# The Effect of Prior Commitment on Group Conflict in Judgmental Tasks

by

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## AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## Abstract

Previous research has identified commitment as one of the major contributing factors in group conflict and this study extends this line of research by considering group conflict as a result of varying members' prior commitment for groups working on judgmental tasks with a unanimous decision rule.

The goal of the group working on a judgmental task is to reach consensus but unanimous decision rule further complicates the decision making process as it requires every member to agree with group's decision. Given this setting, prior commitment was expected to result in higher group conflict and this elevated level of conflict to have more negative affect on the group.

With three judgmental cases formulated, subjects were divided into post-decision and pre-decision groups. In the post-decision groups, each subject was individually presented with each case first and committed to his own decision. With these prior commitments, subjects reached a unanimous decision through a group discussion. In the pre-decision groups, subjects reached a group decision without any prior commitment to their own decisions.

Results showed signs of prior commitment contributing to group conflict. Furthermore, the post-experimental questionnaire showed that higher group conflict translates to more negative affects on the perceived performance, the extent to which members agree with the group's decision, feeling toward other members and willingness to work with the same group.

## Acknowledgements

I would like to thank my supervisor, Professor Frank Safayeni, for his guidance and support throughout the thesis. I would also like to thank my two readers, Professor Scott Jeffrey and Professor Robert Duimering, for their inputs in improving the quality of the thesis.

# Dedication

I dedicate this thesis to my family and friends whom I hold dear to my heart.

## Table of Contents

## List of Figures

## List of Tables

# Chapter 1
# Introduction

Conflict is an inevitable part of a group decision making process that has been identified as one of the biggest factors influencing the effectiveness of a group. Past research has found that conflict often causes members to stand against each other rather than in support of each other (Boardman & Horowitz, 1994; Levine & Thompson, 1996).

What causes conflict then? In addition to the organizational and interpersonal causes identified by Greenberg et al. (1996), commitment of group members has been identified as one of the major contributor to group conflict as people display tendency to “stick” with their decisions once they make a commitment (Lewin, 1951).

In some decision situations, members already have prior knowledge of the task at hand and they formulate their own solutions to the task before deciding as a group. This raises interesting research questions: if each group member makes an individual decision before deciding as a group, would this “prior commitment” cause higher level of conflict during group discussion? Furthermore, would this elevated level of conflict have negative affects on the group?

To answer these questions, series of experiments were conducted where participants were given three decision cases to work on as a group. Each case, which had two possible solutions to choose from, contained sufficient level of ambiguity and uncertainty that both solutions appeared equally attractive to

participants.  They worked on these cases in two conditions: Pre-decision and Post-decision.  In the pre-decision condition, participants were presented with each decision case to work on as a group from the start. In the post-decision condition, each member individually formulated a solution based on his/her subjective logic and understanding of the problem. With this prior commitment, members were asked to reach a group decision.

The thesis will first summarize the literature on commitment, conflict, group performance related to types of tasks and decision rules. Then a classic theory in social psychology will be used as a theoretical framework to raise hypotheses and explain the outcome of the experiment. The thesis will conclude by highlighting practical implications of this study and possible research directions for the future.

# Chapter 2
# Literature Review

The thesis contributes research value to the existing literature by investigating the effect of prior commitment on the level of group conflict with consideration of two factors: Judgmental task and unanimous decision rule. As explained below, group decision making in this setting provides potential for maximum group conflict because both factors lie on extreme ends of the spectrum for decision rules and types of tasks in terms of causing group conflict.

## 2.1 Decision Rule

Many cross-functional teams in global corporations encourage a unanimous decision rule with each member entitled to equal decision-making power because stricter decision rules elicit more thorough discussion (Hastie et al., 1983) and increase a chance of finding the correct answer (Kaplan & Miller, 1987). While different expertise of members in a cross-functional team provides a definite advantage, it can also pose greater challenge for collaboration when unanimity is required since most organizational tasks contain varying degree of uncertainty and ambiguity.

## 2.2 Tasks

Research (Laughlin et al, 1991) has shown that a task generally lies along a continuum between purely intellective and purely judgmental task. While intellective task has an objectively correct solution, judgmental decision is likely to yield multiple

solutions due to a lack of clear criteria for objective evaluation of the task. This is why groups perform better in intellective tasks than judgmental tasks (Laughlin et al., 2002; Laughlin et al., 2003).

The goal of a group faced with a judgmental decision is to reach consensus by finding a solution that every member can agree on and be satisfied with, rather than finding the objectively correct answer (Bonner, 2000). More ambiguous and uncertain the task is (i.e. more judgmental in nature), harder it is for the group to resolve conflict and reach consensus. Although conflict can benefit the group working on an intellective task, it is more likely to be detrimental for a judgmental task. Therefore, knowing the cause of conflict can help the group to minimize the occurrence of conflict.

## 2.3 Conflict

### 2.3.1 Two Basic Types of Conflict

Two basic types of conflict have been identified by researchers studying small-group behavior: task conflict and relationship conflict (Wall & Nolan, 1986; Priem & Price, 1991; Jehn, 1995). Task conflict arises from disagreement among group members regarding various task-related issues whereas relationship conflict is caused by interpersonal disagreement or incompatibilities among group members. Drawing from Guetzkow and Gyr (1954) who characterized task conflict as *substantive* and relationship conflict as *affective,* Pelled (1995) defined s*ubstantive conflict* as the group disagreements about “task issues including the nature and importance of task

goals and key decision areas, procedures for task accomplishment, and the appropriate choice for action" and a*ffective conflict* as "the interpersonal clashes characterized by anger, distrust, fear, frustration, and other forms of negative affect."

### 2.3.2 Relationship between Conflict and Performance

Conflict can benefit the group in many ways. Conflict makes group's goal and the role of each member more explicit (Bormann, 1975; Jehn, 1994; Thibaut & Coules, 1952). Furthermore, conflict motivates members with opposing view to understand each others' positions more fully (George, 1992) and facilitates innovation by encouraging the consideration of new ideas (Albanese & Van Fleet, 1985).

However, conflict causes more harm than good in most cases. Past research has found the negative correlation between group performance and relationship conflict (Argyris, 1962; Kelly, 1979; Mullen & Cooper, 1994). Pelled (1995) introduced three ways in which group performance can be affected by relationship conflict. First, relationship conflict limits the cognitive processing ability of the group. Second, members become more resistant to information provided by other members. Third, the group wastes its time and energy in a fruitless attempt to solve conflict rather than focusing on the task.

Conversely, the relationship between group performance and task conflict varies depending on the type of task the group performs (Jehn, 1995; Gladstein, 1984). Ashby(1956) suggested that the amount of variety generated within the group should match the amount of variety in tasks. Thus, group performance in routine tasks with low variability and uncertainty suffers from task conflict whereas

the group performing nonroutine tasks with high variability may benefit from task conflict as long as the “level of task variety and amount of information required to complete the task exceeds the level of variety and number of different viewpoints among group members” (Jehn, 1995). For a judgmental task which does not have an objectively correct answer, the group is more likely to suffer from task conflict if members can not successfully integrate different viewpoints.

### 2.3.3 Intractable Conflict

Intractable conflict is defined as those that are persistent and destructive despite repeated attempts at resolution (Kriesberg, 2005). Both task and relationship conflict can lead to intractable conflict  as it is typically caused by moral or identity differences in which trade-offs and compromises feel impossible (Pearce & Littlejohn, 1997). Coleman (2003) identified more than 50 sources of intractability that include a variety of different aspects of the contexts, the issues, the relationships, the processes, and the outcomes.

## 2.4 Commitment

Traditional research on commitment has been focused on definition and measurement of organizational commitment. Among several different views of organizational commitment that have evolved throughout the years, two popular definitions were proposed by Becker (1960) and Porter et al. (1974). Becker (1960) defined organizational commitment as a “tendency to engage in consistent lines of activity as the perceived cost of doing otherwise is greater” while Porter et al. (1974)

described it as “the strength of an individual’s identification with and involvement in a particular organization.”

The thesis, however, deviates from the traditional line of research by focusing on commitment of people to their decisions (rather than to their organizations) and its role in causing group conflict. Research has shown that people rationalize their choices once they make them (Ross & Ward, 1995) and they feel obliged to hold on to their original position once it has been publicly announced in order to “save face” (Wilson, 1992). Furthermore, people have become more committed to their initial position when they find further evidence to support their arguments (Petty & Cacioppo, 1986). However, there has not been an experimental study which studied the link between prior commitment and group conflict.

Given a judgemental task and a unanimous decision rule, the group is likely to experience intractable conflict when members stick with their solutions rather than integrating individual solutions to a group decision. The goal of the thesis is then to identify prior commitment as one of the primary source of intractability and therefore avoid the occurrence of conflict by minimizing prior commitment.

# Chapter 3
# Theoretical Framework

Most research on commitment is based on observational studies with insufficient underlying theories to explain the phenomenon. Therefore, the thesis turns to a classical theory in social psychology for building the theoretical framework in the hopes of demonstrating potential implications of using such classic theory to advance the study on prior commitment.

Drawing from Lewin's Field Theory, Festinger developed his Cognitive Dissonance theory to explain individual and group behavior in decision making process. Components of Cognitive Dissonance Theory and its conceptual relevance to the purpose of this study are highlighted below. In order to further aid the understanding of the theory, summary of Lewin's Field Theory and its components are also provided as a supplementary material in Appendix A.

## 3.1 Festinger's Theory of Cognitive Dissonance

### 3.1.1 Introduction: Cognition and Dissonance

Festinger introduced his cognitive dissonance theory in 1956. Similar to Lewin's life space, Festinger devised the term "cognition" which he defined as "any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior" (Festinger, 1956). One maps these elements of cognition onto (physical or social or psychological) reality which "exerts pressures in the direction of bringing the

appropriate cognitive elements into correspondence with that reality" (Festinger, 1956).

Within cognition of an individual, state of psychological tension as well as psychological comfort exist which Festinger elucidated with dissonance and consonance. Dissonance occurs when two cognitive elements do not fit together because they are inconsistent and contradictory to each other. Conversely, consonance occurs when two elements exist in harmony with each other. When one feels cognitive dissonance, this psychological discomfort drives him to reduce dissonance and achieve consonance. Festinger raised two main hypotheses in his book (1957):

1. "The existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance.
2. When dissonance is present, in addition to trying to reduce it, the person will actively avoid situation and information which would likely increase the dissonance."

Further elaboration of these hypotheses and their relevance to the purpose of this study are discussed in the following section.

### 3.1.2 Dissonance Reduction Mechanism at Individual Level

The first hypothesis of cognitive dissonance theory describes the cause-and- effect relationship of occurrence and subsequent reduction of dissonance. (This is similar to Lewin's concept of the barrier that creates tension by preventing locomotion between regions of activity in life space which become rearranged in such a way to relieve the tension). Festinger identified four dissonance reduction mechanisms:

"Spreading the alternatives" refers to the idea that one can adjust the attractiveness of alternatives by changing cognition. Having made the decision, two alternatives which previously had equal appeal can be changed so that chosen alternative ends up having higher appeal than the rejected one and dissonance is reduced by thinking that the choice was the right one.

Establishing "cognitive overlap" is the most economical method of reducing dissonance and it requires treating two dissonant elements as "really the same, really lead to the same end, or really serve the same purpose" (Festinger, 1956). Therefore, one perceives two alternatives as separate paths that lead to the same goal rather than considering them as two mutually exclusive choices.

The third method addresses the tendency of a person to seek consonant information while avoiding dissonant information. One may avoid any new information which may cause further dissonance and if he can not avoid the dissonant information, then he takes new information selectively and this selective exposure to new information helps in reduction of dissonance.

Lastly, forced compliance is an involuntary procedure where one attributes the reason for his decision on authority or situational constraints. Festinger argued that a person experiences cognitive dissonance when he has to make a decision among many alternatives on his own. When he is forced into a decision, he is able to dissociate himself from the decision and attribute his decision to external forces.

These dissonance reduction mechanisms are designed for situations where an individual experiences cognitive dissonance. In group decision making, members also becomes a factor to each other in aiding or disrupting dissonance reduction of an individual.

## 3.2 The Main Hypothesis and Predictions

### 3.2.1 The First Hypothesis

While the aforementioned mechanisms can be effective in reducing dissonance, they require a change in one's cognitive element which is ensued by resistance to change. The ease of dissonance reduction depends on the magnitude of resistance associated with the cognitive element.

Festinger identified three reasons why it may be difficult for one to change his cognitive element. Firstly, the change entails pain and loss which deter the person from changing. Secondly, current state offers sufficient level of satisfaction that the person may not be motivated to change. Lastly, change is simply impossible even if the person wants to change.

Having prior commitment means that individual has reached a decision in his mind and he is in a state of reducing dissonance created by the cognitive clusters of the un-chosen alternative. In this state, he uses any of the aforementioned individual dissonance reduction mechanisms. The successful reduction of dissonance depends on the level of commitment. If individual strongly believes in his decision, then he can reduce dissonance easier. Since level of commitment is not controlled in the experiment, participants in the post-decision condition enter the group discussion with varying degree of commitment to their individual answers (which may differ from each other due to the judgmental nature of the given task). However, the thesis argues that the act of “making a decision” alone (regardless of the level of commitment) is sufficient enough to cause members to experience more resistance to cognitive dissonance compared to those who have not made a decision. If this were true, then members with prior commitment are likely to experience more resistance to reduction of group dissonance. As a result, the group will experience more group conflict when they are asked to reach a unanimous decision on a judgmental task. To validate this claim, the first main hypothesis is raised:

*Hypothesis 1: For the group working on a judgmental task with a unanimous decision rule, higher level of group conflict occurs when its members come into a discussion with prior commitments.*

### 3.2.2 The Second Hypothesis

Lewin believed that group behavior is the collective sum of each individual behavior and that understanding individual behavior is the gateway to understanding groups. Therefore, the scope of his cognitive model does not extend beyond individual's perception of his situation. As Lewin's student, Festinger realized this and extended his cognitive dissonance theory to explain what happens when people make decision as a group.

He described groups as "a major source of cognitive dissonance for the individual and a major vehicle for eliminating and reducing the dissonance which may exist in him" (Festinger, 1956). When disagreements among group members exist, each group member experiences cognitive dissonance in the same way he would when two conflicting cognitions exist within him. The magnitude of dissonance among group members is proportional to the degree of overlap of consonant cognitions in the group. Furthermore, if one already knows that majority of group members agrees with his opinion, then the difference in opinion posed by the minority member will not cause as great of dissonance in him compared to when his opinion is shared with the minority.

Festinger identified three methods by which cognitive dissonance at group level can be reduced: "1) change one's own opinion 2) change the opinions of those with whom there is disagreement, and 3) make the people with whom there is disagreement in some way significantly different from, and therefore not comparable, to oneself" (Liebert & Spiegler, 1963).

