility measure and performance. Therefore, it might be necessary to measure this responsibility variable by using different method (e.g., some implicit measure) or, if their conscious awareness of relative responsibility is quite low, perhaps establishing the process using a *moderation-of-process* design (that is, designs that examine underlying process by utilizing moderation; Spencer, Zanna, & Fong, 2005).

It is interesting to note that American participants did not show an overall motivation gain in the present study. The present results are different from Wittchen and

her colleagues' study (Wittchen, Schlereth & Hertel, in press) which showed significant overall motivation gain effect using very similar task and procedure. However, one potentially important difference between Wittchen et al's study and my study was the fact that Wittchen et al. did not give participants any information about their partner's age. That is, since Wittchen et al.'s participants were recruited from a single student population, they probably just assumed their partners were about the same age as them. However, in my study, participants were given explicit information that their partners were either much younger or much older. As I reviewed in the introduction section, Kohler effect requires: 1) a weaker group member compares his/her performance with his/her partner's (social comparison mechanism), 2) a weaker group member cares about his/her group and/or its evaluation of him/her (indispensability mechanism; Kerr et al., in press-a). The absence of the usually robust overall Köhler effect among the present American participants suggests that large age differences between the participants and their partners might have undermined both mechanisms in the US – I do not compare myself with or feel like part of a team with someone too different from me in age as implied by a popular catchphrase in the US ("do not trust anyone over 30" or under 13?).

To investigate this possibility, I collected data from 33 more American participants in the small discrepancy condition without giving any age information about their partner (much like Wittchen et al.'s study did). I will refer to these participants as the *no-age condition*. Recall that the corresponding participants in the present study (i.e., participants with small discrepancy and a partner with a very different age) showed no overall motivation gain ($M = .96$, $s = 13.99$; $t(176) = .91$, *ns*). However, the no-age participants did exhibit a marginally-significant motivation gain ($M = 4.50$, $s = 14.27$;

$t(32) = 1.85, p < .075$ with a non-directional test). [Note that I only collected about a third as many participants for this new condition; had the sample size been comparable to that in the main study, this same motivation gain effect would have been highly significant. Moreover, the effect size among my no-age participants (N=33, mean motivation gain = 4.50, Hedges's g = .64, effect size r = .31), is comparable to the corresponding effect size observed in Wittchen et al.'s German sample (N=36, mean motivation gain = 6.03, Hedges's g = .69, effect size r = .33).] So, although the American participants in my main study did not distinguish between working with a partner much older than one much younger, the results with the no-age participants suggest that in another sense, age does matter to Americans—viz. for the Americans, large age gaps undermined the processes that produce the Kohler effect. The finding of a significant overall Köhler effect among the Koreans, however, suggests that comparably large gaps in partners' ages does not neutralize the motivation-gain producing processes, and the significant age of partner effect shows that these processes are moderated by social values of the Korean culture (viz., that give older people greater relative responsibility for collaborative tasks).

Implications from all three studies

Considering the results of previously conducted two studies and the present study altogether, let me think about some implications for cross-cultural psychology in general and culture's effects in the Kohler paradigm. (For purposes of the present discussion, I will call the first, experimental study in Seok et al. [2006] Exp. 1, the follow-up scenario study Exp. 2, and the current study Exp.3). I discuss these implications in three different directions: for theory development on motivation gains, for future social psychological research on culture, and for applied settings.

Theoretical implications. The present results have some theoretical implications on group motivation gains paradigm. In the introduction section, I briefly reviewed two main explanatory processes which might underlie the group motivation gains effects (i.e., Indispensability of effort, Goal-setting version of social comparison). Based on the present results, these explanatory processes might be modified. That is, the present results suggest that to produce a Köhler motivation gain, it is not enough simply to make somebody indispensable to the group or to give them the opportunity to compare their performance with more capable group members. At least in some contexts (e.g., cultures), the effect very much depends upon who the other group members are. In the present study, US participants seemed to consider large differences in age as a reason to stop comparing with a partner, or caring much about the group's performance or evaluation. Among Koreans, the same partner-age feedback moderated, rather than eliminated the processes that normally lead to motivation gain. Specifically, the Korean participants felt relatively more responsible for the fate of the group when paired with a younger partner than with an older partner. Of course, most real world work groups are not as homogeneous as the ad-hoc laboratory groups typical in most early studies of group motivation. My findings (along with a few other studies, e.g., Lount et al., 2000; Kerr et al., in press-b; Kerr & MacCoun, 1984) suggest that group composition may be much more important for the occurrence and magnitude of motivation gain and loss effects than current theories would suggest.

