TESTING THE STRICT DEPENDENCE ARGUMENT

by

Daniel Burrill

A thesis submitted to the faculty of
The University of North Carolina at Charlotte
In partial fulfillment of the requirements
For the degree of Master of Arts in
Sociology

Charlotte

2018

Approved by:

____
Dr. Murray Webster Jr.

____
Dr. Lisa Slattery Walker

____
Dr. Joseph Dippong

Abstract

DANIEL BURRILL. Testing the Strict Dependence Argument. (Under the Direction of DR. MURRAY WEBSTER)

Task cues are indications of how an individual in a task group thinks they will perform at the group's task (Berger et al. 1986). Prior research (Conner 1977; Ridgeway et al. 1985) has shown that status characteristics influence the production of task cues. Theorists have argued that task cue production is influenced by status characteristics through the formation of performance expectations (Berger et al. 1986). If this is correct, then a change in performance expectations will produce a corresponding change in task cue production. I test this argument with an experiment which alters the performance expectations of participants over the course of two task group interactions. I measure the production of a single task cue, response latency, which is the elapsed time between when a problem is presented to an individual and when the individual submits a solution to the problem. Because the experiment requires participants to make an initial and a final choice, initial and final response latencies are captured. I do not find strong support for the strict dependence argument. Individuals who begin interactions with low performance expectations for self, do take longer to respond to initial choices than individuals who begin interactions with high performance expectations. However, there is no difference in time for responses to final choices. Changing performance expectations of participants did not result in corresponding changes to response latency times.

ACKNOWLEDGMENTS

I would like to thank my committee, Dr. Murray Webster Jr., Dr. Lisa Slattery Walker, and Dr. Joseph Dippong, for their invaluable support, advice, and feedback during the creation, execution, and interpretation of the experiment in this study.

I would also like to thank two research assistants, Kyle Randolph and Hayley Rodgers for their assistance in collecting the data which allowed me to complete this work.

TABLE OF CONTENTS

LIST OF TABLES viii

LIST OF FIGURES ix

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: LITERATURE REVIEW 3

2.1 Status Cues 3

2.1.1 Task cue production 7

2.1.2 Response latency as a task cue 9

2.2 Testing the Strict Dependence Argument 10

CHAPTER 3: THEORY AND DERIVATIONS 12

3.1 Scope 12

3.2 Definitions 12

3.3 Core Theoretical Assumptions 15

3.4 Derivation 18

3.5 Graph Theory Form 20

3.5.1 Calculating expectation values 23

3.5.2 Predicting expectations for a multi-actor task group 26

CHAPTER 4: EXPERIMENTAL DESIGN AND OPERATION 30

4.1 Experimental Variables 30

4.1.1 Dependent variable 30

4.1.2 Independent variable 31

4.2 The Experimental Setting 31

4.2.1 The experimental task 34

4.2.2 The experimental protocol 36

4.2.2.1 Task and ability introduction 37

4.2.2.2 Phase I –working with a partner 39

4.2.2.3 Phase II –working with another partner 42

4.2.2.4 Exit interview 43

CHAPTER 5: RESULTS AND ANALYSIS 44

5.1 Sampling 44

5.2 Participant Exclusions 45

5.2.1 Operational exclusions 45

5.2.2 Scope condition exclusions 47

5.3 Descriptive Statistics 49

5.4 Results 50

5.5 Discussion 53

CHAPTER 6: SUPPLEMENTAL ANALYSIS 56

6.1 Failure to Maintain Scope Conditions 57

6.2 Inadequate Critical Trials 63

6.3 Failure to Create Strong Expectation States 65

CHAPTER 7: CONCLUSION 70

WORKS CITED 72

APPENDIX A: CONSENT FORM 74

APPENDIX B: TEAM INFORMATION FORM 77

APPENDIX C: VIDEO INSTRUCTIONS 78

APPENDIX D: SURVEY QUESTIONS 83

APPENDIX E: INTERVIEW SCHEDULE 88

APPENDIX F: RECRUITMENT PITCH 93

List of Tables

TABLE 1: Fisek's functional form for path length strength 23

TABLE 2: Participant exclusions 45

TABLE 3: Descriptive statistics 49

TABLE 4: Initial latency times 50

TABLE 5: Final latency times 50

TABLE 6: Initial latency differences within groups 51

TABLE 7: Final latency differences within groups 51

TABLE 8: Latency differences across groups 51

TABLE 9: Observed p(s) 55

TABLE 10: T tests for p(s) 56

TABLE 11: Survey response: importance of getting correct answer 58

TABLE 12: P-O Importance of initial choice 60

TABLE 13: P-O Importance of sticking with own choice 61

TABLE 14: P(s) for final three slides in each condition 62

TABLE 15: Models predicting p(s) 65

List of Figures

Figure 1: Graph linking two actors to two task outcome states	20
Figure 2: Two actors differentiated by two diffuse status characteristics	25
Figure 3: Task Outcome Graph	27
Figure 4: Contrast sensitivity slide showing two panels	34
Figure 5: Partner information screen	39
Figure 6: Panel indicating participant and partner choices	41
Figure 7: Variance of stay response by slide	64

Chapter 1: Introduction

Status cues provide information about the status characteristics possessed by interactants. When an individual is interacting in a task group, others use status cues emitted by that person to draw inferences about the status characteristics that individual possesses (Berger, Webster, and Ridgeway 1986). Differences in status characteristics affect how individuals interact in group settings, including the degree to which one actor may have influence over another (Berger et al. 1977). Understanding how status cues are emitted and how they are incorporated into status organizing processes will provide insight into how task groups organize themselves and how inequalities which emerge within those groups become stable. In this thesis I present research which tests the relationship between expectation states and the production of task cues. This research contributes to our understanding of status cue production by testing a derivation from status characteristics theory.

Status characteristics theory is situated within the expectation states research program. The theory explains how the status characteristics possessed by actors influence the emergence and maintenance of inequality within small task groups. According to the theory, status characteristics influence the formation of expectation states, which are roughly comparable to beliefs about the relative abilities of task-group members. Expectation states, in turn, influence the formation of the group's power and prestige order, including who in the group will have influence over the group's interaction. Researchers shows (Berger et al. 1986) that the production of task cues, one of two types of status cue, is influenced by expectation states. I develop and present a test of the relationship between expectations and task cue production.

The remainder of this document proceeds as follows: First, I review the literature on status cues and their relationship to performance expectations, including Fisek et al.'s theoretical integration of status cues into status characteristics theory (Fisek, Berger, and Norman 2005) Next, I present status characteristics theory and Berger, Webster and Ridgeway's (Berger et al. 1986) predictions about the relationship between performance expectations and task cues, showing how their predictions are derived from the theory. Finally, I present an experiment designed to test their strict dependence argument, in a situation where the theory predicts a change in the production of task cues by a focal actor.

Chapter 2: Literature Review

The core assumptions of status characteristics theory (described in detail in chapter 3) rely on the presence of differences in status characteristics to predict power and prestige orders within small task groups (Berger et al. 1977). According to the theory, a status characteristic is a socially determined characteristic possessed by an actor, that has two or more differentially evaluated states, each of which is associated with beliefs about task abilities. Individuals in a task group are more likely to think that an actor who possesses a positively evaluated state of a status characteristic will perform better at a task than an actor who possesses a negatively evaluated state of the same characteristic. Performance expectations refer to how well an actor thinks he or she is likely to do at a task compared to other actors within a task group. The performance expectations of actors determine the power and prestige order of the group. If a given group member is expected to do well at the group's task, then that group member will occupy a high position within the group's power and prestige order. If a group member is expected to do poorly at the group's task, then that group member will occupy a lower position within the group's power and prestige order.

2.1 STATUS CUES

Status characteristics theory assumes that actors in task groups recognize the status characteristics of other actors within their group. In order for an actor to recognize status information, it must be communicated to him or her in some way. Within a task group, status is communicated through status cues (Fisek et al. 2005). A status cue is anything that can be used by an actor to identify differences in status between him or herself and others (Berger et al. 1986). Berger et al. developed a typology of status cues using two dimensions. One dimension describes the way in which cues are communicated and the other describes the type of information that cues carry. Along the communication dimension, status cues are classified as either indicative or expressive types.

Indicative cues are direct indications or claims that the actor possesses a particular level of a status characteristic. Indicative cues are assumed to be deliberate on the part of the actor producing the cue. Examples of indicative cues include direct statements like "I know how to deal with this problem" or "I earned a PhD in this area," and can also include nonverbal cues like the display of a diploma or award. Status can also be communicated through expressive cues. Expressive cues include behaviors and qualities that are emitted from an actor during an interaction. Examples of expressive cues include accents, posture, and tone of voice.

In addition to the way status is communicated, Berger et al. (1986) also distinguish between the types of status information cues carry. Status cues can be categorical or task cues. Categorical cues carry information about the type of person emitting the cue. For example, feminine dress and long hair may communicate information about a person's gender. Task cues communicate information about how well an actor is doing at a given task. If an actor states "I'm not sure how this works" while they are working on a group project, they have produced a task cue. Combining both dimensions produces a typology of status cues across four domains, Indicative Task, Indicative Categorical, Expressive Task, and Expressive Categorical.

To relate status cues to status characteristics, Berger et al. (1986) present two abstract generalizations. Of interest in this research is the second generalization:

> In heterogeneous situations, if individuals are differentiated in terms of status characteristics, then their differentiation on task cues will coincide with their status differentiation in the given situation (1986:8).

In other words, if two actors possess different states of a characteristic, then the task cues they emit will correspond to the states of the characteristic they possess. Actors who possess high status characteristics will produce high status task cues *i.e.,* cues which indicate the actor believes they will do well at the group's task. Likewise, actors who possess low status characteristics will produce low status task cues. To explain their generalization, Berger and his colleagues argue that task cue production is dependent on the expectation state of the actor. If an actor has high expectations for himself or herself compared to a partner within their group, then they are more likely produce high status task cues when they interact with their partner. Research has demonstrated an empirical link between performance expectations and status cues (Driskell, Olmstead, and Salas 1993; Foddy and Riches 2000; Foschi and Valenzuela 2007; Rashotte and Smith-Lovin 1997; Ridgeway 1987).

Fisek, Berger and Norman (2005) formally integrated the research on status cues with status characteristics theory. Their approach relies on the theoretical concepts of *cue gestalts, behavioral interchange patterns,* and *status typifications.* Behavioral interchange patterns are repeated cycles of interactions having status significance within a task group. Actors within groups can form performance expectations from such behavioral patterns. In a behavioral interchange pattern, actors engage in mutually accepted behaviors which are consistent with a position in a power and prestige order. The behaviors of each actor involved in a behavior pattern are differentiated from one another, and can be positive or negative. One actor in a task group consistently offering suggestions to another actor, who consistently rejects those suggestions is an example of a behavioral interchange pattern. Rejecting suggestions is the positive behavior, because the act of rejecting suggestions implies an evaluator's role. Consistently offering suggestions to an evaluator would then be a negative behavior within that behavior pattern, implying a more subordinate role. Because actors involved in behavioral interchange patterns take on relationally positive and negative roles, actors in the task group can draw inferences about those in the behavior pattern. These inferences are described by status typifications.

Status typifications are culturally defined beliefs about what sorts of behaviors belong to high and low status categories. Fisek et al. use dual-term phrases like "leader-follower" to exemplify status typifications (1991:118). Fisek et al. argue that behavioral interchange patterns are related to performance expectations through status typifications. This argument holds that behavioral interchange patterns will connect members of a task group to different states of status typifications, which will ultimately influence the formation of performance expectations. Recent research has produced empirical support for the relationship between behavioral interchange patterns and performance expectations. Webster and Rashotte (2010; 2017) report a series of experiments where the behavioral interaction patterns of actors in task-groups were manipulated to produce behavior consistent with high or low status typifications. They find that Fisek et al.'s theoretical models fit their experimental data well.

In order to integrate status cues into status characteristic theory, Fisek et al. (2005) use the concept of *Cue gestalts.* Cue gestalts describe the combined effects of all status cues produced by an actor in a situation. Because a cue gestalt can incorporate multiple status cues, the effect of any gestalt is dependent on both the strength of the constituent cues and their directional agreement. If a gestalt contains contradictory status cues or a set of weak cues, then that gestalt will have a weaker effect on the formation of expectations. For task cues, gestalts influence the strength that status typifications have on performance expectations. Weak task cue gestalts produce uncertainty about whether an actor possess a status typification, so the presence of a weak task cue gestalt reduces the impact of the corresponding status typification on the formation of performance expectations (Fisek et al. 2005). The research presented above shows that behavior, including task cue production, will influence the formation of expectation states. Researchers have also argued that expectation states influence the production of task cues, though less work has been done examining that process.

2.1.1 Task Cue Production

The second abstract generalization which Berger and his colleagues presented states that task cues coincide with status differentiation (Berger et al. 1986). Berger et al.

explain this phenomenon by arguing that expectation states, once formed, cause task cues to be produced in a manner consistent with the expectation state. Status characteristics theory argues that status characteristics influence the formation of expectation states. Thus, if an actor in a task group is higher in status, compared to his or her partner, he or she will form positive expectations for self, compared to his or her partner. The actor's high expectations for self, in turn, cause the production of high status task cues as the actor and his or her partner interact. One consequence of this line of reasoning is that task cue production should change when that actor experiences a change in status between situations. Berger et al. refer to this deduction as the *strict dependence argument* (Berger et al. 1986:14). If an actor in a task group forms low performance expectations, then that actor will produce low status task cues. If some change of the situation is introduced, such that the actor's performance expectations increase, then that actor should produce a corresponding rise in task cues.

There is some empirical support for the strict dependence argument. Ridgeway Berger and Smith (1985) conducted an experiment that varied the status characteristics of task groups and measured three types of task cues: (1) Gaze length- the time it took for a research participant to look away from their partner (a confederate) after initial eye contact. (2) Response latency- the time it took for a research participant to verbally respond to a task. And (3) verbal loudness- how loud the research participant's voice was during responses. The researchers report that gaze length and response latency were both well predicted by the status condition of the participant, although, they did not find support for their third dependent variable, verbal loudness.