The first and the second method require members to change one's own opinion or convince others to change their opinions. For the group working on a judgmental task, these methods may be more challenging to use since judgmental task does not possess an objectively correct answer. In other words, members have no motivation to change their own opinion when their opinion is arguably as good as any other opinion. In this vein, they are likely to adjust their feeling toward other members (as suggested by the third method). If they are frustrated with other members, then this frustration translates to negative affect on other members and the group as a whole. This raises the second hypothesis:

*Hypothesis 2: For the group working on a judgmental task with unanimous decision rule, higher level of conflict promotes more negative affects on the group when members come into a discussion with prior commitment.*

### 3.2.3 The Flowchart of Theoretical Framework

Figure 1 illustrates the flowchart that summarizes the theoretical framework for the thesis. Decision time (Details provided in Section 4.5.1) and group valence (Details provided in Section 4.5.2) are two response variables measured to test change in group conflict as a result of manipulating level of prior commitment. The validity of the main hypotheses is further tested with series of predictions regarding various aspects of the group. Details on the predictions are provided in the next section.

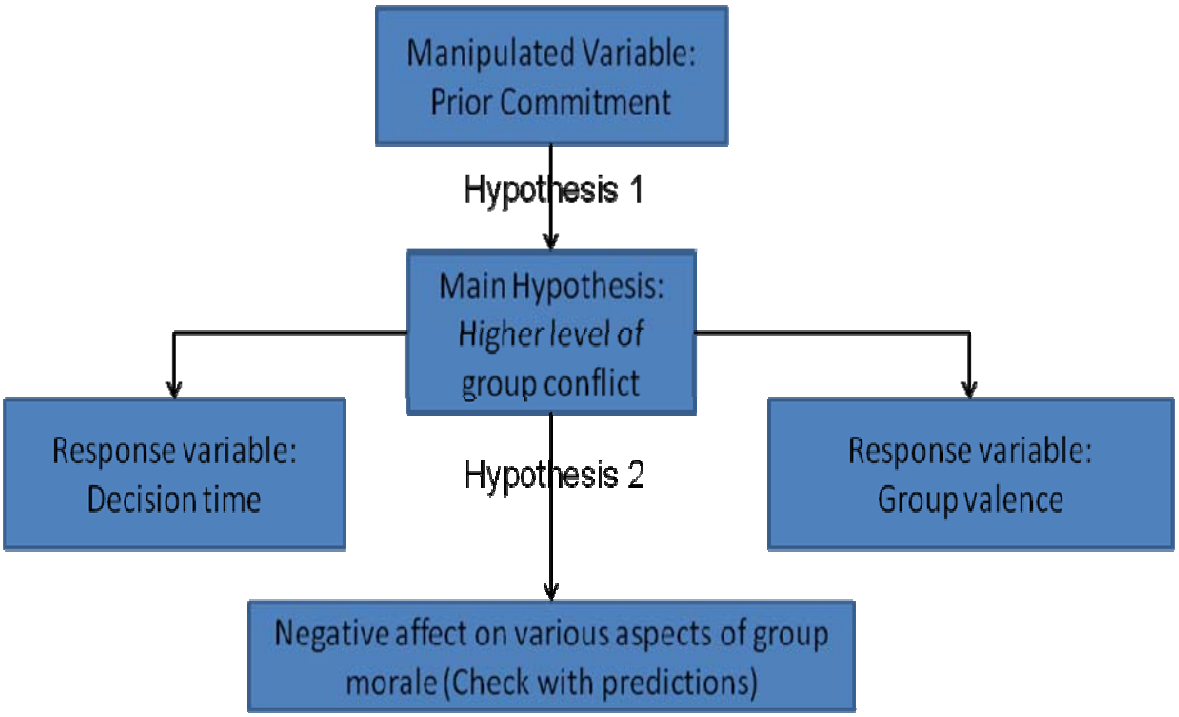


**Figure 1: Flowchart of theoretical framework and hypotheses**

### 3.2.4 Predictions

Since conflict affects various aspects of the group, predictions are made as measures of manipulation of prior commitment. In this study, “group morale” is used as a collective term that encompasses the following aspects of the group dynamics: perceived group performance, degree to which members agree with the group’s decision, compliance, the feeling toward other members, group satisfaction, and willingness to work with the same group again. Ten predictions are listed below.

Response variables: Decision time and group valence

*Prediction 1: It will take longer for the post-decision group to reach a unanimous decision than the pre-decision group.*

*Prediction 2a: More group valence will be generated in the post-decision group than the pre-decision group.*

*Prediction 2b: Perceived level of group conflict will be higher in the post-decision group than the pre-decision group.*

Perceived Group Performance

*Prediction 3a: Perceived group performance will be lower in the post-decision condition than the pre-decision condition.*

*Prediction 3b: Perceived individual performance will be lower in post-decision condition than the pre-decision condition.*

Extent to which members agree with the group's decision and compliance

*Prediction 4: Participants in the post-decision condition will disagree with the group decision more than participants in the pre-decision condition.*

*Prediction 5: Participants in the post-decision conditions will feel greater external pressure for compliance than participants in the pre-decision condition.*

Feeling toward other member, satisfaction and willingness to work with the same group again

*Prediction 6: Participants in the post-decision condition will rate each other lower than participants in the pre-decision condition.*

*Prediction 7: Participants in the post-decision condition will be more dissatisfied with their groups than participants in the pre-decision condition.*

*Prediction 8: Participants in the post-decision condition will be less inclined to work with each other again than participants in the pre-decision condition.*

# Chapter 4
# Methodology

## 4.1 Stimulus

Participants were presented with three decision cases where the main character is in dilemma between two possible courses of action. Each case was designed to cover an issue pertinent to student life style in order to elicit active participation during group discussion. The first case was related to family values where participants were asked to decide whether the main character should go home for Thanksgiving or go on a trip with his girlfriend. The second case was related to friendship values where participants were asked to decide whether to lend money to a friend in financial strain. Finally, the third case tested student ethics where participants were asked to decide whether to report cheating of a classmate (Please refer to Appendix B for details on three cases).

After reading each case, participants were asked to give advices on what the character should do and why he should carry on the suggested course of action. The number of possible alternatives was limited to two in each case for simplicity and ease of reaching a unanimous decision.

## 4.2 Design

### 4.2.1 The Study Condition

As described in the introduction, the experiment was carried out in two conditions: pre-decision and post-decision. In the pre-decision condition, participants were presented with each decision case as a group at the start of the experiment and were asked to reach a unanimous group decision. In the post-decision condition, participants were first presented with each decision case individually before group discussion and were asked to write down their individual answers on the sheet provided (Appendix D). Furthermore, they were asked to write down reasons for choosing their answers. This step was designed to help participants think about the case and increase the level of commitment to their answers.  After the completion of the individual part, participants were asked to reach a unanimous decision through a group discussion, as in the pre-decision condition. Figure 4 illustrates the layout of two study conditions.

**The Pre-Decision Condition**

Group discussion

**The Post-Decision Condition**

Step 1) Individual part

Step 2) Group discussion

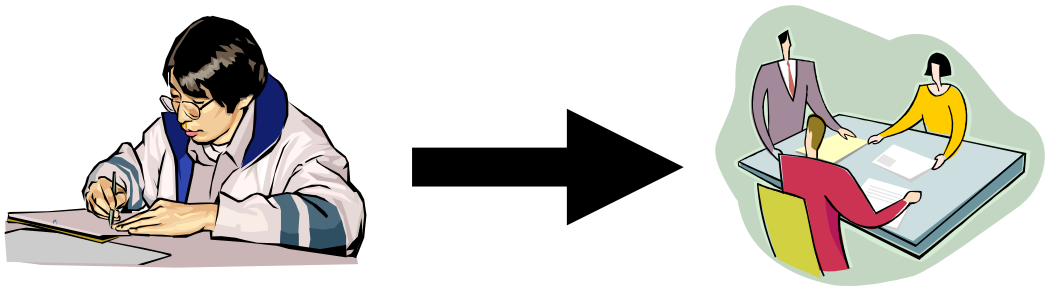

**Figure 2: Graphical representation of pre-decision and post-decision condition**

### 4.2.2 Group Size

Since the aim was to study group conflict in its simplest form, participants worked in groups of three in both conditions. Working on a judgmental task with only two possible alternatives, the aim was to create group conflict which would lead to confrontation between two members with same solution (majority) and the remaining member with a different solution (minority). Although this group polarization would be

present in both conditions, it would be more observable in the post-decision condition where participants enter the group discussion with their pre-chosen answers.

## 4.3 Online Survey

Prior to the experiment, two online surveys were conducted to 163 students in an introductory organizational behavior course at University of Waterloo. The purpose of the first survey was to gather preliminary statistics on how people would answer each of the three decision cases. Since the difference of answers is the starting point of conflict, it was crucial to the purpose of experiment that both alternatives in each decision case appear equally attractive to participants. The purpose of the second survey was to check if the adjustment has worked.

The first survey was conducted to 106 students who were presented with three cases individually and were asked to give their answers and explanations for choosing their answers. Based on the list of reasons and justifications provided, each case was modified to make both alternatives more equally attractive. For example, the majority of students (83.02%) have selected the “be with the family for Thanksgiving” option for the first case (table 1) and one of their biggest reasons for choosing this alternative was because the main character could ask his girlfriend to come with him to his family for Thanksgiving and solve the apparent dilemma. As such, a paragraph was added into the first decision case to address this issue: “In an attempt to solve the apparent dilemma, Doug has offered Kate to join his family for

the holiday but Kate politely declined Doug's offer because her conservative upbringing makes her feel uncomfortable about spending the holiday with Doug's family especially since they have only been going out for a year." This line was added to make the family option less appealing. After calibration of the three decision cases, second survey was conducted to the remaining 57 students from the same course. Table 1 summarizes the preliminary trend of answers for each decision case.

**Table 1: Summary of actual decisions made by students during the online survey**

| | Survey #1 Result (N= 106) | | Survey #2 Result (N=57 ) | |
|---|---|---|---|---|
| Case 1 | Go on the trip | Be with family | Go on the trip | Be with family |
| | 18 | 88 | 29 | 28 |
| | 16.98% | 83.02% | 50.88% | 49.12% |
| Case 2 | Turn him down | Lend money | Turn him down | Lend money |
| | 38 | 67 | 21 | 34 |
| | 35.85% | 63.21% | 38.18% | 61.82% |
| Case 3 | Remain silent | Report to professor | Remain silent | Report to professor |
| | 35 | 71 | 20 | 37 |
| | 33.02% | 66.98% | 35.09% | 64.91% |

It is important to note that the first decision case yielded an even split of answers (as intended) whereas the answers for the second and the third decision case were lopsided. Therefore, the first decision case was used as the primary tool to measure the effect of prior commitment on group conflict. While the remaining two cases were still presented to participants, their roles were supplementary.

## 4.4 Procedure

Participants of this study were 90 students (45 in each condition) in another introductory organizational behavior course at University of Waterloo. They participated for a course credit.

At the start of the experiment, participants were shown a short introductory video that narrated purpose of the study, description of the task and instruction for the experiment. (Appendix C) The experiment was video-taped for post-analysis and statistical analysis of collected data was performed using SPSS 14.0(with confidence interval of 95%).

The group was given maximum of 25 minutes to reach a group decision. If the group could not reach a unanimous decision within the time limit, then it was recorded as “no decision”. This means that participants could not resolve the group conflict and the conflict had become intractable (as explained in 2.3.3).

## 4.5 Measurement

### 4.5.1 Decision time

If prior commitment of members did have an effect on group conflict, the difference in decision time between two study conditions should be the first indicator. Decision time, defined as the duration of the group discussion and thus time taken to reach a group decision, was measured in seconds rather than minutes in order to increase the accuracy of data.

### 4.5.2 Group Valence and Valence Coding

Drawing from Lewin's theory, Hoffman (1961) devised the group valence model (GVM) by defining group valence as the "degree to which a suggestion by a group member is acceptable to all members of the group" (Hoffman, 1961). The GVM is based on the assumption that magnitude of the group valence for a solution, rather than individual valences for different solutions, determines the likelihood of its adoption. Hoffman showed that "the purpose of group discussion is to establish a group preference for a particular solution" (Hoffman & Kleinman, 1994). Within the GVM, Hoffman developed a coding system to measure the level of conflict during the group discussion. From the transcript, he translated every verbal statement of group members into codes which showed either a support (positive valence) or an opposition (negative valence) for different alternatives. With this data, he showed that "the more valence acts that are generated the more it may reflect the existence of task conflict in the group" (Falk, 1982).

Simplified version of valence coding was used in this study for logistics purposes. Instead of sorting through every sentence and categorizing them into valences, verbal statements of each speaker were analyzed in chunks to represent the main point of his/her argument. For example, one participant who was in favor of the family option in the first case spent several minutes explaining to his group why the main character should go home for Thanksgiving instead of going on a trip with his girlfriend. His main argument during this time was that Thanksgiving is a holiday designated for the family. Instead of counting every sentence that he has

used to support his argument during this span of time, his main argument (“Thanksgiving is for the family”) was simply coded as “F+”. If the person brought up this same point again during the course of group discussion, then it was counted again. In this vein, arguments supporting the family option and the trip option were coded as positive valences (“F+” and “T+” respectively) while statements rejecting the two options were coded as negative valences (“F-” and “T-” respectively). Table 2 is a sample of the valence coding and the total number of group valence generated for each alternative.

**Table 2: Sample of valence coding from one of the groups in the pre-decision condition**

| F+ | F- | T+ | T- |
|---|---|---|---|
| Thanksgiving is for the family (x2) | He has already spent every Thanksgiving with his family so his family will understand even if he misses this Thanksgiving | Doug thinks Kate is the "one" so he should pursue this opportunity to enrich their relationship(x2) | Doug’s family will hate Kate if Doug tells the family that he is going on the trip with her instead of spending the Thanksgiving with them |
| Family is more important than the girl friend | It's time for Doug to grow up and make decision for himself instead of being tied to the family | They won't have much time to spend with each other if they are going on off-stream | If they are meant for each other, then they can make time to see each other in the |

| | | | |
|---|---|---|---|
| | | next term | future even if they are going off-stream |
| | He can visit his family any other time | | There is something wrong with the relationship if they break up because Doug didn't go on the trip |
| | | | One trip won't make a difference to the relationship especially if Doug thinks Kate is the "one" |
| 3 F+ valences generated | 3 F- valences generated | 3 T+ valences generated | 3 T- valences generated |

The number of positive and negative valences generated for each alternative was counted in two study conditions (Appendix I) and they were statistically compared to check for the difference. As a side note, participants in favor of one option often supported their arguments by generating negative valence for the other option. For example, one participant in favor of the family option generated positive

valences (“Thanksgiving is for the family”) but also generated negative valences(“Doug’s family will hate Kate if Doug tells the family that he is going on the trip with her instead of spending the Thanksgiving with them”). As such, the total number of valences generated for the group favoring the family option was calculated by adding (F+) + (T-) while the total number of valences generated for the group favoring the trip option was calculated by adding (F-) + (T+).

