THE “RIPPLE EFFECT”:
CULTURAL DIFFERENCES IN
SUBJECTIVE PERCEPTIONS OF RESPONSIBILITY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
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The Ohio State University

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ABSTRACT

Previous research has demonstrated that East Asians make broader causal attributions for behaviors than Westerners. In the current research, it was hypothesized that East Asians would also take responsibility for a broader distribution of consequences of events. This hypothesis was supported in 4 studies. In a content analysis investigating both Japanese and American newspaper articles (Study 1), evidence suggested that Japanese journalists focus more on responsibility for the distal consequences of certain events compared to American journalists. Furthermore, in three cross-cultural experiments involving hypothetical scenarios (Studies 2-4), Japanese participants held themselves responsible to a larger number of people than Americans, and perceived themselves as more responsible for distal consequences, whereas Americans perceived themselves as more responsible for proximal consequences. Study 4 demonstrated that individual differences in holistic thinking were related to the ripple effect, but did not necessarily mediate the cultural difference. Overall the results support the hypothesis that Japanese hold themselves responsible for a broader range of consequences for events than Americans do. Implications for our
understanding of cross-cultural psychology, and for our understanding of holistic/analytic cognition, are discussed.
Dedicated to my family

To my father, Bill; my mother, Georgia; and my sister, Rachel

&

To my son, Dylan; and to my wife, Takako
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CHAPTER 1

INTRODUCTION

Culture has a significant impact on the way individuals think about and perceive the world. Over the past decade and a half, research has documented a host of psychological differences between people from East Asian cultures (e.g. Japan, China, Taiwan, Korea) and people from Western cultures (America, Canada, Australia, Western Europe) (see Fiske, Kitayama, Markus, & Nisbett, 1998, for a review). The consistent emergence of cross-cultural differences in perception, cognition, motivation, and emotion have led researchers to the conclusion that many psychological processes, previously thought to be universal, are actually quite culturally specific (e.g. Nisbett, 2003).

One example of such cultural differences is that self-esteem researchers previously theorized that high self-esteem was essential for mental health (e.g. Taylor & Brown, 1988; Leary, Tambor, Terdal, & Downs, 1995). However, it has become clear
that for people in East Asian societies, particularly Japan, the need for high self-esteem is much less important than for people from Western cultures (Markus & Kitayama, 1991; Heine & Lehman; 1995; 1997; for a review, see Heine, Lehman, Markus, & Kitayama, 1999). In addition, the attribution bias involving the overestimation of the impact of personal influences was considered to be so robust that it was labeled the “Fundamental Attribution Error” (Ross, 1977). However, East Asians have been found to be much less susceptible than Westerners to this “fundamental” effect (e.g. Morris & Peng, 1994; Lee, Hallahan, & Herzog, 1996). Thus, it seems clear that many social psychological phenomena are at least somewhat dependent upon the cultural context in which individuals are embedded.

Holistic versus Analytic Thought

One theoretical framework that has been used to explain cultural differences across a variety of domains is the idea of holistic versus analytic modes of thinking (Nisbett, Peng, Choi, & Norenzayan, 2001). Nisbett and colleagues have postulated that psychological differences between Westerners and East Asians are the result of fundamental differences in cognitive and perceptual tendencies that arose because of the different intellectual traditions of each type of society. On the one hand, East Asians have a holistic way of thinking about and perceiving the world. Holistic thinking involves attending to wholes rather than parts, and attention to relationships of objects within a context rather than looking at objects detached from the context. Within this framework, then, East Asians focus on many elements within a given environment, and the relationships of the elements to each other.
The contextual nature of Japanese cognition has been demonstrated in a study by Masuda and Nisbett (2001). These researchers presented Japanese and American participants with animated scenes of fish and underwater objects and asked them to describe what they saw. Consistent with a holistic style of thinking, Japanese tended to refer to background elements and relationships among objects more so than Americans, who, consistent with an analytical style of thinking, focused on the focal object in each scene. For Japanese, focal objects were much more tied to the background context, indicating that they were more attuned to the entire perceptual field, and to the interrelationships among objects, than Americans were.

Nisbett and colleagues have proposed that such a holistic style of thinking arose because of the intellectual traditions of ancient China, particularly Taoism and Confucianism. These traditions tend to stress a community- and group-centered focus, such as maintaining harmonious relationships with others and with nature, knowing one’s place in the social hierarchy, and emphasizing the importance of finding a middle ground between opposing propositions (Nisbett et al., 2001). Thus, Chinese and other East Asians learned to think about the world in terms of relationships among people and objects, understanding events within a relatively broad social context, and attending to the complexity of various problems.

Westerners, on the other hand, may focus on specific, focal elements in more of an analytical style (Nisbett et al., 2001). This thinking style involves a focus on prominent objects in the environment, attention to the attributes of objects independent of the context, as well as a tendency to categorize objects and use specific rules of logic to predict behavior. An understanding of the world from an analytical perspective is
predicated on extracting objects from contexts, understanding and predicting behavior using formal logic, and avoiding contradiction and inconsistency.

If those who think analytically use logic to predict behavior, then it could be expected that these people would tend to express surprise when individuals behave in a manner inconsistent with their personality traits. Indeed, Choi and Nisbett (2000) showed that Americans expressed surprise when reading an ironic scenario about a seminary student who, because he was in a hurry, bypassed an injured individual on the way to give a lecture on the Good Samaritan. Because of the inconsistencies between the typical characteristics of seminary students and the lack of helping behaviors, Americans indicated that they would not have predicted this outcome. However, Choi and Nisbett showed that Koreans, who think more holistically, expressed less surprise about this behavior, citing situational pressures as a likely cause. Thus, the Americans’ analytical style of thinking led them to expect behavior consistent with personal traits (a seminary student should deliver help) even though contextual influences impeded such “logical” behavior. Rather than seeing the behavior as inevitably interlinked with the contextual forces, Americans tended to expect the actor to behave in a consistent, logical manner, independent of the context.

Nisbett and colleagues (2001) have proposed that such an analytical style of cognition arose because of the intellectual traditions of ancient Greece that influenced Western culture. For the ancient Greeks, the power of the individual was of primary importance. The Greeks believed that people should have a strong sense of personal agency and should be free to develop their interests and lives however they wished. In addition, the fact that the Greeks emphasized debate and logic meant that it was
important to categorize objects and develop rules about their expected behaviors. Thus, this more analytic mode of thinking led to a heightened focus on the individual independent of situational influences, as well as attention to objects and their specific, individual characteristics.

Culture and Attribution

There is now abundant evidence that East Asians think about the world in a holistic manner, whereas Westerners think about the world in an analytic manner. One specific domain of importance for the present research involves cultural differences in attribution (see Choi, Nisbett, & Norenzayan, 1998, for a review). Consistent with a holistic frame of mind, a variety of evidence suggests that East Asians tend to make relatively broad causal attributions, while Westerners, consistent with an analytic frame of mind, make more narrow attributions. For instance, many studies have demonstrated that whereas Westerners have a strong tendency to explain behaviors in terms of an actor’s personal characteristics (e.g. Ross, 1977), East Asians are more inclined to explain behaviors in terms of situational factors influencing the actor (Morris & Peng, 1994; Lee, Hallahan, & Herzog, 1996).

To demonstrate this cultural difference in personal versus situational attributions, Morris and Peng (1994) examined newspaper articles about similar types of mass murders in the United States and China. These researchers showed that American journalists tended to focus almost exclusively on the negative personal characteristics of the murderers; on the other hand, Chinese journalists focused much more on the situational and contextual influences that might have influenced the murderers. In fact, even when situational factors are made salient, Americans continue
to ascribe behaviors to personal factors, while East Asians are more influenced by situation-salience manipulations (Choi & Nisbett, 1998).

A second cultural difference in attribution involves the type of causal agent typically deemed responsible for events. Previous findings have demonstrated that although Americans tend to indicate that single individuals cause events, East Asians are more likely to hold many people, particularly groups, accountable for a given action (Menon, Morris, Chiu, & Hong, 1999; Chiu, Morris, Hong, & Menon, 2000). For example, Chiu et al. (2000) had participants read a vignette in which a pharmacist filled prescriptions with the incorrect medicine, causing several patients to become sick. Chiu and colleagues found that Americans were more likely to indicate that the pharmacist who filled the prescription caused this event, while Chinese participants were more say the pharmacy as a whole was responsible for causing the event.

Finally, a third cross-cultural difference in attribution involves the amount of information that East Asians and Westerners take into account when explaining an event. Compared to Westerners, East Asians take a larger number of factors into account when trying to explain an event (Choi, Dalal, Kim-Prieto, & Park, 2003). Choi and colleagues found that when presented with a list of one hundred possible contributing factors for an event, Korean participants considered a larger number of potential causes before making an attribution than Americans did. This was true for analyses of both deviant and pro-social behaviors.