2.1.2 Response Latency as a Task Cue

In chapter 4 of this thesis, I describe a test of the strict dependence argument. To test the argument, I will be using response latency as a task cue. Response latency has been used as a status cue in prior research. Ridgeway et al. (1985) measured response latency as the elapsed time between the presentation of a problem and an actor's *verbal* response to the problem. Conner (1977) constructed a model for response latency which predicted that frequency of first response, rather than elapsed time, would be influenced by expectation states. Conner measured response latency as the time between a slide appearing on a screen and a participant pressing a button to respond to the slide.

Both Conner and Ridgeway created experimental situations where participants worked in teams to respond to problems, and were told that only the first answer contributed by the team would be counted. This experimental design creates a zero sum situation where contributing first to a problem is directly related to the outcome of the group's task. Let us assume that a task group member in this type of zero sum situation has formed expectations for themselves and every other. For that group member, the decision to contribute first is effectively a decision to increase or decrease the chance that the group will succeed at the task. This type of situation, as both Conner and Ridgeway et al. showed, elicits clear behavioral patterns among participants, but there is no theoretical reason to expect task cues to be produced *only* in situations where the task outcome is directly dependent upon the production of a specific cue. According Berger et al. (1986), task cues should be produced anytime members of a collectively oriented, task focused group form performance expectations. Therefore, a strong test of task cue production should be designed so that the cue being measured is not directly related to the task outcome.

2.2 TESTING THE STRICT DEPENDENCE ARGUMENT

This thesis extends the empirical work done by Ridgeway, Berger, and Smith (1985) by applying the strict dependence argument to a multi-actor task situation. In this type of situation, a focal actor moves from interacting with one group member to interacting with another group member. In this situation, it is possible for a focal actor to interact with two other actors with whom he or she is status differentiated. If task cue production is strictly dependent on performance expectations, then the status value of the task cues produced by the focal actor should change when an actor moves from interacting with a lower status partner to interacting with a higher status partner, and vice-versa. This type of situation constitutes a strong test of the strict dependence argument as the behaviors of a single actor are predicted to change across two interactions, which are distinguished by nothing other than a change in the status differences between the focal actor and their partner.

The causal mechanism at the heart of the strict dependence argument is the formation of performance expectations. The formation of performance expectations, and their effects on behavior in task groups is explained by status characteristics theory. In the next chapter, I describe the theory in detail, and present derivations which can be used to predict how actors produce task cues when interacting in a task group.

Chapter 3: Theory and Derivations

Status characteristics theory has been used to predict changes in task cue production in previous research (Ridgeway et al. 1985). The theory describes how the status characteristics of an actor influence expectation states held by themselves and others within a situation. This chapter presents the theory of status characteristics, along with a prediction for task cue production derived from the theory and extends the prediction to situations involving more than two actors.

3.1 SCOPE

Status characteristics theory applies to task focused, collectively oriented groups. A group is task focused when the primary concern of group members is to accomplish some task. A group is collectively oriented when the input of all group members is required for the completion of the group's task. Though not all groups are task focused and collectively oriented, there are many instances of such groups in society. Common examples of task focused, collectively oriented groups include juries and project teams working within corporations.

3.2 DEFINITIONS

Task cues, as discussed in chapter 2, are indications of an actor's relative ability concerning a specific task. Task cues can be behaviors an actor produces, claims made by the actor or the display of objects that provide information about how well an actor is likely to perform at a specific task (Berger et al. 1986).

Performance expectations are expectations formed by a person within a task group about how well they or other members of the group will do at the task. The process through which performance expectations are formed is described by the theory's core assumptions which are outlined below.

Status characteristics are culturally determined characteristics which have two or more differentially evaluated states. Status characteristics can be divided into two types: specific and diffuse status characteristics. Two features define *specific status characteristics*:

1. Specific status characteristics have two or more states which are differentially evaluated.
2. Each state carries task specific performance expectations which are evaluated with the same sign as the status characteristic state.

Three features define *diffuse status characteristics*:

1. Diffuse characteristics have two or more states which are differentially evaluated.
2. Each state carries task specific performance expectations which are evaluated with the same sign as the status characteristic state.
3. In addition, diffuse status characteristics produce general performance expectations which apply to an unknown number of tasks.

Berger et al. (1977) provide a set of categories describing the task oriented behaviors of actors within a small group. These terms provide a useful way to analyze behavior within a small group interaction.

Action opportunities can be thought of as attempts made by group members to get another group member to provide input. Action opportunities include asking questions, pauses, and asking for information or input.

Performance outputs are efforts made by a group member to address the group's task. Performance outputs include offering an opinion, offering information, and trying to solve a problem faced by the group.

Reward actions are communicated evaluations of group members or group performances. Reward actions include praise, criticism, agreement, and dispute.

Influence occurs when one group member changes their opinion because of another member's disagreement.

Patterns of these four (and other) task behaviors determine the power and prestige order of a group. Actors high in the power and prestige order produce more performance outputs, receive more action opportunities, receive more positive reward actions from other group members, exercise more influence over others and resist influence attempts made by others. Note that the power and prestige order is a relative description of task group members; the power and prestige position of one actor is always relative to the other actors within the group.

Status characteristics theory argues that an actor's position in the power and prestige order of a group is a function of the expectation states held by the actors of the group. The section below described how expectation states are formed.

3.3 CORE THEORETICAL ASSUMPTIONS

The following mechanisms (Berger et al. 1977) describe the process of status generalization, which explains how power and prestige orders emerge within task group settings.

1. Salience. All information about status differentiations between group members as well as all information about status characteristics that are thought to be relevant to the group's task will be salient to the group members.

Salience refers to information that can affect the group's interaction. If some fact or observation available to a task group member influences the formation of performance expectations for that actor, then that information is salient. Within a task group, all status differentiations are assumed to be salient, along with all information about status characteristics that are related to the group's task. This means that status differences between group members will be incorporated into the status generalization process.

2. Burden of proof. All salient status information will become related to the group's task unless that information is explicitly disassociated from the group's task.

Differentiation between task group members is enough to make a status characteristic salient, even if it may not be directly related to the group's task. The burden of proof process assumes that any salient status information will be related to the group's task unless that information is disassociated. Status information is said to be disassociated from a task when members of the task group believe that there is no relationship between task and the status information.

3. Sequencing. Expectations created by (1) and (2) will remain even if individuals leave or enter the group, or the group begins working on a new task. The processes described by (1) and (2) will continue until task specific expectations have been formed for every group member.

During an interaction, the characteristics of a task group member can become salient, and influence the formation of performance expectations. Sequencing assumes that these expectations remain, even if the group member leaves. In other words, the expectations formed by actors in the group are not destroyed when another actor leaves the group. When a new actor enters the group, task group members do not rebuild the performance expectations which they previously created. Instead, the new actor is incorporated into the group, and performance expectations are created for that actor, with the previously existing expectations intact.

4. Combining. Status information is aggregated, so that all salient information is incorporated into the formation of expectation states.

Status aggregation is accomplished with two mechanisms: the principle of organized subsets and the attenuation principle. Because multiple status characteristics can be salient in a situation, status information can be inconsistent. A single actor in a situation can possess both high and low statuses, creating inconsistent status information. The principle of organized subsets holds that, when there is inconsistent status information, this information is first separated into subsets of consistent status information and then aggregated. All negative status information is combined into one subset and all positive status information is combined into another subset. If the expectation value of actor x is e_x, then:

$$e_x = e_x^+ + e_x^- \quad (1)$$

where $e_x^+$and e_x^- represent expectation values for the positive status subset and the negative status subset (Berger et al. 1977:127).

According to status characteristics theory, actors in a situation are connected to beliefs about task abilities through the status characteristics they possess. To determine the value for status consistent subsets, both the strength and the number of the connections between an actors and task outcomes are considered. The process of status generalization determines the strength of a connection and the exact way this is accomplished is discussed in detail in the graph theory section below. The attenuation principle holds that, when aggregating like signed subsets of status information, additional units of information are weighted less heavily. For example, each additional positive status connection adds less to the overall positive subset (Berger et al. 1977).

The values for each subset are calculated using the following equations:

$$e_x^+ = \left[1 - \left(1 - f(i)\right)\ldots\left(1 - f(n)\right)\right] \quad (2)$$

$$e_x^- = -\left[1 - \left(1 - f(i)\right)\ldots\left(1 - f(i)\right)\right] \quad (3)$$

f(i) represents the strength of a connection, and ranges between 0 and 1. The result of these equations gives the aggregated effect of positive and negative expectations for each actor (Berger et al. 1977:125).

The final assumption relates the expectation states of actors to the group's power and prestige order.

5. Power and prestige. Once expectation states have formed for every group member, every group member's relative position in the power and prestige hierarchy is function of their expectation advantage.

Performance expectations describe how a task group member thinks group members will do at a task. Task group members form performance expectations for themselves, and all other group members. An *expectation advantage* is the difference between one actor's performance expectation and another actor's performance expectation. According to assumption 5, the greater the focal actor's expectation advantage over another group members, the higher the focal actor will be in the power and prestige order of the group. Expectation advantages can be positive, indicating that the focal actor expects to do better than the comparison actor, or negative, indicating that the focal actor expects to do worse than the comparison actor at the group's task. To find the expectation advantage of one actor over another, the expectation value (eq. 1) of one actor is subtracted from the other.

3.4 DERIVATION

Berger et al. (1986) predict that, in heterogeneous groups, actors will produce task cues consistent with their expectation states for self and other. Task cues are a type of task oriented behavior, so they can be explained in terms of the four task oriented behaviors described above. For example, if an actor repeatedly provides negative evaluations (a reward action) of the performance of other group members, then they are providing an indicative task cue, they are communicating they believe they will do better at a task compared to the other.

If task cue production is a part of the power and prestige order of a group, then Berger et al.'s (1986) prediction is direct derivation from the theory. Given a set of initial conditions, the theory can predict when a focal actor will produce task cues along with the cue's status position. Consider a situation where:

1. An actor forms expectations for him or herself and two partners, such that the actor maintains an expectation advantage over one partner, while the other partner maintains an expectation advantage over the actor.
2. The focal actor moves from interacting with one partner to interacting with another partner.

Through assumptions 1, 2, and 5, the salient status characteristics possessed by each actor will be incorporated into the formation of expectation states. Through assumption 3, expectations created in the first interaction will still be present when the actor begins interacting with the second partner. Finally, assumption 5 predicts that an actor's position in the power and prestige order is a function of their expectation states. If task cue production is a part of the power and prestige order, an actor's expectation state will influence task cues relative to the two partners. These derivations are expressed as the hypotheses below:

H_1: Once an actor has formed performance expectations for themselves and other group members, that actor will produce task cues consistent with the expectation difference between themselves and the other they are interacting with.

H_2: If the performance expectations of an actor change, the task cues which they produce will change to remain consistent with their relative performance expectations.

Before these hypotheses can be tested, they require the creation of performance expectations for task group members. Performance expectations can be calculated using the graph theory form of status characteristics theory.

3.5 GRAPH THEORY FORM

Status characteristics theory applies to situations in which two or more actors are working to complete a task. It is possible to describe these situations in graph theoretic terms. Graph theory is a set of mathematical methods used to describe relationships between nodes within a network. The graph theory form of status characteristics theory uses undirected, signed graphs. The theory represents theoretical elements as nodes and relations between those elements as edges. Theoretical elements which are active in a situation can include actors, task outcome states, status characteristics, and task abilities. Forming relations between theoretical elements results in paths which link each an actor to one or both instrumental task abilities. An example of these relationships is presented in figure 1.

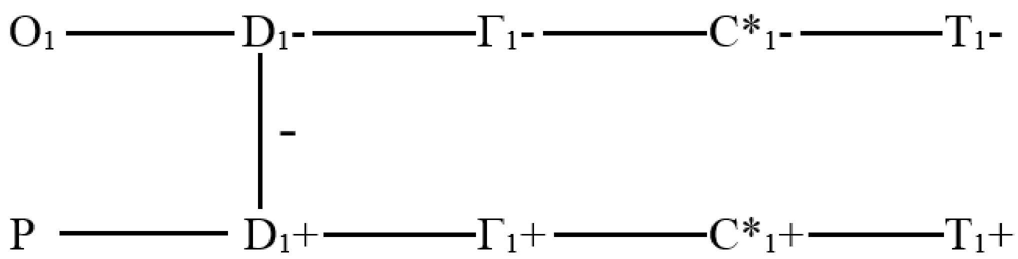

Figure 1: Graph linking 2 actors to task outcome states

Within the figure, the focal actor, P, and a task partner, O_1, are each linked to different states of a diffuse status characteristic, D±. The sign of the characteristic indicates its relative status value within the situation. The link between each actor and their status characteristic is known as possession. Because the actors are differentiated by D, the characteristic is salient in accordance with assumption (1) of the theory. Within the graph theoretical approach, this is demonstrated by adding D to the graph. Any characteristic which is not salient is omitted as it will not connect any actor to either task outcome.

Both states of D are linked to one another because possessing one state of D precludes the possession of the other. This relationship is dimensionality. Dimensional links carry a negative sign (within this graph all unsigned links are positive.) Continuing down the path, D± is connected to Γ±. Γ represents states of generalized task ability. Generalized task ability represents an ability which is related to an unknown number of tasks. Actors with links to Γ+ will be thought to have higher ability at most tasks, compared to actors with links to Γ-. The connection between D± and Γ± represents the effect of diffuse status characteristics, actors possessing D are connected to an unknown number of tasks, as described by part 3 of the definition of diffuse status characteristics. Γ is linked to C*±, the instrumental task characteristic. A task characteristic is said to be instrumental when it is directly related to the group's task (Berger et al. 1977:95). Finally, C*± is linked to T±, task outcome states. This process, which has connected both actors to task outcome states is known as status generalization. Beliefs about status characteristics have been generalized to form performance expectations.

Suppose that the diffuse characteristic in figure 1 is gender and the task is repairing a computer. Because gender is a diffuse status characteristic and P and O_1 differ on gender, gender will be salient and will produce performance expectations. In this case, D+ represents male while D- represents female, reflecting this culture's relative evaluation of the two states. T+ represents probable success at repairing a computer while T- represents probable failure at computer repair. Finally, C*+ represents relatively high computer repair ability while C*- represents relatively low computer repair ability. In this situation, both actors are connected to task outcomes through the diffuse status characteristic gender. In this case, if P believes that women have less ability at most tasks than men (Γ-), then he is likely to behave as if he believes his partner will possess less computer repair ability (C*-) than he does, and that she is more likely to fail at the computer repair task compared to him (T-).