### 4.5.3 Questionnaire

Each participant was given a questionnaire at the end of the experiment. It included eleven questions with nine multiple choices and one short answer. Each question was designed to address the predictions listed in section 3.2.4. Table 3 is the list that matches questions in the questionnaires with appropriate predictions.

**Table 3: Predictions and corresponding measures**

| Prediction | Topic | Measured with |
|---|---|---|
| 2b | Perceived group conflict | Q5 |
| 3a | Perceived group performance | Q1 |
| 3b | Perceived individual performance | Q2 |
| 4 | Agreement | Q3 |
| 5 | Pressure for compliance | Q4 |
| 6 | Feeling toward other members | Q6,Q7,Q8 |
| 7 | Group satisfaction | Q9 |
| 8 | Willingness to work again | Q10 |

# Chapter 5
# Results

## 5.1 Decision Time

Normality of time data was confirmed with Q-Q plots[1] (Appendix F) and the T-test was performed to compare the decision time between pre-decision and post-decision groups. Natural log was used to account for the wide distribution of data in both conditions.

For the first decision case, the difference in decision time between two conditions was found to be statistically significant (P=0.005). From Table 4, the pre-decision group working on the first case took $e^{5.6206}$ = 276 seconds on average to reach a group decision while the post-decision group took $e^{6.4292}$ =619 seconds on average. It is worthwhile to note that every pre-decision group reached a unanimous decision whereas two post-decision groups failed to reach a decision on the first case. This result supports prediction 1 regarding the post-decision group taking longer to reach a group decision. This difference in decision time between two groups was not found for the second (P= 0.176) and the third case (P=0.429).

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[1] In statistics, a Q-Q plot ("Q" stands for quantile) is a graphical tool for diagnosing differences in distributions (such as non-normality) of a population from which a random sample has been taken. One plots the quantiles, typically using the formula k/(n + 1), of the comparison distribution (e.g. the normal distribution) on the horizontal axis (for k = 1, ..., n), and the order statistics of the sample on the vertical axis. For a sample from the comparison distribution this approximates a straight line, especially near the center. In the case of substantial deviations from linearity, the statistician rejects the null hypothesis of sameness. (http://en.wikipedia.org/wiki/Q-Q_plot)

**Table 4: Group statistics of logged decision time for two conditions**

| | group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| logT1 | Pre | 15 | 5.6206 | .67511 | .17431 |
| | Post | 15 | 6.4292 | .75719 | .19551 |
| logT2 | Pre | 15 | 5.5673 | .87482 | .22588 |
| | Post | 15 | 5.8498 | .75459 | .19483 |
| logT3 | Pre | 15 | 6.0275 | .89093 | .23004 |
| | Post | 15 | 6.0977 | 1.20670 | .31157 |

**Table 5: T-test result of comparison of logged decision time between two conditions**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (1-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| logQ1 | Equal variances assumed | 1.041 | .316 | -3.087 | 28 | .003 | -.80854 | .26193 | -1.34508 | -.27200 |
| | Equal variances not assumed | | | -3.087 | 27.639 | .003 | -.80854 | .26193 | -1.34540 | -.27169 |
| logQ2 | Equal variances assumed | .967 | .334 | -.947 | 28 | .176 | -.28250 | .29830 | -.89353 | .32853 |
| | Equal variances not assumed | | | -.947 | 27.410 | .176 | -.28250 | .29830 | -.89413 | .32912 |
| logQ3 | Equal variances | .844 | .366 | -.181 | 28 | .429 | -.07028 | .38729 | -.86360 | .72304 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| assumed | | | | | | | | | |
| Equal variances not assumed | | | -.181 | 25.767 | .429 | -.07028 | .38729 | -.86671 | .72615 |

## 5.2 Group valence

Group valence was only measured for the first decision case, the primary case of interest, which yielded a statistically significant difference in decision time between two study conditions. From

Table 6, participants in the pre-decision condition generated 3.70 valences for family option and 1.70 valences for trip option while participants in the post-decision condition generated 6.70 valences for family option and 4.23 valences for trip option.

T-test comparison of valences between two conditions (Table 7) yielded a statistically significant difference for both the family option (P=0.007) and the trip option (P=0.005). Since normality of the data could not be confirmed, non-parametric test was also used and the result confirmed the result of the t-test with P=0.000 for the family option and P=0.008 for the trip option (Table 8).

**Table 6: Group statistics of group valence of the first case for two conditions**

| | VAR | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Family | Pre | 30 | 3.70 | 4.356 | .795 |
| | Post | 30 | 6.70 | 4.750 | .867 |
| Trip | Pre | 30 | 1.70 | 1.822 | .333 |
| | Post | 30 | 4.23 | 4.776 | .872 |

**Table 7: T-test result of comparison of group valence for the first case between two conditions**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Family | Equal variances assumed | 1.061 | .307 | -2.550 | 58 | .007 | -3.000 | 1.177 | -5.355 | -.645 |
| | Equal variances not assumed | | | -2.550 | 57.571 | .007 | -3.000 | 1.177 | -5.356 | -.644 |
| Trip | Equal variances assumed | 8.242 | .006 | -2.715 | 58 | .005 | -2.533 | .933 | -4.401 | -.665 |
| | Equal variances not assumed | | | -2.715 | 37.270 | .005 | -2.533 | .933 | -4.424 | -.643 |

**Table 8: Non-Parametric test result of comparison of group valence for the first case between two conditions**

| | Family | Trip |
|---|---|---|
| Mann-Whitney U | 215.000 | 289.000 |
| Wilcoxon W | 680.000 | 754.000 |
| Z | -3.496 | -2.422 |
| Asymp. Sig. (1-tailed) | .000 | .008 |

## 5.2 Questionnaire response

Table 9 summarizes the mean response of each question in the questionnaire. T-test of questionnaire responses between two conditions (Table 10) revealed a statistically significant difference for the following question: Q1 (P=0.000), Q2 (P=0.044), Q3 (P=0.016), Q5 (P=0.017), Q6 & Q7& Q8 (0.027) and Q9 (P=0.006). Q4 (P=0.222) was the only question that did not show a difference between the two conditions. Non-parametric test result confirmed the result of the t-test (Table 11).

For Q1 (“How would you rate the group’s overall performance in reaching a unanimous decision?), the mean response of participants in the pre-decision condition was 2.42 compared to 1.62 in the post-decision condition for the difference of 0.8 (P=0.000) on a scale from -3 (Very bad) to 3 (Very good). In other words, participants in the post-decision condition perceived their groups to have performed worse in reaching a unanimous decision and this supported prediction 3a about the perceived group performance.

For Q2 (“How would you rate your overall performance in the group discussion?”), the mean response of participants in the pre-decision condition was 2.38 compared to 2.13 in the post-decision condition for the difference of 0.25 (P=0.044) on a scale from -3 (Very bad) to 3 (Very good). Similar to the result of Q1, participants in the post-decision condition perceived to have performed worse individually in reaching a unanimous decision and this supported prediction 3b regarding the perceived individual performance.

For Q3 (“What was the degree to which you agreed with the group’s decision?”), the mean response of participants in the pre-decision condition was 2.24 compared to 1.73 in the post-decision condition for the difference of 0.511(P=0.016) on a scale from -3 (Strong disagreement) to 3 (Strong agreement). Therefore, participants in the post-decision condition agreed less with the group decision than those in the pre-decision condition and this supported prediction 4 about the extent to which members agree with the group’s final decision.

For Q4 (“To what extent did you feel “pressured” to agree with others?”), the mean response of participants in the pre-decision condition was -0.46 compared to -0.24 in the post-decision decision condition for the difference of -0.22 (P=0.222) on a scale from -3 (I was encouraged to voice my opinion rather than being pressured to agree with others) to 3 (Very strongly forced to agree). Positives on this scale indicate that participants felt pressured for compliance whereas negatives implies that not only participants did not feel any pressure for compliance but they also felt more encouraged to speak up. Both groups indicated that they felt more encouraged

to speak up rather being pressured to comply. This result does not support prediction 5 regarding external pressure for compliance and possible explanation is provided in section 6.2.2.

For Q5 (“How much conflict do you think existed during the group discussion?”), the mean response of participants in the pre-decision condition was 1.38 compared to 1.96 in the post-decision condition for the difference of -0.578 (P=0.017) on a scale from 0(No conflict at all) to 5 (A lot of conflict). In other words, participants in the post-decision condition perceived higher level of conflict during the group discussion and this supported prediction 2b regarding the perceived group conflict.

Q6, 7 and 8 (“How do you feel about person A, B and C?” respectively) were analyzed together to compare the collective feeling of the member toward other group members in each condition. The mean response of participants in the pre-decision condition was 1.67 compared to 2.03 in the post-decision condition for the difference of -0.367(P= 0.027) on a scale from -3(Very negative) to 3(Very positive). Therefore, participants in the post-decision condition indicated more negative feeling toward other members and this supported prediction 6 regarding the feeling toward other members.

For Q9 (“Did you enjoy working with your group members?”), the mean response of participants in the pre-decision condition was 2.53 compared to 2.00 in the post-decision condition for the difference of 0.53 (P=0.006) on a scale from -3(Not at all) to 3 (Very much). This means that participants in the post-decision

condition were more dissatisfied with their groups and this supported prediction 7 about group satisfaction.

For Q10 (“Would you like to work again with the same on a similar task?”), 15.6% (7 out of 45) of participants in the post-decision condition indicated that they would **not** want to work with the same group again compared to none in the pre-decision condition and this supported prediction 8 about willingness to work with the same group again on a similar task.

**Table 9: Group statistics of questionnaire data for two conditions**

| | group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| q1 | Pre | 45 | 2.42 | .543 | .081 |
| | Post | 45 | 1.62 | 1.267 | .189 |
| q2 | Pre | 45 | 2.38 | .535 | .080 |
| | Post | 45 | 2.13 | .786 | .117 |
| q3 | Pre | 45 | 2.24 | .981 | .146 |
| | Post | 45 | 1.73 | 1.214 | .181 |
| q4 | Pre | 45 | -.46 | 1.322 | .197 |
| | Post | 45 | -.24 | 1.282 | .191 |
| q5 | Pre | 45 | 1.38 | 1.336 | .199 |
| | Post | 45 | 1.96 | 1.186 | .177 |
| q678 | Pre | 45 | 2.03 | .991 | .148 |
| | Post | 45 | 1.67 | 1.133 | .169 |
| q9 | Pre | 45 | 2.53 | .694 | .103 |
| | Post | 45 | 2.00 | 1.187 | .177 |

**Table 10: T- test result of comparison of questionnaire data between two conditions**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (1-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| q1 | Equal variances assumed | 22.243 | .000 | 3.894 | 88 | .000 | .800 | .205 | .392 | 1.208 |
| | Equal variances not assumed | | | 3.894 | 59.652 | .000 | .800 | .205 | .389 | 1.211 |
| q2 | Equal variances assumed | 2.411 | .124 | 1.725 | 88 | .044 | .244 | .142 | -.037 | .526 |
| | Equal variances not assumed | | | 1.725 | 77.524 | .044 | .244 | .142 | -.038 | .527 |
| q3 | Equal variances assumed | .162 | .688 | 2.198 | 88 | .016 | .511 | .233 | .049 | .973 |
| | Equal variances not assumed | | | 2.198 | 84.285 | .016 | .511 | .233 | .049 | .974 |
| q4 | Equal variances assumed | .387 | .536 | -.769 | 88 | .222 | -.211 | .275 | -.757 | .334 |
| | Equal variances not assumed | | | -.769 | 87.916 | .222 | -.211 | .275 | -.757 | .334 |
| q5 | Equal variances | 1.454 | .231 | -2.169 | 88 | .017 | -.578 | .266 | -1.107 | -.048 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | assumed | | | | | | | | | |
| | Equal variances not assumed | | | -2.169 | 86.779 | .017 | -.578 | .266 | -1.107 | -.048 |
| q678 | Equal variances assumed | 2.675 | .106 | 1.634 | 88 | .027 | .367 | .224 | -.079 | .813 |
| | Equal variances not assumed | | | 1.634 | 86.461 | .027 | .367 | .224 | -.079 | .813 |
| q9 | Equal variances assumed | 1.429 | .235 | 2.602 | 88 | .006 | .533 | .205 | .126 | .941 |
| | Equal variances not assumed | | | 2.602 | 70.940 | .006 | .533 | .205 | .125 | .942 |

**Table 11: Non-parametric test result of comparison of questionnaire data between two conditions**

| | q1 | q2 | q3 | q4 | q5 | q678 | q9 |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 642.000 | 860.000 | 725.000 | 901.000 | 738.500 | 819.000 | 721.500 |
| Wilcoxon W | 1677.000 | 1895.000 | 1760.000 | 1936.000 | 1773.500 | 1854.000 | 1756.500 |
| Z | -3.199 | -1.366 | -2.476 | -.997 | -2.275 | -1.611 | -2.579 |
| Asymp. Sig. (1-tailed) | .001 | .085 | .007 | .160 | .011 | .053 | .005 |

# Chapter 6
# Discussion

## 6.1 Decision time and Group valence

### 6.1.1 The First Decision Case

For the first decision case, participants in the post-decision condition took longer than those in the pre-decision group to reach a group decision. Moreover, subsequent valence coding of the first case indicated that the post-decision group generated significantly higher number of group valences compared to the pre-decision group. Both data supported the first main hypothesis regarding prior commitment causing higher level of group conflict.

Having made the decision, participants rearranged their preferences so that the chosen alternative became more attractive than other alternatives which had previously been nearly equally attractive. Festinger named this process “spreading the alternatives”, one of the dissonance reduction mechanism described in section 3.1.2. The faster the preference of alternatives was adjusted and stabilized, the more likely it would have been for participants to “stick” with their individual decisions during the group discussion since the judgmental nature of the task (and the lack of an objective answer) provided no viable reason to change their cognitions to suit the need of others. Although this could have reduced the cognitive dissonance at an individual level, it ultimately resulted in more cognitive dissonance for the group

when each member was “frozen” to the way that alternatives had been spread and greater resistance to dissonance reduction translated to higher group conflict in the post-decision condition.

### 6.1.2 The Second and Third Decision Cases

Comparing the decision time between the three cases, it should be noted that participants working on the second and the third case did take longer than the time they took to reach a group decision on the first case. However, unlike the first case, statistical difference in decision time between the pre-decision group and the post-decision group was not shown for the second and the third case. Possible explanation of this result is that differentiation between two groups by prior commitment did not work as intended and the experiment ended up having two pre-decision groups or two post-decision groups rather than having one of each. Two reasons of why differentiation may have failed are provided below.

**The pre-decision group becoming the post-decision group as a result of the preconceived notion of participants**: If participants in the pre-decision group possessed preconceived notions about the issues that two cases dealt with before the experiment, these perceptions would have made them biased toward a solution and have the same effect as prior commitment.

The second case dealt with lending money to a friend in financial hardship and most students already have experiences with similar situation to varying extent. The way they handled the situation in the past could have been a reference point for students when they were answering the question. Some may have turned their

friends down while others may have lent the money. If they are asked a similar question during the experiment, their past experiences and preconceived notion about lending money are likely to guide them to a decision faster and easier.