Scientific implications (for social psychology). As we already saw in the introduction section, there was no cultural moderation of the Köhler motivation gain in Exp. 1 (see Figure 1.1). This suggested that culture's effects, at least in the Köhler

paradigm, were not general cultural effects. But this left open the possibility of other interesting cultural differences—namely, in sensitivity to other aspects of the task or the group, such as partner attributes (viz. family relationship and partner age in Exp. 2; partner age in Exp 3). Considering the full pattern of results across all three studies, I am led to ask the following question: Can we best understand all or most cultural differences in terms of presumed cultural differences in broad trait-like constructs (e.g., self-construal, Individualism-Collectivism, holistic versus analytic reasoning [Nisbett, Peng, Choi, & Norenzayan, 2001]), or do we also need narrower theory that focuses on cultural differences in particular values, beliefs, and norms? At least within the present work on the Köhler motivation gain, I think that narrow or mid-range cross-cultural theories have proven to be more useful. I suspect that fully understanding the role of culture for social phenomena that focus on social perception and interaction (e.g., small group phenomena) may likewise require such low/mid-range theory.

Applied implications. The present study also has some interesting implications for applied work settings. First, the results of this study suggest that we should pay more attention to culturally significant features in a particular society (e.g., age in Korea) when we try to compose effective work teams in that society. For example, based on the present results, we can expect that having older (non-infirm) Korean workers working with younger Korean workers may undermine the younger worker's work motivation compared with workers of the same age (e.g. two younger Korean workers). The current results suggest that the same age effect would not occur in an American workplace, but clearly more research is needed to see whether the current null age effect generalizes to other tasks or age ranges.

Second, the results of this study also imply that we should consider characteristics of each culture when we undertake global businesses. That is, businessmen who would like to launch their businesses in some other Asian countries (e.g., China or Japan) which were strongly influenced by Confucianism might expect the same age effect that was found in Korea. For example, an American company manufacturing in Korea might find that age differences on the shop floor will affect worker motivation in ways that the same age differences in a US workplace would not.

Third, related to the above issue, it would also be useful and interesting to know whether this age effect would persist in cross-culturally composed teams, considering the rapid globalization of the world's economy and occasional merging between two companies from different countries in recent decades. For example, when an older American and a younger Korean are working together as a team, there might be some conflict between workers caused by differences in perceived responsibility (i.e., the younger Korean worker might anticipate the older American should take more responsibility for the outcome of the team, but the older American might not see the age difference as being relevant).

Limitations and Directions for Future Research

Finally, I should note some of the limitations in this study. First, there could be some issues related to the internal validity of the study. One issue might be whether I really manipulated the ability discrepancy at a moderate level or might this manipulation have been too extreme (too weak or too strong). The non-significant ability discrepancy effect in the US data might suggest the latter possibility. Future work might be needed to find an appropriate level of ability discrepancy manipulation by varying the ability

discrepancy at several levels. Another issue related to the internal validity of this study can also be generally applied to any cross-cultural studies. I tried my best to control and minimize any confounds that might threaten the internal validity of this study (e.g., used exactly the same task, same cover story, same instructions, and same time limits in both culture), but some confounds invariably arise in any cross-cultural comparison (e.g., lab room differences between Korea and the US, slight age difference between Korean and US subject pools, differences in specific structure of compensation for research participation). By seeking the same conclusions in conceptual replications, we could demonstrate the observed effect is not artifactual. The last issue related to the internal validity of this study is about the age manipulation procedure. In this study, I used the ostensible online connection method to manipulate partner age variable, but some participants reported strong suspicion for this procedure. Although I removed these suspicious participants in the analyses, still there might be a problem in this method (i.e., we do not know whether a participant really had suspicion if s/he did not report). To solve this problem in future studies, we might use 1) confederates of the desired age or 2) a real online connection to achieve age manipulation.

