

ABSTRACT

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 CONTEXT, AND THE FORMATION OF
 SOCIAL SOLIDARITY IN GROUPS

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A proposed theory explains how actors rely on subtle features of social context when deciding whether to contribute resources to the group and punish their partners after they behave selfishly. The theory incorporates elements of identity control theory with social exchange theory. It proposes that features of social context shape the perceptions of actors in groups. These perceptions, in turn, affect their behaviors and the formation of social solidarity between group members. Three experiments test elements of the proposed theory by varying the context in which actors viewed themselves, their partners, and the overall goals of their groups.

The instructions for study 1 told groups of actors that they either had cooperative or competitive personality types. Study 2 referred to the partners of actors as either collaborators or competitors. Study 3 told actors the goals

of their groups were either defined by cooperation or competition. Each study assigned actors to the same group structure in which individuals completed a public goods game with opportunities to anonymously punish their partners. Results show that actors contributed more resources to their group, and spent fewer resources punishing their partners, when they viewed themselves or their partners as more cooperative than competitive. These behaviors, in turn, affected levels of trust, commitment, and cohesion that formed between group members. The context in which actors viewed the goals of their groups affected their contributions to these groups, but it did not significantly affect their punishment of partners. These patterns of behaviors also had negligible effects on social solidarity in groups. Thus, results from these experiments show that subtle features of the relational context (i.e. perceptions of self and partners) affect the means by which actors promote collective action in groups, shaping the formation of social solidarity between group members.

IDENTITY PROCESSES, SOCIAL CONTEXT, AND THE FORMATION OF
SOCIAL SOLIDARITY IN GROUPS

by

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Dedication

To my loving parents,
Elaine and Phillip Posard

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Chapter 1: Introduction

Collective action is a means to get what one wants by working with others who also want the same thing (Olson 1971). How does social context affect the means by which actors promote collective action in groups of self-interested people? It may lead actors to behave generously with the hope that beneficiaries of this behavior will do the same too (Irwin and Simpson 2013). Alternatively, context may cause actors to rely on punishment to discourage others from behaving selfishly (Yamagishi 1986). A proposed theory explains how the features of social context affect whether actors rely on generosity or punishment to promote collective action in groups. These behaviors, in turn, affect the formation of trust, commitment, and cohesion between group members.

Social exchange theory assumes that actors begin group tasks with the same goal: to accumulate resources for themselves. The theory focuses on the incentives for actors that lead them to negotiate over resources with others in groups (Lawler and Thye 1999). Much of the theorizing on social exchange is concerned with instrumental resources that groups of actors transfer between each other over time. In recent decades, research has attended to the role of network structures that delimit who may interact with whom in groups. Experiments find that features of these networks affect the capacity for actors to gain resources during social exchange. The instrumental resources that

actors gain in groups also shape how they perceive their partners (e.g. trust and commitment) and the group (e.g. cohesion) as a whole (Kuwabara 2011; Lawler, Thye, and Yoon 2008; Molm, Collett, and Schaefer 2007).

Studies find that actors report higher levels of trust and commitment when they are more uncertain about the outcomes of social exchange (Molm et al. 2007). Other studies report that outcomes of social exchange deemed favorable by actors will evoke positive feelings within them (Lawler and Yoon 1996). Features of network structures affect how actors come to understand these feelings, shaping the perceptions of solidarity in groups (Lawler, Thye, and Yoon 2000). More recently, research finds that perceptions of self and others are strong predictors of social solidarity among group members (Kuwabara 2011).

With recent advances in social exchange theory, we now have a better understanding of the relationship between network forms, interpersonal behaviors, and perceptions of social solidarity by actors in groups. Theorizing by Molm et al. (2007) and Lawler (2001) have identified features of networks that affect the behaviors and perceptions of actors. Kuwabara's (2011) research integrates both theories with a model that describes when features of context affect group dynamics, namely the affective and relational contexts. Given these advances, it may prove useful to focus some attention on *how* actors form their perceptions during group tasks. Identity control theory may

help us identify a specific process that answers this ‘how’ question (Burke 1997).

According to identity control theory (ICT), the ratio of two variables predicts how actors will behave in various social contexts (Stets and Burke 2014). The first variable is an identity standard, defined as sets of meanings that actors organize into coherent schemes within their minds (Stryker and Burke 2000). The second variable is the ways in which actors perceive their surroundings. ICT proposes that actors behave in ways that reduces discrepancies between their perceptions and the identity standards they have chosen to reference in a given setting.

The concept of an identity standard is a point where social exchange theory intersects with identity control theory. Social exchange theory assumes that actors enter group tasks with the goal of resource accumulation (Molm 2006).¹ If resource accumulation is a goal for actors, then it follows that actors find meaning in having more rather than less of some resource. That goal may operate as a “person identity”² in the language of identity control theory. Thus, it follows that actors would view themselves as people who want to gain resources during social exchange.

¹ The social exchange perspective broadly defines resources as tangible (e.g. money) and intangible (e.g. status) rewards (Cook and Emerson 1978).

² I use the term “person identity” and “personal identity” interchangeably throughout this dissertation.

If the goal of resource accumulation is a type of person-level identity standard for actors, then it follows that varying the perceptual inputs of their environment would affect the behaviors of actors. I propose that the context in which actors view themselves, their partners, and the goals of their groups is capable of changing these perceptual inputs. It follows from identity control theory that actors will compare these inputs with a salient identity standard, defined by their goal of resource accumulation. The predicted result is that social context will affect how actors reach their goal of accumulating resources in groups, namely the degree to which they chose to rely on generosity or punishment when they promote collective action during group tasks.

In the following pages, I propose a theory of context in social exchange that incorporates elements of identity control theory with social exchange theory. I then test my proposed theory using three experiments where actors complete a group project with two partners. Study 1 manipulates the context in which groups of actors perceive themselves by giving them personality reports stating they have cooperative or competitive personality types. Study 2 manipulates the relational context in groups by referring to the partners of actors as collaborators or competitors. Study 3 manipulates the group context by telling actors that cooperation or competition defines the goals of their groups.

In general, results show that actors view the function of resources in significantly different ways depending on the context in which they view

themselves and others during group tasks. Cooperative contexts lead actors to contribute more resources to group projects than competitive contexts; in contrast, competitive contexts lead actors to punish their partners more than cooperative contexts. Mediation analyses show the effects of social context operate through the exchange process to generate social solidarity in groups.

This first chapter reviewed the general logic behind my proposed theory. Chapter 2 discusses research from social exchange theory. Chapter 3 continues by reviewing studies from identity control theory. In Chapter 4, I incorporate elements of identity control theory with social exchange theory to propose a theory of context in social exchange. Chapter 5 discusses the experiments that I designed to test predictions based on propositions from my proposed theory. Chapters 6 through 8 present results from experiments that manipulate the context in which actors view themselves, their partners, and the goals of their groups, respectively. Chapter 9 is a general discussion of my findings. Finally, Chapter 10 discusses the implications of my proposed theory for research on social exchange and identity control theories.

My findings make several contributions to social exchange theory and identity control theory. Three of the most important of these contributions are worth noting. First, the results show that an underlying identity process affects collective action, independent of social structure. Second, the findings advance identity control theory by showing that social context affects how actors view the function of resources in social exchange settings. Cooperative

contexts lead actors to rely more on contributions to the group than competitive contexts, while competitive contexts lead actors to rely more on punishment of others than cooperative contexts. Third, results show how context operates via the exchange process to affect social solidarity among group members within networks of social exchange.

Chapter 2: Social Exchange Theory

Social exchange theory is a framework that includes several theories, each of which makes similar assumptions about social interactions (Emerson 1974; Molm 2006). First, theories of social exchange assume that actors will behave in their self-interests. This assumption is what allows social exchange theories to define actors as self-interested individuals, or collections of self-interested people. Second, social exchange theory broadly defines resources as something that one actor controls but others also want to control. The theory broadly defines resources to include tangible (e.g. money) or intangible rewards (e.g. status) that hold value for actors. Further, value is not an intrinsic property of resources. Instead, social exchange theory assumes that value exists within the relationship of two or more actors, each of whom are seeking to control the same resource.

Third, theories of social exchange assume the existence of some structure that delimits who has the opportunity to exchange with whom in groups. The structure of social exchange is what creates opportunities for actors to pursue their self-interest by increasing the quantity of resources they control vis-à-vis others. Fourth, exchange structures create opportunities for actors to initiate the transfer of resources with partners. When partners accept these initiations, then a transaction occurs where actors transfer resources to, and receive resources from, their partners. The sequence of

transactions that occur between actors and their partners over time is what generates a social exchange relationship. Put another way, exchange relations are patterns of transactions that actors and their partners construct by initiating on exchange opportunities.

Chapter two has two parts. First, the chapter reviews early theories of social exchange by Homans (1961), Thibaut and Kelley (1959), Blau (1964), and Emerson (1974; 1976). Second, it reviews recent theories on the formation of social solidarity in networks of social exchange. The chapter concludes by discussing how social context could affect actor behaviors in networks of social exchange.

Early Research

Social exchange theory involves four central concepts: actors, resources, networks, and the exchange process. George Homans (1958) first proposed the concept of social exchange to explain human behavior in groups. Homans (1958; 1961) narrowly defined actors as people in pursuit of their self-interests. According to his early theorizing, resources could include tangible or social resources that actors received from transactions with partners. Much of the early research by Homans focused on dyadic networks of two people. Drawing on behavioral psychology, Homans characterized social exchanges as an operant process that reinforced behaviors of people: gains in resources were positive stimuli for actors, while losses were negative stimuli. The pattern in

stimuli is what leads people to give more or less during repeated interactions with their partners.

Thibaut and Kelley's (1959) theory of social exchange share a number of the same assumptions with Homans's early work. For example, Thibaut and Kelley also viewed actors as self-interested people. They broadly defined resources as tangible or intangible rewards and focused primarily on dyadic networks of social exchange. Thibaut and Kelley depart from Homan's theorizing in how they view the social exchange process. For Homans, social exchange was an operant process that reinforced human behavior similar to other types of animals.³ Thibaut and Kelley's theory, in contrast, assigned more agency to people by introducing the concept of "comparison levels." According to this concept, people compare their present outcomes during social exchange with past experiences. Thus, the capacity to compare past and present results is what motivates the way that people choose to behave in future opportunities during social exchange.

Several years later, Peter Blau (1964) would draw from earlier works to present a revised theory of social exchange. Similar to past exchange theories, Blau viewed actors as people in pursuit of their self-interests. Blau also broadly defined resources as tangible or intangible constructs. However, Blau's theorizing broadened the treatment of networks and the social exchange process in two ways. First, he proposed that social exchange processes

³ Homans (1958: 598) originally compared the social exchange process of humans to the operant process that affects how pigeons seek out food in cages.

between two partners could shape the interpersonal relationships of larger, more complex organizations. Second, Blau took a more constructionist view of the social exchange process. People not only responded to present outcomes based on their comparisons to prior experiences, they also could actively use social exchange to construct values and norms. According to Blau, the exchange process is what leads to the construction of widely shared values and norms between groups of people housed within larger organizations.

In subsequent research, Richard Emerson (1974) began to consolidate the various streams of social exchange theory into a formal theoretical framework. Drawing on Homans' theorizing, Emerson assumed that actors behaved in their self-interests by seeking positive reinforcement from their behaviors. Resources provide this reinforcement, broadly defined by Emerson as tangible and intangible rewards for actors. However, Emerson was primarily concerned with the ways in which relationships defined the value of resources for actors. Two related theories are the basis for locating the value of resources within the relationships of actors.

The first theory was Thibaut and Kelley's concept of comparison processes, which emphasized relative comparisons with others during the exchange process. The second was Emerson's (1962: 32, Footnote 7) own theory of power-dependency relations, which draws from the concept of comparison levels that Thibaut and Kelley identified. According to power-dependency theory, power is the capacity to induce others to do something

whether they want to or not. People have power when others depend on them for valued resources given the constraints from a social structure. Thus, power is a function of one's desire for resources they otherwise could not obtain by themselves. If the structure of relationships delimits who controls what resource, then it follows the value of this resource is also located within the relationships of actors.

Power-dependency theory focused on power relationships where incumbents of structural positions had more rather than fewer exchange opportunities in networks. Emerson's theory of social exchange introduced the concept of interdependency in networks without power differences between partners. He proposed that equal-power networks could also foster varying levels of interdependency, generating outcomes that include trust, commitment, and cohesion. These outcomes are the focus of my study. I now will discuss the role that interdependency has in shaping these outcomes as discussed in Molm et al.'s (2007) theory.

Reciprocity Theory of Social Exchange

Molm and colleagues (2007) present a theory on reciprocity that explains how trust and commitment forms within different network structures. The theory identifies two structural characteristics that affect group perceptions, which, in turn, affects trust and commitment between group members.

The first characteristic is the flow of resources. In networks, resources flow unilaterally when actors give rewards to one partner but receive them from another person located in distal parts of the network. Resources flow bilaterally when actors give resources to the same partner who gives them resources in return. For example, networks of generalized exchange have a unilateral flow of resources because Actor A sends resources to Partner B, who sends resources to Partner C who, in turn, returns resources to Actor A. Networks of negotiated exchange have a bilateral flow of resources because Actor A can send and receive resources with Partner B and Partner C. Further, both of these partners may exchange with each other in similar ways.

The second characteristic of networks is the structure of reciprocity. This structure may have direct or indirect forms of reciprocity between partners. Direct reciprocity involves actors who transfer resources after they agree on the terms of exchange. Indirect reciprocity involves actors sending resources to partners before knowing the quantity of resources they will receive from others. For example, networks of negotiated exchange have direct forms of reciprocity since the negotiation of resources between Actor A and Partners B or C occurs before they transfer resources between each other. Networks of generalized exchange have an indirect form of reciprocity because Actor A sends resources to Partner B without knowing how much Partner C will send back to Actor A.

According to Molm and colleagues' theory, the flow of resources (bilateral versus unilateral) and the structure of reciprocity (direct versus indirect) affect social solidarity via three distinct mechanisms. The first is risk of non-reciprocity that actors confront when they transfer resources to their partners. Bilateral flows of resources and direct reciprocity significantly reduces these risks when compared to unilateral flows and indirect forms of reciprocity. The risk of non-reciprocity as a causal mechanism in Molm and colleagues' (2007) theory draws from earlier research on power-dependency (Cook and Emerson 1978) and network exchange (Walker et al. 2000) theories.

As discussed earlier, the original exchange theorists largely focused on psychological mechanisms in dyadic exchange relationships (Homans 1958). During the 1970s, sociological research began to expand this focus to include networks with more than two actors in them. Drawing from research on prospect theory in psychology by Tversky and Khaneman (1974), Cook and Emerson (1978) identified the effects of risk in promoting commitment between actors within exchange relationships. Similarly, Kollock (1994) proposed that commitment with others represents a strategy that actors employ to protect themselves from risky exchange relationships. Based on qualitative research in Southeast Asia, Kollock (1994) noted that different patterns exist in economic exchange relationships for buyers of rubber and rice. Unlike rice, rubber is a commodity that is difficult to determine before

the manufacturing process. Thus, buyers of rubber cannot assess the quality of the commodity before they purchase it. That makes the transaction risky for buyers.

Kollock (1994) explains that buyers of rubber would maintain long-term relationships with sellers to reduce their exposure to risks, regardless of changes in the market price of this commodity. Unlike rubber, the long-term relationships between buyers and sellers of rice varied by the market price because it was less riskier to buy. Kollock (1994) conducted a series of experiments showing that uncertain exchange relationships could produce commitment between partners. Put simply, risk of non-reciprocity is a key mechanism in Molm et al.'s (2007) theory and derives from earlier research on structure (Cook and Emerson 1978), power (Cook et al. 1983), and uncertainty reduction in relationships (Kollock 1994).

The second mechanism in Molm and colleagues' theory of reciprocity is expressive value. Molm et al. (2007: 212) defined expressive value as "the symbolic or communicative value that is attached to the act of reciprocity." Expressive value is located within relationships of actors in network forms. When compared to unilateral flows of resources and indirect reciprocity, the bilateral flows of resources and direct forms of reciprocity increase the opportunities for actors to associate expressive value with social exchange. The third mechanism of Molm et al.'s (2007) theory is salience of conflict where actors view the behaviors of their partners as negative rather than

positive. Molm et al. (2007) argue that networks with indirect reciprocity and unilateral flows of resources have less conflict than structures with direct reciprocity and bilateral flows of resources. Consequently, networks with (1) more rather than less risk of non-reciprocity, (2) more rather than less symbolic value, and (3) less rather than more conflict between partners generate trust and commitment between groups of actors.

Affect Theory of Social Exchange

Lawler's (2001) affect theory of social exchange focuses on the emotional attribution process that actors use to understand their positive feelings after successful exchange outcomes. In an effort to reproduce these feelings, actors will try to identify the source of their emotions (e.g. partner or group). Network structures where actors can easily identify the source of these positive feelings will generate higher levels of commitment to the group (Lawler et al. 2008).

Research on social exchange typically equates value with exchangeable resources (Lawler, Thye, and Yoon 2000; Lawler 2001; Lawler et al. 2008). From this, research assumes that actors want to increase the quantity of resources they have in networks of social exchange. The standard exchange theoretic explanation of value draws from Kollock's (1994) uncertainty-reduction process where actors try to minimize the chance they will lose resources from social exchange. Lawler and Yoon (1996: 90) note how this

standard explanation derives from Emerson's early work on the effects of networks on patterns in the frequency of exchanges. The authors revisit this concept of value in their theory of relational cohesion and propose that partners also value positive emotional responses during social exchange.

Lawler and Yoon (1996) observed that commitment increased as partners successfully completed more rather than fewer exchanges with each other. This finding alone supports the uncertainty-reduction hypothesis. Partners who exchange with each other may develop a norm of behavior that reduces uncertainty in the relationship. However, these partners also completed a series of questionnaires asking them about their feelings (e.g. pleasure and satisfaction; interest and excitement) and their perceptions of relational cohesion (e.g. close or distance, cooperative or conflicting) (Lawler and Yoon 1996: 99). Lawler and Yoon found that actors reporting positive emotions also reported higher rather than lower levels of commitment and cohesion in their groups. Thus, Lawler and Yoon's (1996) theory of relational cohesion argues that positive affect is a distinct causal mechanism in promoting social solidarity in groups.