Similar logic can be applied for the third case which dealt with cheating since it is arguably the most sensitive topic out of the three cases. The stronger the preconceived notions about a given issue, the more likely it is for the person to become guided by those notions in making the decision. Since most students already possess strong preconceived notions about the morality of cheating, it can be argued that they came into the experiment already committed to a decision about cheating. In other words, participants in the pre-decision condition could have entered group discussion with prior commitment the same way that participants in the post-decision group did and two study conditions essentially became the same.

This can be tested with running the experiment again and measuring the time taken by each participant to reach his decision in the individual part of the post-decision condition. If participants reach their individual decisions faster for the second and the third case compared to the first case, it would support the hypothesis that participants came to the experiment with preconceived notions. Furthermore, a question can be added to the questionnaire to address the level of preconceived notions regarding the issues dealt in the two cases.

**The post-decision group becoming the pre-decision group due to the order effect:** Although the purpose of using three decision cases was to test the repeatability of data, repeating the experiment with three cases may have created an

order effect in which previous learning experiences of member biased the result of successive experiments. Given the tendency of people to avoid conflict whenever possible (Witteman,1991), participants in the post-decision condition who experienced high group conflict while working on the first decision case may have tried their best to avoid conflict for the second and the third case. This is a more probable explanation of why the difference in decision time between two study conditions was only shown for the first case. In this sense, the result from the first case holds more significance as the only true measure of group conflict as a result of manipulating prior commitment.

## 6.2 Questionnaire

### 6.2.1 Questions that showed difference between two conditions

Since questionnaire was given at the end of experiment, questionnaire result represents the collective feeling of participants over the three cases. If there is no conclusive evidence of prior commitment leading to higher group conflict in the post-decision groups for second and third case, then the questionnaire result should have reflected this by showing no difference in how groups in two conditions answered the questions, especially because there was no difference in the level of group conflict in two out of three cases. However, the post-decision group consistently rated higher than the pre-decision group on nine out of ten questions (with the exception being Q4).

The post-decision group perceived lower group (Q1) and individual (Q2) performance than the pre-decision group. Since they agreed with the group's decision less (Q3), this was translated to higher level of perceived conflict (Q5) and more negative feeling toward each other (Q6, Q7 and Q8). Finally, they were more dissatisfied from working with each other (Q9) and less willing to work with the same group again (Q10). All of these results consistently support the second hypothesis regarding group conflict having negative affect on group morale.

### 6.2.2 Question that did not show difference between two conditions

It is worthwhile to note that 55.56% of participants (25 out of 45) in the post-decision condition and 57.78% of participants (26 out of 45) in the pre-decision condition selected zero (No Pressure at all) on Q4 which asked, "To what extent did you feel pressured to agree with others?" As described in section 4.2.2, group conflict in a group of three leads to two (majority) on one (minority) split and the majority plays the role of applying pressure for compliance while the minority is on his own to defend his position. Since there are three decision cases and individual decisions are independent of each case, there is a great chance that each member played both the majority and the minority role across different cases. If participants have been on both roles, then they would not indicate that they were being pressured because they also had a chance to exert pressure on others as the majority. This explains why majority of participants in both conditions chose zero on this question. Zero was the indifference point on the scale between "being pressured" and "being encouraged to speak up." In other words, more than half of participants in each

condition indicated that there was no pressure from others to comply with group's decision but they were not encouraged to speak up either.

Another explanation is that participants did not perceive pressure as easily as they perceived conflict in the group. In most cases, people view pressure as a more extreme concept than conflict because pressure arises from unequal status and implies act of suppression while conflict arises from equal status and implies disagreement among members. In the experiment, participants were explicitly told that each member has equal decision making power. Therefore, when participants witnessed acts such as "the rise in tone of the voice" and "change in facial expressions," they were inclined to associate these acts with conflict rather than pressure.

# Chapter 7
# Conclusion

This study added research value to the literature by investigating the effect of prior commitment on group conflict for groups working on judgemental tasks with unanimous decision rule. Results indicated that groups took longer to reach a decision and faced higher group conflict when members committed to their own decision before group discussion. Furthermore, elevated level of conflict translated to more negative affects on the group

The main implication of this study is the intensity with which the participants were influenced by prior commitment. Although participants were playing an advisory role in each case and outcome of decisions did not directly affect participants in any way, participants in the post-decision condition were nonetheless involved in a heated discussion where each member became more persistent with their positions and resulted in higher group conflict which had negative affects on group morale. If prior commitment could elicit this much group conflict for a task whose outcome does not directly affect the members (i.e. outcome of decision is not linked with tangible gains or losses to members), then one can deduce how much group conflict can be caused by prior commitment when the outcome of the task does matter to the group.

# Chapter 8
# Future Research Direction

## 8.1 Social Decision Scheme (SDS) Theory

Davis was one of the first researchers to formalize group decision making process with his social decision scheme theory, which predicts how a group decision is reached from individual choices. He argued that the purpose of group discussion is to adopt a decision scheme with which to "transform the probability distribution characterizing individual preferences to a group distribution over the same alternatives" (Davis, 1973).

The model's prescriptive nature allows the user to foretell what the group's collective decision will be based on members' individual decisions. There are four basic elements of SDS theory: Individual preferences, Group composition, Social combination processes, and group response. Stasser (1999) noted that "individual preferences are the ingredients of group composition, and consensus processes act on preferences within a group to yield a collective response." Although application of the SDS theory into problem-solving groups yielded meaningful results (For example, Laughlin & Ellis, 1986; Stasser et al, 1989), it has not been applied for situations where members enter group discussion with prior commitment. As such, the first step toward future research should be to find out which decision rule groups actually follow when members with prior commitment are asked to reach a group decision.

## 8.2 Other Recommendations

The biggest challenge of the thesis was that the data was based on limited pool of participants. Therefore, data could not be separated into groups who had conflict and groups who did not have conflict in each decision case. With the primary role of prior commitment on group conflict confirmed, the study should be extended to a bigger scale and repeatability of the data should be checked with larger pool of participants. When performing the large scale experiment, group size can be increased (from the initial size of three per group) in order to find the correlation between prior commitment and group size. The aim is to see how group dynamics change as a result of varying prior commitment when there are more members in the group.

In addition to group size, the degree of judgmental tasks can also be varied. In this study, simple judgmental tasks with two possible solutions were used. In future studies, more complex judgemental tasks can be tailored to reflect the real decision situations that organizations face in their operations. (In the formulation process, surveys should be conducted to test how the answer is being split.)
As complexity of judgemental tasks increases, possible number of solutions also increases and it will take longer time reach a group decision with higher group conflict.

If more complex tasks are used, then the number of tasks given in the experiment should be decreased from three to one (which would eliminate the order effect described in section 6.1.2). If multiple judgemental tasks are used in future

studies, then the questionnaire should be given to participants at the end of each task to account for the trend of data relating to each task.

# Appendix A

# Lewin's Field Theory

## 1. Introduction

In contrast to the trait-based views of personality which attributes behavior only as a function of one's static personality traits, Lewin viewed behavior as the resultant of the properties and dynamics of one's immediate and current psychological field. Accurate prediction of one's behavior is only attainable when the individual's immediate psychological situation (as perceived by the person) is examined in conjunction with the individual differences which affect the way in which one perceives his/her immediate situation. Therefore, behavior is a function of the person and his current situation:

**Behaviour = *f* (Person, Situation)**

Both situational and personal factors influence the way one behaves. Lewin contrived a cognitive model which he defined as life space in order to explain how each factor influences behavior.

## 2. Life Space

Life space is a unique snap-shot of one's immediate and total psychological situation as perceived by the person. It indicates "the totality of facts which determine the behavior of an individual at a certain moment" (Lewin, 1936). He focused on one's psychological situation at distinct and immediate moment because generic situation

would fail to grasp the continuously changing nature of one's psychological situation over time. Lewin used principles of topology, a branch of mathematics which originated as an extension of geometry to study the nature of space, to represent life space as an egg-shaped diagram. Figure 1 illustrates life space and its basic components: region of activity, valence, force and locomotion.

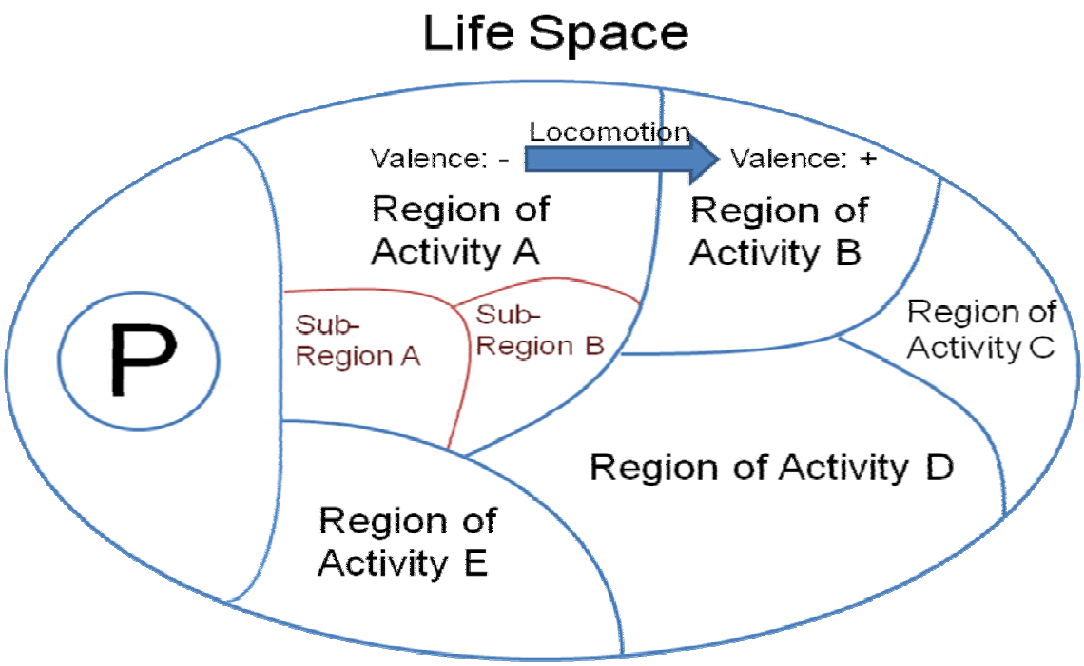


**Figure 3: Graphical representation of life space and its components**

## 3. Region of Activity

"P" denotes the person and each section within the life space is a **region of activity** which embodies a certain activity that the person experiences in a given situation and each region of activity is unique to one's subjective view on reality. For example, if Dave is planning to meet up with his friend and go see a movie after he finishes his

homework, then “doing homework”, “meeting up with a friend” and “going to see a movie” are regions of activity that Dave perceives in his current situation.

## 4. The Hierarchy

Each region of activity is a part of a more inclusive whole with life space being the most inclusive whole. For example, “meeting up with a friend” and “going to see a movie” can belong under a more inclusive region of “leisure activities.” Moreover, each region of activity can be further differentiated into finite sub-regions. For example, “meeting up with a friend” can be further differentiated into “talking to a friend” and “setting up a time and a place to meet.”

## 5. Individual Differences

Individuals have different ways of perceiving situations. Different individuals attach different meanings to the same situation depending on how they perceive the situation so same setting could represent different regions of activity. For example, one student likes the class and perceives it as such while another hates it and project his negative feeling to the region of activity for the class.

Conversely, individuals can behave in similar ways regardless of their individual differences because the situation dictates the behavior of individuals through implicit constraints and explicit rules. For example, researchers created such a powerful situational factor that it caused guards and prisoners in Stanford Prison Experiment to display similar patterns of behavior.

## 6. Valence and Locomotion Between Regions

Each region of activity is associated with a **valence** or the “attractiveness” of a region. Valence creates dynamic force which may draw or repel an individual.

Positive valence attracts the person to a certain region of activity and acceptance of an idea while the negative valence repels and opposition of an idea. Furthermore, the dynamic property of valence denotes that the sign of valence is subject to change depending on the state and need of an individual at that moment. For example, if person is hungry, then he would have positive valence for the region of “eating” but the valence of this region would be negative if the person is full.

Lewin emphasized that an individual always occupies a certain region of activity at any moment and there are various forces (caused by valences) which pull the individual into other regions of activity. Hence, the locomotion within life space (either from one region of activity to another or between sub-regions within a region of activity) is driven by the “totality of forces acting on a given region at a given time” (Lewin, 1936). The strength of this “resultant” force depends on the strength of valence associated with each region of activity.

## 7. Resistance to Locomotion

Lewin argued that path from one region of activity to another always generates an opposing force (analogous to friction on the road) which leads to tension and conflict if it can not be overcome. In other words, the desire to change is met by resistance

to change and one needs to overcome the opposing force of resistance in order to attain change.

Two types of resistance to locomotion exist in life space. Firstly, regions of activity are separated by either physical or psychological boundaries which could act as a barrier to the locomotion between regions. The magnitude of resistance depends on the thickness of boundaries acting as a barrier. Example of physical boundary can be a basketball court within which players must stay. Example of psychological boundary can be when mother tells her child not to eat ice cream before dinner. Although the child wants to move to the region of “enjoying ice cream”, mother’s warning act as a barrier to this region. Secondly, different valence associated with each region can make locomotion difficult especially if target region has lower valence than current region that one occupies. For example, if one is already enjoying himself in the pool on a hot summer day, then the thought of going to see a movie will offer resistance because it is not as attractive as the region that he is currently in.

## 8. Tension and Conflict

Lewin opined that tension stems from a psychological need of an individual and one can relieve this tension by satisfying that need. If immediate satisfaction of the need is not possible, then the system in a state of tension “tries to change itself in such a way that it becomes equal to the state of its surrounding systems” (Lewin, 1938). In other words, tension created from one region of activity needs to be spread out

through other neighboring regions of activity. However, tension remains in the system if the opposing forces from the barrier to the neighboring regions can not be overcome. Unresolved tension leads to a state of conflict where equally strong forces are present in the system.

Lewin differentiated between three types of conflict: positive-positive valence conflict, negative-negative valence conflict and positive-negative conflict. Positive-positive valence conflict involves an individual in dilemma between two equally attractive regions in the opposing direction. Similarly, negative-negative valence conflict involves an individual in dilemma between two equally unattractive regions. Finally, positive-negative conflict occurs 1) when a region with positive valence is inaccessible because it is surrounded by an impassable barrier 2) when a region with negative valence stands in the path to a desired region with positive valence.

## 9. Distinction between Dissonance and Conflict

This section explains the key difference between Levin's conflict and Festinger's cognitive dissonance. Although they share many common characteristics, they affect decision maker in different phases of decision making process. Conflict exists when one has not made the decision (pre-decision phase) whereas dissonance exists after he has made the decision (post-decision phase). In his book, Festinger makes a clear distinction between the two terms to avoid confusion:

"The person is in a conflict situation before making the decision. After having made the decision he is no longer in conflict: he has made his choice: he has, so to

speak, resolved the conflict. He is no longer being pushed in two or more directions simultaneously. He is now committed to the chosen course of action. It is only here that dissonance exists, and the pressure to reduce this dissonance is *not* pushing the person in two directions simultaneously" (Festinger, 1956).