Second, there could also be some issues relevant to the external validity of this study. The first issue might be whether we could generalize results obtained by using Korean students to the general Korean population. That is, it would be interesting to see whether the partner-age effect might be stronger for an older or more traditional population than university students. Also, related to the previous issue and age manipulation, it might be useful to investigate to what extent the results obtained with the 11-year age gap in the present study could be generalized to bigger age differences (e.g.,

30, 40, or 50-year age gaps). If it is feasible to use larger age gaps in an experiment, the findings could have very useful implication for the workplace considering the current trend of a rapidly aging society, where much older workers may be common. For example, will the entry of older/semi-retired workers lead younger Korean workers to feel less responsible at the workplace? Or, is there some age at which the older person is relieved of responsibility, rather than having to assume greater responsibility?

Another issue relevant to the external validity of this study is whether the age effect found in Korean culture could be generalized to other Asian cultures with strong Confucian traditions (China or Japan) or to other collectivistic cultures which were not influenced by Confucianism (e.g., African or Latino cultures). Future works focused on inter-cultural comparisons might address this research question.

Another issue related to the external validity is whether the age effect might be moderated by task features. That is, people's felt responsibility for a particular task might vary depending on task characteristics. For example, a younger adult might feel more relative responsibility for physical task whereas older adult might feel more responsible for tasks which need life experiences or wisdom. A related issue is whether this age effect might be generalized to non-performance contexts. For example, it might be interesting to investigate whether a younger Korean bystander to an emergency feels and acts less responsible when the other bystanders are older rather than the same age or younger. Such an age-of-bystander effect might also be affected by nature of the emergency (e.g., if someone needed physical help, younger bystander might feel more responsibility).

In the present study, the significant age effect for Koreans were observed under conjunctive task demands (i.e., when participants always were the weaker member of the

group and hence, the group's "weak link"). Given the results, it would be interesting to examine different task demands (e.g., additive, coactive or disjunctive tasks) in future studies and to see if the age effect generalizes. Especially, under the additive task demands (i.e., when the final group score was determined by the sum of each member's performances), it would be interesting to see whether partner's age might moderate the social compensation effect (Williams & Karau, 1991). If an older participant in Korea were paired with a younger partner who was anticipated to show poor performance, would we obtain a stronger social compensation effect than when we paired a younger participant and an incapble older partner? And would we find no such age-of-partner moderation effect in the US, as the current results suggest?

Finally, how general is the insensitivity of Americans or other westerners to work partner characteristics? As demonstrated in the Exp. 2 and 3, family relation and partner's age moderated Koreans' performance, but not Americans'. But Lount et al (2000) demonstrated that sex of partner moderated American's performance. Based on these results, it would also be interesting to examine in future studies whether other characteristics of coworker show similar effects to the family relation, age and sex of partner. For example, at least in Korea, I think regional network (i.e., came from same province) or school network (i.e., graduated from same school) might have similar results as implied by Han and Choe's (1994) study. Also, in the US, it would be useful to see if there were any other partner characteristics that US participants are as or even more sensitive to than Asian participants—e.g., racial group membership, job seniority, weight or physical attractiveness, or sexual orientation.

Chapter 5

CONCLUSION

I began this project by being interested in whether motivation gain phenomena which were mainly studied in Western culture might show similar effects in Eastern culture. The results of the first and second studies suggested that culture's effects in the motivation gains paradigm were not general—a larger or smaller Köhler effect--but rather more complex—namely, culture moderated the effect of certain partner attributes (e.g., family relationship and partner age) on the Köhler effect. The third study extended the previous two studies and suggested that partner age effect in Korea might be explained by participant's perceived responsibility for the group's success. That is, Korean participants felt more responsibility, perhaps without much awareness, for the outcome of their group when they are paired with a younger partner than an older partner. I attributed the roots of this age effect in Korea to Confucianism which has shaped Korean society for several hundreds years.