Notice that in figure 2, O_1 is connected to task outcome states in the same way as P. This is because P and O_1 are assumed to evaluate states of the diffuse status characteristic D± the same way. In other words, both P and O_1 believe that D+ is generally associated with high task ability and D- is generally associated with low task ability, even though O_1 possess the negatively evaluated state of D. Beliefs about status characteristics are determined by society. For the example discussed above, it is assumed that both actors live in a society in which being male is generally considered more advantageous than being female. If the society both actors lived in created opposite beliefs about gender, then the situation would be reversed, and the female group member would have an expectation advantage.

3.5.1 Calculating Expectation Values

Per assumption (4), all paths connecting each actor to each task outcome will be combined to calculate the expectation value for a given actor. The length of the path *f(i)* determines its strength on the expectation state of the actor, with longer path lengths having less of an effect on expectation sates. There are estimates for the strength of a set of path lengths. Berger et al. (1977) and Balkwell (1991) developed empirical estimates for path strength while Fisek (1992) presents a theoretical model for path strength. Fisek's model is presented in the equation (4) below and is used in the calculations throughout this thesis. Table 1 shows the strengths for path lengths from Fisek's function.

$$f(i) = 1 - e^{-2.618^{2-i}} \quad (4)$$

Table 1: Fisek et al.'s (1992) function for path length strength

	f(2)	*f(3)*	*f(4)*	*f(5)*	*f(6)*
Path Strength	0.632	0.317	0.136	0.054	0.021

Like-signed paths are combined using the functions (2) and (3) introduced in assumption 4. Recall that for positive paths:

$$e_x^+ = \left[1 - \left(1 - f(i)\right) \ldots \left(1 - f(n)\right)\right] \quad (2)$$

And for negative paths:

$$e_x^- = -\left[1 - \left(1 - f(i)\right) \ldots \left(1 - f(i)\right)\right] \quad (3)$$

The path strengths range from 0 to 1. Paths are assigned to the positive or negative subset based on the sign of the path. To determine a path's sign, the links in the path are multiplied algebraically and the result is multiplied by the value of the task outcome sign (Berger et al. 1977).

Consider P in figure 1. P is connected to T+ by a path length of 4. Each link in the path is positive, so the resulting path is positive. The path's value is multiplied by the task outcome's value, which is also positive. The result is a positive path length of 4. P is also connected to T- by a path length of 5. This path is negative because it contains a negative link between D+ and D-. The negative path is multiplied by the negative task outcome sign to obtain a positive path of length 5. Thus, in this situation, P has two positive paths of length 4 and 5 and no negative paths. For O_1, the signs of paths are reversed. O_1 has two paths of length 4 and 5, both of which are negative, and no positive paths. Because P has no negative paths $e_p = e_p^+$. The reverse is true for O_1, with no positive paths $e_{O_1} = e_{O_1}^+$. To calculate the expectation value of the actor, their path lengths are entered into the equations above.

For p:

$$e_p^+ = \left[1 - \left(1 - f(4)\right)\left(1 - f(5)\right)\right] \tag{5}$$

For O_1:

$$e_{o_1}^- = -\left[1 - \left(1 - f(4)\right)\left(1 - f(5)\right)\right] \tag{6}$$

Values for each path are calculated using Fisek's (1992) function which gives .136 for a path length of 4 and .0542 for a path length of 5. Plugging those values into the equation yields an expectation value of e_p = .1828. O_1 has no positive path lengths so the calculation is the same, except the formula for the negative subset is used, thus, e_{o_1}= -.1828. Finally, to determine the expectation advantage of one actor over another, the expectation value of the second actor is subtracted from the first. For example, to calculate the expectation advantage of p over o_1 the calculation would be $e_p - e_{o_1}$, which in this case is equal to .366.

The graph presented in figure 1 shows two actors differentiated by a single diffuse characteristic, D. A single diffuse status characteristic produces a small expectation advantage. While status characteristics theory predicts behavioral differences for actors with small expectation advantages, reliable measurement of the small behavioral differences predicted by the theory can be difficult. Adding an additional diffuse characteristic will strengthen the expectation advantage of the focal actor, and thus, make the differences in behavior easier to detect. Figure 2 illustrates an interaction with two diffuse status characteristics.

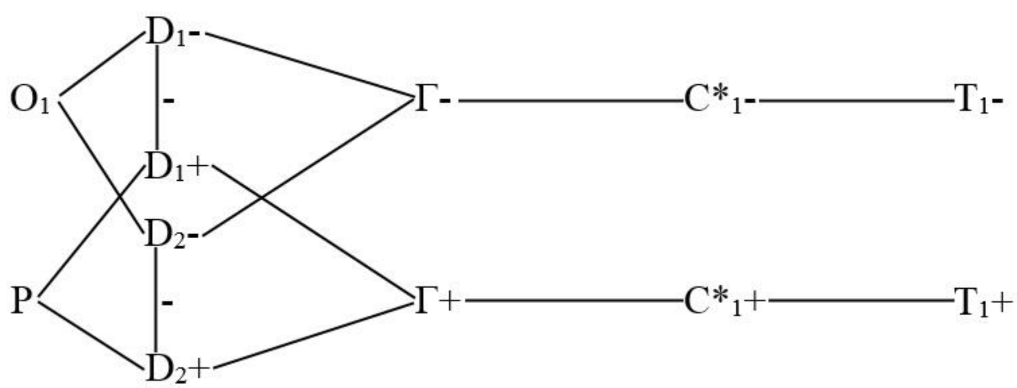

Figure 2: Two Actors Differentiated by Two Diffuse Status Characteristics

The path lengths are counted in the same way as before, but the addition of another diffuse characteristic increases the number of positive paths for the focal actor p. In this situation, the expectation advantage of p (.664) is much stronger than the situation illustrated by figure 1.

3.5.2 Predicting Expectation States for a Multiple-Actor Group.

Figure two illustrates an interaction between a focal actor (P) and one other (O_1). This situation describes the conditions required by H_1, but will not create a change in expectations as required by H_2. A simple way to change the expectations of P would be to have P interact with another actor (O_2) with whom P is status differentiated. If the status characteristics of all the actors are ordered such that $O_1 < P < O_2$ in terms of states of salient characteristics, then when P moves from interacting with O_1 to interacting with O_2, the expectation state of P should change. In other words, when P is interacting with O_1, P should have an expectation advantage. When P is interacting with O_2, P should have an expectation disadvantage, creating the conditions required by H_2.

Because P is involved with two other task group members, P's relation to O_1 must be considered when describing the expectations formed by P, in relation to O_2. The sequencing assumption (#3) argues that if an actor is interacting within a situation and then leaves the group, the elements which relate other actors in the group to the departing actor will remain. This means that paths which are formed when P interacts with O_1 should remain when P begins to interact with O_2. In the situation described by the graph in figure 2, P interacted with a single partner with whom P was status differentiated. The differences between the two actors were the diffuse characteristics D_1 and D_2. In this interaction, P possessed the positive state of both D_1 and D_2 while O_1 possessed the negative states. Because O_2 possess states of both diffuse characteristics which are high, compared to P, P will form connections to the negative states of both D_1 and D_2 when O_2 enters the situation. The ultimate effect of the sequencing assumption on this situation is that P eventually is connected to both states of each status characteristic, and consequently, to both positive and negative task outcome states. Figure 3 graphs this relationship.

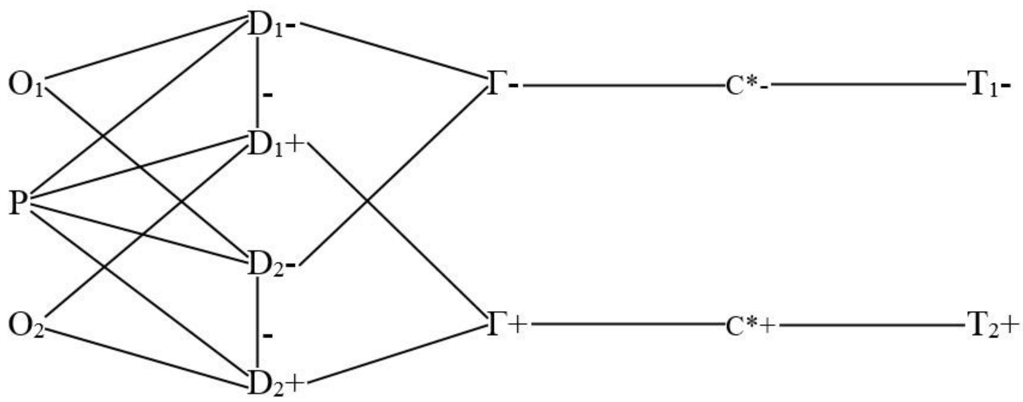

Figure 3: Task Outcome Graph

The figure shows that P still possesses the paths to task outcomes original formed during P's interaction with O_1, but, because P has begun interacting with O_2, P will now form additional paths to task outcomes. Counting the paths, we see that P has 4 positive with lengths 4, 4, 5, and 5. These paths were formed when P was interacting with O_1, and remain even though O_1 has left the interaction. P also has 4 negative paths with lengths 4, 4, 5, and 5. The negative paths where formed once P began interacting with O_2. These paths have lengths 4, 4, 5 and 5. These paths cancel, to produce an expectation value of 0 for P. O_2 has no negative path lengths and four positive paths with lengths 4, 4, 5, and 5, yielding an expectation value of .332. Therefore, P has a negative expectation advantage over O_2 of -.332.

According to status characteristics theory, if a focal actor works in sequence with two task partners, with whom the actor is status differentiated, then that actor will experience a change in performance expectations. If the production of task cues are strictly dependent on expectation states, then that actor will change the production of task cues. The next chapter describes an experimental situation which is designed to create a change in expectations for an actor working on a single task with multiple partners.

Chapter 4: Experimental Design and Operation

The strict dependence argument holds that once expectations are formed by an actor, that actor's task cue production will be consistent with those expectations. Further, a change in expectations will cause a change in the production of task cues. To test these hypotheses, I created an experiment in which participants interacted with two partners in collectively oriented, task focused groups. The experiment was designed to first create a situation where participants formed positive (or negative) expectations for themselves compared to their partner. After the first situation, the experiment then moved each participant to a situation designed to form negative (or positive) expectations for the participant compared to their partner. The rest of this chapter describes the operationalization of the dependent and independent variables, and presents the experiment which was used to test the two theoretical predictions.

4.1 EXPERIMENTAL VARIABLES

4.1.1 Dependent Variable

To test the strict dependence argument, I chose response latency as a task cue. Response latency is the time between an actor receiving an action opportunity and producing a performance output. Response latency meets the definition of an expressive task cue because delays between action opportunities and performance outputs can indicate something about the ability of a participant, and response latency is not normally a behavior which individuals deliberately present to others.

I measure response latency by counting the seconds between when a participant in an experimental situation is given the opportunity to contribute a solution to their group's problem to when the participant submits a solution to the problem.

4.1.2 Independent Variable

My experiment was designed to create a situation in which a participant experiences a change in expectation states. I accomplished this by asking research participants to work on a task, first in one group, then in another. To manipulate expectations, I used the status characteristics of the group members. Specifically, I used the diffuse status characteristics of *age* and *education*.

Both age and education have multiple states, which are differentially evaluated related to beliefs about ability. Kelley, Soboroff, and Lovaglia (2017) report a series of experiments which show that age has an effect on rater's preferences for working-group partners. Their study shows that the status value of age increases until middle age, after which it descends.

4.2 THE EXPERIMENTAL SETTING

In order to test the effect of expectation states on task cue production, a situation must be created which allows for reliable measurement of task cues emitted from research participants. Over the course of a normal interaction, an actor will emit task cues spontaneously, and may emit cues in a variety of ways. Suppose that an actor occupies a high status position in a task group. This could be reflected by the actor's use of a confident tone of voice when speaking to other members of the group. Or the actor may point out that they are qualified to contribute to the task because of some credential they possess. In either case, the actor has produced a task cue which is consistent with their status position. The fact that task cues can vary in form creates a problem for any research aimed at understanding how expectations affect cues. It is possible that an experiment designed to measure one task cue will miss others emitted by a participant over the course of an interaction. This fact can introduce ambiguity in experimental results. In order to reliably record task cue production, a situation in which the research participant’s behavior is limited to a set of measurable actions must be created. To ensure reliable measurement, I employed Berger’s standardized experimental situation (Berger 2014)

In the standardized experimental situation, individuals are told that they are working in a team to complete a collective task. The task consists of a series of problems which the team must solve. For every problem in the series, each team member must choose one of two provided solutions. The participant receives information about their partner's decisions through a computer, or other mediating device, and no face to face interaction occurs between individuals participating in the experiment. The sequence of the standardized experimental situation is as follows:

- The participant is given a few seconds to study a problem related to the group’s task and to choose a solution from two options.
- The participant then receives feedback from the computer about which option their partner chose.

- Then the participant is given a few more seconds to study the problem and to submit a final choice.

By limiting team interaction to the sequence described above, rates of action opportunities and performance outputs can be controlled by the experimenter. This limited type of interaction also reduces the number of meaningful cues which can be transmitted between individuals in the situation. For each problem within the situation, participants are usually told that their partner disagreed with their initial choice. When the participant makes a final decision, he or she must choose to resolve the disagreement in favor of self (by staying with their initial choice) or other (by changing their choice to agree with their partner.) The dependent variable within the standardized experimental situation is usually a measure of influence. Influence is measured as the proportion of stay responses out of the total number of critical trials, labeled p(s). Although my dependent variable is task cue production, I also use p(s) to assess whether or not the expectations for each experimental condition were formed correctly. Constant disagreement from partners may cause participants to become suspicious about whether or not their partner is real, or about how responses are determined. To prevent this sort of suspicion, there are usually a small number of trials where they are told that their partner agrees with their choice.