For example, imagine a person who has to choose between job A and job B, which are equally attractive. In order to aid his decision, he generates a list of advantages and disadvantages for taking each job in his mind. (Completeness of this list depends on his cognitive power to conjure up relevant points to this decision.) These cognitive clusters of job A and job B help him to weigh out alternatives. Cognitive clusters containing favorable characteristics of job A and unfavorable characteristics of job B pulls him toward taking job A while the favorable characteristics of job B and unfavorable characteristics of job A pulls him toward taking job B. Using Lewin's terms, the person is assigning and adjusting valence in each region of activity representing cognitive clusters of job A and B. He is in conflict because he is being pulled in two opposite directions at once. Let us suppose that he has chosen job B. After having made the decision, he is no longer in conflict between two choices. This means that he has assigned higher valence to region of activity representing job B and has moved to this region. However, region of activity representing cognitive clusters of job A still remains in his life space and this remnants of the un-chosen alternative become dissonant with cognitive clusters of the chosen one. He reduces this dissonance by using any of the aforementioned dissonance reduction methods and the magnitude of dissonance depends on

relative importance the decision maker has assigned to the un-chosen alternative.

Figure 2 summarizes the main points of this example.

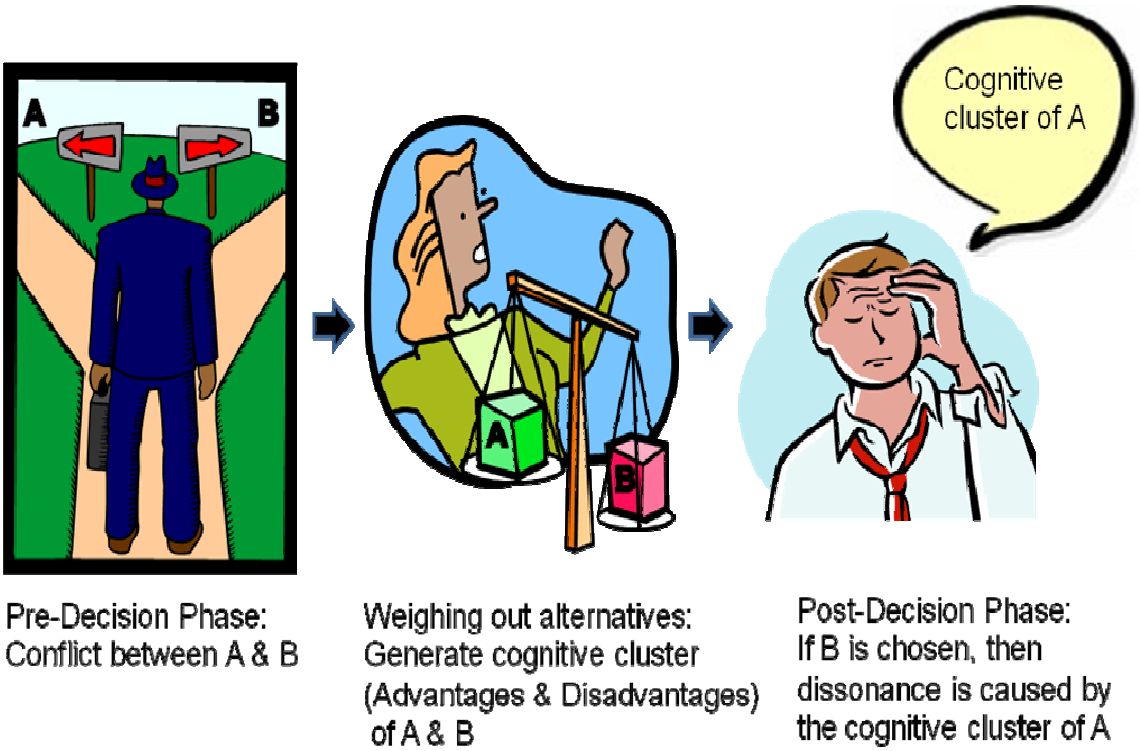


**Figure 4: Graphical representation of pre-decision and post-decision phases**

# Appendix B
# The Stimulus Set

## Case 1

Doug is a 2nd year university student living on campus. The Thanksgiving holiday is coming up and Doug is looking forward to spending time with his family.

Kate is Doug's girlfriend and they have been going out since the first year. Unlike Doug's family, Kate's family does not celebrate Thanksgiving so she is not required to go back home for the holiday. Since she is from the west coast and has never been to the east coast, she has decided to take this opportunity to travel there.

As Doug is preparing to leave the campus, Kate asks him if he is willing to go on a trip with her during the holiday weekend. In an attempt to solve the apparent dilemma, Doug has offered Kate to join his family for the holiday but Kate politely declined Doug's offer because her conservative upbringing makes her feel uncomfortable about spending the holiday with Doug's family especially since they have only been going out for a year. Therefore, Doug is in conflict as to which course of action he should take: Be with his family or go on a trip with his girlfriend.

On one hand, Doug would love to go on a trip with his girl friend. They're madly in

love and Doug thinks Kate could be the “one”. However, they both have been extremely busy with school work and haven’t had a chance to spend quality time together this term. Furthermore, Kate will be leaving the campus for co-op next term and they will be off-stream from each other until they graduate so they would not be able to see each other as often. He thinks this trip is a one-time opportunity to enrich their relationship before Kate has to go away.

On the other hand, Doug does not want to disappoint his family because he knows how much it means for them to be together and his parents are excited to see Doug come home for the holiday.

What should Doug do? Be with his family or go on a trip with his girlfriend? (You’re only allowed to choose between the two suggested solutions)

## Case 2

Ken and Eric are close friends. They go to the same university and they play on the same hockey team. Lately, Ken’s family has been having some money issues so Ken has been running short on cash and has asked Eric for $700 to pay for food and rent. Ken promised to pay him back next month when his parents send him money. Eric is in conflict as to which course of action he should take: lent him the money or turn him down.

On one hand, Eric really wants to help Ken out because he is a close friend. Eric also knows that Ken is a proud person and that he will not ask anyone else for money. Eric recalls how Ken has helped Eric out when he was struggling to adjust to the university life. Ken also taught Eric how to be a better hockey player.

On the other hand, Eric is hesitant because there is no guarantee that Ken's family situation will improve in a month so he is not sure if he will be able to get his money back on time. Eric also survives on a very tight monthly allowance from home and he can not afford to lend him $700 for more than a month. Eric can not ask for extra money from his family since his younger brother is also starting college next month and he knows his parents will have their hands full. If Ken can't pay Eric back on time, Eric will have no money for rent and food himself next month.

What should Eric do? Lend him the money or turn him down? LENDING PARTIAL AMOUNT IS NOT AN OPTION. It's $700 or nothing. (You're only allowed to choose between the two suggested solutions)

## Case 3

Mike is a 3rd year history major at University of Waterloo and he is writing the final for one of his core courses. He is frustrated with the exam because he expected the exam to be based on concepts but the professor has designed the exam with more factual problems which can only be answered through "straight-out-of-the-textbook"

memorization. However, he knows that the professor will bell-curve the grade and he thinks the entire class will do poorly in the exam so that he can still obtain a reasonable grade. It is a small class (40 students) so the performance of each student will significantly influence the bell-curve.

Mike is half-way into his exam and he notices something strange about Dave who is sitting across the table from him. As he looks closer, he witnesses that Dave has smuggled a cheat sheet into the exam against the regulation. Mike is the only person who is aware of Dave's cheating because Dave is sitting in the back corner of the classroom so that other students can not see him. Mike is in conflict as to which course of action he should take: Inform the professor about Dave or remain silent.

On one hand, he feels responsible to report the cheating to the professor. There is a good chance that Dave will outperform rest of the class because the bulk of exam is based on "straight-out-of-the-textbook-memorization" type of questions and it is very likely that Dave's cheat sheet will have answers to these questions. If Dave does significantly better than the rest of the class, then Mike would not benefit from the bell-curve as much and his grade would suffer.
On the other hand, Mike is sympathetic because Dave is still his classmate. Since the university has a strict policy on cheating, he knows that Dave will receive punishment for his cheating.

Regardless of which course of action he decides to take, he has to decide within the exam period because Dave will get rid of his cheat sheet after the exam at which point Mike has no proof of Dave's cheating.

What should Mike do? Inform the professor about Dave or remain silent? (You're only allowed to choose between the two suggested solutions)

# Appendix C
# Video Instruction

## The Pre-Decision Condition

Welcome to my study! In this experiment, you will be given a story of a person in conflict. Your job is to give advice on what he should do. This case does not have a right or wrong answer so it is normal for different people to come up with different solutions.

The purpose of this experiment is to study how people work together in reaching a group decision. Please read the case over carefully and reach a unanimous decision as a group. It is important that you consider various aspects of the problem before reaching the group decision. Each member of the group has equal decision making power and your opinion is as important and valuable to the group as that of other members. If there is disagreement during the group discussion, please use discretion and show respect to others.

In order to promote lively discussion, each of you will be evaluated on your participation during the group discussion. If you want to receive the full 2% bonus marks, you should actively voice your opinion and encourage others to speak up rather than being passive.

Once you have completed the experiment, you will be given a questionnaire to fill out. Now, I will present you with the case.

## The Post-Decision Condition

Welcome to my study! In this experiment, you will be given a story of a person in conflict. Your job is to give advice on what he should do. This case does not have a right or wrong answer so it is normal for different people to come up with different solutions.

The purpose of this experiment is to study how people work together in reaching a group decision. The experiment is consisted of two parts. In the first part, each member of the group will be asked to formulate an individual answer based on his or her subjective logic and understanding of the problem. Please consider various aspects of the problem before reaching your decision. You should be able to justify the reason for choosing your answer to other people. After you have come up with your individual answers, you should write down your answer on the sheet provided. In the second part, you are asked to work together and reach a unanimous decision on the same question through a group discussion.

Each member of the group has equal decision making power and your opinion is as important and valuable to the group as that of other members. If there is disagreement during the group discussion, please use discretion and show respect to others.

In order to promote lively discussion, each of you will be evaluated on your participation during the group discussion. If you want to receive the full 2% bonus

marks, you should actively voice your opinion and encourage others to speak up rather than being passive.

Once you have completed the experiment, you will be given a questionnaire to fill out. Now, I will present you with the case.

## Appendix D

## Individual Answer Sheet for the Pre-Decision Condition

(Please note that your answer will only be used for my thesis and will not be disclosed to anyone under any circumstances)

Date: Timeslot:

Person A Person B Person C

(Please circle one)

What should he do??

_____

_____

_____

_____

Please list the reasons for choosing your answer.

_____

_____

_____

_____

## Appendix E
## Questionnaire

(Please note that your answer will only be used for my thesis and will not be disclosed to anyone under any circumstances)

Date: Timeslot:

Person A Person B Person C

(Please circle one)

1 How would you rate the group's overall performance in reaching a unanimous decision?

0 = No opinion

| | | | | | | |
|---|---|---|---|---|---|---|
| Very Bad | -3 | -2 | -1 | 0 | +1 | +2 | +3 | Very Good |
| | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |

2 How would you rate your overall performance in the group discussion?

0 = No opinion

| | | | | | | |
|---|---|---|---|---|---|---|
| Very Bad | -3 | -2 | -1 | 0 | +1 | +2 | +3 | Very Good |
| | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |

3 What was the degree to which you “agreed” with the group’s decision?

0 = Indifferent

Strong disagreement | | | | | | | Strong agreement

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

4 To what extent did you feel “pressured” to agree with others?

0 = No Pressure at all

I was encouraged to voice my opinion rather than being

| | | | | | | Very strongly forced to agree

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

5 How much conflict do you think existed during the group discussion?

| | | | | | A lot of conflict

No conflict at all

0 1 2 3 4 5

☐ ☐ ☐ ☐ ☐ ☐

(For question 6 to 8, please answer two out of the three depending on your role. For example, you can skip question 6 if you are person A)

6 How do you feel about person A?

0 = Indifferent

Very Negative ← | | | | | | → Very Positive

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

7 How do you feel about person B?

0 = Indifferent

Very Negative ← | | | | | | → Very Positive

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

8 How do you feel about person C?

0 = Indifferent

Very Negative ← | | | | | | → Very Positive

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

**9** Did you enjoy working with your group members?

0 =Indifferent

Not at all ← | | | | | | → Very Much

-3 -2 -1 0 +1 +2 +3

☐ ☐ ☐ ☐ ☐ ☐ ☐

**10** Would you like to work again with the same group on a similar task?

☐ Yes ☐ No

**Please provide a brief reason why you do or do not wish to work with the same group again.

_____

_____

_____

_____

_____

_____

# Appendix F

## Decision Time of Each Groups in Two Study Conditions

**Table 12: Summary of decision time for each group in two conditions**

| Group | Q1 | | Q2 | | Q3 | |
|---|---|---|---|---|---|---|
| | Pre | Post | Pre | Post | Pre | Post |
| 1 | 240 | 240 | 240 | 240 | 240 | 1140 |
| 2 | 180 | 360 | 140 | 240 | 970 | 420 |
| 3 | 330 | 1500 | 150 | 695 | 578 | 480 |
| 4 | 770 | 690 | 460 | 231 | 1500 | 150 |
| 5 | 1500 | 228 | 540 | 675 | 1500 | 400 |
| 6 | 205 | 1050 | 405 | 535 | 645 | 1500 |
| 7 | 185 | 985 | 200 | 300 | 245 | 1500 |
| 8 | 350 | 905 | 170 | 480 | 150 | 29 |
| 9 | 262 | 1135 | 530 | 655 | 235 | 460 |
| 10 | 360 | 1125 | 1500 | 355 | 205 | 1500 |
| 11 | 105 | 280 | 95 | 355 | 95 | 1500 |
| 12 | 150 | 755 | 170 | 1500 | 380 | 135 |
| 13 | 285 | 705 | 970 | 261 | 1500 | 120 |
| 14 | 135 | 1500 | 75 | 75 | 205 | 240 |
| 15 | 330 | 140 | 115 | 110 | 480 | 1460 |