APPENDICES

APPENDIX A

Scenario study

You and another person, Pat, (who are both adults over 20 years old) are partners in a computer equipment and furniture company. The company specializes in providing both the computer equipment and the furniture that goes with it. Your job in this company is to handle one part of each order—the part for computer systems (each system consists of a computer, a monitor, and a printer). A customer tells you what kind of system he/she wants (e.g., what size monitor) and indicates his/her top price. You must then identify the most expensive system available that fits all the customer's requirements. Pat's job is to handle the other part of each order—for computer furniture modules (a module consists of a desk, chair, and printer stand) to go along with the computer system. The customer indicates what kind of furniture module he/she wants (e.g., how large a desk) and his/her top price for furniture, and Pat identifies the most expensive system available that fits the customer's requirements.

When the company began business, it was determined by a respected consulting firm that it should take the same amount of time to handle the computer-system part of an order as it does to handle the furniture-module part. An order is not completed until both parts—the computer system and the furniture module—are processed. The company's profits depend entirely on

how many orders can be completed—the more that are completed, the higher the company's profits.

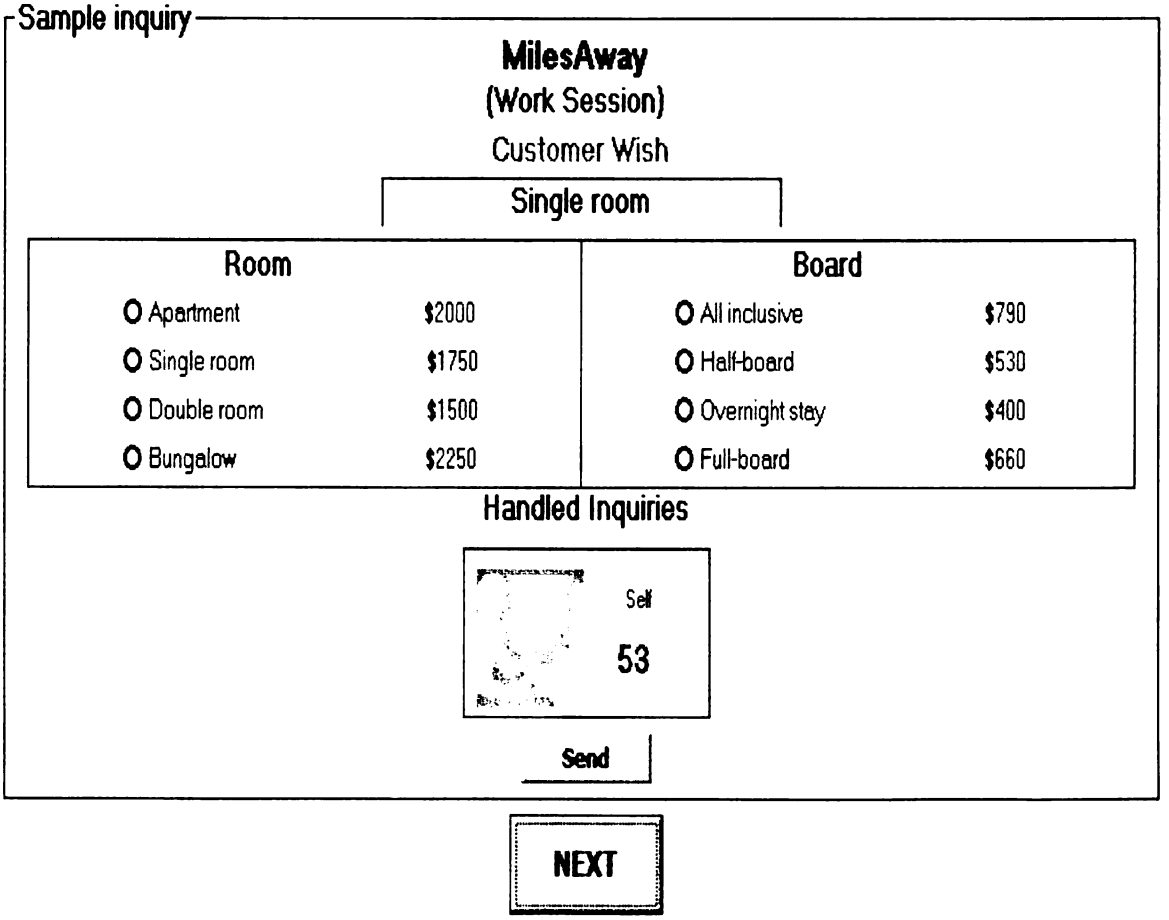
At the end of the most recent 3-month quarter of business, you check the company records and discover that in any given week, Pat is completing an average of 27% more furniture-module orders than you are completing computer-systems orders. Specifically, you completed the computer-system part of 400 orders in an average week, but Pat completed 508 (or 27% more). Since an order is not finalized until both parts are completed, your company has been averaging only 400 completed orders per week.