4.2.1 The Experimental Task

The experiment requires research participants to work with a partner to complete a collective problem solving task. Berger (2014) identified several important features of tasks used in expectation states research. Participants must believe that the task they are working on is related to a real ability and that their performance on the task depends upon their ability level. Participants must also believe that the task and ability are unrelated to other abilities. Finally, the task must involve enough trials to allow for reliable measures of participant behavior.

For this experiment, I used contrast sensitivity as the experimental task. Contrast sensitivity is an experimental task developed specifically for expectation states research (Moore 1965). The task was introduced to participants as a test of a person's contrast sensitivity ability. Participants were told that contrast sensitivity is a newly discovered ability and that individuals who have higher levels of the ability can distinguish between contrasting colors more easily than individuals with lower levels of the ability. Participants were then introduced to the contrast sensitivity task and told that individuals with more contrast sensitivity ability typically score higher on the task than individuals with lower ability. When the task was introduced to participants, they were shown a slide with two panels (see figure 5), each panel containing a set of dark and white rectangles. Participants were told that one panel had more white squares than the other, and that individuals with a higher level of contrast sensitivity ability will correctly select the panel with the greater number of white squares more often than individuals with a lower level of contrast sensitivity ability. Participants were told that the task is timed and that those with higher levels of contrast sensitivity consistently score higher on the test, even in situations where there is not enough time to count the number of black and white rectangles in each panel. In other words, people who supposedly possess a high level of contrast sensitivity ability are more able to determine the area of black or white on a panel compared to those who are low in the ability. Contrast sensitivity is an artificial ability, created for use in expectation states research. Because the concept of contrast sensitivity was created for use in the laboratory, participants are less likely to associate the ability, or related task, with other abilities they may or may not possess, minimizing the risk of introducing prior expectations into the experimental situation.

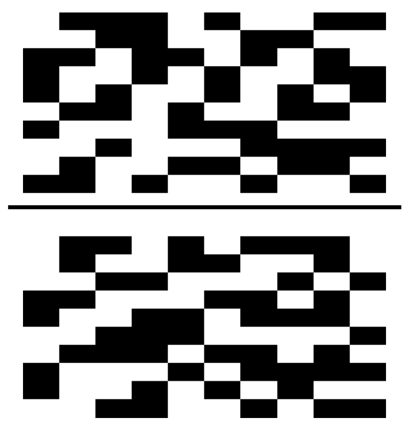

Figure 4: A Contrast Sensitivity Slide Showing Two Panels

Using contrast sensitivity also allows for the creation of tasks with ambiguous solutions. It is important that none of the critical trials have solutions which appear clearly correct or incorrect. If a series of slides has clear solutions, then participants will be more likely to select the slide which is apparently correct. If participants are asked to select the panel with more white area and one panel clearly contains more white area, then participants will be more likely to select that panel. If they experience disagreement after their selection they will be more resistant to influence. Clear choices presented to the participant during the task undermine the use of stay responses as a measure of influence resistance. Also, if the participant experiences disagreement after a clear choice, the risk of the participant becoming suspicious increases, which means that a series of clear choices risks introducing scope condition violations into the experiment. For this experiment, the contrast sensitivity task required participants to examine two panels on a slide and determine which of the two has more white rectangles. The slides used in the experiment were tested to ensure that there was no response preference for the top or bottom panel (Moore 1965).

4.2.2 The Experiment Protocol

The experiment involved two conditions. In both conditions, research participants were told that they were working with two partners to complete two different sets of contrast sensitivity problems. In each condition, participants interacted with partners who were differentiated across two status characteristics, age and education. Although participants were told that they were interacting with partners over a computer network, in reality there were no actual partners. The information and responses shown to the participant were controlled by the computer and determined by the condition to which the participant was assigned.

Participants in condition 1 first interacted with a partner who possessed two relatively high states of the diffuse status characteristics, then with a partner who possessed two relatively low states of the same diffuse characteristics. For condition two, participants first interacted with a partner possessing low states of the diffuse characteristics, then with a partner possessing high states of the characteristics. For each situation in each condition, the participant was given a set of 14 contrast sensitivity problems, 2 of the problems were agreements, and 12 were critical trials. The protocol is described in more detail below.

4.2.2.1 Task and ability introduction

At the beginning of the session, participants were randomly assigned to either condition one or two. As participants arrived, they were greeted by a research assistant and seated individually in rooms which were isolated from the rest of the laboratory. Once seated in the room, participants were provided with a consent form to read and sign[1]. The research assistant left the room while the participant read the form. After a few minutes the research assistant reentered the room to collect the form. Once the form was collected and any questions the participant had about the experiment were answered, the research assistant informed the participant that they would be shown photos of their partners and asked to take a photo of the participant. In reality, the photos viewed by each participant were determined by the condition the participant was in. Taking a photo of the participant was done to make the situation seem more plausible.

[1] A copy of the consent form is available in appendix A

Expectation states were manipulated using the status characteristics of age and education. Race and gender also meet the definition of a diffuse status characteristic, so to hold these characteristics constant, participants were shown photos of partners who matched them in both race and gender, as assessed by the research assistant. After the photo was captured, the research assistant gave a *Contrast Sensitivity Team Information Form*[2] to the participant, and informed them that the study would begin shortly. The research assistant then left the room, and the study program was started remotely on the participant's computer.

Once the program was started, the computer prompted the participant to input their age and education level. After the demographic information was collected, the computer played a video in which a proctor introduced himself as Dr. Gordon and delivered instructions to the participant. Dr. Gordon informed the participant that they were part of a research program investigating a newly discovered ability known as contrast sensitivity. He explained contrast sensitivity to the participant, along with the task of selecting a pattern from a choice of two patterns. For this study, participants were told that they needed to select from two panels, the panel with the most amount of white area. To emphasize the relationship between the task and ability, Dr. Gordon also told the participant that those with high contrast sensitivity ability typically score higher on this type of task than those with low contrast sensitivity ability. To reinforce the idea that contrast sensitivity was a real ability and that possessing different levels of the ability will

---

[2] A copy of the form is available in appendix B.

influence the outcome of the contrast sensitivity task, Dr. Gordon told participants that merely guessing at the task was likely to result in a low score. To disassociate contrast sensitivity from other abilities, he told participants that other common abilities, including reading, writing, and mathematics skills, are not related to contrast sensitivity and that math and reading abilities have been poor predictors of prior participants' scores[3].

Dr. Gordon informed participants that the study they were in was designed investigate how teams composed of different kinds people work together on contrast sensitivity problems. He told participants that they would be placed into two different teams, with each team consisting of themselves and one other person who differs from them by both age and education. Dr. Gordon told participants that the goal of their team was to score as many points as possible while working on a series of twelve contrast sensitivity problems. Dr. Gordon then explained the decision making sequence to participants. To emphasize the collective nature of the task, he told participants that their initial choices were used to communicate beliefs about correct answers between themselves and their partner. Dr. Gordon also told participants that only final choices would count towards the team's score and that they should not hesitate to change their answers if they thought their initial choice was wrong.

4.2.2.2 Phase I- working with a partner

Before beginning the team portion of Phase 1, the computer displayed a screen which appeared to connect the participant to a partner. The computer then showed a

---

[3] A copy of the instruction script is available in the appendix C.

screen which displayed an image of their partner (figure 6) along with information about their partner's age and education level. Each participant interacted with a high and low status partner. The high status partner was shown as a 29 year old PhD candidate of the appropriate race and gender. The low status partner was shown as a 14 year old 8th grade student of the appropriate race and gender. Participants were asked to record the age and education level of each partner on the *Contrast Sensitivity Team Information Form*, along with a team number which was displayed to make the paring seem more plausible.

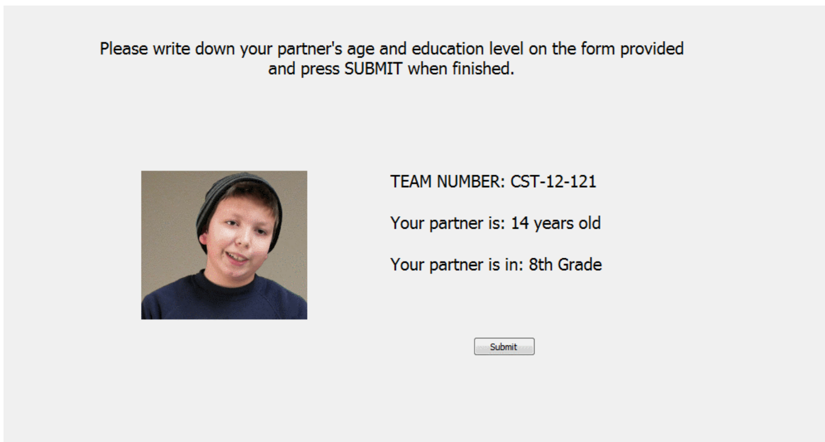

Figure 5: Partner information screen

After the participant finished recording information about their partner, the task began. At the start of each trial in the task, the computer displayed a screen directing them to make an INITIAL choice about the slide. Then, the screen displayed two panels, each of which contained a number of black and white rectangles. Once the panels appeared on screen, a timer (not visible to the participant) began. The participant indicated their initial choice by clicking on the panel which they thought contained more white squares. As soon as they clicked on their choice, the timer was stopped, the elapsed time and panel choice were recorded. If the participant did not make an initial choice after 5 seconds, then an audio prompt was played to indicate time was running out. If after 4 more seconds the participant had still not made an initial choice, an image was displayed informing the participant that they had run out of time and that their responses were not recorded for that trial.

Once the participant made an initial choice, a screen was displayed directing the participant to make a FINAL choice about the slide. Then the program presented the same two panels, with arrows indicating the participant's choice, and their partner's choice for the slide (figure 7). For the 12 critical trials, the arrows indicated disagreement between the participant and their partner. As soon as the panels reappeared on screen, a timer was started. As in the initial choice period of the trial, the participant had 9 seconds to make a choice, with an audio prompt played at 5 seconds. Once again, as soon as the participant made a choice, the timer was stopped and the elapsed time and panel choice were recorded. As in the initial choice period, if the participant exhausted their allotted time without making a final choice, a screen was displayed informing them that their responses were not recorded for that trial. Once time had expired, or the participant submitted a final choice, the program moved on to the next trial. The agreement slides for the first phase were slides 3 and 9. All other slides were critical trials.

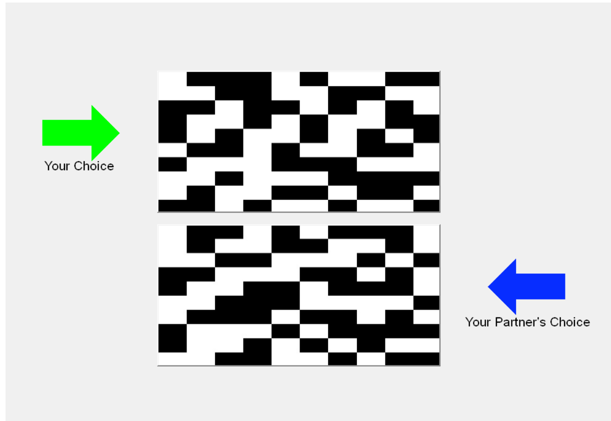

Figure 6: A panel indicated participant and partner choices

Once the participant completed the task, Dr. Gordon reappeared to explain that they would complete a survey[4] asking them questions about their experiences with their first team. Once the survey was completed the program showed another video which explained that the participant would work with a new partner on the same task.

4.2.2.3 Phase II – working with another partner

After the video introducing phase two of the task, the program displayed a screen which appeared to search for a new partner. As in the first phase, the program then displayed a screen with a photo of the participant's partner, along with information about their age and education level. The participant was asked again to record this information on the Contrast Sensitivity Team Information Form. Once the participant finished recording the information, the task began.

[4] Survey questions are available in appendix D.

The task in phase 2 was exactly like the task in phase 1, though different panels were displayed for each phase. For phase 2, trials 3 and 6 were agreement trials. At the end of the trials, Dr. Gordon appeared once again to explain that the participant would complete another survey about their experiences with their second team. This survey is identical to the survey completed in phase 1. After the survey was finished, a research assistant entered the room to conduct an exit interview.

4.2.2.4 Exit interview.

After the survey at the end of phase 2, a research assistant conducted an exit interview with each participant to assess the experimental session. The exit interviews were conducted in order to determine if the scope conditions of the theory held for the duration of the experimental session, and to see if any problems emerged during the session[5].

[5] A copy of the interview schedule is available in the appendix E.

Chapter 5: Results

Chapter 4 described an experiment designed to test the strict dependence argument. In this chapter, I report the results of the experiment. The experiment was run at the UNC Charlotte Group Processes Laboratory. Below, I describe the sample drawn for the experiment, then present and discuss the results.

5.1 SAMPLING

For the experiment I drew a convenience sample from the UNC Charlotte undergraduate student body. The sampling frame was the undergraduate class catalogue. I selected classes with more than 50 students for recruitment attempts. Although a convenience sample was drawn, introductory classes from a wide variety of departments and programs were selected for recruitment. I recruited participants by delivering recruitment pitches at the start of their class sessions[6]. The recruitment pitch was designed to support another experiment which was running in the same lab. That experiment contained an incentive condition, so participants were told they could earn *up to* 25 dollars during the recruitment period, though all participants were paid the full 25 dollars. The alternate experiment also had restrictions which limited the sample to individuals who had healthy hearing, so the pitch included language which informed students that they could not participate if they had ever been diagnosed with hearing loss.

At the end of the pitch, students were given a card with the web address of the laboratory's scheduling service. Students interested in participating scheduled themselves

[6] A copy of the recruitment script is available in the appendix F.

for a session at the scheduling service. Students who signed up were sent a reminder email and text message (if they provided a phone number) prior to their session time.

5.2 PARTICIPANT EXCLUSIONS

To facilitate analysis, I separate exclusions into operational and scope exclusions. Operational exclusions were made because of limitations of the experimental setting, or unforeseen events, like equipment failure or other technical problems. Scope exclusions were made because the scope conditions of the theory were not maintained throughout the experimental session. In total, 76 individuals volunteered to participate in the experiment. Because the experiment held the race and gender of the team constant, only participants who could be paired with a partner matching their race and gender were run. For the experiment, I prepared male and female versions of photos representing African American and white partners. If the participant did not fall into either of these groups, they were not run. Of the 76 participants, 13 were visible members of a non-African American minority group, and were not run through the experiment, leaving 63 participants in the initial sample.