Thus, cultural differences in attribution imply that Westerners see causality as lying more with the individual actor, whereas East Asians are more likely to ascribe causality to the situation and to multiple actors. In addition, East Asians take into
account a larger amount of information when making an attribution. Overall, then, East Asians seem to make broader attributions for behaviors than Westerners, focusing not just on the most proximate causes of an action (personal factors, single person responsible, few possible causes), but also on the more distal, indirect causes as well (situational factors, many people responsible, many possible causes). The findings from attribution research offer additional support for the idea of that holistic thinking predominates in East Asian cultures, and analytic thinking predominates in Western cultures.

The Present Research

Although there are clear cultural differences in causal attribution, there is little research focusing on the opposite side of the coin. That is, assuming an event has already occurred and causal responsibility is not in question, to what extent is the person who caused the event responsible for the consequences of his or her action on others? If East Asians see the world holistically, and Westerners see it analytically, these differences should impact both the perceived causes as well as the perceived consequences of events. Specifically, it is proposed that compared to Westerners, East Asians may be more aware of the “ripple effects” of their actions: East Asians may be more cognizant of the downstream effects of actions on others, particularly those effects that are relatively indirect (see Figure 1). Because their attention is more directed toward the broader context and interrelationships among objects and events, East Asians may also perceive a given action as directly or indirectly affecting a larger number of people. However, Westerners may focus only on the most immediate
consequences of actions in a more analytic manner, and may tend to focus on those directly, but not indirectly, affected by behaviors.

Figure 1: Schematic Representation of the “Ripple Effect.”

The current research was designed to test the idea that compared to Americans (as exemplars of one type of Western culture), Japanese (as exemplars of one type of East Asian culture) are more attuned to the “ripple effect.” In other words, East Asians were predicted to be more aware of how the consequences of their actions affect others. In particular, it was predicted that cross-cultural differences should arise
concerning attention to those proximally versus distally related to the focal event: While Americans may be aware of the proximal effects of their actions, particularly those actions that affect themselves personally, Japanese should be more likely to be aware of the distal effects of their actions, as well as the effects on other people rather than themselves. This hypothesis was tested in a series of four studies.
CHAPTER 2

STUDY 1: CONTENT ANALYSIS

Previous research has often used archival studies of newspaper articles to investigate cross-cultural differences in attributions (Morris & Peng, 1994; Lee, Hallahan, & Herzog, 1996; Menon, Morris, Hong, & Chiu, 1999). For example, Menon et al. (1999) investigated media coverage of investment scandals in one Japanese (Asahi Shimbun) and one American (New York Times) newspaper. Menon and colleagues found that although the Times articles tended to focus on the personal responsibility of the actors, the Asahi Shimbun articles focused more on the situational factors influencing the actors. In addition, Lee et al. (1996) found that sports journalists in Hong Kong focused more on the contextual influences affecting sporting events, while American sportswriters preferred explanations involving dispositions of individual team members.

The present research involved an initial archival study to test the idea of cross-cultural differences in subjective perceptions of responsibility for the consequences of
events. The purpose of this study was to compare newspaper coverage of similar events in America and Japan, with specific attention to events in which a variety of people are directly or indirectly affected. The news articles concerned four topics that were thought to be everyday examples of situations where Japanese might be especially concerned about their responsibility toward others, in particular to those people who were indirectly or distally affected by the focal event.

The first topic of focus concerned train accidents involving fatalities. Both Japan and America have commuter train systems in many areas of the country.\(^1\) Train accidents invariably affect people other than those directly involved in the accident, particularly those commuters who are waiting to board at upcoming stations and are subsequently delayed. Thus, one possible manifestation of the hypothesized ‘ripple effect’ is the attention journalists give to commuters delayed or otherwise inconvenienced by fatal train accidents. Accidents involving fatalities are especially relevant because the focal event is the fatality, not the extent to which commuters were inconvenienced. It was predicted that articles from Japanese news sources would mention inconvenienced commuters more often than American or European articles.

Another set of selected newspaper articles concerned preventing the spread of illness to others. Transmitting germs and illness is a means by which people may be responsible for adversely affecting others; however, people may be differentially aware of whether they have the potential to infect others, particularly because the person who

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\(^1\) While the American commuter rail system is less ubiquitous than that in Japan, there are major commuter train and subway systems in large major metropolitan areas; however, because of the differences in the prevalence of commuter rail systems in Japan and America, articles from European news sources concerning accidents in European countries were also examined for this topic.
transmits a virus or bacterium is not always easy, or even possible, to determine. Thus, the extent to which steps are taken to prevent illness may be seen as a proxy for awareness of the possibility of spreading infection: The more extreme the measures to prevent the spread of illness, the more cognizant people are of their responsibility to prevent transmission and avoid adversely affecting others.

In order to investigate potential cultural differences in prevention of disease transmission, two types of articles were examined. One set of articles concerned influenza outbreaks in schools. Although one method of preventing illness in schools is to send the infected children home, a more extreme measure is to completely close the school itself. Thus, Japanese and American newspaper articles were examined to determine whether school closings were more common in Japan than in America when students had the flu.

A second set of disease-transmission articles concerned using surgical masks to prevent everyday illnesses. Wearing a surgical mask is commonplace in situations where infection would lead to very grave, possibly life-threatening consequences (e.g. for doctors performing surgery; when people are brought into close proximity to patients with serious illnesses like SARS). Thus, a surgical mask is a distinct sign of a strong desire not to spread or contract illness. If surgical masks were used (or recommended) to prevent the transmission of more mundane illnesses like colds or influenza, this would indicate a special precaution to avoid infecting others. Thus, an additional set of newspaper articles was examined to see if such a practice (or recommendation) was more common in Japan than the U.S. It was predicted that compared to American articles, a) Japanese articles would be more likely to mention
schools closing as a result of student illness, and b) that Japanese articles would be more likely to mention or recommend the use of surgical masks to prevent spreading colds or the flu. It should be noted, however, that illness articles mentioning SARS were explicitly excluded from the analysis.

The fourth set of articles concerned corporate restructuring plans. When businesses restructure in order to become more profitable or efficient, one way to do so is by firing employees, although this course of action arguably has the most negative impact on employees. However, there are other ways to deal with business problems that do not involve layoffs, such as transferring or retraining employees, or cutting salaries and/or fringe benefits. One possible manifestation of the ripple effect might be that Japanese companies are less likely to lay off employees when restructuring is necessary; Japanese companies may be especially cognizant of how layoffs would harm not only employees, but also their families, and perhaps even society by contributing to unemployment. Therefore, it was predicted that compared to American articles concerning corporate restructuring plans, Japanese articles would be less likely to mention that employees had been fired.

Method

Keyword selection. Keywords were chosen based on the perceived likelihood of yielding articles most closely matched to the present hypotheses. Keywords used to search for each type of article were constant for news sources in both countries.²

² For the train accident articles keywords were “train,” “accident,” and “crash.” For the school closing articles, keywords were “school,” “influenza,” and “flu.” For the surgical masks articles, keywords were “mask,” “cold,” “influenza,” and “flu.” For the corporate restructuring articles, keywords were “restructuring,” “company,” and “corporate.”
Article selection. Using the LexisNexis search engine, a set of 299 articles was examined involving four topics: fatal train accidents, school closings, recommendations for when to wear surgical masks, and corporate restructuring plans. Articles were restricted to those from either Japanese news sources available through the LexisNexis search engine (e.g. Mainichi Daily News, Daily Yomiuri) or from American news sources available through LexisNexis (e.g. New York Times, Los Angeles Times.) However, in the case of train accident articles, an additional sample was taken from European news sources.

Article selection was performed in reverse chronological order, beginning with the most recent article available, and continuing back in time until roughly the same number of articles was obtained for each event in each cultural sample. For the fatal train accidents, 43 articles were obtained in each sample in America and Japan, and 34 articles were obtained for the European sample. For the school closings, 35 articles per sample were obtained for both American and Japanese sources; for the surgical mask articles, only 15 articles from Japanese sources and 14 articles from American sources could be located. For the corporate restructuring articles, 40 articles were obtained from each sample. Headlines were initially prescreened for relevance to the present research. When the headlines indicated that a retrieved article was most likely unrelated to the type of event under study, such articles were bypassed without further investigation of the text of the articles.

Coding. Two hypothesis-blind judges read the selected articles and determined whether the relevant variable (e.g. commuters delayed because of fatal train accident) had been mentioned within the text of the article or not. The presence or absence of a
‘mention’ was the critical dependent variable. Disagreement between judges occurred on only 3 articles. These disagreements were resolved after further discussion between the two judges.