APPENDIX B

An example and instructions of the task

Let's consider an example. Below is a sample inquiry. Your first task is to check to see what preference the customer has expressed (under the 'Customer Wish'). In this example, s/he has requested a single room. So you would check 'Single Room' under the Room column. Next, you would choose the lowest priced Board option. That is the 'Overnight stay' option (THROUGHTOUT THIS STUDY THE PRICES FOR EACH OF THE OPTIONS WILL BE THE SAME, BUT THEIR POSITIONS WILL BE CHANGED). To choose this, you would simply check 'Overnight stay' under the Board column. Then, to send the offer off to the customer, you press the 'Send' button.

You can see how many customer inquiries you have completed by looking at the number displayed under 'Handled inquires' on your screen. This number will be updated and visible during the whole session. YOUR FINAL PERFORMANCE, HOWEVER, WILL ONLY COUNT THOSE OFFERS THAT MEET BOTH OF THE FOLLOWING TWO CRITERIA: 1. THE CUSTOMER'S PREFERENCE WAS TAKEN INTO ACCOUNT, AND 2. THE CHEAPEST ALTERNATIVE WAS CHOSEN. So, in the example below, checking any Room option other than 'Single Room' OR checking any other Board option than 'Overnight stay' would be an error and wouldn't count toward your final performance score. Please click 'Next' to proceed.



APPENDIX C

1st work session

MilesAway

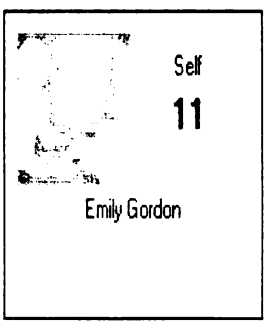
(Work Session 1)

Customer Wish

Overnight stay

Room		Board	
O Double room	$1500	O Half-board	$530
O Bungalow	$2250	O Overnight stay	$400
O Single room	$1750	O All inclusive	$790
O Apartment	$2000	O Full-board	$660

Handled Inquiries



Send

APPENDIX D

Names and ages of connected participants

Right now, 12 female participants are connected in the server including you because this session is for females only. The below screen shows you 8 people who were randomly selected out of these 12 people. Because each person will be paired with each other for the following task performance, the computer will randomly select your partner among these people.

Emily Howe Age: 18	Robin Pyfer Age: 12
Emily Gordon Age: 19	Erin McIntee Age: 20
Amanda Clute Age: 24	Pat Roberts Age: 30
Ashlyn Carlile Age: 13	Cheri Kaylor Age: 19

Please click on this button to identify your partner's name and age

APPENDIX E

The 2nd work session and manipulation of ability discrepancy

MilesAway

(Work Session 2)

Customer Wish

All inclusive

Room		Board	
O Bungalow	$2250	O Full-board	$660
O Apartment	$2000	O All inclusive	$790
O Single room	$1750	O Overnight stay	$400
O Double room	$1500	O Half-board	$530

Handled Inquiries

Self	Partner
16	23
	
Emily Gordon	Pat Roberts
Age: 19	Age: 30

Send

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