Lawler's (2001) affect theory of social exchange proposed that a similar affective mechanism exists in network structures of three or more actors. Incorporating concepts from Collins's (1981) theory of interaction ritual chains, Lawler's (2001) affect theory proposed that actors prefer to maximize their material *and* emotional value during social exchange. According to the

theory, actors' experience an emotional "buzz" when an exchange task is successful and they want to recreate this feeling in future tasks (Lawler 2001). Consequently, emotional responses from past exchanges influences the behavior of actors in the future. Lawler's (2001) affect theory of social exchange focuses on the emotional attribution process that actors use to understand their positive feelings after a successful exchange outcome. In an effort to reproduce these feelings, actors will try to identify the source of their emotions (e.g. partner or group). Network structures where actors can easily identify the source of these positive feelings will generate greater levels of commitment to the group (Lawler et al. 2008).

The key structural characteristic for Lawler's (2001) affect theory is jointness, which is similar to the two structural characteristics that Molm et al.'s (2007) theory of reciprocity identifies (flow of resources, form of reciprocity). Joint networks, according to Lawler (2001), have a direct form of reciprocity and a bilateral flow of resources because they allow for actors to directly negotiate with each other in networks . The affect theory of social exchange predicts that highly joint networks (e.g. bilateral flow of resources and direct reciprocity in the language of Molm et al.'s theory) will lead to more positive affective regard than structures with less joint-ness (e.g. unilateral flow of resources and indirect reciprocity, according to Molm et al.).

Integrated Model of Social Exchange

Kuwabara (2011) presents an integrated model of social exchange that incorporates elements from theories by Lawler (2001) and Molm et al. (2007). While Lawler and Molm et al. focus on what features of networks affect social solidarity, Kuwabara's model explains *when* network features affect solidarity by focusing on the affective and relational contexts of groups. This model defines affective contexts by the degree to which actors view their partners as cooperative or competitive. In comparison, the relational context affects whether actors view their relationships with partners as interdependent or independent.

Kuwabara's integrated model predicts that affective context will generate trust, affective regard, and cohesion by shaping how much actors view their partners as collaborators or competitors. The relational context is what generates a sense of shared responsibility by promoting joint actions, further reinforcing group cohesion. Kuwabara presents results in support of the integrated model by manipulating specific features of dyadic networks. For example, relational context is joint in dyads where the flow of resources is bilateral rather than unilateral. Further, the affective context is more cooperative in dyads with distributive rather than integrative forms of negotiation.

The integrated model is relevant here for three reasons. First, results in support of this model show that cohesion is a distinct concept from trust and commitment. Second, the relational and affective contexts of groups affect trust, commitment, and cohesion in different ways. Third, and perhaps most important for our purposes, the perceptions of cooperation within relationships has a distinct effect on levels of cohesion, independent of structural jointness. If Kuwabara's (2011) model is correct in making the claim that perceptions of cooperation affect elements of social solidarity, independent of network structures, then one may ask *how* perceptions of social context affects the attitudes and behaviors of actors? I explore that question in more detail below.

Social Exchange Heuristic

Experimental research from economics finds that some actors may experience confusion during group tasks. For example, calling a prisoner dilemma game a "Community Game" instead of a "Stock Market Game" leads people to behave more generously in particular types of contexts (Ellingsen, Johannesson, Mollerstrom, and Munkhammar 2012). Adrioni (1995) found that actors behaved more generously in public goods games when they had less rather than more information about their relative standing in groups. These results have led some to propose that actors behave generously toward

others because they are merely confused about the best strategy to employ in groups.

Others have proposed that actors have a cognitive bias during social exchange (Kiyonari, Tanida, and Yamagishi 2000; Yamagishi, Terai, Kioynari, Milfune, Kanazawa 2007; Simpson 2004). The “social exchange heuristic” describes how features of social context lead actors to view a prisoner’s dilemma games as if it was an assurance game - the latter has different optimal strategies for actors to earn resources than the former. In prisoner dilemma games, the optimal strategy for actors is defection from the group; while cooperation is the optimal strategy in assurance games. Yamagishi and colleagues (2007) found that actors behaved more generously in prisoner dilemma games when they had to think about the motives of partners before interacting with them rather than not thinking about these motives.

In a follow-up study, Yamagishi (2007) reports that actors behaved more generously in public goods games where experimenters told them they had been matched with a specific partner compared to those who were not told about this matching. Simpson (2004) found similar evidence of a social exchange heuristic using vignettes that simulated a prisoner’s dilemma game. The actors in this study made decisions for three types of prisoner’s dilemma games and then completed the triple dominance measure of social value orientation. Based on their responses, Simpson classified actors as individualistic or pro-social and found those in the latter group were more

likely to subjectively “transform” prisoner’s dilemma games into assurance games. Thus, the social exchange heuristic may disproportionately affect those with more pro-social rather than individualistic value orientations.

Conclusion

To summarize, social exchange theory assumes that actors want to accumulate resources in groups. Networks of social exchange delimit who may exchange what with whom over time. In recent years, social exchange theorists have identified what specific features within these networks affect the attitudes and behaviors of actors in groups. Molm et al. (2007) propose that perceptions of uncertainty in networks affect the behavior of actors, leading to social solidarity in groups. Lawler’s (2001) affect theory focuses on the degree that networks lead actors to associate their positive feelings with self or others. These network features shape the behaviors of actors, evoking positive feelings within them, and generating solidarity in groups. Thus, it is the network structure shaping the degree that actors attribute their positive feelings with others, leading to group solidarity.

Kuwabara (2011) draws from theories by Molm et al. (2007) and Lawler (2001) and tests the effects of relational and affective contexts on group solidarity. An important contribution from Kuwabara’s model is that perceptions of cooperation by actors shape solidarity, independent of jointness in networks. I advance these findings by asking a simple question: how do

networks lead actors to perceive higher or lower levels of social solidarity in groups?

We know that people have a tendency to make errors when they perceive their relationships with others (Kiyonari, Tanida, and Yamagishi 2000; Yamagishi, Terai, Kioynari, Milfuno, Kanazawa 2007; Simpson 2004). I propose these errors may not be a function of a cognitive bias, but part of a larger social process characterized by actors trying to align their perceptions with an identity standard during group tasks. These actors prefer that their perceptions remain stable, instead of unpredictable, during social exchange. To these ends, it follows that actors will organize their perceptions during the group task and their behaviors will reflect how they perceive these interactions.

Chapter 3: Identity Control Theory

The social world is a complex place that has a near infinite number of components, only some of which are observable to actors (Cooley 1902; Mead 1934). An identity is a cognitive scheme that actors use to organize the meanings they attach to the observable components of social life (Markus 1977; Stryker and Serpe 1994; Stets 2006). Identity control theory (hereafter ICT) explains how these schemes affect the ways that actors chose to behave in various social contexts (Burke and Stets 2009).

According to ICT, social context activates the salience of relevant identities within the minds of actors (Stryker and Serpe 1994). Such identities become points of reference for actors when they decide how to behave in various social contexts. ICT assumes that actors want their environments to match the identity standards they have chosen to reference. Identity verification occurs when the identity standards that actors reference match their environment. When discrepancies exist between the environment and these identity standards, ICT predicts that actors will behave in ways to reduce this difference. Thus, ICT posits that actors behave the way they do because they want their identity and surroundings to match each other.

To illustrate, let us say a young woman finds meaning in her identity as a “smart” undergraduate student. That identity serves as a standard for her to reference in her college courses. When she receives high grades from her

professors, it verifies her identity. When professors give her low grades, she observes signals from her environment that contradict her “smart” identity. ICT predicts this woman will behave in ways to increase signals that verify her identity, and avoid signals that contradict her identity. Thus, she may decide to spend more time studying for her exams, take extra time in writing her papers, or enroll in classes where it is likely that she will receive high grades.

ICT starts with the assumption that some identity standard is salient to actors in a given time and place. The theory broadly defines the concept of “identity” to include any set of meanings that actors may organize into coherent frameworks within their minds. Thus, identity standards may relate to social (e.g. race), role-based (e.g. occupation), or person-level (e.g. moral values) self-meanings (Freese and Burke 1994).

There is evidence that actors will behave in ways that align with their personal identity standards. Stets and Carter (2011) had participants complete a survey where they rated their own moral identity (e.g. honest/dishonest, untruthful/truthful, selfish/selfless). Several weeks later, these same participants volunteered for a laboratory experiment where they completed a standardized test on a computer. The performance by participants on this test determined how many raffle tickets they would receive for a chance to win \$100. The better participants did on this test, the more likely it was for them to win cash rewards.

Before participants began the computerized test, experimenters pretended to check the computer in front of participants. This checking allowed experimenters to show participants that tapping the escape key would allow them to change an answer if it was incorrect. Next, experimenters told participants that they should not use the key while taking the standardized test. Unbeknown to participants, their computer automatically tracked how many times they hit the escape key and changed their test answers. The results show that participants were significantly less likely to behave immorally (by using the escape key) in the experiment when they had a stronger, rather than weaker, moral identity (Stets and Carter 2011). In support of identity control theory, the finding shows that individuals will behave in ways that align with their personal identity standards (e.g. moral identity).

Burke's Identity Model of Network Exchange

Burke's (1997) identity model of network exchange incorporates elements of identity control theory with network exchange theory. Network exchange theory (NET), a close relative of social exchange theory, explains how network structures generate power differences in groups. The theory defines power as the structural capacity to obtain valued outcomes even when others resist (Markovsky et al. 1993). According to NET, the distribution of these resources is dependent on the positions that incumbents occupy within

networks. Decades of research on NET find that varying the connections between positions in networks affects who exchanges with whom in groups (Lovaglia, Skvoretz, Willer, and Markovsky 1995; Markovsky et al. 1993; Skvoretz and Willer 1993; Walker et al. 2000). The result is that some actors gain more resources than others, leading to power differences in groups.

NET assumes the goal of actors is to maximize the quantity of resources they control in groups (Markovsky et al. 1993). It is from this assumption that NET examines how network structures constrain the capacity of actors to achieve this goal of resource accumulation. Burke's (1997) identity model broadens the assumption that actors want to maximize their own resources by focusing on varying the goals of individuals. According to the model, the goals of actors are located within the identities that actors seek to verify by exchanging resources with others in groups. Thus, resources provide actors the means to verify their identities that define what goals they are pursuing in exchange networks.

To test the model, Burke (1997) ran a series of simulations used by researchers of NET. The simulations involve computer algorithms that represent decisions about the allocation of resources by actors in various network structures. NET simulations typically assume that actors want to maximize their control over resources and the algorithms subsequently represents these goals. Burke ran the same NET simulations after making two changes. First, he set the primary goal of actors at 100-percent participation

in exchanges with partners. Second, Burke set a secondary goal of actors as the avoidance of getting few or no resources during the exchange. Next, Burke ran the simulations in the same network structures that lead to power difference in groups and compared his results to previous NET experimental and simulation results that assumed the goals of actors were defined by resource maximization. Burke's changes to the goals of simulated actors led to a more equitable distribution of resources in groups compared to NET simulations, reducing power differences in network structures.

The social context may affect how identity processes operate within networks known by social exchange theorists to generate social solidarity in groups. It could be that the social context affects how actors perceive their environment and, therefore, the means used to verify their identity standards. To illustrate, let us return to my previous example of the woman who views herself as a "smart" undergraduate student. What happens when she becomes a graduate student, where grades have less importance than in undergraduate classes? The same woman may value high grades, but she may choose to focus more of her attention on conducting research than, say, preparing for midterm exams in her graduate courses. Why would this fictitious woman change her strategy of identity verification as an undergraduate when she becomes a graduate student?

I propose that the social context (undergraduate or graduate classes) affects how people view the function of resources (course grades or research).

The same fictitious student may still want to verify her identity as being “smart,” but elect to follow different strategies depending on the features of her immediate context. That is why she focuses less of her attention on course grades as a graduate rather than as an undergraduate student when verifying the same identity of “being smart.” In the next section, I review some research on the effects that social context has on group dynamics.

Social Context

There is evidence that social context affects the attitudes and behaviors of people (Berkowitz and LePage 1967; Carter 2013; Galinsky, Gruenfeld, and Magee 2003; Galinsky, Magee, Inesi, and Gruenfeld 2006; Hill, Bartol, Tesluk, and Langa 2009; Stets and Burke 2014; Stets and Carter 2011). For example, studies find that people in a room with a firearm will behave more aggressively towards others than when no gun is present (Berkowitz and LePage 1967). Priming experiments show that people who write about times they had power over someone else were more self-oriented and willing to act by themselves than people that wrote about experiences of powerlessness (Galinsky, Gruenfeld, and Magee 2006).

Chatman and Barsade (1995) found evidence of a social context effect in a study where they defined the goals of collective tasks as cooperative or competitive. The study had two groups of participants complete a business simulation as incumbents of roles within a fictitious company. For one group,

experimenters gave participants literature that described the company as having a reputation for teamwork and a collectivist culture. The second group received literature that described the company as having a reputation for individualism and a culture that was competitive.

Researchers asked participants to rate the cooperativeness of their partners and to self-report the number of people they interacted with during the simulation (Chatman and Barsade 1995). Participants in the cooperative group rated their partners as more cooperative than people in the competitive group. Those in the cooperative group also reported that they interacted with more people during the simulation than participants in the group with a competitive culture. The results suggest that context affects how actors perceive their relationships with others during group tasks.

Evidence from research on social exchange theory also finds effects from social context. In one study, Molm, Whitman, and Melamed (2012) found that prior histories in one form of exchange affects elements of social solidarity that forms latter in different network forms. The authors assigned groups of actors to networks of negotiated exchange before completing reciprocal exchange or vice-versa. Results show that experiences in negotiated exchange sensitized actors to perceived conflict in reciprocal exchange. And, the experiences in reciprocal networks “inoculated” actors from the negative effects of negotiated exchange on elements of solidarity (Molm et al 2012). The result is that

history of exchange in other network forms affects the formation of trust, affective regard, and relational solidarity in the other.

If the features of social context affect how actors perceive self and others in groups, then changing features of this context may affect how actors view the function of resources they give to and receive from others during group tasks. Specifically, social context may lead actors to view resources as a means of contributing to a group project or punishing others. The degree to which actors view the function of resources as contributions or punishment could subsequently affect social solidarity in groups.

Chapter 4: Theoretical Propositions and Predictions

Scope Conditions

The proposed theory of context in social exchange explains how social context affects the behaviors of actors, leading to the formation of solidarity in groups. My proposed theory has four scope conditions. First, the theory focuses on groups of two or more actors working together on a collective task. Second, actors exchange some non-excludable resource during this task, meaning the resources gained by one partner does not reduce the gains by others in the same group. Third, actors know how much each of their partners contributed to the group during this collective task. Fourth, actors have the opportunity to spend their own resources to anonymously punish others in the group. Given these scope conditions, the proposed theory explains how social context affects the means by which actors promote collective action in groups, leading to the formation of social solidarity between group members.

Propositions

Social exchange theory assumes that actors enter social interactions with the goal of maximizing some valued resource. If actors value a resource, then it follows that actors find meaning in the goal of maximizing how much of the resource they control. If the goal of acquiring resources is: (a)

meaningful to actors, and (b) salient to actors within groups, then the goal of resource accumulation operates as an identity standard. Specifically, this goal operates as a personal identity standard whereby actors view themselves as individuals that want to control more rather than less resources (Burke 1997).

Identity control theory argues that actors want to control how they perceive their surroundings and do so by referencing identity standards (Carter 2013; Stets and Burke 2014; Stets and Carter 2011). If the goal of resource accumulation represents a person-level identity standard for actors, then it follows that changing the context of group tasks would affect how actors perceive the means by which they verify this identity (Carter 2013). Identity control theory predicts that changing these perceptions of actors would affect their behaviors as they attempt to verify salient identity standards.

I assume the more that a social context attends to the group-interests, the more likely it is for actors to focus their attention toward the group rather than their own self-interests. When actors focus their attention toward the group rather than self-interests, the (a) more likely those actors will behave as if they view the function of resources as contributions, and (b) the less likely those actors will behave as if they view the function of resources as punishment toward others in the group.

Proposition 1 (Resource Allocation). The more that social context emphasizes the interests of groups rather than self-interests of actors, (a) the more that actors will behave as if they view the function of resources as contributions to the group, and (b) the less that actors will behave as if they view the function of resources as punishment against individual group members.

The affect theory of social exchange (hereafter called the affect theory) explains how the emotions of actors generate social solidarity in groups (Lawler 2001). According to the affect theory, outcomes from social exchange evoke positive or negative feelings within actors. The theory assumes that actors want to know why they experience these feelings and do so by attributing their emotions to self, others, or the group as a whole.

The structure of networks affects where actors decide to attribute their positive feelings. When features of networks clearly delimit who gave what to whom, the theory predicts that actors will attribute their positive feelings to others. When actors attribute positive feelings with others instead of self, the affect theory predicts that more rather than less social solidarity forms in groups. Similarly, identity control theory predicts that actors will experience positive feelings when there is less discrepancy between their perceptual inputs and the identity standard they have chosen to reference (Stets and Burke 2014). If the goal of actors is to accumulate valued resources, and we

treat this goal as a “person-level” identity standard, then it follows that actors will verify this standard when they gain more rather than less resources from the group. The result, according to identity control theory and the affect theory of social exchange, is that actors will experience positive feelings.

Proposition 2 (Affect). When actors gain more resources from the group, the more positive rather than negative feelings they will experience.

The scope of my proposed theory includes groups of three or more actors working together in public goods games. The structure of public goods game clearly delimits who contributed how many resources to a shared pool. According to the affect theory of social exchange and identity control theory, the structure of public goods games should lead actors to attribute their positive feelings with others. It follows from the theory that actors who experience positive feelings in the same networks would also report higher levels of trust and commitment in their groups.