Results and Discussion

Figure 2 shows the percentage of articles mentioning the critical events. Overall, results supported the present hypotheses. First, compared to American and European news reports, Japanese articles were more likely to mention whether fatal train accidents had delayed other commuters, $\chi^2 (86) = 7.73, p = .007$; $\chi^2 (77) = 11.90, p = .001$. In addition, Japanese sources were also more likely than American sources to mention that primary and secondary schools had closed as a preventative measure against the spread of influenza among students $\chi^2 (70) = 16.59, p < .001$. Japanese articles were also more likely to recommend wearing surgical masks to prevent spreading even common illnesses, such as colds or influenza, $\chi^2 (29) = 15.19, p < .001$. Last, American articles concerning corporate restructuring plans were significantly more likely to mention layoffs than were similar articles in Japanese newspapers, $\chi^2 (80) = 6.24, p = .012$.

Thus, results from Study 1 provide initial support for the hypothesis that compared to Americans, Japanese are more aware of how actions affect others, in particular those people indirectly or distally affected by the focal event. Across a variety of domains, including train accidents, disease transmission, and corporate policy, Japanese newspaper articles were more likely to indicate or imply a concern about how people were affected by focal events, especially those distally affected.
However, despite the realism of newspaper reports, various alternative explanations may account for the observed cultural differences in Study 1. For example, Japanese society may place a special importance on punctuality, and thus any event (e.g. train accident) that disrupts schedules may warrant some mention of to what extent people were inconvenienced. In addition, it remains possible that Japanese are simply more concerned with health and hygiene than Americans are, and thus are more likely to go to greater lengths (e.g. close schools or wear surgical masks) to prevent disease transmission. Layoffs may be less common in Japan because of the cultural and economic norm of lifetime employment in Japan, in which employees are often
expected to stay with one company throughout their careers; thus, corporations may not lay off employees because of long-established cultural/economic norms, rather than a heightened awareness of how such layoffs would adversely affect employees and/or society. It is also important to note that the evidence for cultural differences in firings was indirect. Although Japanese articles were less likely to mention firings when reporting on restructuring plans, firings may have actually occurred but were not reported. In addition, no evidence was obtained demonstrating how Japanese do deal with restructuring other than via firings. Although it is assumed that other steps were chosen rather than firing workers (i.e. cutting bonuses or other perks, changing some workers to part-time rather than full-time) no evidence was obtained to support this assumption. Therefore, in order to provide stronger evidence for cultural differences in subjective perceptions of responsibility, it was important to replicate the effects from Study 1 within a more controlled experimental context.
CHAPTER 3

STUDY 2: CAR ACCIDENT SCENARIO

Study 2 was an experimental investigation involving a hypothetical scenario in which a person caused a car accident on a busy street. American and Japanese participants were asked to read this scenario and imagine themselves as the person who caused the accident. Following the scenario, participants were asked several questions concerning their perceptions of the consequences of this event. Participants were queried about how many people they thought would have been affected by the event, as well as the extent to which they felt responsible for a variety of consequences of this action. Based on the holistic nature of East Asian cognition, it was predicted that compared to American participants, Japanese participants would perceive a larger number of people affected by the event. In addition, Japanese participants were also predicted to be especially aware of the distal, downstream consequences of events. Therefore, compared to Americans, Japanese were predicted to take more responsibility
for the effects on those indirectly/distally related to the event, but not necessarily those proximally affected.

Method

Participants. Eighty American students at Ohio State University and 79 Japanese students at Hokkaido University participated in exchange for partial course credit. The data from 5 Americans and 4 Japanese was excluded because of non-differentiation of responses. This left the data from 75 Americans and 75 Japanese for formal analysis.

Procedure. Participants were brought into the laboratory by a female undergraduate experimenter in groups of approximately 20-25 people. They were asked to sit at desks where questionnaire packets were presented face down. The experimenter explained that the experiment had to do with responsibility, and that participants would be asked to read a scenario and then answer several questions about the scenario. The experimenter then told participants to turn over the packets and begin, at which time she left the room.

Participants turned to the first page of the packet, which involved the car-accident scenario. Instructions indicated that participants were to read the scenario and imagine themselves in the situation. The scenario read as follows:

It is Monday morning, and you are driving to school on the city’s largest and busiest road. You are the president of the student government, and you are in a hurry to make it on time for an important meeting. The student government is meeting to vote on several issues of interest to your school, and by the rules of
the student government, they cannot vote unless you are present. You glance
down to review your notes for the meeting, and as soon as you do the car in
front of you brakes to avoid an animal running across the road. You look up
again, notice you are about to hit the car, but you can’t put on the brakes in
time. With a loud crash, your car slams to a stop as you rear-end the car in
front of you.

Following the scenario several questions were presented. The first question
involved an open-ended estimate of the number of people both directly and indirectly
affected by the accident. Next, a set of close-ended questions probed the extent to
which participants felt responsible toward a variety of target persons and events.
Participants were asked a) how responsible they felt for damaging their own car, as well
as b) how responsible they were to the driver they hit. These two consequences were
considered two proximal effects of the accident. Subsequent questions concerned
responsibility for the more distal consequences of the event. Participants were asked
how responsible they were for c) delaying the other commuters in traffic, as well as d)
toward the student government for missing the meeting. Finally, participants were also
asked e) how responsible they felt for an accident that may have occurred back in
traffic.

In addition to the responsibility measures, questions were also asked concerning
a) how bad participants felt about each consequence, and b) how likely they would be to
offer an apology or some sort of compensation to the driver they hit, the student
government, or the commuters in traffic. Responses for all dependent measures were
provided on 5-point unipolar scales, with responses ranging from 1 (not at all) to 5 (completely/extremely.)

Results and Discussion

Number of people affected. An initial one-way between subjects Analysis of Variance (ANOVA) was conducted on the number of people Americans and Japanese thought would be affected by the accident. Based on the distribution of data, responses greater than 10,000 were considered outliers and were reset to 10,000. These responses occurred for 3 Japanese and 4 American participants. The results indicated that as predicted, Japanese perceived significantly more people ($M = 1,459$, $SD = 2,738$, Min = 2, Max = 10,000) were affected by the car accident than Americans ($M = 346$, $SD = 974$, Min = 1, Max = 10,000), $F(1,147) = 5.60$, $p = .019$, $\eta^2 = .037.3$

Subjective perceptions of responsibility. Perceptions of responsibility were examined for each of the five target variables. An initial 2 (culture) x 5 (target) mixed-factorial ANOVA was conducted as an initial analysis, with culture as a between-subjects variable, and target-type as the within-subjects variable. The results indicated a main effect for target type, $F(4,576) = 17.78$, $p < .001$, $\eta^2 = .154$. However, this was qualified by a significant culture x target interaction, $F(4,576) = 29.20$, $p < .001$, $\eta^2 = .169$, indicating that perceptions of responsibility for each consequence depended on participants' cultural background (see Figure 3).

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3 The population of Sapporo, Japan, (1.7 million), where the Japanese data were collected, is almost the same as that of Columbus, Ohio (1.6 million). In addition, Sapporo has a more extensive public transportation system than Columbus does, including a subway system and commuter train lines, neither of which are available in Columbus. Thus, it is unlikely that Japanese participants perceived a greater number of people affected simply because there are more people in Sapporo. In fact, given that public transportation is essentially non-existent in Columbus, there is likely much more automobile traffic in Columbus than in Sapporo.
Pairwise mean comparisons decomposed the source of this interaction. Cross-sample comparisons indicated that compared to Japanese participants, Americans took more responsibility for the damage to their own car, \( F(1,146) = 50.65, p < .001, \eta^2 = .258 \), and marginally more responsibility for the damage to the car of other driver, \( F(1,144) = 2.59, p = .110, \eta^2 = .018 \). However, compared to Americans, Japanese held themselves more responsible for delaying the other commuters, \( F(1,144) = 4.06, p = .046, \eta^2 = .027 \), and for causing an accident farther back in traffic, \( F(1,144) = 26.23, p < .001, \eta^2 = .151 \). No cross-cultural differences in responsibility toward the student government were observed. Thus, Americans took more responsibility for the proximal consequences of the event (self, other driver) while Japanese took more responsibility for the distal consequences (delaying commuters, causing another accident).

In addition, within-sample comparisons indicated that Americans felt more responsible for damaging their own car than they did for the other four consequences (all \( ps < .001 \).) Thus, the pattern of means suggests that for Americans, responsibility was highest for the consequences that affected them personally, and perceptions of responsibility became progressively less as the consequences moved away from the self. This is bolstered by the fact that there was a highly significant linear trend in the responsibility answers for Americans, \( F(1,70) = 154.85, p < .001, \eta^2 = .689 \).