5.2.1 Operational Exclusions

Table 2 shows the total number of participants and exclusions. Three participants were mistakenly paired with a partner who did not match them in terms of race or gender and were excluded.

Table 2: Participant Exclusions

Total Participants	63	
Excluded for operational reasons	13	20.6%
Partner mismatch	3	4.8%
Age	1	1.6%
Children are better at task	8	12.7%
Previous experimental experience	1	1.6%
		34.2%
Excluded for scope condition violations	5	7.9%
Collective Orientation	2	3.2%
Task Orientation	1	1.6%
Prior Expectations	1	1.6%
Suspicion	1	1.6%
Total Exclusion Rate		28.6%
Total Analyzed	45	71.4%

Eight participants were excluded because they reported a belief that the contrast sensitivity ability was greater in children than adults. The experiment was designed with the assumptions that age was a diffuse status characteristic, and that older individuals would be more positively evaluated. If an actor believes that younger individuals possess more contrast sensitivity ability, then they are not treating age as a diffuse status characteristic, as defined in the experimental design. Because my hypotheses are not concerned with the status value of age *per se*, I excluded these eight participants from analysis. About 12% of all participants reported a belief that younger participants possessed more ability. The relatively high rate at which this belief was reported suggests an operational problem with the experimental design. I discuss this issue in more detail chapter 7.

Finally there were two other operational exclusions. One participant was excluded because of their age. The high status partner was shown as a 29 year old PhD student, so participants needed to be young enough for a difference in age to exist between them and their partners. The participant who was excluded reported their age as 35; six years older than the high status partner. One participant was excluded because she had participated in an expectation states experiment the previous year, and recalled the deception used in that experiment.

5.2.2 Scope Condition Exclusions

Status characteristics theory applies to situations where individuals are collectively oriented and task focused so experimental tests of the theory must create situations where participants are collectively oriented and task focused. The theory argues that expectation states influence the formation of power and prestige orders, so experimental tests of the theory must also ensure that participants do not enter the situation with previously formed expectations. Collective orientation, task orientation and prior expectations were assessed for each participant using the survey data and exit interviews collected during the experimental protocol.

Scope exclusions run the risk of introducing bias into the experiment because the decision to exclude a participant is ultimately made by a researcher. To avoid bias, the criteria for exclusions should be clearly understood prior to conducting the experiment.

For this experiment, I excluded participants if their interview and survey data indicated a violation of the theory's scope conditions *and* it was clear that the violation changed the behavior of the participant. Using these criteria, a participant who merely reports being uninterested in their partner's responses would not be excluded, while a participant who reports disinterest and states that they completely ignored their partner during the interaction would be excluded. This approach increases the chance that any bias introduced into the experimental analysis will be against the theory's predictions, instead of favoring it.

Five participants in total were excluded for scope condition violations. One participant was excluded for a loss of collective orientation. This participant reported a lack of concern for their partner's input, and stated that they completely ignored it. One participant was excluded for prior expectations. This participant reported that her background in art gave her a higher contrast sensitivity ability compared to her partners. One participant was excluded for task focus. This participant reported that they were just clicking through the experiment to get through it as quickly as possible. Finally, two participants were excluded for suspicion. Both of these participants precisely articulated the deception (there was no real partner, and the partner's responses were manipulated). I report these two exclusions as scope exclusions because the strong suspicion reported by both participants certainly induced a loss of collective orientation.

About 8% of the participants were excluded for scope condition violations, and about 20% of participants were excluded for operational reasons for a total exclusion rate of about 28%. The largest source of exclusions was the belief that children were better at the task. About 13% of participants were excluded because they believed that children were better at contrast sensitivity. After all exclusions, there were 45 participants remaining for analysis. I report descriptive statistics for this group of participants below.

5.3 DESCRIPTIVE STATISTICS

Table 3 shows the descriptive statistics for the final sample. In condition one, participants started by interacting with a younger, less educated partner, then interacted with an older, more educated partner. In condition two participants started by interacting with an older, more educated partner, then interacted with a younger, less educated partner. For condition one, there were 21 participants. The mean age for condition one was 19. 10 participants were women, and 4 participants were African American. For condition two, there were 24 participants. The mean age for condition two was 19. 14 participants were women and 11 participants were African American. A t test (t=-2.50 p=.618) shows that the mean age between the two groups is not significantly different. χ^2 proportion testing shows that there is not a significant difference in the proportion of women for each condition (χ^2 = .44, p = .51). Testing did show a significant difference in the proportion of African Americans in each condition (χ^2 = 5.139, p = .02). This difference is not likely to bias results however, because the experiment employs a within-subjects design and because race is held constant for each subject.

Table 3: Descriptive statistics

Total participants	45
Mean Age(SD)	19 (1.44)
Women (%)	24 (53.3)
Minority group member (%)	15 (33.3)
Condition 1	21
Mean Age	19 (1.58)
Women (%)	10 (48)
Minority group member (%)	4 (19)
Condition 2	24
Mean Age	19 (1.33)
Women (%)	14 (58)
Minority group member (%)	11 (52)
T test for age (p value)	-2.50(.618)
χ^2 Woman (p)	0.44 (.51)
χ^2Minority Group member (p)	**5.139 (.02)**

5.4 RESULTS

The strict dependence argument predicts that task cue production will change when expectation states change. For this experiment, response latency was defined as the time between the participant seeing a slide and the submission of their choice for that slide. This means that that there are two measurements of response latency for each critical trial, an initial-choice latency and a final-choice latency. I report both initial and final response latencies below.

The ordered predictions for response latency are:

- Condition 1, Phase I < Condition 2, Phase I
- Condition 1, Phase I < Condition 1, Phase II

- Condition 2, Phase I > Condition 2, Phase II

Because responses in phase II are not independent of responses in phase I, I do not test an ordered prediction for conditions 1 and 2 in phase II.

Tables 4 and 5 presents the observed response latencies for the experiment. For initial response latency, there is a decrease in both conditions as participants move from condition 1 to condition 2.

Table 4: Initial Latency

Condition	Phase I	Phase II
C1: H->L	3.14	3.07
C2: L->H	3.85	3.37

Table 5: Final Latency

Condition	Phase I	Phase II
C1: H->L	3.60	2.91
C2: L->H	3.59	2.76

Concerning the strict dependence argument, this ordering is correct for condition 2, but incorrect for condition 1. We should expect to see an increase in response latency as participants move from high to low status. Paired sample t tests, shown in tables 6-8, reveal that the difference for condition 1 is not significant, ($t = .57$, $p = .71$). The difference for condition 2 is significant ($t = 2.10$, $p = .02$).

For final response latency, again, there is a decrease in latency for both conditions from phase I to II. This ordering is correct for condition 2 but not for condition 1. Paired sample t tests for condition 1 are not significant. For condition 1 ($t = 3.15$, $p \approx 1.00$), the response latency change is in the wrong direction. i.e., participants in condition 1 make final decisions faster in phase II than in phase I. For condition 2 the results are significant (t = 3.5, p = .001). Thus, we see a decrease in response latency when participants move from high status positions to low status positions, but only for those individuals who started out in low status positions. This finding holds for both initial and final responses.

Table 6: Initial latency Differences Within Conditions

	Prediction	Mean Diff(SE)	t	p	df
Cond 1	PI < PII	0.07(0.13)	0.57	0.71	20
Cond 2	PI > PII	0.47(0.23)	2.1	0.02	23

One Tailed, Paired Sample t test

Table 7: Final Latency Differences Within Conditions

	Prediction	Mean Diff(SE)	t	p	df
Cond 1	PI < PII	0.62(0.20)	3.15	1	20
Cond 2	PI > PII	0.86(0.23)	3.5	0.001	23

One Tailed, Paired Sample t test

Table 8: Latency Differences Across Conditions

	Prediction	Mean Diff(SE)	t	p	Welch's df
Initial	C1 < C2	-0.70(0.39)	-1.80	0.04	44.863
Final	C1 < C2	-0.08(0.46)	-0.17	0.43	44.995

One Tailed t test (unequal variance)

The strict dependence argument also makes an ordered prediction for the first phase of the experiment. The response latency for condition 1 should be lower than the response latency for condition 2. A t test (table 7) shows that for initial latency, there is a difference for response latency in phase I (t = -1.8, p = .04). However there is no difference in final latency for this phase (t = -.17, p = .43).

5.5 DISCUSSION

The results do not show clear support for the strict dependence argument. The first hypothesis made by the strict dependence argument was:

H_1: Once an actor has formed performance expectations for themselves and other group members, that actor will produce task cues consistent with the expectation difference between themselves and the other they are interacting with.

This hypothesis was tested by comparing the mean response latency from condition 1, phase I to condition 2, phase II. For initial latencies, we observe a significant difference between conditions 1 and 2. That difference is in the predicted direction, i.e., condition 1 latencies are lower than condition 2 latencies. However, we do not see significant differences for the final latencies in condition 1. Conner (1977) and Ridgeway et al. (1985) found differences in response latency for their experiments. However, as discussed in chapter 2, in both of these experiments task cue behavior was directly related to task outcomes. In my experiment, task cue behavior was not directly related to task outcomes. While the differences in experimental designs prevent a direct comparison of results, I will note that by removing the direct relationship between task cue behavior and task outcomes, the resulting behaviors of participants are changed.

The difference I observed between initial latencies and final latencies could be due to some factor which mediates the relationship between expectations and task cue behavior. By directly connecting task cue behavior to task outcomes, it is not possible to identify mediating factors. As an example, response latency could be a function of certainty, which is in turn influenced by performance expectations. If this were the case, performance expectations would generate certainty about task choices. If there is no way for a participant to compare their decision to other group members, as was the case in the initial choice phase of my experiment, then we should expect higher latencies from those less certain about their task choices. Once a comparison is possible, however, certainty should increase for participants with low performance expectations, (they should be certain that their initial choice is probably wrong) which would cause a corresponding change in behavior.

While my experiment does not represent an independent test of this or any other hypothesized mediating relationship, failure to find a direct relationship between performance expectations and task cue production does introduce doubt about the strict dependence argument. It could be the case that some mediator exists between expectations and task cue production which has not been identified. Future research should be oriented towards identifying and testing potential mediators. It may also be the case that my results were caused by an operational problem with my experimental design. I explore this possibility in more detail in chapter 6.

Turning to the second hypothesis generated from the strict dependence argument, I examine the observed latencies from phase I to phase II of the experiment. The second hypothesis was:

H_2: If the performance expectations of an actor change, the task cues which they produce will change to remain consistent with their relative performance expectations.

This hypothesis predicts an increase in response latency in condition 1 as participants move from phase I to phase II, and a decrease in response latency in condition 2 as participants move from phase I to phase II. The results show that both initial and final latency decreased from phase I to phase II for both conditions. For initial latency, the ordering is wrong for condition 1, though not significant. The ordering is correct and significant for condition 2, but because the overall trend is a decrease in latency from phase I to phase II, this significant finding does not, in itself, support the strict dependence argument. For final latencies, we observe a greater difference between phase I and phase II for both conditions, again the ordering is wrong for condition I. The ordering is correct and significant for condition 2, but once again, the decrease in latency for condition 2 is consistent with an overall decrease in latency. Examining the totality of evidence, I do not find support for the H_2. H_2 makes ordered predictions which were not observed across the conditions and phases.

Overall, I do not find support for the strict dependence argument. However, before drawing a strong conclusion it is important to examine the possibility of operational problems introduced by the experimental design. In chapter 6, I explore potential problems and look at how they may have impacted the results obtained by my experiment.

Chapter 6: Supplemental Analysis

In this chapter, I examine potential problems with the experimental design and operation described in chapter 4. I explore three important areas, the experiment's ability to instantiate scope conditions, the number of critical trials used in the experiment, and the strength of performance expectations formed by the experiment. Before examining potential problems however, it is useful to examine the measure of influence collected during the experiment. P(s) values can be used as an indication of how expectations were formed in the experimental sample, which may help illuminate any problems with the study's design.

This experiment consisted of two conditions, each of which had two phases. The observed p(s) values for each phase are reported in table 8. The first row of the table shows condition 1, where participants started in a high status position and moved to a low status position. The second row shows condition 2, where participants started in a low status position and moved to a high status position.

Table 9: Observed P(s)

C1: H->L	0.59	0.57
C2: L->H	0.56	0.63

The results show that the resistance to influence does not change much from cell to cell. For condition 1, the mean p(s) is .59, when participants enter the second phase of the experiment, the mean p(s) drops to .57. The change is larger in condition 2. Condition

2 participants start with a mean p(s) of .56, which increases to .63 for the second phase. T tests confirm that the difference between each cell is not significant. Table 9 shows the t tests. For the tests which compare the means of phase I and II in each condition, a paired sample t test was used, because these data were collected from the same participants. The tests which compare means across conditions are two sample t tests. The lack of a significant difference between each cell suggests that expectations were not formed in the way intended by the experimental design. All tests were one tailed tests.

Table 10: T tests for p(s)

	Prediction	Mean Diff(SE)	t	p	df
Phase I	C1>C2	0.02(0.05)	0.33	0.373	20
Phase II	C1<C2	-0.06(0.04)	-1.69	0.052	23
Condition 1	PI>PII	0.02(0.05)	0.4	0.3346	43.47
Condition 2	PI<PII	-0.06(0.05)	1.08	0.14	40.66

t tests = 1 tail

6.1 FAILURE TO MAINTAIN SCOPE CONDITIONS

The experimental protocol may have failed to create a situation which met the scope conditions of the theory. In other words, the experimental protocol may have failed to create a sample of participants which was sufficiently collectively oriented and task focused. The exclusion rate for scope condition violations was 7.9%, but this included 2 participants who were suspicious. Two suspicious participants both reported knowing another person who participated in the study and both registered to participate during the same week. This suggests a contamination issue, which was not a direct result of the experimental design. Ignoring the two suspicion exclusions, 4.7% of the sample was excluded for scope condition violations, a relatively low rate of exclusion. Looking at the remaining scope exclusions, there exists no discernible pattern of exclusion. If the protocol were introducing a scope condition problem, we should expect to see high rates of scope exclusions, and a clear pattern of scope violations. If, for example, the protocol created a situation where the participants were not task-focused, we should expect to see more exclusions for task focus than other types of problems.