Proposition 3 (Interpersonal Dynamics). Positive affect will lead actors to develop more rather than less trust and commitment in groups.

Social exchange theory views the relationship between actors and their partners as interdependent. In other words, the behaviors of actors toward their partners at one point in time affects how they will chose to behave in the future. The social exchange framework assumes that actors have the capacity to identify patterns in these behaviors when they interact with their partners over time. Such patterns are what lead actors to formulate beliefs about trust and commitment based on their experiences during social exchange (Lawler et al. 2008; Molm et al. 2007). According to the social exchange theoretic perspective, cohesion is a concept defined by how actors view themselves as part of a group that is a distinct entity from themselves (Kuwabara 2011). Proposition 4 follows by proposing that trust and commitment between partners in groups will generate higher rather than lower levels of group cohesion:

Proposition 4 (Cohesiveness). When actors contribute more resources to the group and fewer resources to punish their partners, the more they will perceive themselves and these partners as a cohesive entity.



Figure 4.1 The Proposed Theory of Context in Social Exchange

Diagram of the Proposed Theory

Figure 4.1 diagrams the multilevel dimensions of the proposed theory of context in social exchange. The solid line represents the macro-level relationship between the independent variable (features of social context) and the dependent variable (group cohesion). The four arrows with dashed lines represent a causal path between three dependent variables at the micro-level that affect the formation of group cohesion at the macro-level.

According to the above diagram, Proposition 1 proposes that social context affects the ways in which actors use valued resources in groups. In public goods games, the optimal strategy is for everyone in the group to

contribute more of their resources into a shared-resource pool.⁴ When public goods games provide actors the opportunity to punish their partners without them knowing who punished whom, then actors have two ways to induce their partners to contribute more resources. First, actors may choose to contribute resources to the shared pool and hope their partners will exhibit similar levels of generosity in the future. Second, actors may elect to induce their partners to behave generously by punishing them. More likely than not, actors will choose a combination of both strategies during social exchange.

Proposition 1 states that social context affects whether actors choose a strategy of reliance on contributions to their groups or punishment of individual group members. Cooperative contexts will focus the attention of actors on group-interests, leading them to rely more on contributions and less on punishment than in competitive contexts. When most actors contribute more rather than fewer resources into a shared pool during public goods games, actors are more likely to gain resources from the group.

Proposition 2 draws from the affect theory of social exchange and identity control theory by proposing that actors will experience positive feelings when they receive resources from the group. Proposition 3 follows from the affect theory to propose that trust and commitment is higher in groups that evoke more positive rather than negative feelings within actors.

⁴ From the point of view of actors, the optimal strategy in public goods games is extreme “free-riding” where one actor contributes zero resources but her or his partners both contribute all of their resources. Extreme free riding becomes less optimal during social exchange because it leads partners to reduce their generosity over time.

Proposition 4 states that trust and commitment will lead actors to view their group as a cohesive social entity.

Predictions

I test my predictions using three separate experiments. During each experiment, actors completed a repeated public good game with the same two partners. The game has 24 periods, with two stages within each period. In the first stage, all members of the group receive 20 tokens and they can decide to contribute none, some, or all of these tokens into a group project. The partners of actors simultaneously make this same decision. After everyone makes a decision, the game sums all contributions and multiplies this total by a factor of 0.50 to determine the product. This product is how much the game returns to each group member. In the second stage, the game shows how much each person in the group gave to, and received from, the group during the previous stage. It is during this second stage that actors can spend one of their own tokens to anonymously send two punishment points to their partners. These actors can spend no more than 10 tokens - sending a maximum of 20 punishment points - to each of their two partners. The game tells actors how many punishment points *both* of their partners sent to them. It also shows actors the total amount they earned in the game. After showing actors this information, the game begins a new period of this group task.

Proposition 1 of the proposed theory of context in social exchange proposes that social context affects the behavior of actors in public goods games. This proposition assumes that social context will affect how actors view the function of resources, leading them to use these resources in different ways. Hypothesis 1 predicts that actors will rely more on contributions to the group project when they are located in networks with cooperative rather than competitive contexts. Hypothesis 2 predicts that actors will spend fewer resources to punish their partners in networks with cooperative rather than competitive contexts.⁵

Hypothesis 1: Networks with cooperative contexts will cause actors to contribute more resources to a group project than networks with competitive contexts.

Hypothesis 2: Networks with cooperative contexts will cause actors to spend fewer resources to punish their partners than networks with competitive contexts.

⁵ In my original proposal, Hypothesis 2 predicted that cooperative contexts would lead actors to punish their partners more when these partners behaved selfishly. That prediction was logically inconsistent with Proposition 1 of my proposed theory. Specifically, Proposition 1 states that social context will lead actors to behave as if they view the function of resources as contributions to the group rather than sanctions against individuals. I revised Hypothesis 2 based on my reading of Burke's (1997) identity model of network exchange.

If actors contribute more resources to the group project, and spend fewer resources punishing their partners, then actors are likely to gain resources from the group project. According to the affect theory of social exchange, such gains would evoke positive feelings within actors. Hypothesis 3 tests Proposition 2 by measuring the emotions that actors express in their faces in the last four minutes of the group task.⁶ I make the following prediction:

Hypothesis 3: Networks with cooperative contexts will cause more positive facial expressions by actors than networks with competitive contexts.

I also measured the emotions of actors by asking them questions about their general feelings during the group project. In each experiment, actors gave answers to questions that asked them to rate how positive or negative they felt toward each of their partners and the group as a whole. Proposition 2 states that actors who received resources from the group will experience more positive than negative feelings. Hypothesis 4 predicts that actors in

⁶ I did not have the computing power to analyze data for the entire video of participant's faces. I estimated that each period of the group task took participants one minute to complete. Since there were 24 periods in total, I chose to analyze the last sixth of tasks which lasts about four minutes. Relational cohesion theory predicts that actors would experience the most positive feelings at later points in time (Lawler and Yoon 1996). Thus, it is likely that actors would express the most positive feelings during later rather than earlier parts of the group task.

cooperative rather than competitive contexts will report more positive feelings in survey questions they answer after completing the group task:

Hypothesis 4: Networks with cooperative contexts will cause actors to report feelings that are more positive about the group project than networks with competitive contexts.

Proposition 3 states that actors who experience positive feelings in groups will report higher levels of trust and commitment Proposition 4 follows that trust and commitment will lead to higher rather than lower levels of group cohesion. Hypothesis 5 follows from these propositions by predicting that actors will report higher levels of social solidarity in networks with cooperative rather than competitive contexts:

Hypothesis 5: Networks with cooperative contexts will generate higher levels of trust, commitment, and cohesion in groups than networks with competitive contexts.

Mediation Analyses

My proposed theory argues that social context affects cohesion when actors exchange resources with their partners in groups. Thus, the exchange of resources is part of a causal relationship between my independent (social context) and dependent variables (group cohesion). Mediation analysis is a statistical technique for testing whether actor behaviors during social

exchange (contributions to the group and punishment of partners) transmits the effect of social context on cohesion.

Baron and Kenny (1986) outlines a process for conducting mediation analyses. The process involves estimating three linear regression equations, each presented below:

$$Y = a_1 + B_1X + e_1 \quad (1)$$

$$M = a_2 + B_2X + e_2 \quad (2)$$

$$Y = a_3 + B_3X + B_4M + e_3 \quad (3)$$

where Y represents the dependent variable (i.e. group cohesion), X is the independent variable (i.e. social context), M is the mediator (i.e. average contributions to the group project or punishment of partners), a is the constant for each equation, B is the effect size, and e is the error term.

Mediation analysis involves a four-step process (Baron and Kelley 1986; MacKinnon, Fairchild, and Fritz, 2007). First, the researcher identifies a significant relationship between an independent and dependent variable. That relationship is displayed in Equation 1, where social context (B_1X) affects levels of cohesion in groups (Y). Second, there is a significant relationship between this independent variable on the mediator. Equation 2 shows this relationship between social context (B_2X) and the average contributions to the group project or average punishment of partners in the group (M).

Third, the mediator significantly affects the dependent variable after controlling for the effect from the independent variable. Equation 3 shows the effect that the mediator (B_4M) has on group cohesion (Y), after controlling for social context (B_3X). Fourth, I used the Sobel mediation test to determine whether the mediator in Equation 3 (M) significantly transmits the effect of the independent variable on the dependent variable. (For more information about this test, see MacKinnon et al. 2007: 5-7).

My proposed theory states that social context affects what actors do with resources in groups, leading to trust, commitment, and cohesion between group members. Thus, the exchange behaviors of actors is a central feature of my proposed theory. Social exchange is what provides actors the opportunity to control how they perceive their interactions with partners by contributing resources to the group project or punishing their partners. The outcomes of social exchange generate positive feelings within actors, leading to social solidarity in groups. If evidence supports my proposed theory, then it follows that the social exchange process would mediate the effects of context on group cohesion.

Hypothesis 6 predicts that social context will increase cohesion by operating through the contributions of actors to their group projects. Hypothesis 7, in comparison, predicts that social context operates through the punishment of partners to reduce group cohesion.

Hypothesis 6: Contributions to the group project by actors will mediate the effect of social context by increasing cohesion in groups.

Hypothesis 7: Punishment of partners by actors will mediate the effect of social context by decreasing cohesion in groups.

The next chapter reviews details about the methods that I used in three separate experiments. Much of the design elements for each of my experiments are the same, except that I manipulated subtle features of social context. Study 1 manipulated the context in which actors viewed themselves. Study 2 varies the context in which actors viewed their partners. In Study 3, I manipulated the context in which actors viewed the goals of their groups.

Chapter 5: Experimental Method

Three experiments test the effects of social context on social solidarity in groups. Study 1 tests the context in which actors view their personality by giving them personality reports that focus on cooperative or competitive traits. Study 2 manipulates the relational context of groups by describing the partners of actors as collaborators or competitors. Study 3 tests whether group context affects social solidarity by telling actors their group goals focus on cooperation versus competitive. Each study used the same five outcome measures:

- (1) The percent of resources that actors contribute to a group project,
- (2) The percent of resources that actors spend to punish their partners,
- (3) The emotional expressions that actors exhibit in their faces during the last four minutes of the group project,
- (4) Actors self-reported feelings about the group project, and
- (5) Actors self-reported beliefs about levels of trust, commitment, and cohesion within their groups.

Experimental Procedures

I recruited participants that were enrolled in undergraduate classes from various departments at the University of Maryland. Participants registered for study sessions using an online registration system. Appendix A

displays my recruitment advertisement and images of the screens from my registration website. During the registration process, participants completed an online questionnaire asking them about their social value orientation. I used the online questionnaire to justify the personality reports that I gave participants in Study 1. I also sent reminder e-mails to participants one day before the start of their scheduled experimental session (See Appendix A).

For each of my experiments, I randomly assigned participants to groups and conditions using a two-step process. First, I used a list randomizer to reorder the names of participants for a given experimental session. I then assigned participants into groups of three based on the order of names on this randomized list. Second, I randomly assigned groups of participants to one of two conditions in each experiment. Thus, participants and their partners were assigned to the same social context in each of my three experiments.

When participants arrived for a study session, experimenters escorted individuals to pre-assigned seats in the computer lab. Next, I began a short presentation on the instructions of the group project.⁷ My presentation reviewed the instructions that participants saw on their computer screens during the group project. The instructions stated that participants would complete 30 periods of a group task with two partners seated somewhere in their computer lab. The composition of these groups did not change during

⁷ I use the terms group “task” and “project” interchangeably throughout this dissertation.

the experiment. Unbeknown to participants, the group task would only last 24 periods instead of 30 periods to prevent “end effects.”⁸

The group task occurred over a computer network using treatment for the Z-Tree software package (Reuben and Riedl 2009). Z-Tree is a freely available software program that allows multiple participants to exchange with one another using a single computer server. It took most groups between 30 to 40 minutes to complete the group task (including reading the study instructions on their screens) using Z-Tree. The Z-Tree treatment had participants complete 24 periods of the task where they made two decisions in each period. In the first decision, the program gave each participant an endowment of 20 tokens and asked them to decide to contribute none, some, or all of their tokens to a group project. The treatment allowed participants to keep whatever tokens they did not contribute to the project. Z-Tree automatically summed the tokens contributed to the group by all three group members and multiplied that total by a factor of 0.50. The product was the amount of tokens that each actor received from the group project.

To illustrate, let us say that Mike, Sarah, and Adam are in the same group. The exchange period begins with each of them receiving an endowment 20 tokens. Mike and Sarah decide to contribute all of their tokens to the group. Adam contributes none of his tokens, deciding instead to keep all of his

⁸ End effects refer to changes in participant behaviors when they know a task will end soon. The effect may cause participants to behave less generously in the final periods of social exchange, independent of the manipulation.

20 tokens for himself. The total amount contributed to the group project is 40-tokens (20 tokens from Mike, 20 tokens from Sarah, and zero tokens from Adam). Next, Z-Tree multiplies these 40-tokens by 0.50 to equal 20 tokens. As a result, the group project returns 20 tokens to Mike, Sarah, and Adam. Since Mike and Sarah contributed all of their tokens, they each would earn 20 tokens so far. Adam, however, would earn 40 tokens (the 20 tokens he kept for himself + the 20 tokens he received from the group project).

In the second stage, Z-Tree displays a new screen showing participants how much each member contributed and received from the group project. This second stage is where actors can spend one of their own tokens to send two deduction points to partners.⁹ Z-Tree allows participants to spend up to 10 of their tokens to send a maximum of 20 deduction points to each of their partners. Returning to the previous example, Mike and Sarah would have the opportunity to buy “deduction points” against Adam. Mike and Sarah earned 20 tokens in the first stage of the period. Let us say that Mike decides not to purchase any deduction points, but Sarah decides to spend 10 of her tokens to buy 20 punishment points for use against Adam, who chooses not to punish his partners in this group. Next, Z-Tree would display a new screen showing how much each participant earned in this period of the group task.

For Mike, Z-Tree would show that he started with 20 tokens, contributed all of his tokens to the group project, and received 20 tokens from

⁹ I use the terms “deduction points” and “punishment points” interchangeably throughout this dissertation.

the project. Since Mike did not purchase deduction points, his total earnings for the period would be 20 tokens. For Sarah, Z-Tree would show that she started with 20 tokens, contributed all of her tokens to the group project, and received 20 tokens from the project. She spent 10 of her tokens to send Adam 20 deduction points, leaving her with 10 tokens for the period. Finally, Z-Tree would show that Adam started with 20 tokens, contributed none of his tokens to the group project, but received 20 tokens from the project. Adam had a subtotal of 40 tokens, less the 20 deduction points sent to him by Sarah. Thus, Adam's total earning for the period is 20 tokens.

The Z-Tree treatment does not tell participants who punished whom during the group project. Instead, participants only view a screen showing the total amount of deduction points sent to them by both of their partners.¹⁰ Z-Tree shows participants their running total of earnings after each period, but the software does not tell them how much their partners earned in the same period. Without some method of comparing their earnings to others, I assume these cumulative totals lack meaning for actors during the group project.

When participants completed the group task, experimenters opened a questionnaire on their computer screens that asked them about their experiences during the group task.

¹⁰ The Z-Tree treatment allowed participants to have a deficit of total tokens during the group task. To prevent participants from carrying high levels of deficits in their total earnings, I told them that everyone in the study session would receive a "bonus" of tokens determined by the software program. I also told them the game would deduct their deficits from this bonus.

Experimental Methods and Theory Building

The proposed theory of context in social exchange predicts the relationship between features of social context, actor behaviors during social exchange, and their perceptions of social solidarity after social exchange. Put simply, my proposed theory explains a specific process that involves a number of narrowly defined variables. There are several reasons why the experimental method, instead of other methodologies, is attractive for testing my proposed theory. First, the method allows me to manipulate specific features of social context, including the ways that actors view themselves, their partners, and the goals of their groups. Second, a laboratory setting allows me to control for a number of confounding effects (e.g. whether or not participants know each other before working together on a group task). Third, experiments give me the capacity to consistently measure the attitudes and behaviors of participants over time in a controlled setting. The Z-tree software collects the behaviors of participants during the group task and I gave participants the same survey questions after they completed this task.

Experimental methods have the same purpose as other methodologies: it provides a means to test specific claims made by a theory (Lucas 2003). By theory, I refer to a set of logical statements explaining phenomena that span time, place, and historical context (Cohen 1989, 1993; Lucas 2003). Experiments are simply a means for testing specific relationships, between

narrowly defined concepts, in a particular moment in time. The results of experiments in and of itself are not what lead to generalizable claims. Such results provide evidence in support of predictions, derived from statements of theory, that by definition are generalizable because it spans time, place, and historical context. Thus, my results are merely sets of observations from a particular time and place that offer support for a more general statement of theory that spans these constraints. The replication of my results in future studies is what gives external validity to my proposed theory (Lucas, Morrell, Posard 2013; Zelditch 1969).

Chapter 6: Study 1 - Individual Context

Design and Participants

Study 1 is a two-condition, between-subjects design in which I randomly assigned participants to groups where everyone received reports telling them they had competitive or cooperative personalities. There were 91 students from a large public-university located in the mid-Atlantic region of the United States (U.S.) who completed this study. I removed five participants from my final analyses who incorrectly reported the results from their personality test. My remaining sample size after removing those who failed the manipulation check was 86 participants (59 woman and 27 men).

Manipulation and Procedures

Participants in Study 1 volunteered for the experiment using an online registration system. Appendix A displays images of each screen from this system. The study required that participants answer 10 questions about their social values. I used the questionnaire to justify results in the fictitious personality reports that I gave participants.

I scheduled between six and 15 participants for each study sessions. I randomly assigned participants in each session to groups of three people where they completed a group project. The study did not tell participants who in

the computer lab was their partners. Upon their arrival, experimenters gave participants unique identification numbers and showed them where to sit in the labs. The study required that all participants sign a standard consent form.

After participants gave their consent to participate in Study 1, I presented on the instructions of the experiment. The details of my presentation are located in Appendix B. I used the same Microsoft PowerPoint presentation for all sessions in Study 1. The slides from my presentation outlined the instructions of the group project that participants were about to complete.