## Appendix G

## Q-Q Plot of the Decision Time Data

### The Pre-Decision Condition

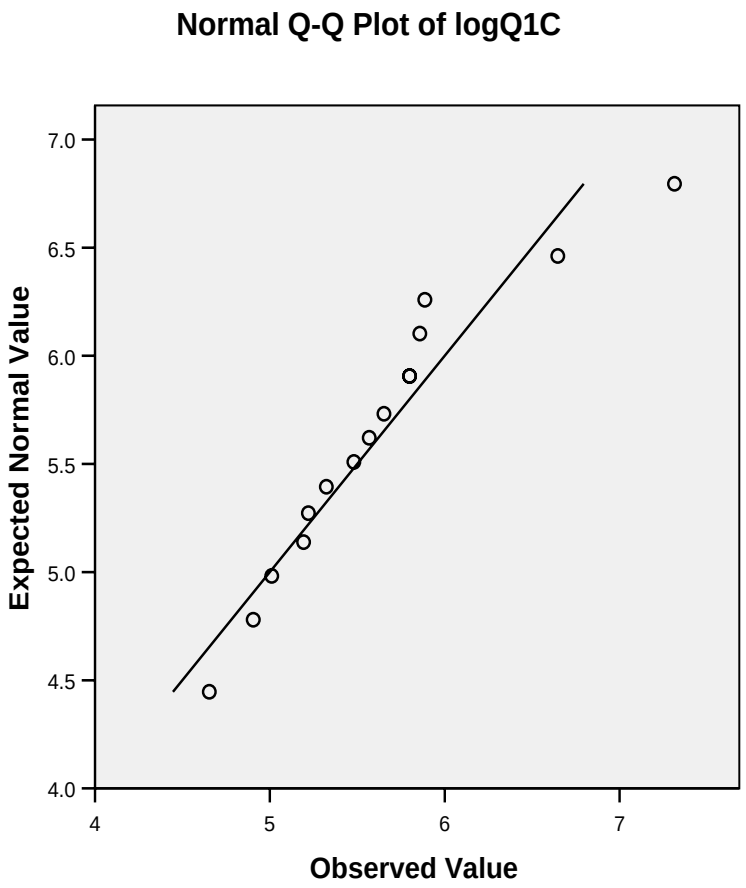


**Figure 5: Normal Q-Q plot of decision time of groups in the pre-decision condition working on the first case**

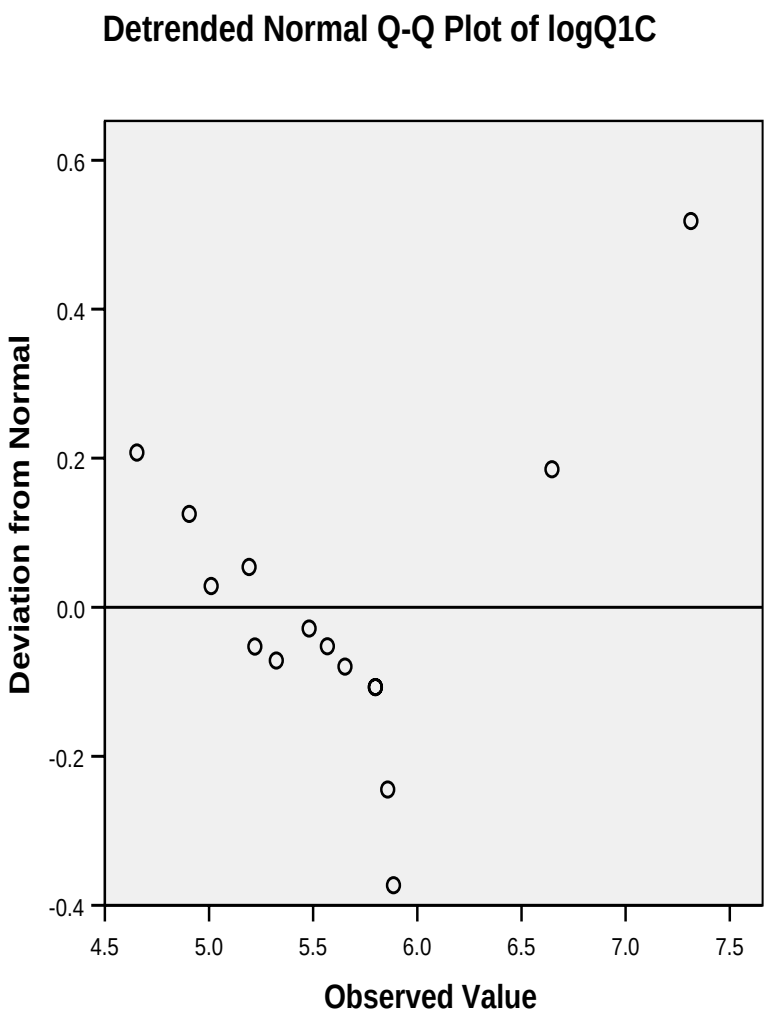


**Figure 6: Detrended normal Q-Q plot of decision time of groups in the pre-decision condition working on the first case**

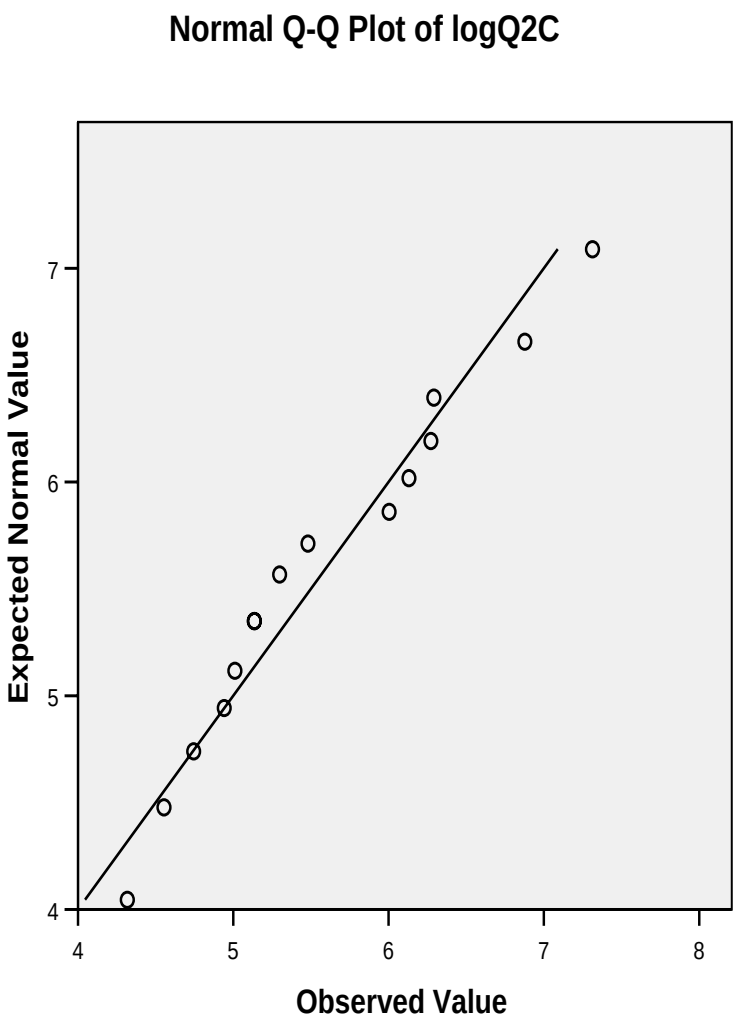


**Figure 7: Normal Q-Q plot of decision time of groups in the pre-decision condition working on the second case**

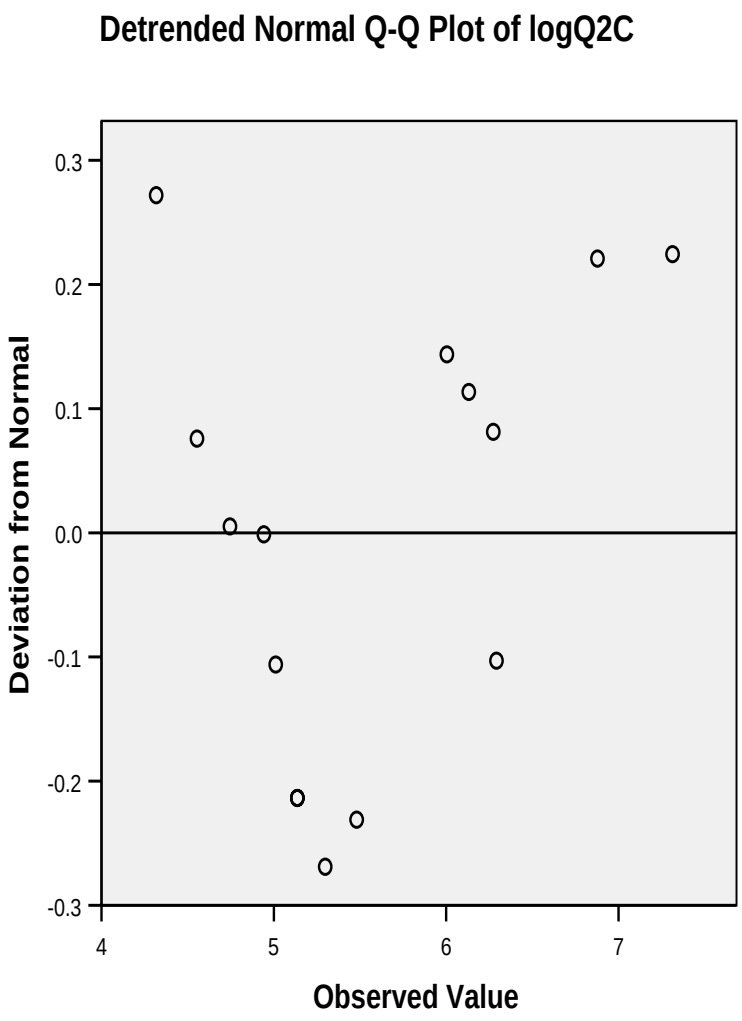


**Figure 8: Detrended normal Q-Q plot of decision time of groups in the pre-decision condition working on the second case**

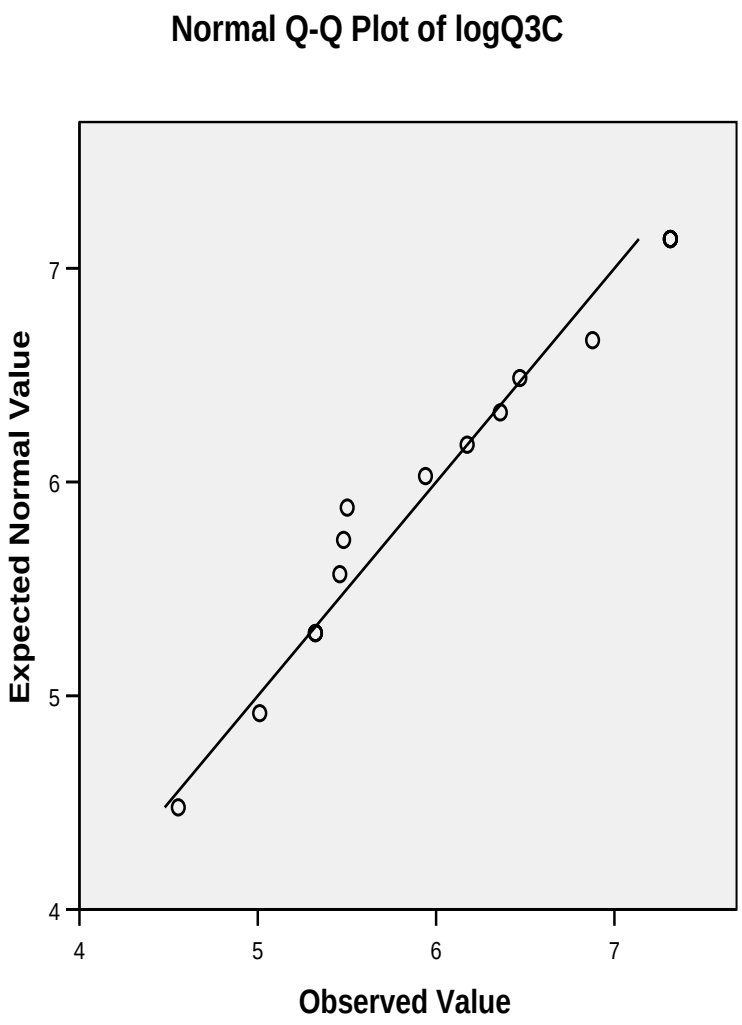


**Figure 9: Normal Q-Q plot of decision time of groups in the pre-decision condition working on the third case**

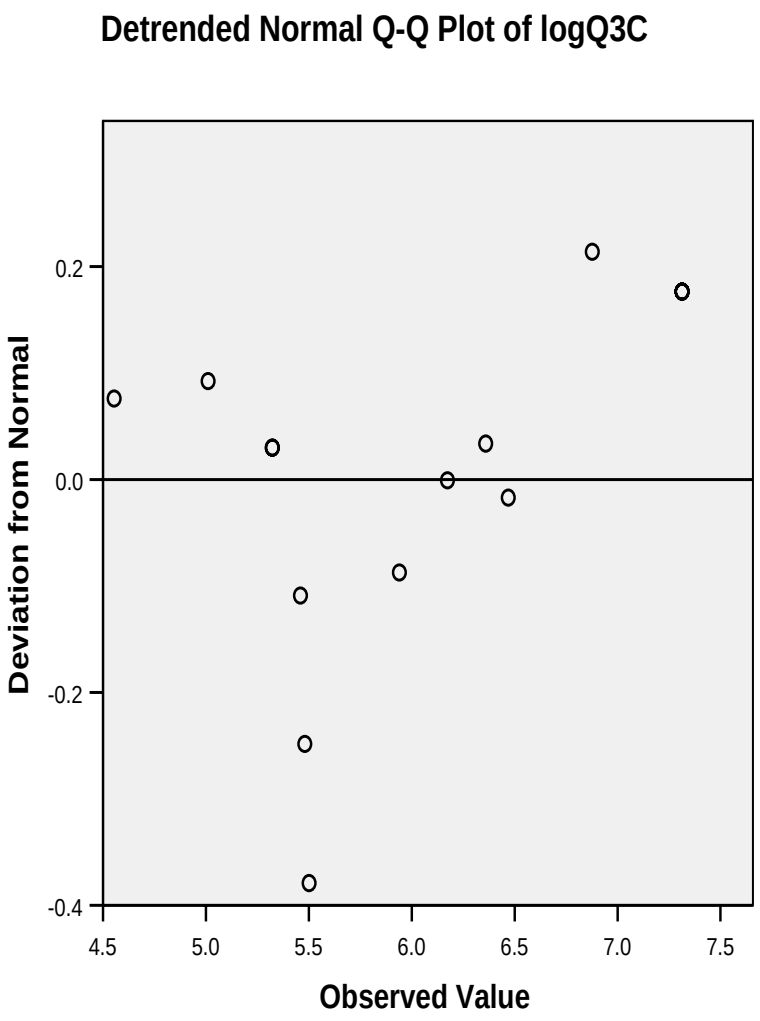


**Figure 10: Detrended normal Q-Q plot of decision time of groups in the pre-decision condition working on the third case**