Beyond looking at exclusion rates, scope conditions can be assessed through survey responses, as well as the form filled out by participants during the experiment. A rough test of task focus is to look at the rate at which participants incorrectly filled out the *Contrast Sensitivity Team Information Form.* General errors in the form could indicate the participant is not paying close enough attention to the experiment's instructions, which indicates a lack of task focus. However, only one participant made an entry error on the form. This participant listed their own education level as 12^{th} grade, likely missing the portion of the instructions which ask participants to record their in-progress degree, if they were working towards a degree. This participant recorded all other information on the form correctly. Every other participant in the study filled the form out correctly, noting the proper age and education level of both partners, correctly annotating their own age and education level, and transcribing the correct *Team Identification Numbers* for both phases of the task. This suggests that all participants were focused on the task well enough to at least process information about their partner at the beginning of each phase.

Surveys from both phases contained a question which asked participants how important getting the correct answer was to them. This question can also be used to assess task focus. Table 11 shows the mean and modal response for this question. The question responses are on a rating scale, coded from 1 to 7. A response of 1 indicates that the participant thinks getting the correct answer is “Extremely Important”, while a response of 7 indicates that the participant thinks getting the correct answer is “Extremely Unimportant”. 4 is a neutral response of “neither important nor unimportant”. High scores on this survey item would indicate a lack of task focus. The modal response to this question for every cell indicates that participants thought getting the correct answer was important. The highest modal response was observed in condition 1, phase II. Here most participants rated getting the correct answer as “somewhat important.” For all other cells, the modal response is “very important”. The low scores on this question suggest that participants were suitably task focused. Overall, I can find no strong evidence that the experiment created a problem with task focus.

Table 11: Importance of getting correct answer

	Phase I	Phase II
Mean		
C1: H->L	2.76	2.43
C2: L->H	2.25	2.46
Mode		
C1: H->L	2	3
C2: L->H	2	2

Responses to survey questions can also be used to assess the degree of collective orientation present in the sample. There were four survey items which could be relevant to the question of collective orientation. The first two questions are related to the importance of initial choices. The survey asked participants to first rate how important they thought their own initial choices were when making a final choice, then how important they thought their partner's initial choices were. For both of these questions, responses were coded from 1 to 7 with a response of 1 indicating that the initial choice was "Extremely Important", a response of 7 indicating that the initial choice was "Extremely Unimportant", and a response of 4 being neutral, indicating that the initial choice was "neither important nor unimportant." To develop a scale of collective orientation, I reverse coded both questions and subtracted the question about the importance of the partner's initial choice from the question about the importance of the participant's initial choice. The degree of importance placed on the initial choices of a partner should vary with the expectations a participant has formed for that partner. However, a collectively oriented partner should place some importance on their partner's initial choices. Thus, high scores on this scale would indicate a lack of collective orientation. Table 12 shows the mean and modal scores on this scale. The modal response for each cell is low, for every cell except condition 1 phase I, the response is 0, suggesting that participants place about the same degree of importance on their own initial choices as they do on their partner's initial choices. For condition 1 phase I, the modal response is -1, suggesting that these participants placed slightly more importance on their partner's initial choice than they did on their own.

Table 12: P-O Importance of Initial Choices

	Phase I	Phase II
Mean		
C1: H->L	-0.52	0.29
C2: L->H	0.58	0.79
Mode		
C1: H->L	-1	0
C2: L->H	0	0

The second set of survey questions is related to the importance participants placed on sticking to their own choice. The survey first asked participants how important they thought it was to stick to their own choice, then how important they thought it was to change their response to agree with their partner. Both of these questions were coded in the same way as above, with 1 representing a response of "Extremely Important." To assess collective orientation, I reverse coded both of these questions and subtracted the question about agreeing with the partner from the question about sticking to the initial choice. If participants were not collectively oriented, we should expect to see high overall scores on this scale. Table 13 shows the scores for this scale. The modal response for each cell is 0, suggesting that participants place sticking to their own choice and agreeing with their partner at about the same level of importance. Both sets of questions indicate that participants weight their partner's contributions at about the same level as their own, suggesting a sample which is generally collectively oriented.

Table 13: P-O Stick to own Choice

	Phase I	Phase II
Mean		
C1: H->L	0.67	0.48
C2: L->H	0.13	0.33
Mode		
C1: H->L	0	0
C2: L->H	0	0

Survey responses are an imperfect way to measure collective orientation and task focus. Survey methodology suffers from the social desirability effect, which means that responses about other people tend to be normative. Because participants might respond to survey questions in ways which avoid the appearance of rudeness, survey responses by themselves should not be considered as strong evidence that participants are sufficiently collectively oriented or task focused. However, the totality of available evidence does not point towards scope condition violations as an explanation for the low differences in the observed p(s) scores. To summarize, I find that

- The overall exclusion rate for scope violations is low
- There is no discernible pattern in scope condition exclusions
- The error rate for the *Contrast Sensitivity Team Information Form* is negligible
- Survey items used to assess collective orientation and task focus do not indicate any problem with scope condition violations

Although I cannot eliminate the possibility of a scope condition problem, the available evidence does not support the conclusion that the experiment failed to create a situation where participants were collectively oriented and task focused.

6.2 INADEQUATE CRITICAL TRIALS

Another potential problem, which may explain the lack of difference in p(s) responses is that there were not enough critical trials in each phase to allow for stable measures of p(s). For each phase there were 14 trials, 12 of which were critical trials. Many researchers use 20 critical trials to ensure a stable measure of p(s) (Berger 2014). I elected to use a lower number because of concerns with boredom lowering task focus. 20 critical trials in each phase would have required more than 40 trials overall. A large number of trials combined with multiple instruction sets which are, by design, repetitive creates a situation which is very likely to cause boredom in many participants. Lowering the number of critical trials lowers the chance of boredom systematically affecting the results of the experiment. However, using fewer critical trials introduces the risk that the experimental session will end before stable measures of p(s) are captured.

Table 14: p(s) Values for Final Three Slides in Each Condition.

	Phase I			Phase II		
	S12	S13	S14	S12	S13	S14
C1	0.57	0.60	0.62	0.33	0.62	0.52
C2	0.67	0.63	0.54	0.54	0.75	0.58

One way of assessing the stability of responses is to examine the p(s) for the final three slides in each phase. Table 13 shows the p(s) values for the final slides. For phase I, there is a clear trend for both conditions. The p(s) scores are increasing for condition 1 while they are steadily decreasing for condition 2. These trends follow the predicted ordering for each condition. That is, condition 1 is designed to form a positive expectation advantage and the trend in p(s) is positive. Condition 2 is designed to form a negative expectation advantage and the trend in p(s) is negative. The change in p(s) scores for the final three slides of phase I suggests that the behavior of the participants had not stabilized. For phase II, behavior is more erratic. In both conditions, the observed p(s) is low on the 12th slide, spiked on the 13th slide and drops down for the final slide. The overall trend for both conditions in phase II is positive. The erratic behavior in the last three slides for phase II suggests that the behavior of participants had not completely stabilized.

I also examined the changes to the variance of stay response rates for each slide. Figure 9 shows the trends in stay response rate variance. Slides are clustered together in groups of three. For phase I, the variance of both conditions is stable until the third set of slides (8, 10, and 11). For condition 1, the variance increases at the third set of slides before dropping. For condition 2, the variance drops at the third set of slides before returning to its earlier levels. The variance in phase II is far more erratic, with condition 1 showing the most disturbance. Overall, the changes in variance show that behavior had not completely stabilized. Taken together, the changes in variance over both phases and the p(s) responses for the last three slides of both phases suggests that there were too few critical trials to gain a stable measure of behavior.

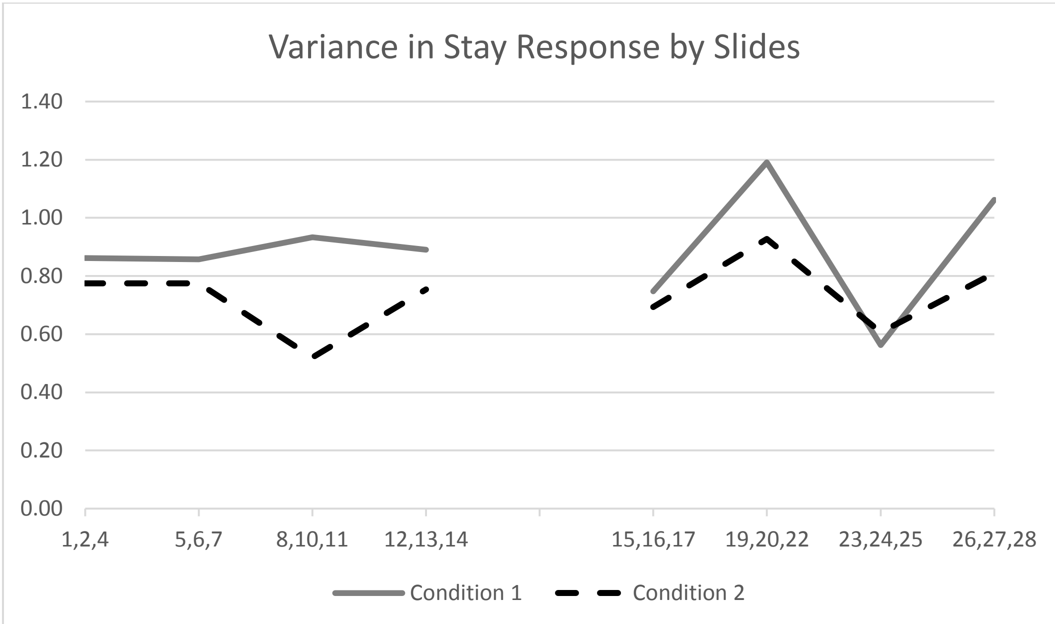

Figure 7: Variance in Stay Response by Slides

6.3 FAILURE TO CREATE STRONG EXPECTATION STATES

Another potential problem is that the status characteristics which were used to manipulate participant expectations did not function the way the experimental design assumed they would. For this experiment, the diffuse characteristics of age and education were used. For each characteristic, the experiment relied on the assumption that higher states of age and education were associated with higher generalized expectation states. If this was not the case, then the experiment would not have created expectations in the assumed directions. In the exclusion section I noted that about 12 percent of all participants reported a belief that younger participants possessed more ability. 12% of the sample reporting an explicit association with younger states of age to higher states of ability suggests that age was not instantiated as a status characteristic the way the experimental design assumed it would be. To assess the effect of age as a status characteristic, I constructed a series of theoretical models which included and excluded age. Table 14 shows these models.

Table 15: Theoretical Models Predicting p(s)

Phase I Models	m	q	C1: Ep-Eo	C2: Ep-Eo	χ^2	p	G^2
Education Only	0.58	0.03	0.366	-0.366	0.07	0.97	0.91
Education and Age	0.58	0.02	0.664	-0.664	0.07	0.97	0.91
Phase II Models							
Education Only	0.59	0.07	-0.183	0.183	2.75	0.25	0.51
Education and Age	0.59	0.04	-0.332	0.332	2.75	0.25	0.51

n = 45, df = 2

P(s) is predicted using the following equation:

$$p(s) = m + q(e_p - e_o) \tag{7}$$

The parameters m and q are estimated from the data. The baseline tendency of a population to resist influence is represented by m, and experimental effects are represented by q. (e_p – e_o) represents the expectation advantage of the focal actor, and is derived from theoretical models (Berger et al. 1977). Because this experiment involves running participants through two phases, responses in phase II are not independent of responses in phase I. Accordingly, I modify the p(s) equation for all phase II models to account for the observed p(s) responses from phase I:

$$p(s) = m + q(e_p - e_o) + u_i \tag{8}$$

Here, $(e_p - e_o)$ represents the expectation advantage for an actor in a given phase and condition, and can take on four values (2 conditions x 2 phases), while m and q have not changed. Estimating u_i allows the intercept for each participant to vary randomly, which accounts for the fact that phase II and phase I observations are nested within individuals and not independent of one another.

If age is functioning as a status characteristic in the assumed direction, then models which include age should fit the data better than models which do not. Additionally, we should see an increase in the value of q for models including age, because the effect of the expectation advantage on p(s) would necessarily be greater for models which more accurately describe the data. Alternatively, if age is not functioning as a status characteristic in the assumed direction, then we should expect models which ignore its effect to have higher q values and fit the data better. Table 14 shows that the models which ignore age do have higher q values than those which include age. For phase I, adding age lowers the q value from 0.03 to 0.02. For Phase II, adding age lowers the value of q from .07 to .04.

Turning to the fit of each model, I find that including age has no effect on model fit. Fit is assessed as G^2, the proportional reduction in the value of χ^2. I compare each theoretical model to a simple model which uses only m to predict p(s). Comparing similar models, there is no substantive change when age is added.

There are three lines of evidence which suggest that age was not functioning as a status characteristic in the manner required for the experiment:

1. About 12% of all research participants reported an explicit association between lower states of age and higher states of contrast sensitivity ability.
2. The values of q for models which ignore the effects of age are greater than the values of q for models which incorporate the effects of age.
3. Including the effects of age does not substantively improve the fit of any model.

Taking into consideration these three facts, I conclude that age did not function as a status characteristic in the direction assumed by the experiment.

If age did not function as a status characteristic in the assumed direction, then status differences between participants and their partners were much weaker than I intended them to be. With the absence of a consistent effect from age, the status difference between participants and their partners was due to a single diffuse characteristic, education. If only one diffuse characteristic was consistently salient in the situation, then the resulting expectation advantage would be weak. The observed p(s) for each cell of the experiment is consistent with a situation where small expectation advantages have been created. Returning to the observed p(s) values in table 8, there are numerical, though non-significant, differences between each cell. The differences in each cell are directionally consistent with the intended expectation state differences. For condition 1, participants start as the high status actor and end as the low status actor. The observed p(s) for condition 1 shows a decrease in resistance to influence as participants move from phase I (0.59) to phase II (0.57). For condition 2, the situation is reversed, and the observed p(s) increases as participants move from phase I (0.56) to phase II (.63). There are also differences across conditions. In phase I, the observed p(s) is higher for condition 1 (0.59) than condition 2 (0.56). In phase II the observed p(s) is higher in condition 2 (0.63) than condition 1 (0.56). Although these data are not significant, it is likely that the sample size was not large enough to detect the differences in p(s) caused by a weak expectation state difference. Indeed, a power analysis shows that for an effect size of .17 (the differences in observed p(s) in phase I divided by the pooled standard deviation), there is a 91% chance of getting a type II error for the sample size of this experiment.