The instructional slides for Study 1 told participants they were about to complete a group project with two partners for the entire experiment. The instructions continued by telling participants that each period of the group project has two stages. In the first stage, instructions told participants they would decide how many tokens to contribute to a group project. In the second stage, instructions told participants they would see how much other participants in their group contributed to the same project. Participants would then have a chance to punish the other participants in their group.

As discussed in Chapter 5, participants in my studies completed the same group project and received similar instructions on the rules of the

project (See Appendix C).¹¹ I also told participants the University of Maryland has contracted with a company named Looking Glass Incorporated (hereafter LGI). I explained that LGI specializes in psychometric testing of employees to identify their underlying personality traits. I then explained that LGI drafted reports on the personality traits of participants based on their answers to the social value questionnaire when they registered for my study.

I randomly selected groups of participants to receive one of two reports describing their personalities as competitive or cooperative. Appendix C displays both types of the personality reports that I gave participants. Each personality report has four pages. The first page displayed a color logo for LGI above the title, “Personality Report.” Page two described either a cooperative or competitive personality trait with fictitious quotes about the traits from two employees.¹² I used strength themes from Gallup Corporation’s Clifton Strength Finder as the basis of descriptions for the cooperative or competitive personality traits (Buckingham and Clifton 2001).

¹¹ The instructions that I gave participants in each of my three studies were different in two ways. First, I changed the first two slides of instructions based on the type of context that I was manipulating. Second, study 2 manipulated the social context by referring to partners of participants as “collaborators” or “competitors.” Studies 1 and 3 referred to partners of participants as “participants.”

¹² I used the same names and professional titles for quotes used in reports about cooperative or competitive personality traits. The reports attributed the first quote to “Jeremy B.” who was a “human resources manager.” The same report attributed the second quote to “Andrea H.” with the title of “sales manager.” The order of presentation of quotes was the same for both types of personality reports.

I based the descriptions of a competitive personality trait on what Buckingham and Clifton (2001: 91) calls the “competitive theme.” The theme focuses on positive aspects of competition. I used quotes from people who described how they were invigorated from winning competitions with others. I based the description of a cooperative personality trait off the “inclusiveness theme” from the Gallup Corporation’s Clifton Strength Finder (Buckingham and Clifton 2001:103). The inclusiveness theme focuses on the positive aspects of making all people feel part of a group. I used quotes from people who described how they prefer behaving in ways that were inclusive of all people without judgments toward others.



Figure 6.1 Fictitious Data Visualization from Personality Reports

Page three of the reports displayed graphics that visualized fictitious data on the personality traits of participants. Figure 6.1 displays the graphics used in the cooperative and competitive personality reports, respectively. The only differences between the two images in Figure 6.1 are the titles and colors used in the bar charts. The image on the left side of Figure 6.1 used blue bars, while the right-side image has red bars.

The fourth page of the report asked participants to take a moment to reflect on their personality traits. I used the reflection exercises to strengthen the effect of my manipulations on participants. The exercise asked participants to describe the role of cooperation or competition in their lives and to give an example of filtering their world using this theme. I then gave participants one minute to write a response. Upon completion of the reflection exercise, participants began the group task. I told participants that LGI loaded the results from their personality test into the computer program. Thus, participants saw one of the two images displayed in Figure 6.1. Appendix C displays images of each screen from this group task for participants in the cooperative or competitive conditions.

Dependent Measures

Contribution. – Each period of the public goods game began with actors receiving an endowment of 20 tokens. The contribution measure is the percentage of these 20 tokens that actors decided to transfer into a shared pool. On average, participants in Study 1 contributed 51% of their endowment to the shared pool across the 24 periods of the group project.

Punishment. – After making decisions about contributing resources into a shared pool, actors viewed a new screen on their computers telling them how much they and their partners contributed to the shared pool. Next, actors made a second decision about anonymously punishing their partners.

Actors could spend one of their own tokens to send two deduction points to partners of their choosing. The game allowed participants to send up to 20 deduction points (costing them 10 tokens) to each of their partners. On average, participants in study 1 sent their partners 11% of the total number of deduction points allocated to them in each period of the game.

Facial Recognition of Emotions - I used web cameras to record the facial expressions of participants as they completed the group project. I trimmed the last four minutes of the videos and then analyzed them using the CERT software. CERT uses algorithms to identify the level of emotions that people express in their faces (Valstar and Pantic 2012).

The software is capable of measuring seven core emotions: joy, surprise, contempt, sadness, disgust, fear, and anger. The software also measures neutral expressions of emotions that do not fall into any of these seven categories. CERT assigns a number to each category that ranges from 0 to 1.0, with the total values for all categories equaling 1.0. Thus, each category represents a percentage of emotions that participants expressed at a given point in time.

CERT estimated values for each frame of the four-minute videos, excluding frames where participants obstructed the recording of their cameras. Most videos recorded between 7,000 and 12,000 frames per actor during the four minutes of recordings that I used. Next, I took the average of values assigned by CERT for each emotive category per participant. The average for

each category provides a measure of their emotional expressions during the last four-minutes of the group task.

Positive Affect. – I measured positive affect using an index of three questions asking participants about their general feelings during the group project. Two of these questions asked participants, “In general, how would you describe your feelings towards Participant #[1/2] during the experiment?” using a seven-point scale [1 = “Very negative” / 7 = “Very positive”]. A third question asked participants, “How much do you feel that you and the other participants worked well together?” with answer choices ranging along a seven-point scale [1 = “Not at all” / 7 = “Very much”]. The Cronbach’s alpha coefficient of reliability for this positive affect index is 0.66.

Trust. – I measured trust using an index of three questions. Two of these questions asked participants, “How much did you trust Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A lot]. The third question asked participants, “How much did you trust the other participants?” using another seven-point scale [1 = Not at all / 7 = Very much]. The Cronbach’s alpha coefficient of reliability for the trust index is 0.70.

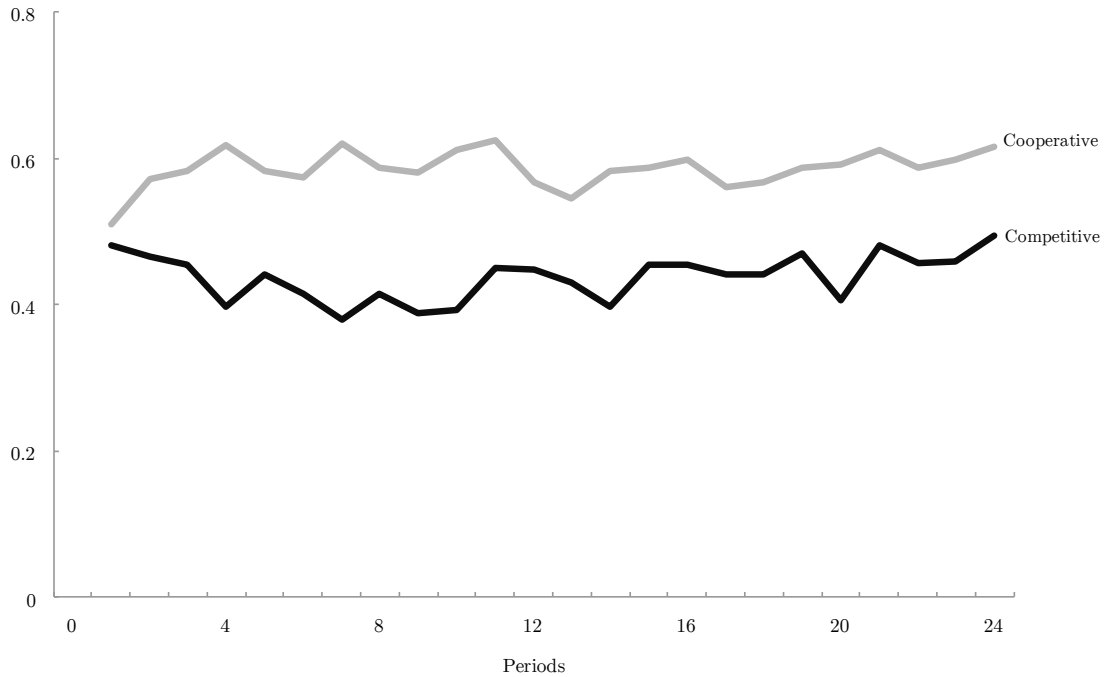
Commitment. – I measured commitment using an index of three questions. Two of the questions asked participants, “How committed were you to Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A lot]. The third question asked participants, “How committed were you to the other participants?” using another seven-point scale [1 = Not at all / 7 =

Very much]. The Cronbach's alpha coefficient of reliability for the commitment index is 0.79

Cohesion. – I measured cohesion using an index of six answer choices to the same question asking participants, “Think about the relationship you and the other participants had during the group task. How would you describe the relationship on each of the following?” Participants used a nine-point scale for each of the following answer choices: Distant/Close, Conflictual/Cooperative, Fragmenting/Integrating, Fragile/Solid, Divisive/Cohesive, and Self-Oriented/Team-Oriented. The Cronbach's alpha coefficient of reliability for the cohesion index is 0.89.

Personal Identity Standard. – The Schwartz (2007) value scale is a personal value questionnaire that measures 10 universal values: achievement, benevolence, conformity, hedonism, power, security, self-direction, stimulation, tradition, and universalism. I used an adapted version of Schwartz's questionnaire from the World Values Survey that asked participants, “You will see statements that describe some people. Please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you.” Participants used a five-point scale to answer questions that described each of the 10 universal values from Schwartz's questionnaire.

Figure 6.2 Average Percent of Contributions to the Group by Personality Type



Generosity

Hypothesis 1 predicts that actors will contribute more tokens to the group project when they receive reports that describe their personality as cooperative rather than competitive. The results in Figure 6.2 support this prediction. This figure displays the average percent of contributions to the group by actors during the 24 periods of the group task. The gray line represents actors with reports that described their personalities as cooperative; while the black line represent those individuals who received competitive personality reports. We see a consistent difference in generosity

over time by condition assignment. Table 6.1 tests whether these differences in average contributions are statistically significant between conditions for the four parts of this group task.

Table 6.1 T-Tests for Average Contributions to the Group

Periods	Cooperative Trait	Competitive Trait	t-value
1 to 6	57%	44%	2.36**
7 to 12	60%	41%	3.04**
13 to 18	57%	44%	2.10*
19 to 24	60%	46%	2.00*
All Periods	59%	44%	2.51**
<i>N</i>	42	44	

Notes. -* $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

The results in Table 6.1 support my first prediction: actors with reports that described their personality as cooperative gave, on average, 59% of their endowments to the group. In comparison, actors with reports that described their personality as competitive gave 44% of their endowments to the group.

That difference was statistically significant ($t = 2.51$; $p = .007$, one-tailed).¹³

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In each quartile of the group task, Table 6.1 shows that actors with cooperative personality reports gave significantly more to their group than actors with reports describing their personality as competitive. In periods one to six, actors with cooperative reports gave an average of 57% to the group and those with competitive reports gave 44% of their endowment ($t = 2.36$; $p = .010$, one-tailed). For periods seven to 12, actors in the cooperative condition gave 60% of their endowment while those in the competitive condition gave 41% ($t = 3.04$; $p = .002$, one-tailed).

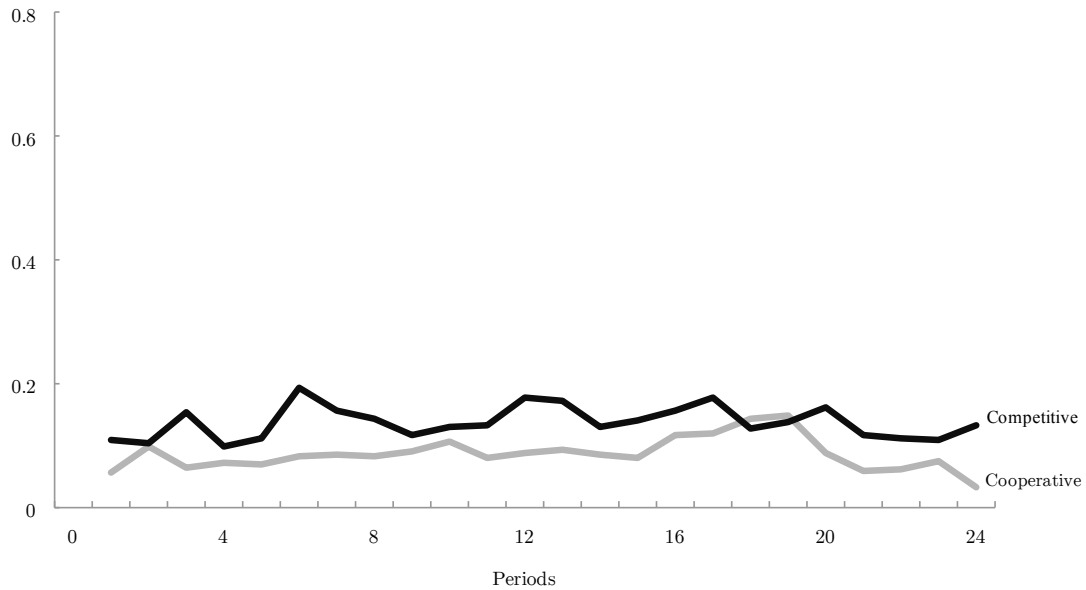
For periods 13 to 18, a similar difference exists: cooperative reports led actors to give 57% of their endowment, while competitive reports led actors to contribute 44% ($t = 2.10$; $p = .02$, one-tailed). For the last quartile, Figure 6.1 shows that actors with cooperative reports gave 60% of their endowment to the group and those with competitive reports gave 46% of their

¹³ These differences could be a function of “group effects” where generosity by a few actors leads their partners to behave generously too. I ran two separate Analysis of Covariance (ANCOVA) models that attempted to control for these effects. The first model controlled for contributions by actors relative to their partners. I calculated this measure by taking the average contributions by all members of a group. Next, I subtracted the contributions by actors from this group average. After controlling for relative contributions, I still found similar differences between experimental conditions ($F = 5.97$; $p = .008$, one-tailed). The second model controlled for average contributions from both partners of actors. After controlling for these contributions, I found evidence that actors were more generous in cooperative rather than competitive conditions ($F = 2.34$; $p = .065$, one-tailed).

¹⁴ I found similar results after controlling for the gender of actors.

endowment. That difference also was statistically significant ($t = 2.00$; $p = .025$, one-tailed).

Figure 6.3 Average Percent of Punishment Toward Partners by Personality Type



Punishment

Hypothesis 2 predicts that actors will spend fewer resources to punish others after receiving reports describing their personality as cooperative rather than competitive. The results in Figure 6.3 support my prediction. This figure displays the average percentage of punishment points sent to partners by actors during the 24 periods of the group task. Similar to the previous figure, the gray line represents actors with cooperative personality reports and the black line represents those with competitive reports. Table 6.1 tests the

difference in average percent of punishment points sent to partners between conditions in each quartile of the group task.

Table 6.2 T-Tests for Average Punishment of Partners

Periods	Cooperative Trait	Competitive Trait	t-value
1 to 6	8%	13%	-2.36**
7 to 12	9%	14%	-1.93*
13 to 18	11%	15%	-1.42 ⁺
19 to 24	8%	13%	-1.83*
All Periods	9%	14%	-2.06*
<i>N</i>	42	44	

Notes. – ⁺p<.10, *p<.05, **p<.01, ***p<.001; One-tailed probabilities reported.

The results in Table 6.2 support my prediction: actors with reports that described their personality as cooperative sent 9% of their allotted punishment points to partners, while those with competitive reports sent 14% of their allotment to partners. That difference was statistically significant ($t = 2.06$; $p = .021$, one-tailed). This finding could be a function of contributions to the group by partners of actors. If these partners behaved more generously than actors in groups, then actors may be less likely to punish their partners who gave more than they did. To address this issue, I ran a separate analysis of covariance (ANCOVA) model that controls for the average total amount of contributions by both partners of actors. After controlling for the total amount of contributions by these partners, actors still spent significantly less

resources to punish their partners in cooperative rather than competitive contexts ($F = 2.63$; $p = .054$, one-tailed).^{15 16}

For periods one to six, actors with cooperative reports sent 8% of their punishment points to partners and those with competitive reports sent 13% of their point allotment. That difference was statistically significant ($t = -2.36$; $p = .010$, one-tailed). For periods seven to 12, actors in the cooperative condition used 9% of their punishment points to the 14% used by this in the competitive condition. Again, the difference was statistically significant ($t = -1.93$; $p = .023$, one-tailed).

For periods 13 to 18, the above table shows moderately significant differences between conditions: those in cooperative conditions used 11% of their punishment points to the 15% used by those in competitive conditions ($t = -1.42$; $p = .08$, one-tailed). In the last quartile, actors with cooperative reports used 8% of their punishment points and those with competitive reports used 13% of these points. That difference was also statistically significant ($t = -1.83$; $p = .035$, one-tailed).

¹⁵ I ran two separate ANCOVA models that attempt to control for “group effects.” The first model controlled for absolute contributions to the group by actors. After controlling for these absolute contributions and the interaction effect between these contributions and condition assignment, I still found significant differences between condition assignment in punishment of partners ($F = 4.40$; $p = .020$, one-tailed). The second of these models controlled for relative contributions to the group by actors and the interaction between these contributions and condition assignment. After controlling for these factors, I still found similar differences in punishment by condition assignment ($F = 4.12$; $p = .023$, one-tailed).

¹⁶ I found similar results after controlling for the gender of actors.

Table 6.3 Facial Expressions of Emotions by Personality Trait

Emotion	Cooperative Trait	Competitive Trait	t-value
Joy	0.010 (.092)	0.014 (.016)	-1.36*
Surprise	0.012 (.022)	0.015 (.015)	-0.635
Contempt	0.266 (.111)	0.289 (.150)	-0.748
Neutral	0.446 (.120)	0.381 (.127)	2.252***
Sadness	0.144 (.099)	0.185 (.161)	-1.29
Disgust	0.037 (.074)	0.044 (.059)	-0.499
Fear	0.023 (.072)	0.014 (.022)	0.749
Anger	0.059 (.066)	0.058 (.068)	0.028
Total	0.997	1.000	
<i>N</i>	35	40	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

Totals under 1.000 due to rounding error.