By contrast, Japanese showed the highest amount of responsibility toward the student government, a relatively distal consequence, although the details provided in the scenario made this target particularly salient. In fact, for Japanese, perception of
responsibility toward the student government was significantly higher than for three of the other four consequences: the damage to their own car, the accident back in traffic, and delaying the commuters (all $p$s < .025). Thus, for Japanese, responsibility was much more evenly distributed across targets and events, with the lowest means for the most proximal and most distal consequences, and the highest mean for a moderately distal target. This contention is bolstered by the fact that there was a significant quadratic trend in the data for Japanese, $F(1,74) = 15.36, p < .001, \eta^2 = .185$. No other within-sample differences were observed.
Negative Affect. Subsequent analyses examined the extent to which Americans and Japanese experienced negative affect with regard to the five critical consequence variables in the car accident scenario. As with the responsibility data, an initial 2 (culture) x 5 (target) mixed factorial ANOVA was conducted as an initial analysis, with culture as a between-subjects variable, and target-type as the within-subjects variable. A main effect for target type emerged within this overall analysis, $F(4,588) = 30.42, p < .001, \eta^2 = .171$. However, this was qualified by a significant culture x target interaction, $F(4,588) = 8.95, p < .001, \eta^2 = .057$. Pairwise mean comparisons mirrored those of the perceptions of responsibility. Compared to Japanese, Americans indicated they felt significantly worse about the damage to their own car, $F(1,148) = 7.05, p = .009, \eta^2 = .044$, as well as about the damage to other person’s car, $F(1,147) = 7.08, p = .009, \eta^2 = .046$. However, Japanese indicated they felt worse about delaying the other commuters, $F(1,148) = 7.61, p = .007, \eta^2 = .046$, as well as for causing the accident back in traffic, $F(1,148) = 6.63, p = .011, \eta^2 = .043$. No differences were observed in affect toward the student government. These results parallel those obtained on the responsibility measures.

Likelihood of apologies/compensation. A 2 (culture) x 3 (target) mixed ANOVA was examined concerning the likelihood that Americans and Japanese would apologize and/or offer some form of compensation to three targets: the driver they hit, the members of the student government, and the delayed commuters. Analyses on the apology data revealed a main effect for target, $F(2,296) = 247.01, p < .001, \eta^2 = .625$, which was qualified by a significant interaction, $F(2,296) = 9.15, p < .001, \eta^2 = .058$. Individual comparisons revealed that Americans were more likely to apologize to the
driver they hit, $F(1,148) = 14.05, p < .001, \eta^2 = .087$. However, Japanese were more likely to apologize to the drivers delayed in traffic, $F(1,149) = 5.23, p = .057, \eta^2 = .024$. No differences in likelihood of apologies to the student government were observed, $p > .27$.

Results for likelihood of compensation indicated a main effect for culture, $F(1,148) = 8.01, p = .005, \eta^2 = .546$, with Japanese more likely to offer compensation than Americans. However, the culture x target interaction was non-significant, $p > .28$. Cross-cultural comparisons indicated that Japanese were more likely to offer compensation to the student government, $F(1,148) = 6.95, p = .009, \eta^2 = .045$, and to the delayed commuters, $F(1,148) = 4.38, p = .038, \eta^2 = .029$. No differences emerged regarding the driver that was hit. Thus, Japanese were more likely to apologize or offer compensation to people indirectly affected by the car accident (delayed commuters, student government), whereas Americans were more likely to offer apologize to the person most directly affected (driver who was hit).

Overall, the results from Study 2 provide additional support for the hypothesized cultural differences in perceptions of responsibility for events. Responding to a hypothetical scenario involving the effects of a car accident, Japanese participants indicated that they thought a larger number of people were affected, either directly or indirectly, than Americans did. In addition, Japanese were more likely to feel responsible to targets and events distally related to the focal event (e.g. commuters delayed in traffic, an accident that happened back in traffic). Japanese also indicated more negative affect concerning these distal consequences, and indicated a greater willingness to apologize or offer compensation to indirectly affected targets.
By contrast, Americans said they felt more responsible for the effects on the more proximate targets, such as the damage to their own car, as well as to the driver they hit. In addition, Americans tended to feel the most negative affect toward the most proximal consequences, as well as being most likely to apologize to the person most directly affected (the other driver). Importantly, Americans held themselves responsible for the self-related consequences more than for any other type of consequence, whereas Japanese felt most responsible for the most salient distal consequence (effects on student government.) Thus, the overall patterns of results support the idea that Japanese are aware of a broader scope of the consequences of their actions than Americans are. This broader awareness of the consequences of events also manifested itself in affective reactions, and willingness to offer apologies and compensation to those affected.

It is interesting to note that Americans’ perceptions of responsibility were focused mostly on the self, and responsibility decreased as the consequences moved farther away from the self. This result is consistent with a variety of evidence that, particularly regarding cross-cultural comparisons involving Japanese and Americans, the individual self is of much greater importance psychologically for Americans (e.g. Markus & Kitayama, 1991; Heine et al., 1999). By contrast, Japanese took the most responsibility for the most salient distal consequence in the scenario, the effects on the student government. For Japanese, the focal consequence was a relatively distal consequence, and responsibility gradually decreased as consequences moved both closer to and farther away from the self relative to this focal consequence. In fact, the lowest mean for Japanese concerned responsibility for the most proximal consequence,
the damage to the protagonist’s own car. Thus, although Americans’ perceptions of responsibility gradually decreased in a linear manner as consequences were less and less relevant to the self, perceptions of responsibility for Japanese were much more equally distributed across the range of consequences, following a quadratic pattern. This is intriguing evidence that that Japanese are more aware of a broader spectrum of the consequences of their actions, with the highest level of responsibility focused more on others and not on themselves personally.
CHAPTER 4

STUDY 3: COMPANY SCENARIO

The purpose of Study 3 was to explore the present hypothesis within a different type of scenario from that used in Study 2. Because the car-accident scenario involved an unintentional action, it was important to explore the same effects in a situation where a behavior was intentional. It is quite possible that perceptions of responsibility may differ depending on whether one intended to cause an event: Japanese may be especially sensitive to the unintentional effects on others, and may be less likely to take responsibility for distal consequences if an action is purposely designed to affect a specific individual or group of individuals. In this latter situation Japanese may be more aware of the proximal effects of their actions because of their intention to cause certain proximal effects. Thus, it was important to explore the ripple effect in a scenario where a behavior was intentional. This would allow a further generalization of cross-cultural differences in perceptions of responsibility. To this end, Study 3
involved a scenario where the protagonist intentionally performed an action that affected a variety of other people.

**Method**

**Participants.** Ninety American students (31 males and 59 females) at Ohio State University and 72 Japanese students (37 males and 35 females) at Hokkaido University participated in exchange for partial course credit. The data from 3 Americans and 2 Japanese were excluded because of non-differentiation of responses. This left the data from 87 Americans and 70 Japanese for formal analysis.

**Procedure.** The procedure was identical to that of Study 2, with the exception of the scenario administered. The scenario involved a CEO firing employees and doling out pay cuts, and read as follows:

You are the president of a large company. Your company is having major financial difficulties, and you decide you must lay off fifteen percent of your employees in order to try to make the company profitable again. You meet with all the high-level managers to decide which employees are the least essential to the company, and you decide to fire these non-essential employees. In addition, you decide to cut all salaries, including your own, by fifteen percent. You hope that these measures will make the company profitable again.

Following the scenario, participants were queried as to the extent they felt responsible to certain target persons or events. As with Study 2, the first question involved an open-ended estimate of the number of people both directly and indirectly
affected by the layoffs. Subsequently a set of close-ended questions probed the extent to which participants felt responsible toward a) themselves for cutting their own salary, as well as how responsible they were to b) the employees who took pay cuts, c) the employees they fired, and d) the families of the fired employees. Finally, participants were also asked how responsible they felt if e) a year later there was an increase in crime in the area. This last question was designed to test a consequence very temporally distant from the focal event. Following these measures, an additional set of questions was asked concerning, a) how bad participants felt about each of the consequences, and b) how willing they would be to offer compensation or apologies to certain targets.

Results and Discussion

Number of people affected. A one-way between subjects ANOVA was conducted on the number of people Americans and Japanese thought would be affected by the firings/pay cuts. Based on the distribution of data, responses greater than 25,000 were considered outliers and were reset to 25,000. These responses occurred for 6 Japanese and 4 American participants. The results indicated that Japanese perceived that more people were affected by this situation ($M = 4,498$, $SD = 7,900$, Min = 10, Max = 25,000) than Americans ($M = 1,437$, $SD = 3,738$, Min = 10, Max = 25,000), $F(1,138) = 8.60$, $p = .004$, $\eta^2 = .058$. It should be noted that an alternative explanation for this effect is that Japanese companies are likely larger on average than American companies.