Chapter 7: Conclusion

Overall, I find little support for the argument that task cue production is strictly dependent on expectation states. For actors who begin a series of interactions in a low status position and move to a high status position, there is evidence that changes in expectations alter task cue production rates. However, the strict dependence argument does not apply only to actors who start in low-status positions. I find no evidence that task cue production changes with expectation states in those cases where actors begin their interaction as the high-status group member. This inconclusive finding may be because of the relatively weak status differentiation caused by the failure of age to function as the experimental design assumed it would.

I also find that initial latencies are lower for actors who begin in high status positions, compared to actors who begin in low status positions. However, I find no corresponding effect for final latencies. This finding suggests the possibility that some mediating factor exists between performance expectations and response latency.

Future versions of this experiment should be designed to ensure stronger differences in expectations from phase I to phase II. The most reliable method of doing this would be to manipulate expectations in a more direct manner. Providing participants with feedback on their performance during a pretest phase, in which they work on contrast sensitivity tests alone, is a reliable way of manipulating expectations more directly. This experiment would have also benefited from a larger number of critical trials in each phase. The decision to use only 12 critical trials for each phase was motivated from a concern that a large number of trials in two separate phases would induce a loss of task-focus as participants succumbed to boredom. Although a shorter experimental session will likely reduce the problems caused by boredom, the 12 critical trial design introduced questions about the stability of participant behavior and was ultimately not worth the cost of reduced analytical ability inherent to designs with fewer trials. Future versions of this experiment would benefit from longer trials for each phase. Finally, any further investigation of the relationship between performance expectations and task cue production should ensure that task cue behavior is not directly related to task outcomes.

Works Cited

Balkwell, James. 1991. “Status Characteristics and Social Interaction.” *Advances in Group Processes* 135–76.

Berger, Joseph. 2014. “The Standardized Experimental Situation in Expectation States Research.” Pp. 269–90 in *Laboratory Experiments in the Social Sciences*, edited by M. Webster and J. Sell. Waltham, Massachusetts: Elsevier.

Berger, Joseph and Hamit M. Fisek. 2006. “Diffuse Status Characteristics and the Spread of Status Value: A Formal Theory.” *American Journal of Sociology* 111(4):1038–79.

Berger, Joseph, Hamit M. Fisek, Robert Z. Norman, and Morris Zelditch. 1977. *Status Characteristics and Social Interaction*. New York, New York: Elsevier.

Berger, Joseph, Murray Webster, and Cecilia Ridgeway. 1986. “Status Cues, Expectations, and Behavior.” *Advances in Group Processes* 3:1–22.

Conner, Thomas. 1977. “Performance Expectations and the Initiation of Problem Solving Attempts” *Journal of Mathematical Sociology* 5:187-198.

Driskell, James E., Beckett Olmstead, and Eduardo Salas. 1993. “Task Cues, Dominance Cues, and Influence in Task Groups.” *Journal of Applied Psychology* 78(1):51–60.

Fisek, Hamit M., Joseph Berger, and Robert Z. Norman. 1991. “Participation in Heterogeneous and Homogeneous Groups: A Theoretical Integration.” *American Journal of Sociology* 97(1):114–42.

Fisek, Hamit M., Joseph Berger, and Robert Z. Norman. 2005. “Status Cues and the Formation of Expectations.” *Social Science Research* 34:80–102.

Fisek, Hamit M., Robert Z. Norman, and M. Nelson-Kilger. 1992. “Status Characteristics and Expectations States Theory: A Priori Model Parameters and Test.” *Journal of Mathematical Sociology* 16:285–303.

Foddy, Margaret and Phoebe Riches. 2000. “The Impact of Task and Categorical Cues on Social Influence.” *Advances in Group Processes* 17:103–30.

Foschi, Martha and Jerilee Valenzuela. 2007. “Selecting Job Applicants: Effects from Gender, Self-Presentation, and Decision Type.” *Social Science Research* 37:1022–38.

Markovsky, Barry, Le Roy Smith, and Joseph Berger. 1984. "Do Status Interventions Persist?" *American Sociological Review* 49(3):373–82.

Moore, James C. 1965. "Development of the Spatial Judgement Experimental Task." *Stanford University*.

Rashotte, Lisa Slattery and Lynn Smith-Lovin. 1997. "Who Benefits from being bold: The Interactive Effect of Task Cues and Status Characteristics on Influence in Mock Jury Groups." *Advances in Group Processes* 14:235-255.

Ridgeway, Cecilia. 1987. "Nonverbal Behavior, Dominance, and the Basis of Status in Task Groups." *American Sociological Review* 52(5):683–94.

Ridgeway, Cecilia, Joseph Berger, and Le Roy Smith. 1985. "Nonverbal Cues and Status: An Expectation States Approach." *American Journal of Sociology* 90(5):955–78.

Webster, Murray and Lisa S. Rashotte. 2010. "Behavior, Expectations and Status." *Social Forces* 88(3):1021–49.

Webster, Murray and Lisa S. Walker. 2017. "Behavior Patterns, Performance Expectations, Gender, and Task Focus: A Replication and Extension." *Social Psychology Quarterly* 80(2):194–203.

Appendix A: Participant Consent Form

UNC CHARLOTTE

College of Liberal Arts & Sciences
Department of Sociology
9201 University City Boulevard, Charlotte, NC 28223-0001

Consent Form: Decision Making in Teams

Project Purpose

You are invited to participate in a research study, which investigates the effects team settings on decision making.

Investigator(*s*)

Daniel Burrill M.A. candidate, Sociology, UNC at Charlotte
Murray Webster, PhD, Sociology UNC at Charlotte

Eligibility

You are invited to participate in this study if you are between the ages of 18 and 24 and are a current undergraduate student at UNC Charlotte.

Overall Description of Participation

If you volunteer to participate in this study, you will be asked to work on tasks which requires you to answer questions presented on a computer screen. You will work on two sessions of this task with two different partners. You will not meet these people, but you will be given information about their age and education level and see a photo of them. You will also be asked to provide your own age and education level. At the start of the session we will ask to take a photograph of you. This photo will be uploaded to one of our computers and will be visible to your partners during the study. Once you have completed both sessions of the task, you will be asked to complete a short survey which will ask you about your experiences today. After you have finished the survey, we will talk to you a little more about your experiences. When we talk to you, we will ask for your permission to record the conversation. Your permission to record the conversation will be made separately from your agreement to participate in this study. You can participate in this study and then let us know that you do not want your conversation to be recorded. Participation in this study will take approximately 2 hours

Risks and Benefits of Participation

This research has no reasonably foreseeable risks to you. However, the project may involve risks that are not foreseeable. There are no direct benefits to you as a study participant. This study benefits society because it increases our understanding of decision making in team settings.

Compensation/Payment/Incentives
You will be reimbursed $25.00 for your time. If you decide to withdraw your consent, you will be reimbursed an amount prorated by the length of time you have been in the lab.

Volunteer Statement
You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started.

Confidentiality Statement
Any identifiable information collected as part of this study will remain confidential to the extent possible and will only be disclosed with your permission or as required by law. This study will ask you to share your age and your current education level with two other research participants. Although you enter this information into one of our laboratory computers, this information will not be saved as part of the study. You will also be photographed as part of the study. Although this photo will be visible to your partners, it will not be saved. As soon as the session ends, the photo will be deleted.

We will also ask to record a conversation between you and a member of the research team. Because your voice will be potentially identifiable by anyone who hears the digital recording, your confidentiality for things you say on the digital recording cannot be guaranteed. However, we will limit access to the digital recording by storing it on a password protected hard drive. This recording will be used to help us understand your experiences in the study and will not be published or made publicly available in any way, except as required by law.

Statement of Fair Treatment and Respect
UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the Office of Research Compliance at 704-687-1871 or uncc-irb@uncc.edu if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact Dr. Murray Webster (704-687-4079, mawebste@uncc.edu).

Approval Date
This form was approved for use on June 28, 2017 for use for one year.

Consent Statement
I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project. I understand that I will receive a copy of this form after it has been signed by me and the principal investigator of this research study.

_______________________________________ _______________________

Participant Name (PRINT) DATE

____

Participant Signature

_______________________________________ _______________________

Investigator Signature DATE

Appendix B: Team Information Form

Contrast Sensitivity Team Information Form

Session________
Date__/__/____

Contrast Sensitivity Team 1	
Your team's number	
Your age	
Your education level	
Your partner's age	
Your partner's education level	

Contrast Sensitivity Team 2	
Your teams' number	
Your age	
Your education level	
Your partner's age	
Your partner's education level	

Appendix C: Video instructions

Introduction

[Dr. Gordan]

Hello. I am Dr. Philip Gordan and I would like to thank you for joining us today. I am speaking to you from a laboratory control room and I will be your host for today's study. You are about to take part in a study which involves many research teams working from several social science laboratories across UNC Charlotte. We think that you will find this to be an interesting as well as rewarding experience. Right now, you are about to view a recorded video which will explain the study to you. Please pay careful attention to the instructions.

[Video begins: Dr. Gordan]

Hello again. During this instructional video, I will explain the task which you will be working on today. This study is part of a research program studying several basic abilities. Researchers across the nation are studying how these abilities are used in group settings. These abilities are generally *unlike* any of the more usual types of skills or aptitudes. This makes them interesting because it is difficult to predict beforehand how well someone will do at these tasks. Today we will be studying one specific type of ability. I will explain more about the nature of this ability in a few minutes.

Much of our knowledge about these abilities comes from studies of discussion groups. In those studies, researchers observed group members talk face-to-face while working through a problem. Face-to-face discussion groups are quite common in society, but technology has made a new type of group possible. Members of these new groups do not discuss problems face-to-face but instead, communicate using computers. We are interested in studying these kinds of groups and our research team along with many other social scientists are conducting a large number of studies to learn how groups using technology can work as effectively as face-to-face groups. Today, you are participating in one of these studies.

Now I would like to explain to you the task which you will be working on. Within the past few years social scientists have found that individuals *differ* in their ability to perceive contrast between figures or objects. In other words, when some individuals are presented with a set of figures or objects, they can make accurate judgements about *contrast*. For example, some individuals can quickly detect differences between the amount of black and white between two different objects. Other people do not have this ability to the same extent. The ability to make accurate judgements about contrast is called *Contrast Sensitivity* by social scientists. At this time, we do not know exactly why some people have more contrast sensitivity than others. We believe that it may be related to training, background, and possibly to innate capabilities. One of the interesting things we do know is that this ability is not related to specialized skills than an individual might possess. Such as artistic skill, mathematical skill, or grades in classes. There does not appear to be a relationship between those types of skills and contrast sensitivity.

Researchers have found that contrast sensitivity is an entirely new type of ability. One that is unrelated to other types of skills and abilities which have been studied.

Because of the importance of contrast sensitivity, social scientists are engaged in an extensive set of studies to understand how individuals use this ability in different settings. For many types of problems, findings have shown that individuals working together can accomplish tasks more effectively than individuals working alone. For today's study, we are interested in learning how teams composed of people from different backgrounds use contrast sensitivity when working together on contrast sensitivity problems. Today, you will work through two sets of contrast sensitivity problems. For each set of problems, you will be paired with a team-member who differs from you both in terms of age and in education level. At the beginning of this session, we asked you to provide your age and education level. We use this information to match individuals to suitable partners. A researcher also took your photo. At the beginning of each task, you will see a photograph of your partner along with some information about their age and education level. Your partner will see the same information about you.

Because this study involves a large number of social science laboratories, it is very likely that you will be matched with partners who are not in the same physical space as you. In order to ensure that we keep an accurate record of each team, we have provided you with a contrast sensitivity team information form. Before the start of each task, we ask that you write down the age and education level of yourself and your partner. We also ask that you write down the unique team identification number for each team you are assigned to. If you did not receive a contrast sensitivity team information form, please alert a research assistant in your laboratory so that you will be able to record this important information about your team.

As I mentioned, we are interested in how individuals in groups use their contrast sensitivity to solve problems. Exchanging information with others can often lead to more correct decisions than a single individual could make alone. We have observed that in many situations, such as when a doctor diagnoses an illness, individuals are called upon to make decisions that must be correct. In these situations, when a person is concerned only with the correctness of a decision, he or she will often gather all available advice and information from others. Exchanging information with each other and considering another person's choices will often lead to more correct answers than a single person could make working alone. We are interested in studying these kinds of situations. Therefore, on each of these contrast sensitivity problems, we are going to allow you to make an initial choice as to what you think is the correct answer and to exchange that information with your partner. After you have made your initial choice, you will see the other person's initial choice. Then, after a short period, you will be asked to make a final decision about the problem. Since we are only interested in your making the correct *final* decision, you should not hesitate to change your initial choice if that will help you make a correct *final* decision.