Data for 11 participants who received reports describing their personality as cooperative are not displayed because it was lost due to technical problems during the video recording process.

Positive Affect

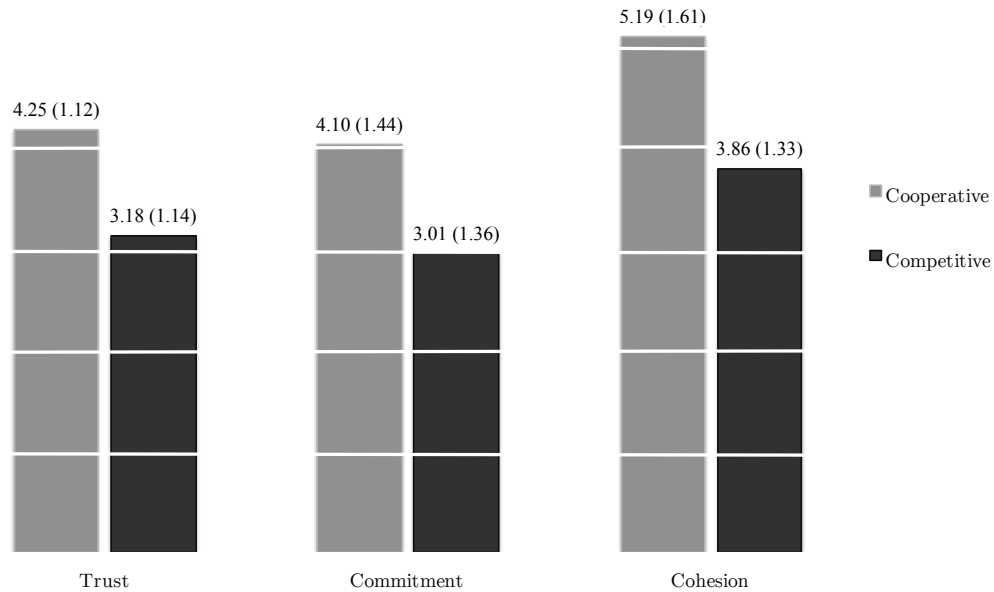
Hypothesis 3 predicts that actors with cooperative personality reports will express more positive emotions in their faces than actors that received competitive reports. Table 6.3 shows the results from the facial recognition software by condition assignment. The results do not support Hypothesis 3. Table 6.3 shows the emotional expressions of actors during the last four minutes of the group task. There were no significant differences in levels of

surprise, contempt, sadness, disgust, fear, or anger. Table 6.3 shows, however, that actors expressed more neutral feelings when given cooperative instead of competitive personality reports ($t = 2.252$; $p = .014$, one-tailed). Also, levels of joy were higher in competitive rather than cooperative conditions ($t = -1.36$; $p = .046$, one-tailed).

Hypothesis 4 predicts that actors with cooperative personality reports will report feelings that are more positive after the group project than actors with competitive reports. I used an index of three questions that asked actors to rate their general feelings during the group project. Actors with reports that described their personality as cooperative reported higher levels of positive affect ($M = 4.52$; $SD = 1.19$) than actors receiving competitive reports ($M = 3.77$; $SD = .84$). The results using a one-way analysis of variance shows significant differences between experimental conditions ($F = 11.57$; $p < .001$, one-tailed).¹⁷

¹⁷ ANOVA assumes equal variances between samples. The results from Bartlett's test for equal variances shows a significant differences in the variance of my positive affect index between experimental conditions ($\text{Chi}^2 = 4.978$; $p = .013$, one-tailed). I found significant differences between conditions using the non-parametric, Kruskal-Wallis test ($\text{Chi}^2 = 7.20$; $p = .004$, one-tailed).

Figure 6.4 Means of Trust, Commitment, and Cohesion by Personality Type (Standard Deviations in Parentheses)

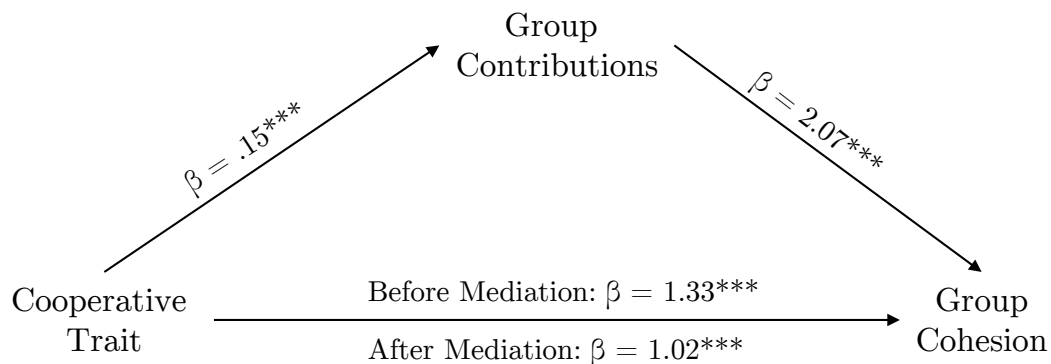


Social Solidarity

Hypothesis 5 predicts that actors will report higher levels of social solidarity when they receive reports describing their personality as cooperative rather than competitive. Figure 6.4 displays the average levels of trust, commitment, and cohesion by experimental condition. The results using a one-way analysis of variance (hereafter ANOVA) support each of the predictions made in Hypothesis 5. Trust was significantly higher for actors with cooperative rather than competitive personality reports ($F = 19.28$; $p < .001$, one-tailed). Similarly, actors in the cooperative condition reported higher

levels of commitment to their group than individuals in the competitive condition ($F = 13.14$; $p < .001$, one-tailed). As predicted in Hypothesis 5, actors reported higher levels of cohesion after receiving a cooperative rather than competitive personality report ($F = 17.33$; $p < .001$, one-tailed).

Figure 6.5 Mediation Analysis for Group Contribution



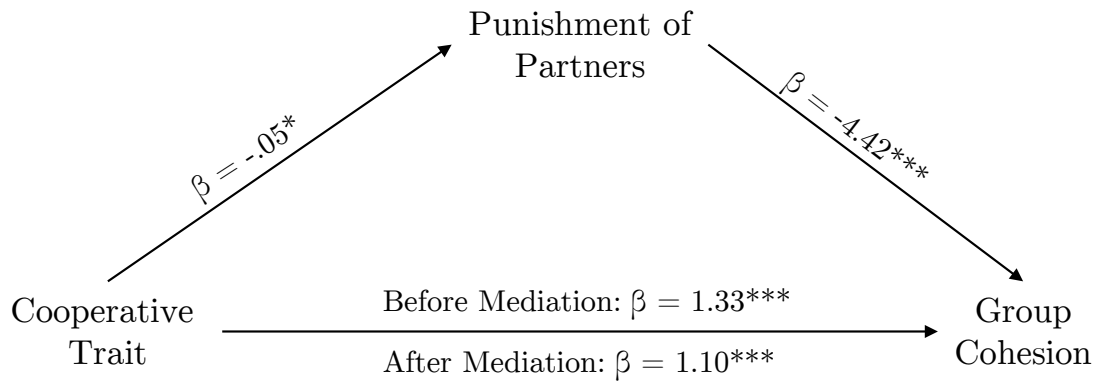
Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (one-tailed)

Contributions and Punishment as Mediators

Hypothesis 6 predicts that contributions to the group project by actors will mediate the relationship between social context and cohesion. Figure 6.5 displays the results from an analysis testing the mediating effect of group contributions within the relationship between experimental condition and cohesion (Baron and Kenny 1986). First, I found a significant relationship between type of personality report and cohesion ($\beta = 1.33$; $t = 4.16$; $p < .001$, one-tailed). Second, I found a significant relationship between the type of

personality report and group contributions ($\beta = .15$; $t = 2.51$; $p = .007$, one-tailed). Third, the mediator (group contributions) significantly affects cohesion after controlling for the effects of experimental condition ($\beta = 2.07$; $t = 3.77$; $p < .001$, one-tailed). Fourth, the results from a Sobel mediation test show that group contributions significantly transmits the effect of context on cohesion ($z = 2.09$; $p < .018$, one-tailed). Thus, the results in Figure 6.5 show that generosity to the group transmits the effect of social context on cohesion.

Figure 6.6 Mediation Analysis for Punishment of Partners



Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (one-tailed)

Hypothesis 7 predicts that punishment of partners by actors will mediate the relationship between social context and group cohesion. The results in Figure 6.6 support this prediction. First, I found a significant relationship between personality report and cohesion ($\beta = 1.33$; $t = 4.16$; $p < .$

001, one-tailed). Second, these reports also had a significant effect on the punishment of partners ($\beta = -.05$; $t = -2.06$; $p = .022$, one-tailed). Third, the mediator significantly affected cohesion after controlling for the type of personality report ($\beta = -4.42$; $t = -3.31$; $p < .001$, one-tailed). Finally, the results from a Sobel mediation test shows that punishment transmits the effect from type of personality report on cohesion ($z = 1.75$; $p < .040$, one-tailed). Thus, the results in Figure 6.6 show that punishment of partners transmits the effect of social context on cohesion.

Table 6.4 Means of Social Value Questions by Personality Trait

	Cooperative Trait	Competitive Trait	t-value
<i>Individualism vs. Collectivism</i>			
Conformity	3.43 (1.06)	3.18 (.79)	1.05
Security	3.64 (1.01)	3.52 (1.05)	0.54
Self-Direction	3.64 (.76)	3.93 (.12)	-1.73*
Stimulation	3.71 (1.04)	3.70 (.88)	0.05
<i>Egoism vs. Altruism</i>			
Universalism	3.31 (.98)	3.34 (.96)	-0.15
Benevolence	4.48 (.71)	4.18 (.81)	1.79*
Achievement	3.76 (.91)	3.80 (1.00)	-0.16
Power	2.81 (.99)	3.07 (1.04)	-1.18
<i>N</i>	42	44	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

Alternative Explanation: Changing Personal Identities

Identity control theory posits that behaviors of people is a function of the relationship between two variables: (1) the identity standard that individuals reference, and (2) perceptions of their immediate surroundings. My proposed theory assumes the first of these two variables is constant. In other words, I assume that participants view themselves as people who prefer to gain more rather than less resources (i.e. tokens) during group tasks. Under this assumption, I then varied how actors perceived themselves by giving them a report that describes their personality as cooperative or competitive.

However, it could be that social context affects the identity standard that actors have chosen to reference. By giving actors a cooperative or competitive personality report, they may have chosen to reference a pro-social or selfish identity standard. Thus, social context may operate through identity standards to shape behaviors that, in turn, affect solidarity in groups.

After completing the group task, I had actors complete a social values questionnaire. The questionnaire was an adapted version of Schwartz's (2007) value scale found in the World Value Survey (WVS). Welzel (2009) identified two global dimensions of values based on respondent answers in the WVS. The first was a collectivist/individualistic value dimension, and the second dimension was egoism/altruism. After actors completed the group project, I asked them to answer these same questions used by Welzel.

Table 6.4 compares the means for answers from the social values questionnaire by experimental condition. The above table shows limited evidence that social context affects the values held by actors. First, only one question that measured individualism vs collectivism values was significantly different between conditions. Actors reported significantly higher levels of self-direction after receiving personality reports that described them as competitive instead of cooperative. None of the other three questions from this set of values significantly differed by condition.

Second, Table 6.4 shows significant differences for one question from the egoism versus altruism set of values. Actors reported significantly higher levels of benevolence when they received cooperative rather than competitive personality reports. For the other questions in this set, the above table shows no significant differences. Third, the results from a Pearson's pairwise correlation shows no significant relationship between levels of cohesion and the answers that actors gave to the self-direction ($r = -0.028$; $p = .398$, one-tailed) nor the benevolence questions ($r = .095$; $p = .326$, one-tailed). Put simply, there is limited evidence that features of context operate through the social values of actors to affect cohesion in groups.

Discussion

The results from Study 1 support most of my predictions. In support of hypothesis 1, I found that actors contributed more resources to a group project when they received a report describing their personality as cooperative instead of competitive. I also found support for hypothesis 2 with actors sending less punishment points to their partners after receiving a cooperative instead of competitive personality report.

I did not find support for hypothesis 3 on the facial expressions of emotions by actors. The expressions of “joy” was significantly higher for actors with competitive rather than cooperative personality reports. I also found that “neutral” expressions were significantly higher for actors with reports describing their personality as cooperative instead of competitive. This neutral category represents expressions on faces without contracted muscles or movements. It represents an emotionless facial expression. In general, competitive contexts evoked more emotions in the faces of actors than cooperative contexts (i.e. neutral). However, there was little variation between conditions for the specific types of emotions (e.g. contempt, disgust, or anger).

I did find evidence in support of hypothesis 4, which predicted that actors would report more positive feelings in groups with cooperative rather than competitive contexts. That finding raises questions about the difference between the emotional expressions of actors and their answers to questions about these emotions. There were several limitations with the collection of

data for these emotional expressions, however. I discuss these limitations later in this dissertation.

In support of hypothesis 5, I found that actors reported significantly higher levels of trust, commitment, and cohesion in groups when they received cooperative rather than competitive personality reports. I also found evidence in support of hypotheses 6 and 7 using separate mediation analyses. In support of hypothesis 6, I found evidence that average contributions to the group project significantly mediated the relationship between social context and group cohesion. Similarly, I found support for hypothesis 7 with punishment of partners mediating this same relationship.

Finally, I did not find convincing evidence for an alternative explanation: that features of social context affect the identity standards referenced by actors. I found non-significant differences between conditions for most answers that actors gave to questions about their social values. I did find significant differences in answers for two of the social value questions. However, there were non-significant relationships between these answers and levels of group cohesion.

Chapter 7: Study 2 - Relational Context

Design and Participants

Study 2 is a two-condition, between-subjects design where I randomly assigned participants to group tasks that referred to their partners as collaborators or competitors. The study had 94 students from a large public-university located in the mid-Atlantic region of the U.S. I removed eight participants from my final analysis who incorrectly reported that their computer referred to partners as collaborators rather than competitors or vice-versa. The remaining sample size after removing those who failed the manipulation check was 86 participants (61 women and 25 men).

Manipulation and Procedures

Participants in Study 2 volunteered for the experiment using the same online registration system from the last study. Similar to my last study, I scheduled participants for sessions with six to 15 people in computer labs on campus. When participants arrived for sessions, experimenters gave them unique identification numbers and showed them where to sit in the labs. The study required all participants to sign standard consent forms before they began this second study.

After participants signed their consent forms, I presented on the instructions of the study. The presentation that I gave in Study 2 was the

same one that I gave in my first study (See Appendix B for this presentation). The slides used in my presentation were similar to the instructions that participants saw on their computer screens. When I finished my presentation, the participants in study 2 started the group task.

I randomly assigned participant to groups where the task referred to their partners as collaborators or competitors (See Appendix C). The manipulation affected two components of the group task. First, the instructions either referred to partners of participants as competitors or collaborators. Second, the group task used one of these two words during each period of exchange. Third, the study asked participants to reflect about working with collaborators or competitors in groups. The slide continued by asking participants to describe the role of competition or collaboration in their own group using examples. I gave participants one minute to complete this reflection exercise.¹⁸ I used the reflection exercise to strengthen the manipulation for participants in study 2.

¹⁸ One concern is that participants would reflect on competitive or collaborative groups they were part of in the past, not the groups in study 2. If participants chose to write about the former, it may confound the effects of present group context with prior contexts. I did not find evidence of this confounding effect. All but five participants mentioned past experiences. Of the five participants who wrote about past group experiences, only two participants wrote more than one sentence about their prior experiences in competitive or collaborative groups.

Dependent Measures

Contributions. – Similar to my last study, each period of the public goods game began with actors receiving an endowment of 20 tokens. The contribution measure is the percentage of these 20 tokens that actors decided to transfer into a shared pool. On average, participants in study 2 contributed 50% of their endowment into the shared pool across the 24 periods of the public goods game.

Punishment. – After making decisions about contributions into a shared pool, actors viewed a new screen on their computers telling them how much they and their partners contributed into the shared pool. Next, actors made a second decision about anonymously punishing their partners. Actors could spend one of their own tokens to send two deduction points to partners of their choosing. The game allowed participants to send up to 20 deduction points (costing them 10 tokens) to each of their partners without their partners knowing who punished whom. On average, participants in study 2 sent their partners 10% of the total number of deduction points allocated to them by the game.

Facial Recognition of Emotions - Similar to my previous study, I used web cameras to record the facial expressions of participants as they completed the group project (Valstar and Pantic 2012). I trimmed the last four minutes of the videos and then analyzed them using the CERT software. The software

measured levels of joy, surprise, contempt, sadness, disgust, fear, anger, and there was a neutral expression category. CERT assigns a number to each category that ranges from 0 to 1.0, with the total values for all categories equaling a total of 1.0.

Positive Affect. – I measured positive affect using an index of three questions asking participants about their general feelings during the group project. Two of these questions asked participants, “In general, how would you describe your feelings towards Participant #[1/2] during the experiment?” using a seven-point scale [1 = “Very negative” / 7 = “Very positive”]. A third question asked participants, “How much do you feel that you and the other participants worked well together?” with answer choices ranging along a seven-point [1 = “Not at all” / 7 = “Very much”]. The Cronbach’s alpha coefficient of reliability for the positive affect index is 0.65.

Trust. – I measured trust using an index of three questions. Two of these questions asked participants, “How much did you trust Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A lot]. The third question asked participants, “How much did you trust the other participants?” using another seven-point scale [1 = Not at all / 7 = Very much]. The Cronbach’s alpha coefficient of reliability for the trust index is 0.71.