Subjective perceptions of responsibility. Perceptions of responsibility were examined for each of the five target variables. An initial 2 (culture) x 5 (target) mixed-
factorial ANOVA was conducted as an initial analysis, with culture as a between-subjects variable, and target-type as the within-subjects variable. The results indicated a main effect for target responsibility, $F(4,612) = 116.57, p < .001, \eta^2 = .432$. However, this was qualified by a significant culture x target interaction, $F(4,612) = 14.75, p < .001, \eta^2 = .088$, indicating that perceptions of responsibility for each consequence depended on participants’ cultural background (see Figure 4).

Further analyses decomposed the source of this interaction. Compared to Japanese participants, Americans’ subjective perceptions of responsibility were higher for the extent to which they thought they were responsible for cutting their own salary, $F(1,154) = 14.92, p < .001, \eta^2 = .088$. However, Japanese took more responsibility for the effects on the fired employees, $F(1,155) = 6.74, p = .010, \eta^2 = .042$, and to the families of the fired employees, $F(1,154) = 9.88, p = .002, \eta^2 = .060$. Finally, Japanese were also significantly more likely to see themselves as responsible for the most distal consequence, an increase in societal crime a year after the layoffs, $F(1,155) = 4.39, p = .038, \eta^2 = .028$. No cultural differences emerged involving the pay cuts themselves (see Figure 4).

In addition, within-sample comparisons indicated that Americans felt more responsible for cutting their own salary than they did for the other four consequences (all $ps < .002$). Thus, the pattern of means suggests that as in Study 2, Americans’ perceptions of responsibility were highest for the consequences that affected them personally, and became less as the consequences moved away from the self. This is bolstered by the fact that, as was the case in Study 2, there was a highly significant
linear trend in the responsibility answers for Americans, \( F(1,84) = 181.05, p < .001, \eta^2 = .683. \)

By contrast, Japanese showed the highest amount of responsibility toward the fired employees and their families. In fact, responsibility for these two consequences did not differ within the Japanese sample (\( p > .26 \)). However, responsibility toward both these targets was higher than for the other three consequences: cutting their own salary, cutting salaries of employees, and causing the increase in crime in the area a year later (all \( ps > .001 \)). Thus, for Japanese, responsibility was again much more

![Figure 4. Perceptions of responsibility, Study 3](image-url)
evenly distributed across targets and events, with the lowest means for the most proximal and most distal consequences, and the highest means for moderately distal targets. An additional trend analysis indicated that there was a highly significant quadratic trend in the Japanese data, $F(1,70) = 93.33, p < .001, \eta^2 = .575$, suggesting that responsibility was lowest for the most proximal and distal consequences, and highest for the moderately distal consequences.

**Negative Affect.** Additional analyses examined the extent to which Americans and Japanese experienced negative affect with regard to the five critical variables in the company scenario in Study 3. As with the responsibility data, a 2 (culture) x 5 (target) mixed ANOVA was conducted as an initial analysis, with culture as a between-subjects variable, and target-type as the within-subjects variable. A main effect for culture emerged, such that Americans tended to feel worse about the effects of the consequences compared to Japanese, $F(4,620) = 112.03, p < .001, \eta^2 = .420$. This main effect was qualified by a significant culture x target interaction, $F(4,620) = 6.36, p < .001, \eta^2 = .039$.

However, unlike Study 2, these responses did not mirror the responsibility data. Individual comparisons revealed no cultural differences, except for feelings about the increase in societal crime. Contrary to predictions, Americans, rather than Japanese, felt worse about this event, $F(1,155) = 20.97, p < .001, \eta^2 = .119$. The reasons for this effect are not particularly clear.

**Likelihood of apologies/compensation.** An initial 2 (culture) x 3 (target) mixed ANOVA was examined concerning the likelihood that Americans and Japanese would apologize and offer compensation to three targets: the employees who took pay cuts, the
employees who were fired, and the families of the fired employees. This analysis revealed a significant main effect for culture, with Americans, rather than Japanese, apologizing more readily, $F(2,310) = 37.83, p < .001, \eta^2 = .196$. Individual comparisons revealed that Americans were more likely to apologize to all three targets, all $p_{\text{s}} < .044$. A similar main effect was observed for compensation, $F(2,310) = 59.27, p < .001$, with Americans more likely to offer compensation than Japanese; however, the overall interaction was not significant. Individual comparisons indicated Americans were more likely to offer compensation to the families of the fired employees than Japanese, $F(1,155) = 12.02, p = .001, \eta^2 = .072$. No other differences were significant. Thus, the results from the affect and apology/compensation questions did not mirror the results on the responsibility measures.

This failure to replicate the ripple effect regarding affect and apologies may suggest that although Japanese are more aware of a broader spectrum of the consequences of their actions, the intentionality of the action may preclude the need to feel negative affect about the consequences, or offer apologies or compensation. Perhaps Japanese felt that the firings in this scenario were a regrettable but necessary action, and therefore there was no reason to feel bad about something that was presumably well thought-out and that needed to be done in order to help the company survive and retain the remaining employees. It is also possible that because firings seem to be less common in Japan than in America, Japanese may not be as certain as Americans of the appropriate behaviors in such a situation, and thus may be less likely to feel bad or apologize. The results from Study 3 suggest that the intentionality of an action is an important moderator of the ripple effect with regard to affect and apologies,
and perhaps in situations where one intends to cause certain actions, negative affect and apologies are less relevant for Japanese. However, this moderator requires further investigation as to why the affect and willingness to apologize depend on the intentionality of an action.

Regarding cross-cultural differences in perceptions of responsibility, the results from Study 3 offer additional support for the current hypothesis. With respect to a behavior that was performed intentionally, Japanese perceived responsibility to a larger number of individuals than Americans did. In addition, perceptions of responsibility for Japanese were more widely distributed; in particular, Japanese felt more responsible for the distal consequences of the event, while Americans were most concerned with the consequences for themselves. In fact, the highest responsibility means for Japanese involved the effects on the fired employees and their families, while Americans felt most responsible about cutting their own salary. Perhaps the most striking result is that compared to Americans, Japanese took more responsibility for an increase in crime that occurred a year later. This result shows that the Japanese perceive the ripple effects of their actions extending farther outward in a temporal, as well as in a physical manner.

In fact, the results from the responsibility measures from Studies 2-3 are quite consistent. Across two different scenarios Americans were clearly most concerned with the most proximal consequences of the events (damage to their own car, cutting their own salary), whereas Japanese took the most responsibility for the most salient distal consequences in each scenario (effect on student government, effects on fired employees and their families.) This pattern of results was the same regardless of whether the events were intended or not. In addition, in both studies Americans’
perceptions of responsibility gradually decreased as consequences moved away from the self, which was reflected in the linear trend in the data for Americans. For Japanese the effects on salient others were considered more important than the most immediate and most distal consequences, a pattern that was reflected in the quadratic nature of the data for Japanese in both studies.

It is important to address two alternative explanations for the present data. First, one might argue that the holistic nature of Japanese cognition induces them to be less discriminant as to the importance of any single consequence, and thus the current results might simply be due to Japanese distributing responsibility more evenly across targets without much consideration of which consequences are most important or most relevant. In other words, Japanese may take a similar amount of responsibility for any consequence regardless of its actual relevance to the focal event. However, the quadratic nature of the Japanese responses speaks against this possibility; compared to the responsibility for the most salient distal consequences, Japanese took significantly less responsibility for both the most proximal and most distal consequences in each scenario. Thus, Japanese did show meaningful differences in responsibility toward various targets, and these differences replicated across Studies 2 and 3. A more comprehensive explanation is that the locus of responsibility seems to differ for Japanese and Americans: For Americans the primary focus is the effects on the self, and for Japanese it is the effects on the most salient others. For participants in both cultures, responsibility for additional consequences decreased relative to this focal consequence.

It is also interesting to note that although Japanese took more responsibility than Americans for the most distal consequence in Study 3, the increase in societal crime,
this particular mean was relatively low. In fact, Japanese took significantly less responsibility for this consequence than for all other four consequences in this scenario. This particular effect is evidence that Japanese do in fact discriminate between the importance of different consequences, and do not simply perceive all potential consequences of an event as equally relevant. Thus, even though cultural differences exist in responsibility for different consequences, this seems to be due to a difference in locus of attention to the event, rather than a difference in the amount of attention given to the consequences of events.