For each team you are in, you will be asked to make decisions about 12 contrast sensitivity problems. This is how it will work:

[CUT TO DEMO SLIDE- BLACK SCREEN]
[Dr. Gordan]
[DEMO SLIDE FADE IN] First, I will present a slide on the screen
[ARROWS SHOWING PANELS] The slide will contain two panels, each of which consist of patterns of black and white rectangles.
For each slide, your task is to tell which of the two panels has more white rectangles. That is, your task is to determine which panel has more white area. You will have five seconds to study the slide before I ask you to make an initial choice about which panel contains more white area. That is to say, both you and your partner will make a preliminary choice between the two panels. This is for the purpose of letting your partner know what you think is the correct choice. You will indicate this choice by using the mouse to click on the panel which you think contains more white area.
[GREEN BOX AROUND TOP PANEL] When you make your initial choice, the panel which you select will be highlighted by a green box. Also, after you make your initial choice, that choice will be communicated to your partner, and you will be able to see your partner's initial choice on your monitor. However, you will not receive information about your partner's initial choice, until after you have made your own initial choice
[BLUE ARROW ON TOP PANEL]
After both of you have made your initial choices and exchanged information, you will have five seconds more to study the slide, then you will be asked to make your final decision about the slide. After you and your partner have made your final decision, the computer will record the decisions, and then move on to the next set of panels. You will repeat this procedure for all twelve slides.
[SLIDE RESETS]
[Dr. Gordan]
Please note, if you do not make your choice within a few seconds after we call for you to do so, the computer will not record any choice for that slide. This means that neither you, nor your teammate will contribute to the team's score for that trial. If someone answers too late, you and your teammate will both see a message stating that your answers were not recorded for that session. Please be sure to provide your answers promptly, when we ask for them.
You may find that some of these slides are difficult to judge as differences between each panel are small. However, there is a right answer to each and every slide. We have found that individuals with high contrast sensitivity consistently chose more correct answers than those with low contrast sensitivity. We have also found that people with high contrast sensitivity may not be completely aware of how it is that they chose the correct answer. They seem to be operating on the basis of very slight, almost intuitive cues and feelings. However, *be careful*, guesses are often incorrect, and merely guessing at the slides usually leads to a low score.
So that you will have some idea of how well others have done at this task, we have prepared a set of standards
[CUT TO CHART]

We have found that two people working as a team can make more correct final decisions than either of them could make alone. We are studying this kind of team situation in our work today. For each problem, you will have a chance to study the slide and make an initial choice, and see your partner's initial choice before you make your final decision. *Only* final decisions will count towards your team's contrast sensitivity score. Let me explain how we score final decisions: each time a person makes the correct final decision the *team* will receive one point. If both of you make the correct final decision, the team will receive two points. If an individual makes an incorrect final decision, then that final decision adds nothing to the team score for that trial. In this form of the contrast sensitivity test, there will be 12 problems. That means, the maximum possible team score is 24. The minimum of course, is 0.

So that you can see how well others have done on this task, we have prepared the standards on this chart. This task has been administered to teams consisting of people from different background in this part of the country and elsewhere. These standards are based on those studies.

[ARROW TO CENTER ROW] We have found that when individuals are given the opportunity to make an initial choice, and to exchange information with each other before making a final choice, a team score of 14-17 points is a usual or *average* score. Actually 16 is the most typical score. 14-15 is getting a little low and 17 is high.

[ARROW UP ONE ROW] 18-21 points is an unusual occurrence and indicates an above average team performance.

[ARROW UP ONE ROW] 22-24 is a rare occurrence and it indicates a superior team performance.

[ARROW DOWN THREE] 11-14 is an unusual occurrence and it indicates a below average team performance.

[ARROW DOWN ONE] and 0-10 is a rare performance and it indicates a poor team performance.

[ARROW TO CENTER ROW] In general the characteristics of this task are that it is usual to score in this area, between 14-17 points. You can also see that, although a person might expect to get 5 or 6 problems correct by merely guessing, that would lead to a low team score of between 5 to 12 points.

The average team score is between 14-17 so we find that most people score consistently better than they would if they were merely guessing.

[CUT TO Dr. Gordan]

Let me repeat several important points before you are assigned to your first team.

You are about to work on a set of 12 contrast sensitivity slides

For each slide, the task is to determine which panel has more white area

You will have five seconds to make your initial choice.

After you have made your initial choice, for each slide, you will see your partners initial choice

After five more seconds, you will make your final decisions for that slide. After both of you have made your final decisions, you will move on to the next slide.

Now you are ready to be matched with your first partner. Once you are matched with a partner, please be sure to fill out the Contrast Sensitivity Team Form, before pressing the submit button. Once both partners have pressed the submit button, the task will start
[CALL PARTNER SCREEN]
[CALL VIDEO 3]
[Dr. Gordan]
Now we would like for you to complete a short survey about your experiences with your first team. This survey will ask you questions about the task and about your team. There is no time limit for this portion of the study. Please think about these questions carefully and answer each one to the best of your ability. When you have finished with this survey, you will be matched with another partner for the second and final round of contrast sensitivity problems. Because it is not possible to know how long it will take each person to complete their survey, it may take a few moments for you to be matched with a suitable partner.
[CALL SURVEY 1]
[CALL VIDEO 4]
[Dr. Gordan]
Thank you for completing these two contrast sensitivity tasks. Now we would like for you to complete a short survey about your experiences with your second team. This survey is just like the one you completed after the first contrast sensitivity task. There is no time limit for this portion of the study. Please think about these questions carefully and answer each one to the best of your ability. When you have finished with this survey, a research assistant working in the laboratory you are located in will ask you a few more questions about your overall experiences with today's study. I would like to thank you for your participation today. The time you spent with us will no doubt be a valuable contribution to the ongoing study of contrast sensitivity and team performance.

Appendix D: Survey Questions

Questionnaire

These questions ask about your experience in the group today. As each question appears, please think about it and then indicate your choice by clicking on the answer that best represents your view. There is no time limit; take as long as you need to give your answers to these questions.

1. How difficult did you find the Contrast Sensitivity problems?

Please select the number that best represents how difficult you found the Contrast Sensitivity problems.

The problems were:

Difficult			Neither Difficult Nor Easy	Easy		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

2. How important were your own initial choices in making your final decisions? On the following scale, please select the number that best represents how important your own initial choices were in making your final decisions:

   In working the Contrast Sensitivity problems, my initial choices were:

Important			Neither Important Nor Unimportant	Unimportant		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

3. How important were your partner's initial choices in making your final choices?

Please select the number that best represents how important your partner's initial choices were in making your final choices:

In working the Contrast Sensitivity problems, my partner's initial choices were:

Important			Neither Important Nor Unimportant	Unimportant		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

4. How important was getting the correct answer?

Please select the number that best represents the importance of getting the correct answer.

In working the Contrast Sensitivity problems, getting the correct answer was:

Important			Neither Important Nor Unimportant	Unimportant		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

5. How important was sticking with your own choice when your partner disagreed with you?

Please select the number that best represents how important it was to stick to your own choice when your partner disagreed with you.

Sticking with my own choice was:

Important			Neither Important Nor Unimportant	Unimportant		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

6. When you and your partner make different initial choices, how important was it to you to change your choice to agree with your partner?

Please select the number that best represents how important changing your choice to agree with your partner was.

Changing my choice to agree with my partner was:

Important			Neither Important Nor	Unimportant		

Unimportant

Extremely Very Somewhat Somewhat Very Extremely

1 2 3 4 5 6 7

7. How satisfied are you with how well you did on this set of Contrast Sensitivity problems?

Please select the number that best represents how satisfied you are with how well you did on the set of Contrast Sensitivity problems.

I am _____ with my performance.

Satisfied			Neither Satisfied Nor Dissatisfied	Dissatisfied		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

8. How would you evaluate your own performance on the Contrast Sensitivity task?

Please select the number that best represents how you would evaluate your own performance on the Contrast Sensitivity task.

I evaluate my performance as:

Good Neither Good Nor Poor Poor

Extremely Very Somewhat Somewhat Very Extremely

1 2 3 4 5 6 7

9. How would you evaluate your partner's performance on the Contrast Sensitivity task?

Please select the number that best represents how you would evaluate your partner's performance on the Contrast Sensitivity task.

I evaluate my partner's performance as:

Good Neither Good Nor Poor Poor

Extremely Very Somewhat Somewhat Very Extremely

1	2	3	4	5	6	7

10. How do you feel your own ability to solve Contrast Sensitivity problems compares with that of your partner?

Please select the number that best represents how you feel your own ability to solve Contrast Sensitivity problems compares with that of the other participant.

I believe our abilities compare this way:

I have more ability			My partner and I have equal ability	My partner has more ability		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

16. How satisfied are you with what you and your partner accomplished as a group on the Contrast Sensitivity Task?

Please select the number that best represents how satisfied you are with what your group accomplished as a group on the Contrast Sensitivity Task.

I am _____ with what our group accomplished as a group.

Satisfied			Neither Satisfied Nor Dissatisfied	Dissatisfied		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

17. Suppose you were asked to solve another set of 20 Contrast Sensitivity problems in which you would be working alone without anyone else's answers. How well would you expect to do if working alone?

Please select the number that best represents how many Contrast Sensitivity problems you would expect to get correct working alone:

Working alone, I would probably get _____ correct answers.

Extremely Poor Extremely Well

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

18. Suppose your partner was asked to solve another set of 20 Contrast Sensitivity problems in which your partner would be working alone without anyone else's answers. How well would you expect your partner to do if working alone?

Please select the number that best represents how many Contrast Sensitivity problems you would expect your partner to get correct working alone:

Working alone, my partner would probably get _____ correct answers.

Extremely Poor																			Extremely Well
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

19. Taking everything into consideration, how satisfied are you with your participation in today's study?

Please select the number that best represents how satisfied you are with your participation in today's study.

Overall, I am _____ with my participation in today's study.

Satisfied			Neither Satisfied Nor Dissatisfied	Dissatisfied		
Extremely	Very	Somewhat		Somewhat	Very	Extremely
1	2	3	4	5	6	7

INTERVIEW SCHEDULE

ASK PERMISSION AND START RECORDING

This is a group number _____ on [date] starting at [time] and your name is _________.

1. Well, _______, what did you think of the study?

2. Have you ever done anything like this before?

3. Have any of your friends participated in this study?
   a. Did they tell you anything about it?
   b. What did they tell you about it?

4. Before you came up here, did you wonder what the study would be like?
   a. Did you come to any conclusions before you came up? What was that?
   b. Did you think it might be like anything you had done before?

5. Did you know the other person in either of your groups today?
   a. [IF YES]
      i. How certain were you that it was __________?
      ii. Did you have any idea of how well he would do at the problems or the slides?
      iii. Does he usually do well at tests?

iv. Did you think that his ability at other tests might affect how well she would do at these tests?

v. Do you think that knowing who he was make any difference in how you answered the slides?

1. Why (not)?
2. What difference did it make for you to know who he is?

b. [IF NO]

i. Before you came up here, did you wonder about who the other people might be

Now I want to ask you some questions about the Contrast Sensitivity slides.

6. Did the slides seem like any other task that you have done?
    a. What task?
    b. How well do you usually do at that kind of task?
    c. Did that give you any idea how well you expected to do at this task?

7. Were the problems easier or harder than you expected them to be?
    a. Why is that?

Now I would like to ask you about your work with your **<u>first</u>** team

8. While you were working on the slides, did you think about how well you were doing?
    a. Why was that?
    b. Were you able to form any idea about how well you were doing?
    c. Were you able to form any idea about how well your partner was doing?

        i. Did it seem as if he was doing better than you, less well than you, or about the same as you?
        ii. Why was that?

9. Can you tell me, in as much detail as you can remember, how you got your <u>initial choices</u> to the slides?
    a. As you went through the series, did you change the way you made your initial choices? How? Why?
    b. After you made your initial choice, then what did you do?
        i. Well, did you look at your partner's initial choice?
        ii. Did you re-study the slide?
10. How did you make your <u>final decisions</u> to the slides?
    a. Well, when a slide appeared, what did you do?
    b. Then what?
    c. As you went through the series, did you change the way you made your final decisions?
    d. Was it helpful to see the other person's initial choice before you made your final choice?
    e. Why or why not?

11. Thinking about your first [second] team, were you able to form any impressions of the other person?
    a. What sort of a person did he/she seem to be?
    b. Did he/she seem to be like anyone you have met before?

12. If you were going to do another set of 12 slides, would you prefer to work with your first team member, or a different person?
    a. Why?
    b. [If new person] what sort of person would have made a good team member?

13. Were you able to come to any conclusions about how your partner was working on the slides?
    a. [if yes] which team?
    b. What do you think they were thinking?

14. Did you find that it was helpful to work with your first partner for each set of slides?
    a. Why or why not?

15. Do you feel you probably did <u>better</u> or <u>worse</u> working with your first partner than you would do alone?
    a. Why is that?

16. While you were working on the slides, did you find it helpful to view your partner's choices?
    a. Why or why not?
    b. How often did you look at your partner's choice before making your final decision?

Now I would like to ask you about your work with your **<u>second</u>** team

17. Thinking about your second team, were you able to form any impressions of the other person?
    a. What sort of a person did he/she seem to be?
    b. Did he/she seem to be like anyone you have met before?

18. If you were going to do another set of 12 slides, would you prefer to work with your second team member, or a different person?
    a. Why?

    b. [If new person] what sort of person would have made a good team member?

19. Were you able to come to any conclusions about how your partner was working on the slides?
    a. What do you think they were thinking?

20. Did you find that it was helpful to work with your second partner for each set of slides?
    b. Why or why not?

21. Do you feel you probably did <u>better</u> or <u>worse</u> working with your second partner than you would do alone?
    a. Why is that?

22. While you were working on the slides, did you find it helpful to view your partner's choices?
    a. Why or why not?
    b. How often did you look at your partner's choice before making your final decision?

23. I noticed there was a lot of disagreement across both teams. Do you have any idea why?

24. Between yourself and the two partners you worked with, who do you think was the most likely to be right?
    a. Why?

Appendix F: Recruitment Pitch

Recruitment Pitch

Good morning. I am ___________________ from the Department of Sociology here at UNCC. I am here today to interest you in participating in one of our paid research studies.

During the year, the Sociology Department conducts studies in a number of areas, and for most of these studies it is necessary to hire students like you to help us. Students that have helped us in the past have found it to be an interesting and rewarding experience. It's a chance to learn something about yourself and to see how this type of research is conducted.

Although this is not a permanent job, we do pay you for your time. If you decide to participate in our study you will be paid up to $25.00. The study lasts for about 2 hours and takes place in Fretwell. The only requirement for participation is that you be between the ages of 18 and 24.

This research has been approved by UNCC's Institutional Review Board.

What I would like to do now is hand out these flyers which have our url on them. If you are interested in participating with us, you can follow the url on the flyer. That will take you to our scheduling website. All you have to do to participate is answer a few short questions, and schedule yourself for a session you find convenient.

Any questions? (Distribute forms)

(Thank the students and professor)