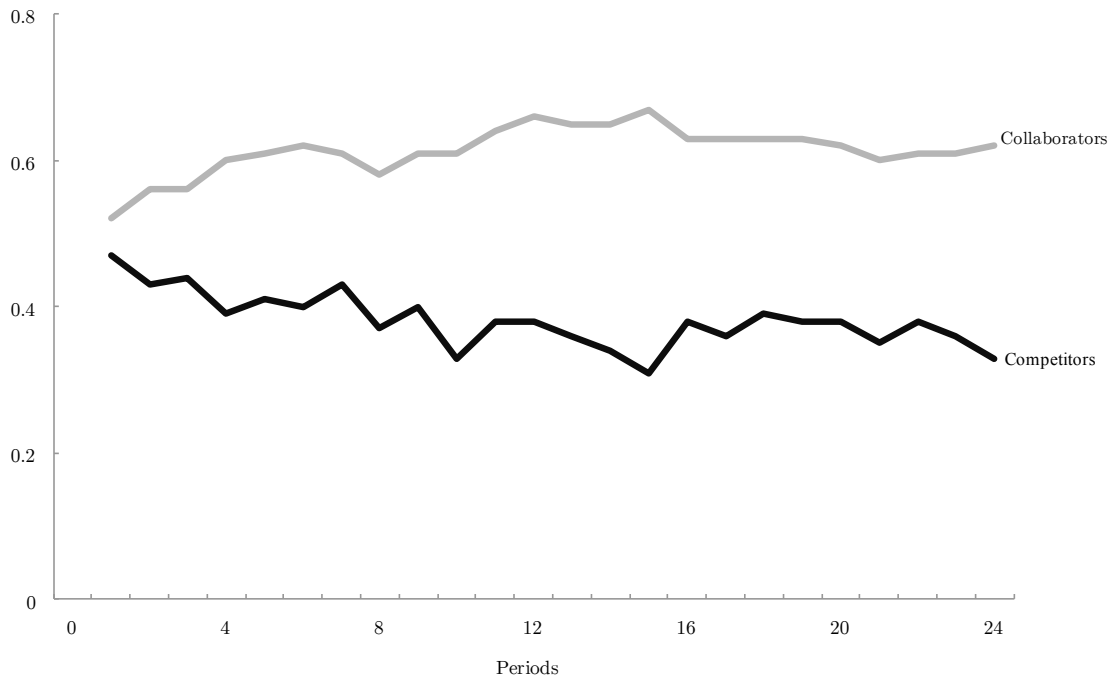
Commitment. – I measured commitment using an index of three questions. Two of these questions asked participants, “How committed were you to Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A

lot]. The third question asked participants, “How committed were you to the other participants?” using another seven-point scale [1 = Not at all / 7 = Very much]. The Cronbach’s alpha coefficient of reliability for the commitment index is 0.78.

Cohesion. – I measured cohesion using an index of six answer choices to the same question asking participants, “Think about the relationship you and the other participants had during the group task. How would you describe the relationship on each of the following?” Participants used a nine-point scale for each of the following answer choices: Distant/Close, Conflictual/Cooperative, Fragmenting/Integrating, Fragile/Solid, Divisive/Cohesive, and Self-Oriented/Team-Oriented. The Cronbach’s alpha coefficient of reliability for the cohesion index is 0.92.

Personal Identity Standard. – Similar to my first study, I used the adapted version of Schwartz’s (2007) personal value questionnaire that is used by the World Values Survey. The questionnaire told participants, “You will see statements that describe some people. Please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you.” It then asked them to use five-point scales to rate their value orientation to: achievement, benevolence, conformity, hedonism, power, security, self-direction, stimulation, tradition, and universalism.

Figure 7.1 Average Percent of Contributions to the Group by Partner Type



Generosity

Hypothesis 1 predicts that actors will contribute more tokens to the group project when these groups refer to their partners as collaborators rather than competitors. The results in Figure 7.1 support my prediction. This figure displays the average percent of contributions to the group during the 24 periods of the group task. The gray lines represents actors in groups that referred to their partners as “collaborators”; while the black line are those in groups that called these partners “competitors.” The above figure shows a

consistent difference in contributions over time by condition assignment. Table 7.1 tests whether these differences are statistically significant.

Table 7.1 T-Tests for Average Contributions to the Group

Periods	Collaborators	Competitors	<i>t</i>
1 to 6	58%	42%	2.75**
7 to 12	62%	38%	3.81***
13 to 18	65%	36%	4.29***
19 to 24	59%	38%	3.02***
All Periods	61%	38%	3.56***
<i>N</i>	44	42	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

The results in Table 7.1 support my prediction: actors with collaborators as partners gave 61% of their tokens to the group on average, while those with partners described as competitors gave 38% of their endowment to the group. That difference was statistically significant ($t = 3.56$; $p < .001$, one-tailed).^{19 20} Table 7.1 shows significant differences for each

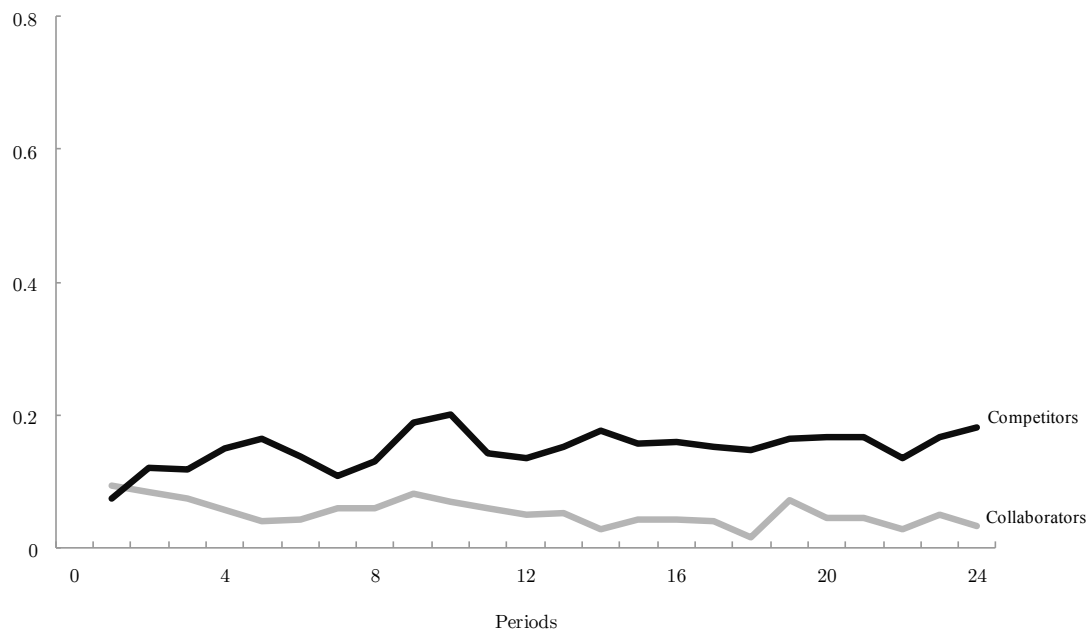
¹⁹ These differences could be a function of “group effects” where generosity by a few actors leads their partners to behave generously too. I ran two separate Analysis of Covariance (ANCOVA) models that attempted to control for these effects. The first model controlled for contributions by actors relative to their partners. After controlling for these relative contributions, I still found similar differences between experimental conditions ($F = 16.49$; $p < .001$ one-tailed). The second model controlled for average contributions from both partners of actors. After controlling for partners’ contributions, I still found evidence that actors were more generous in cooperative rather than competitive conditions ($F = 18.26$; $p < .001$, one-tailed).

²⁰ I found similar results after controlling for the gender of actors.

quartile of the group task. For periods one to six, actors with collaborators as partners gave 58% of their endowment compared with 42% given by those with competitors as partners ($t = 2.75$; $p = .004$, one-tailed). Those with collaborators as partners gave 62% of their endowment in periods 7 to 12, compared to actors with competitors as partners who gave 38% ($t = 3.81$; $p < .001$, one-tailed).

For periods 13 to 18, a similar pattern exists: actors with collaborators as partners as partners gave 65% to the group, while those with competitors as partners gave 36% ($t = 4.29$; $p < .001$, one-tailed). In the last quartile, actors gave 59% of their tokens to the group project, while those with competitors as partners gave 38% of their tokens to the group ($t = 3.56$; $p < .001$, one-tailed).

Figure 7.2 Average Percent of Punishment Toward Partners by Partner Type



Punishment

Hypothesis 2 predicts that actors will spend fewer resources to punish partners described as collaborators rather than competitors. The results in Figure 7.2 support my prediction. Similar to my previous figures, the gray line represents actors with partners described as collaborators; while the black line are those with partners described as competitors. The over-time pattern in this figure shows that actors punished their partners more when the game called them competitors versus collaborators over time. The results in Table 7.2 test if these differences are statistically significant.

Table 7.2 T-Tests for Average Punishment of Partners

Periods	Collaborator	Competitors	<i>t</i>
1 to 6	6%	13%	-2.86***
7 to 12	6%	15%	-3.66***
13 to 18	4%	16%	-6.18***
19 to 24	6%	16%	-4.57***
All Periods	5%	15%	-5.02***
<i>N</i>	44	43	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

The results in Table 7.2 support my prediction: actors with collaborator partners used 5% of their punishment points against others, while those with competitor partners used 15% of these points. That difference was statistically significant ($t = -5.02$; $p < .001$, one-tailed). However, the percent of

punishment points that actors sent to their partners may be a function of who gave how much to their groups. I ran a separate ANCOVA model that controls for the average total amount of tokens that partners of actors contributed to the group. After controlling for the behaviors of these partners, I still found that actors spent significantly less resources to punish their partners in cooperative rather than competitive conditions ($F = 18.26$; $p < .001$).^{21 22}

The above table shows significant differences between conditions for each quartile of the group task. Between periods one to six, actors sent 6% of their punishment points to collaborator partners versus the 13% they sent to partners described as competitors ($t = -2.86$; $p = .005$, one-tailed). For periods seven to 12, actors sent 6% of their punishment points to collaborator partners while actors sent 15% of these points sent to competitor partners ($t = -3.66$; $p < .001$, one-tailed).

The differences between conditions for the last two quartiles were also statistically significant. Between periods 13 to 18, actors used 4% of their

²¹ I ran two separate ANCOVA models that attempt to control for “group effects.” The first model controlled for absolute contributions to the group by actors and the interaction effect between these contributions and condition assignment. After controlling for these contributions and the interaction effect between these contributions and condition assignment, I still found significant differences between condition assignment in punishment of partners ($F = 11.04$; $p < .001$, one-tailed). The second of these models controlled for relative contributions to the group by actors and the interaction between these contributions and condition assignment. After controlling for these factors, I still found similar differences in punishment by condition assignment ($F = 24.10$; $p < .001$, one-tailed).

²² I found similar results after controlling for the gender of actors.

allotment of punishment points against collaborator partners to the 16% used by actors with competitor partners ($t = -6.18$; $p < .001$, one-tailed). For the last quartile, actors used 6% of their allotted punishment points against partners described as collaborators. In comparison, actors used 16% of this allotment to punish their partners described as competitors. That difference was also statistically significant ($t = -4.57$; $p < .001$, one-tailed).

Table 7.3 Facial Expressions of Emotions by Partner Type

Emotion	Collaborator	Competitor	t-value
Joy	0.007 (.011)	0.012 (.016)	-1.71*
Surprise	0.007 (.014)	0.028 (.093)	-1.43
Contempt	0.247 (.129)	0.305 (.171)	-1.73*
Neutral	0.515 (.123)	0.485 (.155)	0.960
Sadness	0.104 (.089)	0.102 (.083)	0.130
Disgust	0.040 (.052)	0.037 (.058)	0.304
Fear	0.003 (.004)	0.004 (.022)	-0.095
Anger	0.077 (.113)	0.040 (.059)	1.862*
Total	1.000	1.013	
<i>N</i>	40	43	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported. Totals over 1.000 due to rounding error.

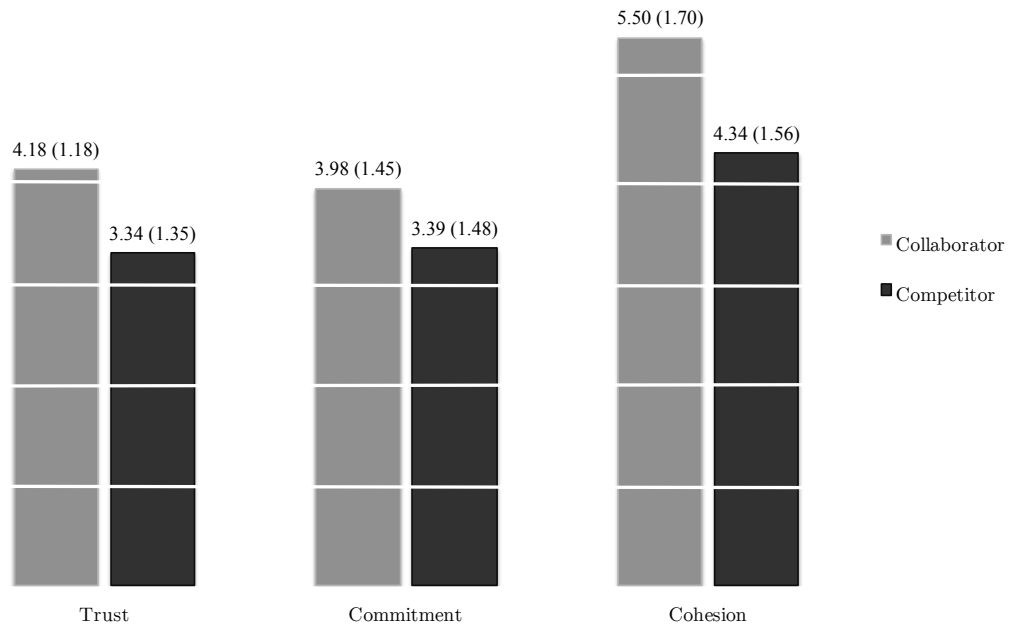
Positive Affect

Hypothesis 3 predicts that networks with cooperative contexts will cause actors to express more positive emotional expressions in their faces than networks with competitive contexts. Table 7.3 displays the measures of

emotional expressions in the faces of participants during the last four minutes of the group task. The table shows little support for Hypothesis 3. We see higher levels of contempt expressed in the faces of actors with competitors rather than collaborators as partners ($t = -1.73$; $p = .043$, one-tailed). The above table also shows that actors with collaborators as partners expressed significantly lower levels of joy ($t = -1.71$; $p = .045$, one-tailed) and higher levels of anger ($t = 1.86$; $p = .033$, one-tailed) compared to those with competitor partners. There were non-significant differences for the other measures of emotions that CERT measured.

Hypothesis 4 predicts that cooperative contexts will cause actors to report feelings that are more positive about the group project than networks with competitive contexts. I used an index of three questions that asked actors to rate their general feelings during the group project. Results support my prediction: actors reported significantly higher levels of positive affect when they had partners described as collaborators ($M = 4.43$; $SD = 1.06$) instead of competitors ($M = 3.92$; $SD = 1.01$) ($F = 5.08$; $p = .013$, one-tailed).

Figure 7.3 Means of Trust, Commitment, and Cohesion by Partner Type
(Standard Deviations in Parentheses)

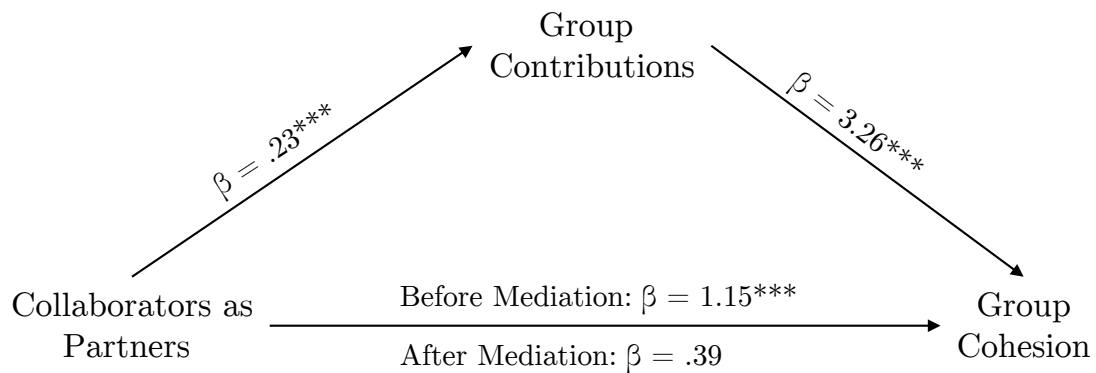


Social Solidarity

Hypothesis 5 predicts that actors will report higher levels of social solidarity in networks that refer to their partners as collaborators rather than competitors. Figure 7.3 displays the means for each of the three measures of social solidarity. In support of Hypothesis 5, I find significant differences between conditions for measures of trust, commitment, and cohesion using one-way ANOVA models. Actors with collaborators as partners reported significantly higher levels of trust than actors with competitor partners ($F = 9.39$; $p = .002$, one-tailed). I also found significantly higher levels of

commitment for actors with partners as collaborators rather than competitors ($F = 3.55$; $p = .031$, one-tailed). Finally, I found that group cohesion is significantly higher when actors have collaborators instead of competitors as their partners ($F = 10.78$; $p = .002$, one-tailed).