It is also important to emphasize that the current results are unlikely due to differences in population size. First, the cities of Columbus and Sapporo, which were the two cities in which the experiments took place, were matched on population. In addition, while Sapporo is a more densely populated city than Columbus (and Japan is a more densely populated country than America) population or density differences would not provide a plausible explanation for the interaction between culture and perceptions of responsibility for proximal and distal consequences. If the current results were due to population differences, this would likely produce a main effect for culture on the responsibility items, with Japanese taking more responsibility for all consequences regardless of their proximity to the focal event, and a similar pattern of data emerging in both samples. However, these effects did not occur, suggesting that population differences cannot account for the present results. Instead, results from the present studies are most consistent with the idea that Japanese tend to think about the consequences of events in a holistic manner, while Americans tend to think about consequences of events in an analytic manner.
CHAPTER 5

STUDY 4: MEDIATIONAL ANALYSIS

An important assumption underlying the current research is that the ripple effect is the result of fundamentally different modes of thinking about the world: Whereas Japanese think about and perceive the world more holistically, Americans think about and perceive the world more analytically. If this presumption is correct, then it is important to explore whether individual differences in holistic/analytic thinking mediate the cultural differences in subjective perceptions of responsibility. Thus, Study 4 involved a replication of the scenario administered in Study 2; however, Study 4 also involved the addition of an individual difference measure of holistic thinking to examine whether this construct mediates the previously observed cultural differences in subjective perceptions of responsibility.\(^5\)

\(^5\) Currently the only existing scale to measure holistic/analytic thinking has items focusing on holistic thinking rather than analytic thinking (Choi et al., 2003), although most research has assumed that holistic and analytic thinking are orthogonal concepts.
Preliminary Study

The only extant scale measuring holistic thinking (Choi et al., 2003) has been used in only one published study to date, and has undergone minimal scale validation and reliability analysis. Thus, prior to Study 4 the holism scale (HS) was initially administered to a large sample of 246 American students in a pre-screening session of students in order to determine, a) the degree to which it correlated with other similar psychological constructs, and b) its factor structure. A previous study (Choi et al., 2003) found small correlations \( r = .07, r = .14 \) between the HS and an individualism-collectivism scale (Hui, 1988) and a moderate correlation \( r = .35 \) between HS and an attributional complexity scale (Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986). The Choi et al. research also identified a two-factor structure with regard to the 10 items in the HS scale.

In the present study the HS scale was administered in combination with a different Individualism-Collectivism scale (Triandis, 1995), in addition to the Consideration of Future Consequences Scale (Strathman, Gleicher, Boninger, & Edwards, 1994), and a Self-Construal Scale (Singelis, 1994), all psychological constructs assumed to be related to holistic thinking and the current hypothesis regarding perceptions of consequences. Exploratory factor analysis (EFA) was also used to investigate the factor structure of the scale.

The results indicated moderate and significant correlations between the HS and all other scales (see Table 1). Thus, although the HS was significantly related to other relevant scales, showing convergent validity, the moderate correlations (all \( r \)s between .21 and .35) indicate that holism has discriminant validity as well.
<table>
<thead>
<tr>
<th>Scale</th>
<th>$r$ value</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consideration of Future Consequences</td>
<td>.293</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Interdependent Self-Construal</td>
<td>.219</td>
<td>.001</td>
</tr>
<tr>
<td>Independent Self-Construal</td>
<td>.253</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.341</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Individualism</td>
<td>.253</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Table 1. Correlations between holism scale and other constructs

An exploratory factor analysis (EFA) was then carried out to determine whether the 2-factor structure found in the Choi et al. (2003) research was replicated in the present data. In line with recent recommendations for EFA (Fabrigar, Wegener, MacCallum, & Strahan, 1999), maximum likelihood factor analysis and oblique (Crawford-Ferguson) rotation were used to obtain solutions. An initial analysis indicated that item #9 in the HS (“A marker of good architecture is how harmoniously it blends with other buildings around it”) did not load highly on any factor in any of the solutions, so this item was dropped from subsequent analyses. A Chronbach’s alpha coefficient of .70 was obtained for all items in the HS, minus item 9, indicating the scale had acceptable internal reliability.
Further analyses began with the exploration of a 2-factor structure. Observation of the resulting scree plot and the number of eigenvalues over one indicated that a two-factor solution was ideal. The chi-square statistic for the 2-factor solution was also highly significant, $X^2(19) = 79.12, p < .001$. However, the RMSEA point estimate for the 2-factor solution was .109, which indicated that this solution was not a particularly good fit to the data.

Additional factor solutions were then analyzed for comparison with the 2-factor solution. A 3-factor solution yielded a significant chi-square statistic, $X^2(12) = 23.43, p = .024$, and an RMSEA point estimate of .058, which indicates good fit to the data. In addition, items in the 3-factor solution yielded high loadings on only one factor per item, indicating a clear factor structure. Furthermore, each of the 3 factors had high loadings from 3 items of the HS, suggesting that this solution had an acceptably high number of manifest variables loading on each latent factor.

The 4-factor solution yielded a non-significant chi-square, $X^2(6) = 4.62, p = .593$ and the lowest RMSEA estimate of 0.0. However, there was an important reason that a 4-factor solution was considered less than ideal. It is generally accepted that 3 manifest variables is the minimal acceptable number for a valid and reliable latent factor to be extracted (Fabrigar et al., 1999). In the 4-factor solution, one factor had only one item with a high loading, while a second factor had only two items with high loadings. Thus, the 4-factor solution did not seem to be the best solution because it generated too many factors relative to the total number of items in the scale, and did not

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seem to indicate the presence of reliable latent factors. In addition, the 1-factor solution loadings were quite small (< .16) for 3 of the 9 items, suggesting this was not an optimal solution. In addition, the 1-factor solution yielded an unacceptable RMSEA point-estimate of .146. Therefore, taking a variety of criteria into account, a 3-factor solution, minus item 9, was deemed the best factor solution.

The factors in the 3-factor solution also grouped together around relatively similar themes. The first factor of the three-factor solution, which contained items 1, 2, and 5, concerned the interrelatedness of objects and events. The second factor, which contained items 3, 4, and 10, concerned the structure of the causes and consequences of the events. The third factor containing items 6-8, concerned awareness of the context in which events occur (see Table 2). The relatedness and the structure factors were highly correlated with each other ($r = .61$). However, the relatedness and context factors ($r = .12$) and the structure and context factors ($r = .18$) showed smaller intercorrelations.

The current results differed somewhat from previous research regarding the factor structure of the HS, which found a 2-factor structure for the HS. However, the entire holism scale, collapsed across factors, has been found to have predictive validity and reliability in previous research (Choi et al., 2003). In addition, the present research was not concerned with scale construction and validation per se; rather, this preliminary study was undertaken in order to understand more clearly the nature of holism as an individual difference measure. Therefore, because the overall HS, collapsed across

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*Both the scree plot and number of eigenvalues above one are considered reasonable initial estimates of the ideal number of factors, although these are recommended to be used in combination with other indicators of the appropriate number of factors (Fabrigar et al., 1999).*
factors, also showed reasonable internal reliability in the current study, the 9 items from HS were used to test further the possibility that holism mediates the ripple effect.

<table>
<thead>
<tr>
<th>Item</th>
<th>Related</th>
<th>Structure</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Everything in the universe is somehow related to everything else.</td>
<td>.910</td>
<td>-.071</td>
<td>-.007</td>
</tr>
<tr>
<td>2. Even a small change in any element in the universe can lead to substantial alterations in others.</td>
<td>.453</td>
<td>.277</td>
<td>-.127</td>
</tr>
<tr>
<td>3. Any phenomenon has numerous causes, although some of the causes are not known.</td>
<td>-.007</td>
<td>.783</td>
<td>.022</td>
</tr>
<tr>
<td>4. Any phenomenon has numerous consequences, although some of the consequences are not known.</td>
<td>-.074</td>
<td>.967</td>
<td>.001</td>
</tr>
<tr>
<td>5. Nothing is unrelated.</td>
<td>.380</td>
<td>.083</td>
<td>.141</td>
</tr>
<tr>
<td>6. It’s not possible to understand the pieces without considering the whole picture.</td>
<td>.071</td>
<td>.032</td>
<td>.410</td>
</tr>
<tr>
<td>7. The whole is greater than the sum of its parts.</td>
<td>.050</td>
<td>-.033</td>
<td>.666</td>
</tr>
<tr>
<td>8. Paying attention to the field is more important than paying attention to its elements.</td>
<td>-.122</td>
<td>.005</td>
<td>.706</td>
</tr>
<tr>
<td>10. Sometimes, the empty space in a painting is just as important as the objects.</td>
<td>.155</td>
<td>.316</td>
<td>.016</td>
</tr>
</tbody>
</table>

Table 2. Factor loadings, holism scale.
MAIN STUDY

Method

Participants. One hundred twenty-eight American students (55 male and 73 female) in an introductory psychology class at Ohio State University and 104 Japanese students (45 male, 59 female) in an introductory psychology class at Tokyo University participated in exchange for partial course credit. Participants in the American sample constituted a separate sample from those who participated in the preliminary study. Participants were recruited in the same manner as in previous studies. The data from 6 participants in the American sample and 2 students in the Japanese sample were excluded due to non-differentiation of responses. That left the data from 122 American participants (51 male and 71 female) and 102 Japanese participants (44 male, 58 female) for formal analysis.