## The Post-Decision Condition

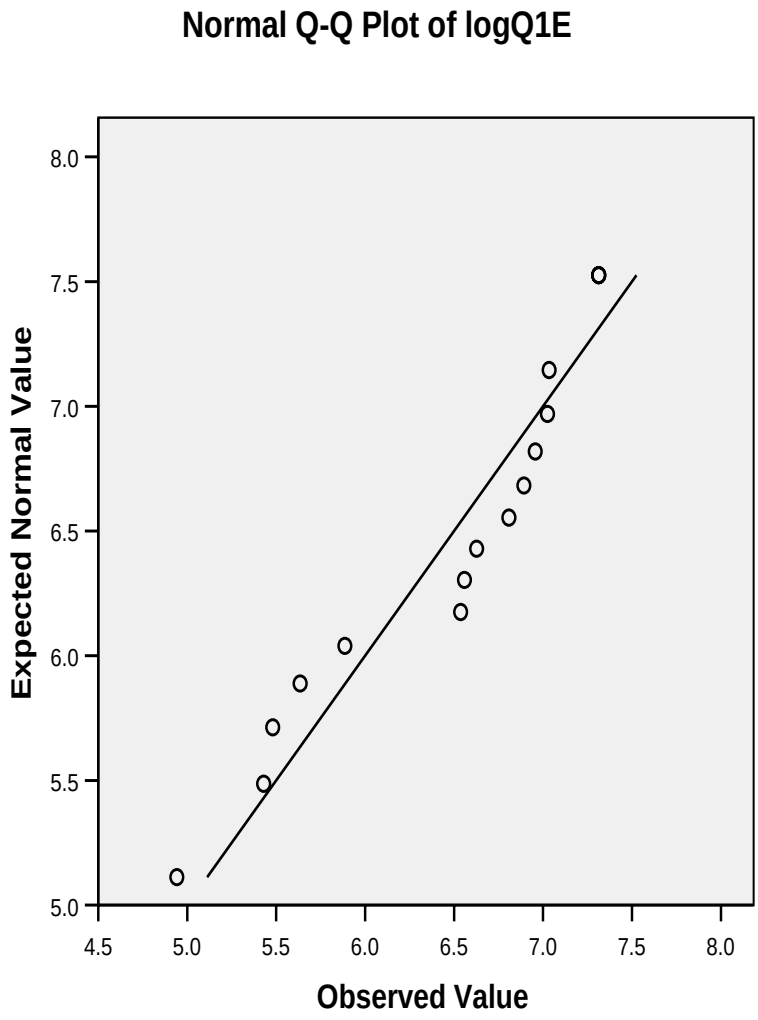


**Figure 11: Normal Q-Q plot of decision time of groups in the post-decision condition working on the first case**

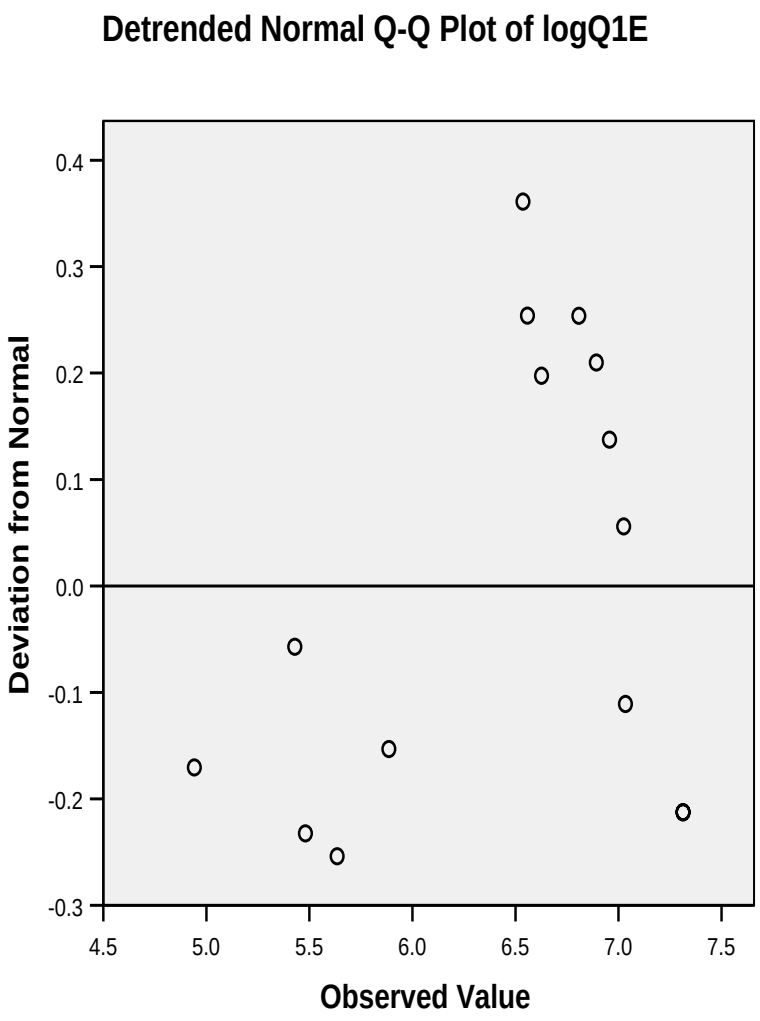


**Figure 12: Detrended normal Q-Q plot of decision time of groups in the post-decision condition working on the first case**

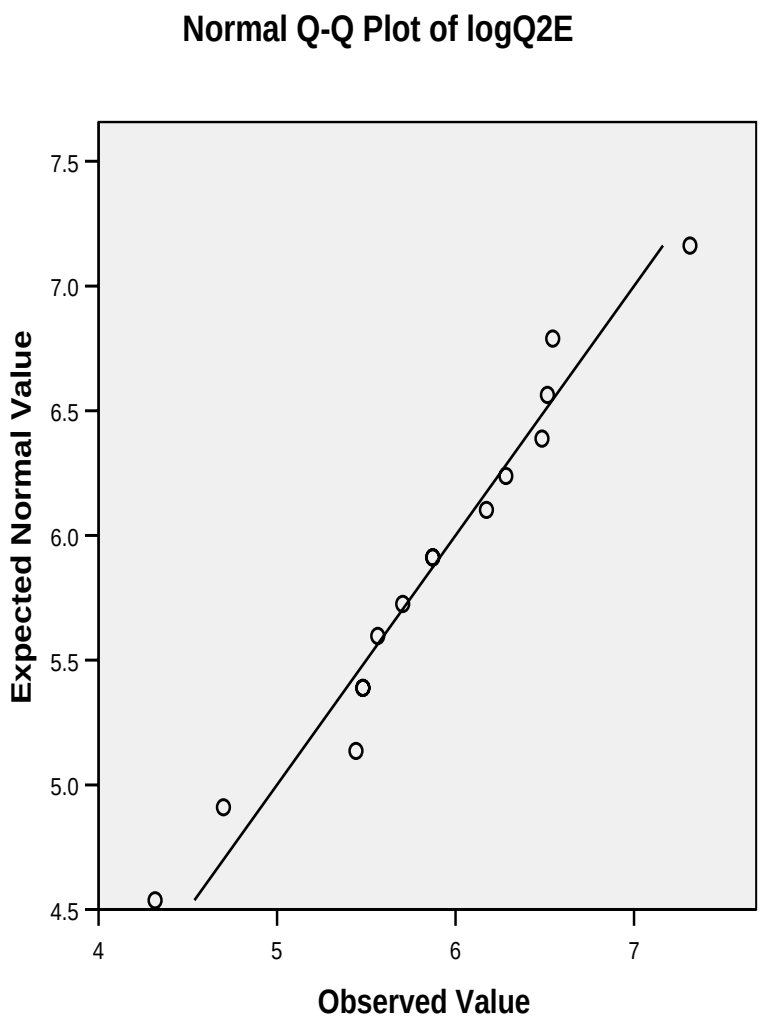


**Figure 13: Normal Q-Q plot of decision time of groups in the post-decision condition working on the second case**

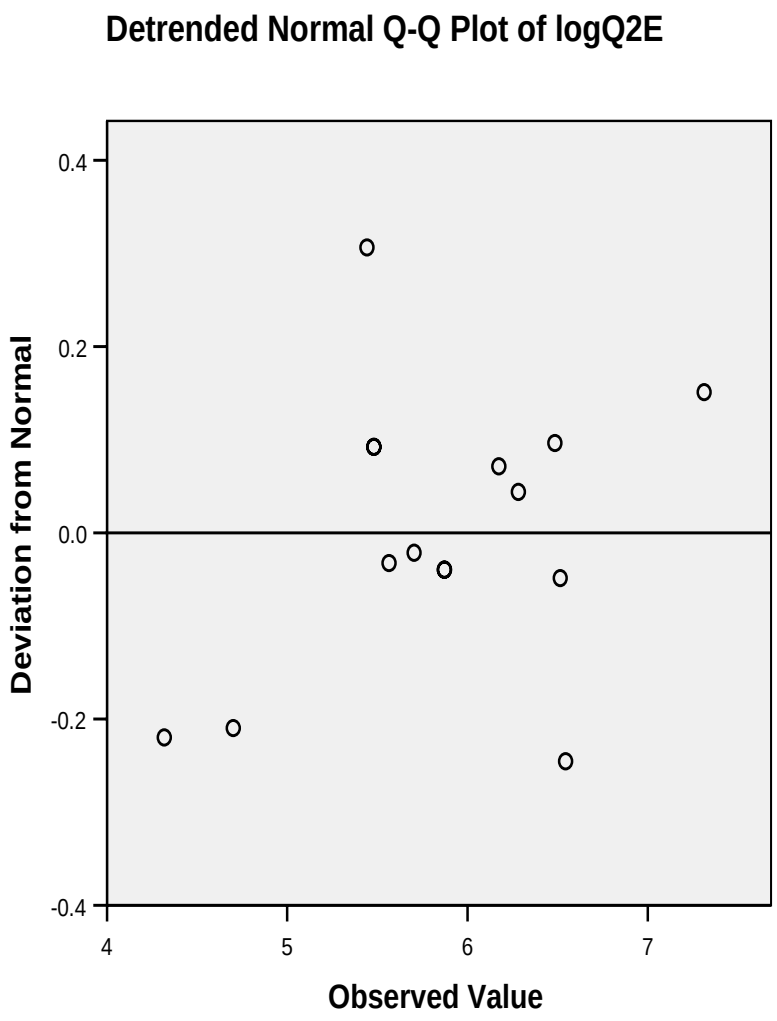


**Figure 14: Detrended normal Q-Q plot of decision time of groups in the post-decision condition working on the second case**

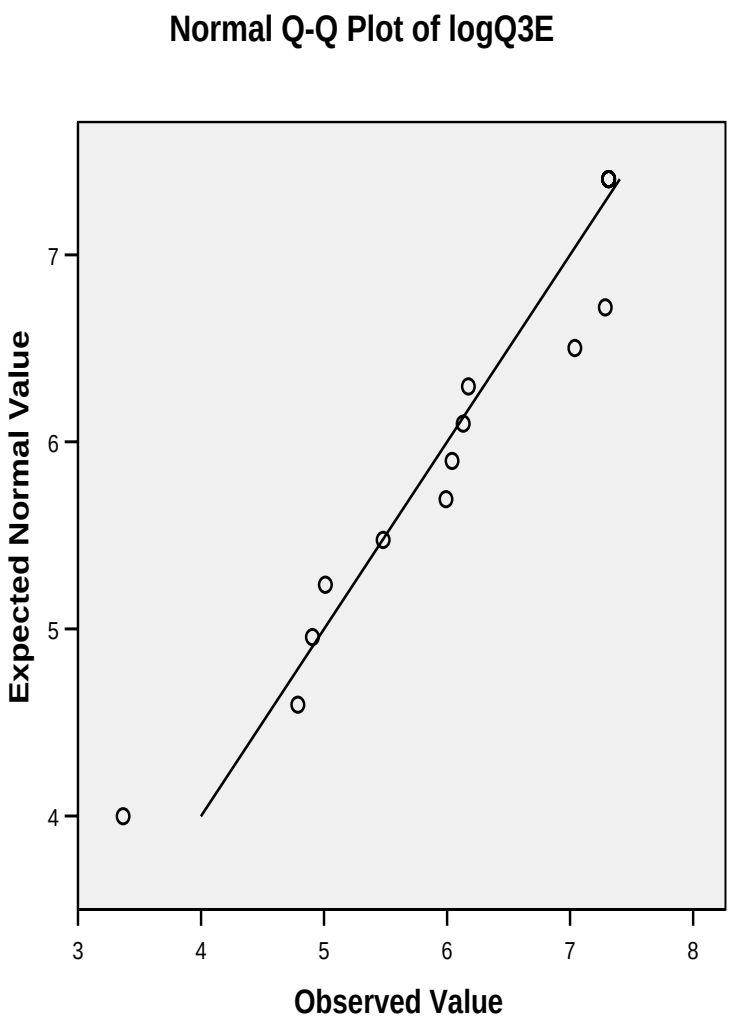


**Figure 15: Normal Q-Q plot of decision time of groups in the post-decision condition working on the third case**

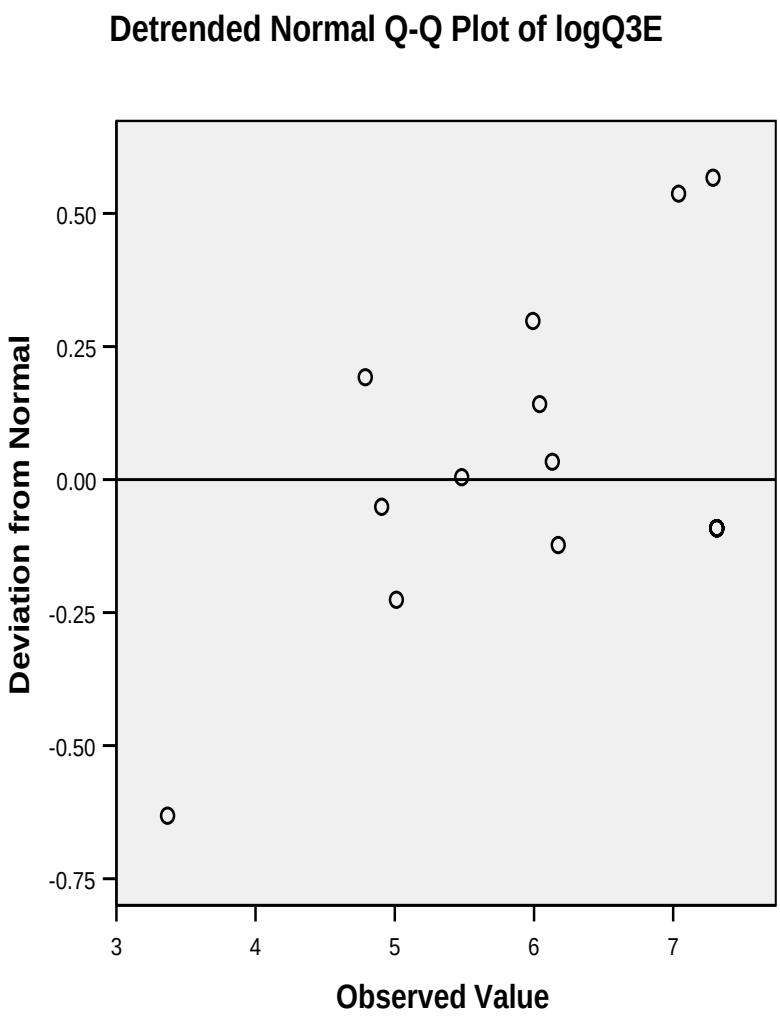


**Figure 16: Detrended normal Q-Q plot of decision time of groups in the post-decision condition working on the third case**