Figure 7.4 Mediation Analysis for Group Contributions



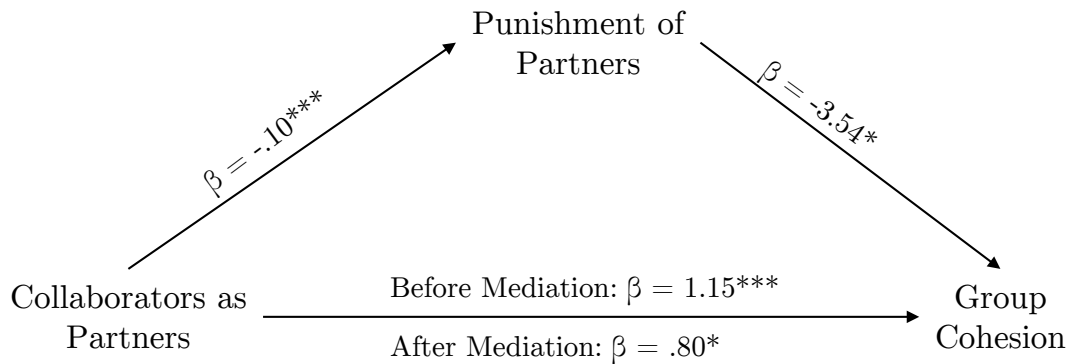
Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (one-tailed)

Contributions and Punishment as Mediators

Hypothesis 6 predicts that contributions to the group project by actors will mediate the relationship between social context (partners described as collaborators rather than competitors) and cohesion in groups. Figure 7.4 displays the results of a mediation analysis that finds support for my prediction. First, there is a significant relationship between type of partner and cohesion ($\beta = 1.15$; $t = 3.22$; $p = .001$, one-tailed). Second, partner type

significantly affects the mediator, group contribution ($\beta = .23$; $t = 3.87$; $p < .001$, one-tailed). Third, the mediator (group contribution) significantly affects cohesion after controlling for type of partner ($\beta = 3.26$; $t = 5.99$; $p < .001$, one-tailed). Fourth, results from a Sobel mediation test show that group contributions significantly mediated the effect of partner type on cohesion ($z = 3.33$; $p < .001$, one-tailed). Thus, the results in Figure 7.4 show that generosity toward the group transmits the effect of social context on group cohesion.

Figure 7.5 Mediation Analysis for Punishment of Partners



Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$ (one-tailed)

Hypothesis 7 predicts that punishment of partners by actors will mediate the relationship between social context and group cohesion. Figure 7.5 displays support for this prediction based on results from a second mediation analysis. Similar to my last results, we find that partner type

significantly affects cohesion ($\beta = 1.15$; $t = 3.22$; $p < .001$, one-tailed). Second, there is a significant relationship between partner type and punishment of partners by actors ($\beta = -.10$; $t = 4.95$; $p < .001$, one-tailed). Third, the mediator (punishment of partners) significantly affects cohesion ($\beta = -3.54$; $t = -1.82$; $p = .037$, one-tailed). Finally, the results from a Sobel mediation test show that punishment of partners significantly transmits the effect of social context on group cohesion ($z = 1.71$; $p = .044$, one-tailed).

Table 7.4 Means of Social Value Questions by Partner Type

	Collaborator	Competitor	t-value
<i>Collectivism vs. Individualism</i>			
Conformity	3.16 (1.23)	3.23 (1.00)	-0.289
Security	3.60 (1.00)	3.60 (.98)	0.000
Self-Direction	4.00 (.87)	4.00 (.76)	0.000
Stimulation	3.60 (.96)	3.65 (.95)	-0.227
<i>Egoism vs. Altruism</i>			
Universalism	3.56 (1.10)	3.30 (1.06)	1.100
Benevolence	4.21 (.83)	4.33 (.57)	-0.758
Achievement	3.93 (1.06)	3.77 (.75)	0.824
Power	2.88 (1.00)	2.91 (.83)	-0.116
<i>N</i>	43	43	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

Alternative Explanation: Changing Personal Identities

Similar to my first study, I had actors complete an adapted version of Schwartz's (2007) value scale found in the World Value Survey (WVS). The 10-question survey measured two universal values: individualism versus collectivism and egoism versus altruisms. The purpose of this scale was to test whether or not social context affects group cohesion by changing the identity standards that actors referenced during the public goods game. Table 7.4 displays results that do not support this alternative argument. This table shows no significant difference between conditions for participant answers to each of the social value questions. The results from pairwise correlations between cohesion and each answer from the social value questions were mostly non-significant. The exception to this statement was a positive correlation between cohesion and levels of benevolence ($r = .117$; $p = .072$, one-tailed). Thus, it is doubtful that social context operates via the social value of benevolence (or the other values) to shape group cohesion.

Discussion

The results from study 2 support most of predictions. In support of hypothesis 1, I found that actors contributed more resources to groups with

partners described as collaborators instead of competitors. In support of hypothesis 2, I found the opposite relationship: actors spent more resources to punish competitors instead of collaborators as partners.

I found limited evidence in support of hypothesis 3 on the effects that social context had on facial expressions of emotions by actors. Expressions of contempt were higher in the factors of actors with partners described as competitors instead of collaborators. However, I found limited evidence in support of my prediction for the other measures of emotive expressions.

In support of hypothesis 4, actors with partners described as collaborators reported significantly higher levels of positive affect than individuals with competitors as partners. Further, I found evidence in support of hypothesis 5 with actors reporting higher levels of trust, commitment, and cohesion in the collaborator versus competitor conditions. The results from mediation analyses support my predictions in hypotheses 6 and 7, with contributions to the group and punishment of partners mediating the relationship between social context and group cohesion. Finally, I failed to find support for the alternative explanation that social context changes the identity standards of actors. There were no significant differences between experimental conditions for answers that actors gave to the social value questionnaires.

Chapter 8: Study 3 - Group Context

Design and Participants

Study 3 is a two-condition, between-subjects design where I randomly assigned participants to group tasks that defined the goals of their group by cooperation and teamwork versus competition and individualism. The study had 87 students at a large public-university in the mid-Atlantic region. I excluded three participants from my final analyses who incorrectly reported the goals of their group. The remaining sample size was 84 participants (54 women and 30 men).

Manipulation and Procedures

Participants in Study 3 used the same online registration system from my prior two studies. Similar to my other studies, I scheduled participants for sessions with six to 15 people in computer labs on campus. When participants arrived for sessions, experimenters gave them unique identification numbers and showed them where to sit in the labs. The study required all participants to sign standard consent forms before they began study 3.

After participants signed their consent forms, I presented on the instructions of the study. The presentation that I gave in study 3 was the same one that I gave in my first two studies (See Appendix A). The slides

used in my presentation were similar to the instructions that participants saw on their computer screens. These slides explained that study 3 simulates how employees for a company make decisions at work. It displayed a logo for a fictitious company, named Looking Glass Incorporated (hereafter LGI), on their computer screen. The introductory instructions stated that LGI was founded in 1932 with a focus on one of two type of core values: “Teamwork, Cooperation, Results” or “Individuals, Cooperation, Results” (See Appendix E). Throughout the experiment, participants saw one of the two logos displayed in Figure 8.1

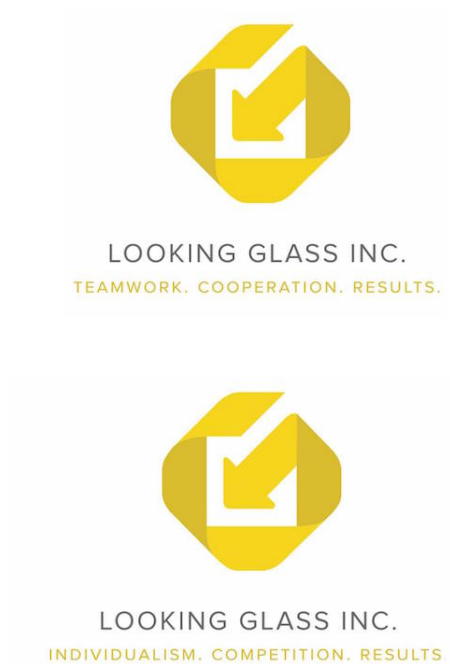


Figure 8.1 Logos for Looking Glass Incorporated

The group task in study 3 was the same one that I used in my previous two studies, except for three differences. First, the instructions discussed a fictitious company, named Looking Glass Incorporated. Second, this experiment asked participants to write the three core values of this company. Third, participants saw one of the two logos displayed in Figure 8.1 on their screens.

Dependent Measures

Contributions. – Similar to my last two studies, each period of the public goods game began with actors receiving an endowment of 20 tokens. This contribution measure is the percent of these 20 tokens that actors decided to transfer into a shared pool. On average, participants in study 3 contributed 47% of their endowment into the shared pool across the 24 periods of the public goods game.

Punishment. – After making decisions about contributions to a shared pool, actors viewed a new screen telling them how much they and their partners contributed into this pool. Next, actors made a second decision about anonymously punishing their partners. Actors could spend one of their own tokens to send two deduction points to partners of their choosing. The game allowed participants to send up to 20 deduction points (costing them 10 tokens) to each of their partners without their partners knowing who punished

whom. On average, participants in study 3 sent their partners 11% of the total number of deduction points allocated to them by the game.

Facial Recognition of Emotions - Similar to my previous study, I used web cameras to record the facial expressions of participants as they completed the group project (Valstar and Pantic 2012). I trimmed the last four minutes of the videos and then analyzed them using the CERT software. The software measured levels of joy, surprise, contempt, sadness, disgust, fear, anger, and there was a neutral expression category. CERT assigns a number to each category that ranges from 0 to 1.0, with the total values for all categories equaling a total of 1.0.

Positive Affect. - I measured positive affect using an index of three questions asking participants about their general feelings during the group project. Two of these questions asked participants, “In general, how would you describe your feelings towards Participant #[1/2] during the experiment?” using a seven-point scale [1 = “Very negative” / 7 = “Very positive”]. A third question asked participants, “How much do you feel that you and the other participants worked well together?” with answer choices ranging along a seven-point [1 = “Not at all” / 7 = “Very much”]. The Cronbach’s alpha coefficient of reliability for the positive affect index is 0.63.

Trust. - I measured trust using an index of three questions. Two of these questions asked participants, “How much did you trust Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A lot]. The third

question asked participants, “How much did you trust the other participants?” using another seven-point scale [1 = Not at all / 7 = Very much]. The Cronbach’s alpha coefficient of reliability for the trust index is 0.61.

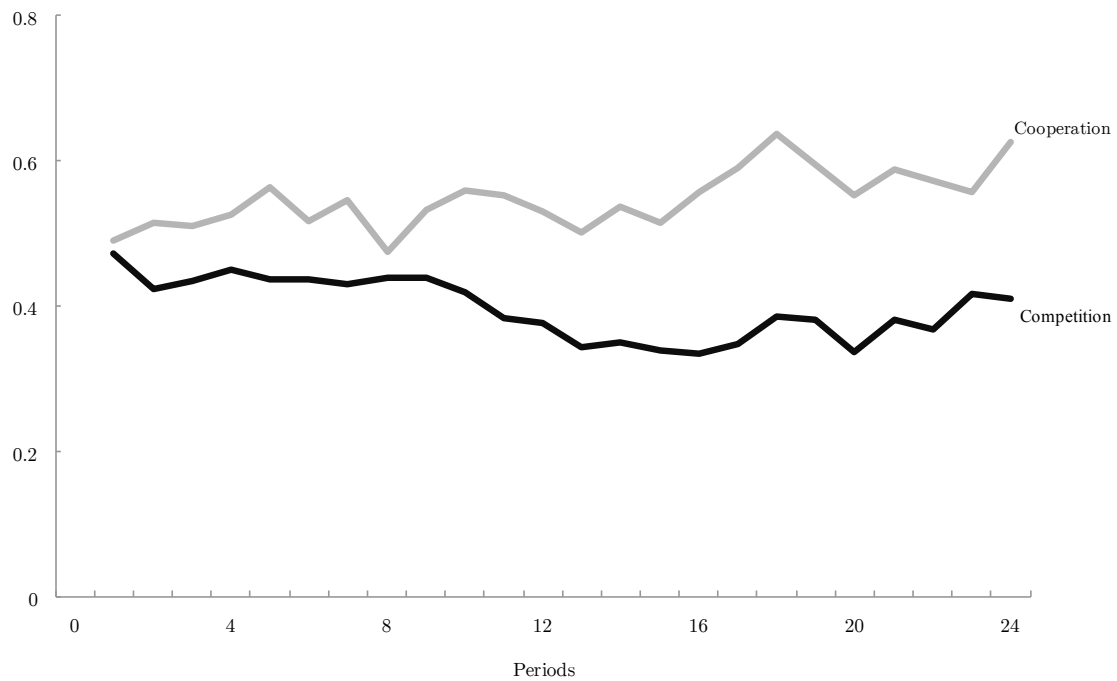
Commitment. – I measured commitment using an index of three questions. Two of these questions asked participants, “How committed were you to Participant #[1/2]?” using a seven-point scale [1 = Not at all / 7 = A lot]. The third question asked participants, “How committed were you to the other participants?” using another seven-point scale [1 = Not at all / 7 = Very much]. The Cronbach’s alpha coefficient of reliability for the commitment index is 0.69.

Cohesion. – I measured cohesion using an index of six answer choices to the same question asking participants, “Think about the relationship you and the other participants had during the group task. How would you describe the relationship on each of the following?” Participants using a nine-point scale for each of the following answer choices: Distant/Close, Conflictual/Cooperative, Fragmenting/Integrating, Fragile/Solid, Divisive/Cohesive, and Self-Oriented/Team-Oriented. The Cronbach’s alpha coefficient of reliability for the cohesion index is 0.90.

Personal Identity Standard. – Similar to my first two studies, I used the adapted version of Schwartz’s (2007) personal value questionnaire used by the World Values Survey. The questionnaire told participants, “You will see statements that describe some people. Please indicate for each description

whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you.” It then asked them to use five-point scales to rate their value orientation for: achievement, benevolence, conformity, hedonism, power, security, self-direction, stimulation, tradition, and universalism.

Figure 8.2 Average Percent of Contributions to the Group by Goal Type



Generosity

Hypothesis 1 predicts that actors will contribute more tokens to the group project when the goals of their group focus on cooperation rather than competition. The results in figure 8.2 support this prediction. This figure

displays the average percent of contributions to the group during 24 periods of exchange. Similar to my last two studies, the gray line represent actors in groups with goals that emphasize cooperation; while the black line are groups with goals that focus on competition. We see a different pattern of results from my last two studies. The figure shows that contributions by condition assignment were closer together in the first part of the group task. During the second half of the group task, Figure 8.2 shows a divergence in contributions between the two conditions. Table 8.1 tests whether these differences are statistically significant for each quartile of the group task.

Table 8.1 T-Tests for Average Contributions to the Group

Periods	Cooperation	Competition	t-value
1 to 6	52%	44%	1.482 ⁺
7 to 12	53%	42%	1.824 [*]
13 to 18	56%	35%	3.336 ^{***}
19 to 24	58%	38%	3.144 ^{**}
All Periods	55%	40%	2.65 ^{**}
<i>N</i>	43	41	

Notes. – ⁺p<.10; ^{*}p<.05, ^{**}p<.01, ^{***}p<.001; One-tailed probabilities reported.

The results in Table 8.1 support my first prediction: actors in cooperative groups contributed an average of 55% of their endowment to the group project, while those in competitive groups contributed 40% of this endowment. That difference was statistically significant ($t = 2.65$; $p = .005$,

one-tailed).²³ ²⁴ The above table shows that condition assignment had a moderately significant effect on contributions to the group during the first quartile of the group task. In periods one to six, actors in cooperative groups gave 52% of their endowments to the 44% given by those in competitive groups ($t = 1.482$; $p = .071$, one-tailed). Between periods seven to 12, we see a difference in generosity was significant with actors in cooperative groups contributing 53% of their endowment to the 42% contributed by those in competitive groups ($t = 1.824$; $p = .035$, one-tailed).

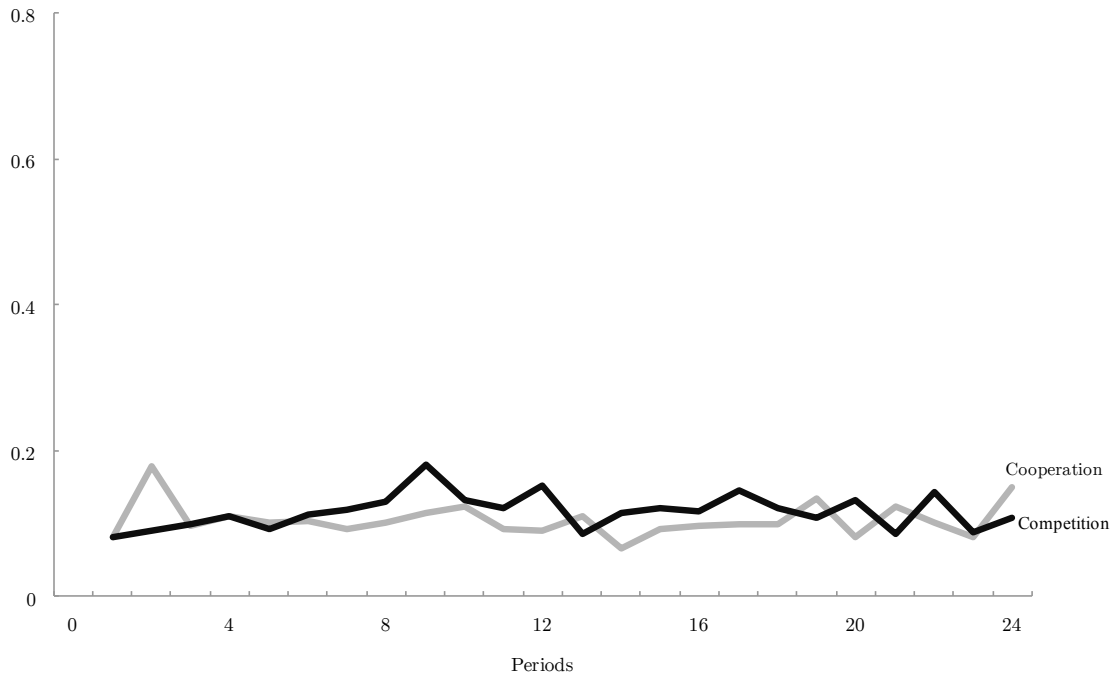
The differences in generosity becomes more noticeable in the last quartiles of the group task. Between periods 13 to 18, Table 8.1 shows that actors in cooperative conditions contributed 56% of their endowment to the group while those in the competitive conditions gave 35% of their endowment ($t = 3.336$; $p < .001$, one-tailed). In the last quartile of the task, a similar difference exists in generosity. Actors in groups with cooperative goal gave 58% of their endowment, while those in groups with competitive goals

²³ These differences could be a function of “group effects” where generosity by a few actors leads their partners to behave generously too. I ran two separate Analysis of Covariance (ANCOVA) models that attempted to control for these effects. The first model controlled for contributions by actors relative to their partners. After controlling for these relative contributions, I still found similar differences between experimental conditions ($F = 25.36$; $p = .002$, one-tailed). The second model controlled for average contributions from both partners of actors. After controlling for partners’ contributions, I found limited evidence that actors were more generous in cooperative rather than competitive conditions ($F = 1.57$; $p < .107$, one-tailed).