Procedure. Participants responded to the same car accident scenario used in Study 2. Following the car accident scenario, participants were asked to answer some questions that we were ostensibly pre-testing for use in future experiments. Participants were then presented with a list of 9 of the original 10 questions from the HS (Choi et al., 2003).

Results and Discussion

Number of people affected. An initial one-way between subjects Analysis of Variance (ANOVA) was conducted on the number of people Americans and Japanese thought would be affected by the accident. As in Study 2, responses greater than 10,000 were considered outliers and were reset to 10,000. These responses occurred for 5 Japanese and 5 American participants. The results indicated that as in Study 2,
Japanese perceived significantly more people \((M = 1214, SD = 2,630, \text{Min} = 2, \text{Max} = 10,000)\) were affected by the car accident than Americans \((M = 671, SD = 2,188, \text{Min} = 1, \text{Max} = 10,000)\), \(F(1,216) = 5.27, p = .023, \eta^2 = .024.\)

**Subjective perceptions of responsibility.** Perceptions of responsibility were examined for each of the five target variables. An initial 2 (culture) x 5 (target) mixed-factorial ANOVA was conducted as an initial analysis, with culture as a between-subjects variable, and target-type as the within-subjects variable. The results indicated a main effect for target type, \(F(4,868) = 56.90, p < .001, \eta^2 = .208.\) However, this was qualified by a significant culture x target interaction, \(F(4,868) = 60.81, p < .001, \eta^2 = .208,\) indicating that perceptions of responsibility for each consequence depended on participants’ cultural background.

Cross-sample mean comparisons indicated that compared to Japanese participants, Americans took more responsibility for the damage to their own car, \(F(1,222) = 76.36, p < .001, \eta^2 = .256,\) and significantly more responsibility for the damage to the car of other driver, \(F(1,219) = 9.11, p = .003, \eta^2 = .040.\) However, compared to Americans, Japanese held themselves more responsible for delaying the other commuters, \(F(1,220) = 4.14, p = .043, \eta^2 = .019,\) and for causing an accident farther back in traffic, \(F(1,222) = 71.94, p < .001, \eta^2 = .245.\) No cross-cultural differences in responsibility toward the student government were observed.

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\(^7\) The number of people Japanese perceived to be affected in this study \((M = 1214)\) was lower than in Study 2 \((M = 1459)\), even though the data for Study 4 were collected in Tokyo, a much larger city (pop. 27 million) than Sapporo (pop. 1.7 million) where Study 2 was conducted. This is additional evidence that the current results are very unlikely due to population or density differences between Japan and America.
Negative Affect. Additional analyses examined the extent to which Americans and Japanese experienced negative affect with regard to the five critical consequence variables in the car accident scenario, and the extent to which they would offer apologies and/or compensation. Individual comparisons mirrored those of the perceptions of responsibility, and results replicated those from Study 2. Compared to Japanese, Americans indicated they felt significantly worse about the damage to their own car, as well as about the damage to other person’s car. However, Japanese indicated they felt worse about delaying the other commuters, as well as for causing the accident back in traffic, all \( ps < .026 \). No differences were observed in feelings toward the student government. These results parallel those obtained on the responsibility measures, and replicate the results from Study 2.

Likelihood of apologies/compensation. Individual comparisons regarding the apologies and compensation were similar to those in Study 2. These analyses revealed that Americans were more likely to apologize to the driver they hit, whereas Japanese were more likely to apologize to the delayed commuters, \( ps < .026 \). Japanese were also more likely than Americans to offer compensation to the student government and to the delayed commuters, \( ps < .05 \). The only notable difference with the results from Study 2 was that in the current study, American participants indicated a greater willingness to apologize to the student government, \( F(1,216) = 7.02, p = .001, \eta^2 = .070 \). No cultural differences in this effect were observed in Study 2.

Correlations. Table 3 presents intercorrelations between perceptions of responsibility, culture, and the individual differences measure of holism with both the American and Japanese samples. Within the American sample only, several significant
correlations between holism and responsibility were obtained, but all were small. No significant correlations between holism and responsibility were obtained in the Japanese sample. When collapsing across samples, however, holism did appear to be somewhat related to perceptions of responsibility. As would be expected, Japanese ($M = 4.89$, $SD = 5.58$) scored significantly higher on the scale than Americans ($M = 4.45$, $SD = 6.77$), $F(1,223) = 26.73$, $p < .001$. Across samples, holism was positively correlated with the perceived number of people affected, $r(223) = .142$, $p = .036$, responsibility for delaying the commuters, $r(223) = .181$, $p = .007$, and responsibility for the accident

<table>
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<tr>
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<th>holism</th>
<th>numb</th>
<th>driver</th>
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<th>govt</th>
<th>self</th>
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* significant at the $p < .05$ level.
** significant at the $p < .01$ level.

Table 3. Intercorrelations between holism, culture, and perceptions of responsibility for consequences of car accident, Study 4.
back in traffic, $r(223) = .142$, $p = .036$. Holism was negatively related to perceptions of responsibility for damage to one’s own car, $r(223) = -.212$, $p = .001$. Thus, holism was somewhat related to perceptions of responsibility and in the predicted directions: The more participants thought about the world holistically, the more responsibility they perceived for distal consequences, and the less responsibility they perceived for the proximal consequences; participants who were low on the HS took more responsibility for proximal consequences and less for distal consequences.\(^8\)

*Mediational Analyses.* Mediational analyses were then undertaken to determine whether holism mediated the cultural differences. In line with recommendations for mediational analyses (Baron & Kenny, 1986) a set of four regression equations was run for each consequence in which a cultural difference was obtained. In the first equation holism was regressed on culture; in the second equation consequence was regressed on holism; in the third equation consequence was regressed on culture; in the fourth equation, consequence was simultaneously regressed on culture and holism. Mediation is demonstrated if the first three equations are significant, while the fourth equation is significant for holism but not culture. In other words, for mediation to occur, culture should produce a non-significant effect on consequence when controlling for holism, which should continue to have a significant effect.

Overall the results of these analyses did not seem to support the predictions that holism would mediate cultural differences in perceptions of responsibility. Significant effects tended to emerge within the first three regression equations for each

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\(^8\) The intercorrelations with the affect data mirrored those of the responsibility data, such that holism was positively correlated with negative affect toward the distal targets. Holism was negatively correlated with negative affect for proximal consequences.
consequence (see Figure 5). However, Sobel’s tests (Sobel, 1982; Preacher & Leonardelli, 2003) indicated that although the effect of culture decreased when controlling for holism, such that the effect of culture became non-significant, the decrease was not significant for either effect, $ps > .43$, indicating only partial mediation. Thus, the evidence for mediation is rather weak.

![Diagram of mediation analyses, Study 4. Numbers are beta weights.](Image)

**Figure 5.** Mediational analyses, Study 4. Numbers are beta weights.
For the consequences toward the self, the other driver, and the accident back in traffic, simultaneous regression equations indicated significant effects for *culture*, but not for holism; thus, the effect of culture was larger and more powerful than that of holism, leading to a lack of mediation for holism for these effects. In addition, holism did not mediate any of the affect or apology/compensation measures. Overall, then, the results seem to indicate that although holism is related to the present results, holism is not a clear mediator of the cultural effects.

Although evidence for holism mediating the ripple effect did not clearly emerge in Study 4, there are several reasons why this does not necessarily indicate that holistic thinking is not at least partly responsible for the present results. First, individual difference measures are able only to imperfectly capture psychological constructs, and such scales invariably contain measurement error; however, the measurement of the independent variable, in this case participants’ cultural background, contains no measurement error. Thus, it is not surprising that the effects of the independent variable (culture) led to clearer and stronger effects than for the mediator (holism), making a mediational relationship difficult to detect. This underestimation of the effect of the mediating variable and possible overestimation of the effects of the independent variable is one very common problem when performing mediational analysis (Baron & Kenny, 1986.)