# Appendix H

# Questionnaire Data for Each Participant in Two Conditions

## Pre-decision condition

**Table 13: Summary of questionnaire data for each participant in pre-decision condition**

| Group | | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Person A | 3 | 3 | 3 | 0 | 0 | | 3 | 3 | 3 | Yes |
| | Person B | 2 | 2 | 3 | -2 | 2 | 2 | | 2 | 2 | Yes |
| | Person C | 3 | 3 | 3 | 0 | 0 | 3 | 3 | | 3 | Yes |
| 2 | Person A | 3 | 2 | 3 | -1 | 3 | | 0 | 3 | 3 | Yes |
| | Person B | 3 | 3 | 2 | 0 | 2 | 1 | | 2 | 3 | Yes |
| | Person C | 3 | 2 | 2 | 0 | 1 | 0 | 0 | | 2 | Yes |
| 3 | Person A | 2 | 2 | 2 | 0 | 1 | | 2 | 2 | 2 | Yes |
| | Person B | 2 | 2 | 2 | 1 | 2 | 2 | | 2 | 2 | Yes |
| | Person C | 2 | 2 | 3 | 0 | 1 | 3 | 3 | | 2 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person A | 2 | 1 | 2 | 1.5 | 3 | | 0 | 1 | 3 | Yes |
| | Person B | 2 | 2 | 2 | 0 | 1 | 2 | | 2 | 3 | Yes |
| 4 | Person C | 2 | 3 | 3 | -3 | 3 | -2 | 3 | | 2 | Yes |
| | Person A | 2 | 3 | 0 | -3 | 0 | | 1 | 3 | 2 | Yes |
| | Person B | 3 | 2 | 3 | -3 | 1 | 3 | | 3 | 3 | Yes |
| 5 | Person C | 3 | 3 | 2 | -2 | 0 | 3 | 3 | | 3 | Yes |
| | Person A | 2 | 2 | 1 | -2 | 3 | | 3 | 3 | 3 | Yes |
| | Person B | 2 | 2 | 3 | -1 | 0 | 2 | | 2 | 3 | Yes |
| 6 | Person C | 3 | 3 | 3 | -3 | 4 | 3 | 3 | | 3 | Yes |
| | Person A | 3 | 3 | 3 | 0 | 0 | | 3 | 3 | 3 | Yes |
| | Person B | 3 | 3 | 3 | 0 | 0 | 2 | | 3 | 3 | Yes |
| 7 | Person C | 3 | 3 | 3 | 0 | 0 | 3 | 3 | | 3 | Yes |
| 8 | Person A | 2 | 2 | 3 | 0 | 2 | | 2 | 3 | 2 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person B | 2 | 2 | 3 | 1 | 1 | 0 | | 0 | 3 | Yes |
| | Person C | 3 | 3 | 2 | 0 | 1 | 2 | 2 | | 2 | Yes |
| | Person A | 3 | 3 | 3 | 0 | 0 | | 0 | 0 | 0 | Yes |
| | Person B | 2 | 2 | 1 | 0 | 2 | 2 | | 2 | 1 | Yes |
| 9 | Person C | 2 | 2 | 2 | 0 | 0 | 3 | 3 | | 3 | Yes |
| | Person A | 2 | 3 | 2 | 0 | 0 | | 3 | 3 | 3 | Yes |
| | Person B | 2 | 3 | 2 | 2 | 2 | 2 | | 1 | 1 | Yes |
| 10 | Person C | 2 | 3 | 1 | 0 | 4 | -1 | 0 | | 2 | Yes |
| | Person A | 3 | 3 | 3 | 0 | 0 | | 3 | 3 | 2 | Yes |
| | Person B | 3 | 2 | 3 | 0 | 0 | 2 | | 2 | 3 | Yes |
| 11 | Person C | 3 | 2 | 3 | 0 | 0 | 3 | 3 | | 3 | Yes |
| | Person A | 2 | 2 | 1 | 0 | 3 | | 2 | 2 | 3 | Yes |
| 12 | Person B | 2 | 2 | 3 | -3 | 2 | 2 | | 2 | 3 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person C | 2 | 2 | 2 | 0 | 1 | 3 | 3 | | 3 | Yes |
| 13 | Person A | 1 | 2 | -1 | 0 | 4 | | 2 | 2 | 3 | Yes |
| | Person B | 2 | 3 | 3 | 0 | 4 | 0 | | 0 | 3 | Yes |
| | Person C | 2 | 2 | 2 | -1 | 3 | 2 | 2 | | 3 | Yes |
| 14 | Person A | 3 | 2 | 3 | -3 | 0 | | 3 | 2 | 3 | Yes |
| | Person B | 3 | 2 | 3 | 0 | 0 | 3 | | 3 | 3 | Yes |
| | Person C | 3 | 2 | 1 | 2 | 1 | 2 | 2 | | 2 | Yes |
| 15 | Person A | 3 | 3 | 3 | 0 | 2 | | 2 | 2 | 2 | Yes |
| | Person B | 2 | 2 | 2 | -2 | 1 | 2 | | 2 | 2 | Yes |
| | Person C | 2 | 2 | 0 | 1 | 2 | 2 | 2 | | 3 | Yes |

## The Post-Decision Condition

**Table 14: Summary of questionnaire data for each participant in post-decision condition**

| Group | | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person A | 3 | 2 | 2 | -3 | 3 | | 3 | 3 | 3 | Yes |
| | Person B | 0 | 1 | 2 | 0 | 1 | 2 | | 3 | 3 | Yes |
| 1 | Person C | 1 | 2 | 2 | 0 | 0 | 2 | 2 | | 2 | Yes |
| | Person A | 1 | 1 | 3 | 0 | 1 | | 3 | 3 | 2 | Yes |
| | Person B | 3 | 3 | 2 | 0 | 1 | 3 | | 2 | 3 | Yes |
| 2 | Person C | 3 | 0 | 2 | 0 | 1 | 1 | 1 | | 2 | Yes |
| | Person A | 1 | 3 | 3 | -3 | 3 | | 1 | 0 | 2 | Yes |
| | Person B | 3 | 3 | 2 | -3 | 1 | 3 | | 3 | 3 | Yes |
| 3 | Person C | 0 | 1 | 1 | 0 | 2 | 3 | 3 | | 2 | Yes |
| 4 | Person A | 3 | 3 | 3 | 0 | 1 | | 3 | 3 | 2 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person B | 3 | 1 | 2 | 1 | 1 | 0 | | 2 | 2 | Yes |
| | Person C | 3 | 3 | 3 | -2 | 1 | 2 | 2 | | 3 | Yes |
| | Person A | 2 | 1 | 2 | 1 | 2 | | -2 | 2 | 1 | Yes |
| | Person B | 3 | 3 | 1 | 0 | 1 | 3 | | 3 | 3 | Yes |
| 5 | Person C | 2 | 2 | 1 | 0 | 1 | 2 | 2 | | 2 | Yes |
| | Person A | 2 | 3 | 2 | 1 | 3 | | 3 | 2 | 3 | Yes |
| | Person B | 2 | 2 | 1 | 0 | 4 | 2 | | 1 | 1 | Yes |
| 6 | Person C | 1 | 3 | 1 | 1 | 4 | 2 | 2 | | 2 | Yes |
| | Person A | 2 | 2 | 2 | 2 | 2 | | 0 | 0 | 2 | Yes |
| | Person B | 3 | 3 | 2 | 0 | 3 | 2 | | 2 | 3 | Yes |
| 7 | Person C | 1 | 2 | -1 | 0 | 5 | -2 | 1 | | -3 | No |
| | Person A | 3 | 3 | 2 | 0 | 3 | | 3 | 3 | 3 | Yes |
| 8 | Person B | -2 | 3 | -1 | 2 | 3 | -1 | | -1 | -1 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person C | 1 | 2 | 3 | 0 | 3 | 3 | 1 | | 1 | No |
| 9 | Person A | 3 | 3 | 2 | 1 | 1 | | 2 | 2 | 2 | Yes |
| | Person B | 2 | 2 | 2 | 0 | 1 | 2 | | 2 | 3 | Yes |
| | Person C | -1 | 2 | 2 | -2 | 2 | 3 | -1 | | 1 | No |
| 10 | Person A | -1 | 1 | 2 | 0 | 0 | | 3 | 2 | 1 | Yes |
| | Person B | 3 | 3 | 2 | 0 | 4 | 2 | | 0 | 3 | Yes |
| | Person C | 2 | 2 | 2 | 0 | 2 | 1 | 2 | | 3 | Yes |
| 11 | Person A | 1 | 2 | 3 | 1 | 1 | | -2 | 2 | 1 | Yes |
| | Person B | 1 | 1 | 1 | 0 | 2 | 1 | | -1 | 2 | Yes |
| | Person C | 3 | 3 | 2 | -2 | 2 | 2 | 1 | | 2 | Yes |
| 12 | Person A | 1 | 2 | -2 | -3 | 3 | | 3 | 3 | 1 | No |
| | Person B | 0 | 2 | 3 | -3 | 4 | -1 | | 3 | 3 | Yes |
| | Person C | 2 | 2 | 3 | 0 | 1 | 2 | 2 | | 2 | Yes |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Person A | 2 | 1 | 2 | 0 | 2 | | 0 | -1 | 0 | No |
| | Person B | 1 | 2 | 3 | -1 | 1 | 2 | | 2 | 2 | yes |
| 13 | Person C | 0 | 2 | 2 | -1 | 3 | -2 | 2 | | 2 | No |
| | Person A | 0 | 3 | 1 | 0 | 1 | | 2 | 2 | 3 | No |
| | Person B | 2 | 2 | 2 | 0 | 1 | 2 | | 2 | 2 | Yes |
| 14 | Person C | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 3 | Yes |
| | Person A | 2 | 2 | -2 | 1 | 3 | | 2 | 2 | 3 | Yes |
| | Person B | 2 | 3 | 2 | 0 | 1 | 3 | | 3 | 2 | Yes |
| 15 | Person C | 2 | 2 | 3 | 0 | 2 | 3 | 3 | | 3 | Yes |

# Appendix I

# Group Valence Generated for Each Group in Two Study Conditions

## The Pre-Decision Condition

**Table 15: Summary of group valence generated by each group in the pre-decision condition working on the first case**

| | **Be with family** | | | **Go on the trip** | | |
|---|---|---|---|---|---|---|
| Group | Positive valence | Negative valence | Net Valence | Positive valence | Negative valence | Net Valence |
| 1 | 3 | 0 | 3 | 0 | 5 | -5 |
| 2 | 1 | 0 | 1 | 0 | 1 | -1 |
| 3 | 0 | 6 | -6 | 0 | 1 | -1 |
| 4 | 2 | 1 | 1 | 4 | 19 | -15 |
| 5 | 2 | 2 | 0 | 5 | 18 | -13 |
| 6 | 1 | 5 | -4 | 2 | 1 | 1 |
| 7 | 2 | 0 | 2 | 0 | 7 | -7 |
| 8 | 3 | 3 | 0 | 3 | 4 | -1 |
| 9 | 3 | 1 | 2 | 0 | 3 | -3 |
| 10 | 6 | 2 | 4 | 2 | 2 | 0 |
| 11 | 3 | 0 | 3 | 0 | 2 | -2 |
| 12 | 0 | 2 | -2 | 3 | 4 | -1 |
| 13 | 1 | 5 | -4 | 0 | 3 | -3 |
| 14 | 4 | 2 | 2 | 1 | 2 | -1 |
| 15 | 3 | 1 | 2 | 1 | 5 | -4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | 34 | 30 | 4 | 21 | 77 | -56 |

## The Post-Decision Condition

**Table 16: Summary of group valence generated by each group in post-decision condition working on the first case**

| | **Be with family** | | | **Go on the trip** | | |
|---|---|---|---|---|---|---|
| Group | Positive valence | Negative valence | Net Valence | Positive valence | Negative valence | Net Valence |
| 1 | 5 | 2 | 3 | 1 | 8 | -7 |
| 2 | 1 | 2 | -1 | 4 | 0 | 4 |
| 3 | 12 | 2 | 10 | 9 | 14 | -5 |
| 4 | 1 | 5 | -4 | 2 | 22 | -20 |
| 5 | 5 | 0 | 5 | 0 | 8 | -8 |
| 6 | 10 | 8 | 2 | 5 | 6 | -1 |
| 7 | 3 | 6 | -3 | 21 | 6 | 15 |
| 8 | 5 | 3 | 2 | 4 | 10 | -6 |
| 9 | 4 | 1 | 3 | 8 | 15 | -7 |
| 10 | 6 | 4 | 2 | 15 | 2 | 13 |
| 11 | 5 | 0 | 5 | 0 | 6 | -6 |
| 12 | 7 | 3 | 4 | 3 | 6 | -3 |
| 13 | 3 | 2 | 1 | 2 | 4 | -2 |
| 14 | 3 | 4 | -1 | 0 | 5 | -5 |
| 15 | 6 | 0 | 6 | 11 | 13 | -2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | 76 | 42 | 34 | 85 | 125 | -40 |

# Appendix J

# Decision Statistics for Groups in Two Study Conditions

## The Pre-decision Condition

**Table 17: Summary of the final group answer for groups in the pre-decision condition**

| | Group Responses (N= 15) | | |
|---|---|---|---|
| Q1 | Remain silent | Report to prof | No Decision |
| | 7 | 5 | 3 |
| | 46.67% | 33.33% | 20.00% |
| Q2 | Go on the trip | Be with family | |
| | 3 | 12 | 0 |
| | 20.00% | 80.00% | 0.00% |
| Q3 | Turn him down | Lend money | |
| | 7 | 7 | 1 |
| | 46.67% | 46.67% | 6.67% |

## The Post-Decision Condition

**Table 18: Summary of the final group answer for groups in the post-decision condition**

| | Individual Responses (N= 45) | | Group Responses (N= 15) | | |
|---|---|---|---|---|---|
| Q1 | Remain silent | Report to prof | Remain silent | Report to prof | No Decision |
| | 18 | 27 | 2 | 9 | 4 |
| | 40.00% | 60.00% | 13.33% | 60.00% | 26.67% |
| Q2 | Go on the trip | Be with family | Go on the trip | Be with family | |
| | 17 | 28 | 4 | 9 | 2 |
| | 37.78% | 62.22% | 26.67% | 60.00% | 13.33% |

| | | | | | |
|---|---|---|---|---|---|
| | Turn him down | Lend money | Turn him down | Lend money | |
| | 25 | 20 | 9 | 5 | 1 |
| Q3 | 55.56% | 44.44% | 60.00% | 33.33% | 6.67% |

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