In addition, participants from different cultures have been shown to interpret the meaning of Likert scales differently, and may respond according to different standards or different reference groups (Heine, Lehman, Peng, & Greenholtz, 2002), which may have led to additional error in the measurement of holistic thinking. It is also possible
that additional cultural differences may be influencing the present results, such as differences in behavioral expectations and cultural norms for various events, which are difficult if not impossible to measure via an individual difference scale. The lower variability for responses on the holism scale for Japanese \((SD = 5.58)\) than Americans \((SD = 6.77)\) may have also contributed to the fact that correlations that were significant in the American population were non-significant in the Japanese population. A lack of variation in the responses of Japanese participants could have disguised any relationship between holism and responsibility in the Japanese sample, leading to non-significant mediational tests. Thus, this difference in sample variability, although rather small, could have also contributed to the fact that holistic thinking did not act as a mediator, since the predicted effects tended to emerge in the American sample but not the Japanese sample.

A final issue is that many studies examining psychological constructs presumed to underlie cross-cultural differences, such as individualism/collectivism, independent/interdependent self-construals, and holistic/analytic thinking, often assume these constructs to be present but do not measure them at an individual level, or do not obtain reliable or logical relationships when these constructs are measured (for reviews, see Markus & Kitayama, 1991; Nisbett et al., 2001; Oyserman, Coon, & Kemmelmeier, 2002; Heine et al., 2002). However, these concepts continue to be powerful and useful at the theoretical level, despite consistent problems of concrete measurement in cross-cultural comparisons. For these reasons, then, it remains likely that holism is at least partly responsible for the present results, particularly because correlations from Study 4 indicated a clear association between holism and the ripple effect. Nevertheless, the
evidence from all four studies makes it clear that distinct cultural differences do exist regarding perceptions of the consequences of events, with Japanese taking more responsibility for distal consequences, and Americans taking more responsibility for proximal consequences.
CHAPTER 6

GENERAL DISCUSSION AND IMPLICATIONS

Overall, results from the present research offer support for the idea that compared to Americans, Japanese are more aware of the “ripple effects” of their actions. In Study 1, a content analysis of newspaper articles from Japanese and American newspaper sources indicated that in four domains, Japanese were more likely to take into account how certain actions affected other people in a relatively distal manner. In Studies 2-4, Japanese perceived themselves as responsible to a larger number of people than Americans for both an accidental and an intentional behavior. Studies 2-4 also demonstrated that Japanese take more responsibility for the distal consequences of their actions, whereas Americans take more responsibility for the proximal consequences of their actions. In addition, in the car accident scenario (Studies 2 and 4), Japanese experienced stronger negative affect regarding the distal consequences, and indicated a greater willingness to apologize or offer compensation to targets indirectly related to focal events. However, Americans experienced more
negative affect for the proximal consequences, and indicated a greater willingness to apologize or offer compensation to targets directly affected by events. Study 4 demonstrated that holistic thinking is associated with these effects, although mediational evidence was quite weak. Holism was significantly correlated with perceptions of responsibility, affect, and willingness to apologize, but scores on the HS only partially mediated perceptions of responsibility for two consequences. Thus, although there is a clear cultural difference regarding the ripple effect, and holism is clearly related to this difference, the mediator of this effect is still unclear.

Nevertheless, results from the present studies are consistent with the idea that Japanese are more concerned than Americans with the interrelatedness of events and relationships in a holistic manner (Nisbett et al., 2001). Previous research has demonstrated cultural differences in a variety of domains regarding holistic/analytic thinking, including attention to the field (Masuda & Nisbett, 2001), detection of covariation (Ji, Peng, & Nisbett, 2000), acceptance of contradiction (Peng & Nisbett, 1999), and causal explanation (Lee et al. 1996; Morris & Peng, 1994). Yet the current results add to these findings by offering an investigation into how Americans and Japanese differ in perceptions of responsibility for the consequences of their actions. In fact, the present research goes beyond previous findings by focusing on the cognitive processes that occur after an event has already occurred. The current results indeed show that there are meaningful cultural differences in how Japanese and Americans perceive the consequences of various actions, with Japanese being more ‘farsighted’ in their awareness of consequences, and Americans being much more ‘nearsighted.’
The results from the current research demonstrate a distinct similarity to previous research on cultural differences in causal attribution. Much research has shown that East Asians make broader attributions for behaviors than Westerners, placing more emphasis on situational factors (Morris & Peng, 1994; Choi et al., 1998), group-focused attributions (Menon et al., 1999), and taking a larger amount of potential causes into account (Choi et al., 2003). Results from the current research suggest a similar ‘broadening’ phenomenon concerning the consequences of behaviors. Compared to Americans, Japanese thought more people were affected by an event, and tended to see responsibility as extending farther downstream by taking more responsibility for distal consequences. Thus, it seems highly likely that these effects may be two sides of the same cognitive process. Those individuals who think about the world more holistically make broader causal attributions, and they also perceive themselves as responsible for a relatively wide array of consequences. Those individuals who think about the world in an analytic manner make more narrow causal attributions, and see themselves as responsible for a smaller number of consequences. Thus, an interesting question for future research is to explicitly investigate the interrelatedness of perceptions of cause and consequence to determine the extent to which the two are truly the result of the same process, as well as the extent to which affecting one phenomenon affects the other.

In addition, the increased sense of responsibility for Japanese may also have an impact on constructs like shame and apologies. For example, Japan has been classified as a “shame” culture, where group norms are considered the standard for behavior rather than more internalized, moral standards in the West (Benedict, 1946). Thus, the
predominance of shame may arise from the heightened sense that for Japanese, actions have a wide variety of consequences on others. In addition, apologies have been documented to be much more prevalent in Japan than in America (Wagatsuma & Rosett, 1986). In fact, apologies are often expected in Japan even when a person is not responsible for a given action. In addition to being evidence for the self-critical and modest nature of Japanese, such customs may also reflect the fact that societal norms force Japanese to be very much aware of the consequences of their (and others’) actions. However, it is important to note that only the data from Studies 2 and 4, and not from Study 3, supported these assumptions.

The current results also have interesting implications for the way in which Japanese and Americans may deal with everyday situations where people must take responsibility. One implication is that crime may occur much less often in Japan than in America at least partly because Japanese see their actions as affecting a wider variety of people. Thus, a given crime may be seen as not only affecting oneself and the victim, responsibility may extend outward to include friends and relatives and co-workers of the victim. In addition, the temporal nature of the ripple effect suggests that criminals (or potential criminals) in Japan may be more likely to see themselves as responsible for the degradation of society over time if they commit crimes. Thus, if any given crime leads Japanese to feel responsible to a large number of people, this increased sense of responsibility may give Japanese much more pause about whether or not to commit crimes.

A second implication has to do with the fact that there is an enormous discrepancy in the amount of lawsuits between the two cultures: Lawsuits are as rare in
Japan as they are common in the U.S. If Americans’ sense of responsibility is most closely dependent on how actions affect themselves, they may be less likely to take into account how their actions affect others, and thus as a result, disputes over who is responsible for the consequences of events may occur much more often in America than in Japan.

Limitations and Directions for Future Research

Although the present results offer evidence for cultural differences in how people perceive responsibility for the consequences of events, a few caveats are in order. First, the experimental investigations involved only hypothetical scenarios, and thus only hypothetical behaviors and hypothetical reactions to those behaviors were studied. Thus, future research should extend the present findings by looking at behaviors that have more meaningful consequences for participants and that involve more real-world situations, for example in interpersonal interactions with other individuals.

A second limitation is that all behaviors and consequences in the present research were negative. One might argue that the fact that because Japanese tend to be more self-deprecating and Americans tend to be more self-enhancing (e.g. Heine et al., 1999), Japanese may be more sensitive to the consequences of actions that negatively affect others, but would not be more sensitive to the consequences of actions that positively affect others. Thus, it remains to be seen whether similar cross-cultural effects would emerge for more pro-social behaviors and consequences.

A third issue for future research involves the degree to which the ripple effect is culturally embedded. It is possible that the lack of mediational evidence in Study 4 implies that the ripple effect is highly embedded in the idiosyncratic norms of Japanese
(or East Asian) culture. For example, the actual concept or meaning of responsibility may differ somewhat in Japan and America. In addition, cultural norms may dictate that a sense of responsibility should extend farther outward for Japanese than for Americans, even when controlling for holistic thinking, suggesting that culture may have additive effects over and above that of holistic thinking.

Finally, it remains to be seen whether similar cross-cultural differences would be obtained for non-social events. In the current research, all consequences had effects on people. However, if holistic thinking is the psychological mechanism responsible for the current results, then a similar pattern of results should be found regardless of whether the event has social or non-social consequences. For example, compared to Americans would Japanese indicate that an earthquake or an explosion affected a larger area of land, or had a more devastating long-term environmental impact? The answers to these questions would provide compelling evidence for the ripple effect as a pervasive cultural difference between Japanese and Americans.
LIST OF REFERENCES