²⁴ I found similar results after controlling for the gender of actors.

contributed 38%. That difference was also statistically significant ($t = 3.14$; $p = .005$, one-tailed).

Figure 8.3 Average Percent of Punishment Toward Partners by Goal Type



Punishment

Hypothesis 2 predicts that actors will spend fewer resources to punish partners in groups with goals defined by cooperation versus competition. The results in Figure 8.2 do not support this prediction. This figure displays the average percentage of punishment points sent to partners in groups with goals defined by cooperation or competition. Similar to the last figure, the gray line represents actors in groups where the goals were defined by cooperation and

the black line are those in groups with competitive goals. The punishment of partners do not appear to vary much between experimental conditions. Table 8.2 tests whether this pattern was statistically significant.

Table 8.2 T-Tests for Average Punishment of Partners

Periods	Cooperation	Competition	t-value
1 to 6	11%	10%	0.592
7 to 12	10%	14%	-1.225
13 to 18	9%	12%	-0.772
19 to 24	11%	11%	0.054
All Periods	11%	12%	-0.438
<i>N</i>	43	41	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

The results in Table 8.2 do not support my prediction. Actors in cooperative groups spent 11% of their allotment of punishment points throughout the group task to the 12% spent by those in competitive groups. That difference was non-significant ($t = -.438$; $p = .332$, one-tailed). I ran a separate ANCOVA model that controlled for the average total amount of contributions to the group by partners. After controlling for these

contributions, I still found non-significant differences between conditions for punishment of partners in groups ($F = 0.78$; $p = .190$).^{25 26}

We see a similar pattern of non-significance for each quartile of the group task. Between periods one to six, actors in cooperative groups gave 11% of their allotted punishment points and those in competitive groups gave 10% ($t = .592$; $p = .278$, one-tailed). For periods seven to 12, actors in groups with cooperative goals spent 10% of their allotment to punish others, while those in groups with competitive goals spent 14% ($t = -1.225$; $p = .112$, one-tailed).

Table 8.2 shows the same pattern of non-significance between conditions during the last quartiles of the group task. For periods 13 to 18, actors in the cooperative condition spent 9% of their allotment of punishment points to the 12% spent by those in the competitive condition ($t = 0.772$; $p = .442$, one-tailed). In the last quartile, actors in cooperative and competitive conditions both spent 11% of their allotment to punish their partners ($t = 0.054$; $p = .479$, one-tailed). So far, these results indicate that group context does not significantly affect how actors view the function of resources. While generosity was significantly higher in groups with cooperative rather than

²⁵ I ran two separate ANCOVA models that attempt to control for “group effects.” The first model controlled for absolute contributions to the group by actors. After controlling for these contributions and the interaction effect between these contributions and condition assignment, I still found non-significant differences between condition assignments for punishment of partners ($F = .01$; $p = .454$, one-tailed). The second of these models controlled for relative contributions to the group by actors and the interaction between these contributions and condition assignment. After controlling for these factors, I still found non-significant differences in punishment by condition assignment ($F = 0.19$; $p = .331$, one-tailed).

²⁶ I found similar results after controlling for the gender of actors.

competitive goals, I found no significant difference in the levels that actors relied on punishment between these conditions.

Table 8.3 Facial Expressions of Emotions by Group Goal

Emotion	Cooperative	Competitive	t-value
Joy	0.011 (.015)	0.012 (.013)	0.453
Surprise	0.016 (.027)	0.016 (.031)	-0.080
Contempt	0.266 (.152)	0.273 (.162)	0.179
Neutral	0.466 (.140)	0.407 (.139)	-1.928*
Sadness	0.132 (.087)	0.173 (.163)	1.461
Disgust	0.046 (.103)	0.057 (.113)	0.468
Fear	0.008 (.008)	0.014 (.027)	1.365
Anger	0.054 (.064)	0.048 (.071)	-0.434
Total	0.999	1.000	
<i>N</i>	43	41	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported. Totals under 1.000 is due to rounding error.

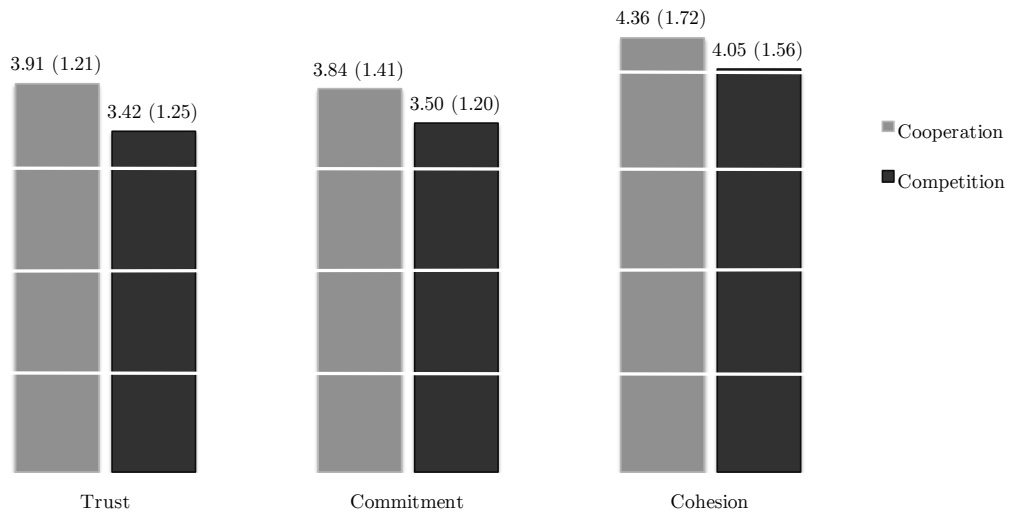
Positive Affect

Hypothesis 3 predicts that groups with goals defined by cooperation will cause actors to express more positive emotional expressions in their faces than groups with competitive goals. Table 8.3 displays the measures of emotions in the faces of actors. The results generally do not support Hypothesis 3. The table shows no significant differences in joy, surprise, contempt, sadness disgust, sadness, fear, or anger. There is some evidence

that actors expressed more “neutral” expressions when located in the cooperative rather than competitive condition ($t = -1.928$; $p = .029$, one-tailed).

Hypothesis 4 predicts that groups with cooperative goals will cause actors to report more positive feelings than groups with goals defined by competition. I measured positive affect using an index of three questions that asked actors about their overall feelings and how they felt toward each of their partners. In support of hypothesis 4, I found that actors reported significantly higher levels of positive affect in the cooperative ($M = 4.22$; $SD = 1.05$) rather than competitive ($M = 3.75$; $SD = 1.08$) condition ($F = 4.05$; $p = .024$, one-tailed).

Figure 8.4 Means of Trust, Commitment, and Cohesion by Goal Type (Standard Deviations in Parentheses)



Social Solidarity

Hypothesis 5 predicts that actors will report higher levels of social solidarity in networks with group goals defined by cooperation instead of competition. Figure 8.4 displays the means and standard deviations for three components of social solidarity. In general, the results in this figure do not support my prediction. In support of my prediction, I did find significant differences for trust using a one-way ANOVA model. Actors in groups with cooperative goals reported significantly higher levels of interpersonal trust than actors located in competitive groups ($F = 3.23$; $p = .038$, one-tailed).

However, I did not find significant differences between conditions for the commitment and cohesion indices. The results from one-way ANOVA models show that actors in groups with cooperative goals were no more likely than actors in competitive groups to report higher levels of commitment ($F = 1.42$; $p = .118$, one-tailed). Similarly, results also show no significant difference for levels of cohesion between conditions ($F = 0.77$; $p = .192$, one-tailed).

Contributions and Punishment as Mediators

A necessary condition for mediation analysis is a significant relationship between an independent and dependent variable (Baron and Kenny 1986). The results in Figure 8.4 show that groups with goals defined by cooperation or competition did not significantly affect levels of cohesion. Thus,

no significant variation exists between levels of the independent variable (cooperative versus competitive group goals) on the dependent variable (cohesion) that a mediator (percent of contributions, or punishment toward, partners) could account for.

Hypothesis 6 predicts that contributions to the group project would significantly mediate the relationship between group context and cohesion. Hypothesis 7 predicts that punishment of partners by actors will also mediate the relationship between group context and cohesion in groups. Study 3 does not find support for either of these two predictions.

Table 8.4 Means of Social Value Questions by Group Goal

	Cooperation	Competition	t-value
<i>Individualism vs. Collectivism</i>			
Conformity	3.40 (1.18)	3.15 (.79)	1.311
Security	3.79 (.94)	3.59 (.97)	0.983
Self-Direction	3.84 (.81)	3.98 (.85)	-0.762
Stimulation	3.72 (1.08)	3.68 (.99)	0.169
<i>Egoism vs. Altruism</i>			
Universalism	3.40 (1.07)	3.41 (1.26)	-0.076
Benevolence	4.26 (.69)	4.39 (.77)	-0.841
Achievement	3.77 (1.00)	3.78 (1.06)	-0.058
Power	2.81 (1.05)	2.71 (.93)	0.492
<i>N</i>	43	41	

Notes. – * $p < .05$, ** $p < .01$, *** $p < .001$; One-tailed probabilities reported.

Alternative Explanation: Changing Personal Identities

I had actors complete the same social value questions that were used in my first two studies. Table 8.4 displays the means for answers to these questions by condition assignment. The figure shows no significant differences for actors in groups with goals defined by cooperation or competition. The results from pairwise correlations between cohesion and answers to this social value questions were mostly non-significant. The exception was a negative correlations between cohesion and levels of power ($r = -.220$; $p = .0221$, one-tailed).

Discussion

I found limited evidence to support my proposed theory in study 3. In support of hypothesis 1, I did find that actors were more generous in groups with goals defined by cooperation instead of competition. However, I did not find support for hypothesis 2: the goals of groups did not significantly affect how much actors punished their partners, on average. I did not find much support for hypothesis 3 either. The facial expressions of emotions in the faces of actors largely did not significantly vary by condition assignment. The exception was a significant differences in “neutral” expressions defined as faces without contracted muscles or movements. Thus, cooperative contexts led

actors to express more muscle contractions and movements in comparison to competitive contexts.

In support of hypothesis 4, actors in cooperative contexts did report higher levels of positive affect than individuals in contexts that were competitive. I found limited evidence supporting hypothesis 5: levels of trust was higher in cooperative rather than competitive contexts, but there were no significant effects from my experimental manipulation on commitment nor cohesion. Since there were non-significant relationships between condition assignment and cohesion, there was nothing for average contributions to the group or punishment of partners to mediate. Thus, I did not find support for hypotheses 6 and 7 about the mediating role of exchange behaviors on group cohesion. Finally, I did not find evidence that social context affected the social values reported by participants after they completed the group task.

Chapter 9: Discussion

The question this project addressed was, how does social context affect the means by which actors promote collective action in groups? I began with the assumption that two methods exist for getting others to contribute their own resources for the public good: (1) actors give resources to the group and hope that others will do the same, too, and (2) actors punish their partners who may otherwise behave selfishly in these groups. I propose the degree that actors rely on generosity or punishment largely depends on subtle features of social context. And, how much actors rely on generosity versus punishment affects the formation of cohesion in groups. A proposed theory of context in social exchange describes a process where the subtle features that define how actors view themselves, others, and the group as a whole affect group cohesion.

Study 1 manipulated the context in which actors viewed themselves as cooperative or competitive. This first study gave actors a fictitious report about their personality traits and displayed the findings from this report on their computer screens during the group task. Results support most of the predictions based on my proposed theory. Actors behaved more generously and punished their partners less when they received cooperative instead of competitive personality reports. Consequently, actors with cooperative reports experienced more positive affect and higher levels of social solidarity in groups

than actors with competitive reports. Mediation analyses shows that generosity mediated the relationship between social context by increasing levels of cohesion in groups. Further, results show that punishment mediated this relationship by reducing the effect of context on group cohesion.

Study 2 manipulated the context in which actors viewed their partners as collaborators or competitors. The group task in this study was no different than what I used in my first study, except for a change in one word: the task referred to partners as “collaborators” or “competitors” instead of “participants.” Results in support of predictions showed that changing this single word significantly affected the attitudes and behaviors of group members. Actors behaved more generously and punished their partners less in groups where these partners were called collaborators versus competitors. Further, actors reported higher levels of positive affect and social solidarity when they had collaborators instead of competitors as partners. Again, results from mediation analyses showed that generosity significantly mediated the effect of social context on cohesion. Punishment had the opposite effect by reducing cohesion in groups.

Study 3 manipulated the context in which actors viewed the goals of their group as cooperative or competitive. The task told actors this study is a simulation on how employees make decision at work for a fictitious company. It also told actors the values of this company were defined by “cooperation, teamwork, and results” or “competition, individualism, and results.”

Throughout the group task, actors saw a professional-looking logo of this company that displayed these values on their computer screens. Overall, results did not support my proposed theory. Actors in groups with goals defined by cooperation contributed significantly more to the public good, but the manipulation did not significantly affect how much actors punished their partners. Groups with cooperative goals did produce higher levels of positive affect and trust than groups with competitive goals. However, results showed no significant differences in commitment or cohesion between conditions. Since no significant relationship exists between the manipulation and cohesion, there was nothing to mediate in this relationship.

There are several alternative explanations that may explain why subtle features of context affected cohesion in my first two studies. First, social context may change the goals of actors during the group task. Put another way, actors may enter groups with the goal of resource accumulation but change these goals once they interact with others in cooperative or competitive contexts. I found limited evidence of this change in the answers that actors gave on a social value questionnaire. These non-finding may raise questions about measurement error in the questionnaire that actors completed after finishing the group task. However, the European Values Survey and the World Values Survey have found significant differences between countries using similar types of questions (Welzel 2009).

There could be an endogeneity problem in the relationship between generosity, punishment, and cohesion during group tasks. If groups of actors are more generous, and their partners behaved less generously, the former may decide to punish the latter. I did not find evidence in support of this alternative explanation. First, I still found significant effects from condition assignment on generosity and punishment after controlling for average contributions in relation to the average contributions by their group. Second, I also found significant effects of condition assignment on punishment after controlling for the average generosity by actors and the average total contributions by their partners.

It could be that competitive contexts led actors to compete with their partners more than cooperative contexts. There are several limitations to this explanation. First, the tokens that participants exchanged in my experiments represented tickets for a raffle where the prize was \$100 cash. The study instructions explicitly told participants their raffle was separate from those of their partners. These instructions also told participants that everyone in their group could win a cash prize from their separate raffles. Second, there was no way for actors to know how much they earned relative to others who completed this experiment in the past. Without a way to compare their earnings, the fact that actors earned 100 or 1000 tokens has no meaning to them in and of itself. Third, I told actors they could not write down calculations during the group task. That rule prevented actors from

estimating how much their partners may have earned relative to themselves. Even if actors did make these comparisons with their partners, it would make no difference since they were earning tokens for tickets in raffles that were separate from their partners.

Finally, the manipulation itself may lead actors to believe that using generosity or punishment is the expected pattern of behavior for them in groups. In other words, my studies merely found effects from repeatedly framing each period of the group task. There are two reasons to conclude that my results are more than a repetition of “framing effects” versus a broader, identity process. First, I found few differences between conditions in the percent of contributions to the group nor punishment of partners in period one of the group task. Thus, it appears that subtle features of context had a gradual effect on the behaviors of actors over time, at least in my first two studies. Second, I found no significant effect of social context on several of my dependent variables in study 3, despite finding these effects in my first two studies. The lack of significant findings in my last study suggests that actors selectively chose what features of social context they will use to organize their perceptions of group tasks. Put simply, not all features of social context have the same effect on people. It is widely accepted in social psychology that people not only react to their surroundings, but also pro-actively engage and construct their reality (Cooley 1902; Mead 1934). The results from my experiments support this proposition: those in my first two studies selected to

organize their perceptions and behaviors around the context in which they viewed themselves and others, but others chose to ignore the context in which they viewed the group as a whole.

Facial Expressions of Emotions

I did not find evidence in support of predictions about the facial expressions of emotions by actors. There were several limitations with the implementation of this methodology during my experiments. First, I did not expect participants to obstruct the cameras on their computer screens. Some participants used their hands to cover part of their faces when they leaned in to look at their computer screens; others wore hats that blocked their foreheads, reducing the capacity to measure facial expressions by CERT; while some people in my studies tended to look away from the camera all together. Much of these behaviors were idiosyncratic of people in how they use computers. The result, however, was measurement error because I had fewer data points to measure using the CERT software.

Second, I used Microsoft Movie Maker software to record the videos of participant faces during the experiments. While the video recordings were the same for everyone in my studies, this software used different techniques for compressing the videos into a digital file. To reduce file size, this software compressed the videos using a “variable frame rate” that was different for each participant. For example, one file for a participant may capture 20 frames per

second in contrast to other files that recorded 10 or 30 frames per second. Even within the same video file, the frame rates varied with rates that were less than 10 per second in some parts and more than 30 in other parts. The CERT software measures the facial expressions for each frame, resulting in significant differences in sample sizes for each participant.

Third, I did not have the computing power to analyze the entire 30 minutes of video recordings of participants in my study. Video recordings are sequences of multiple frames that a camera takes over time. For each participant, I recorded upwards of 150,000 frames during the entire experiment. That means study 1 would have a total sample size of 12.9 million frames (150,000 frames per participant x 86 total participants = 12,900,000) for analysis. The CERT software that I used to analyze my video files codes the faces of participants in each frame of these videos. I soon realized that my personal computer lacked the power to analyze these frames. If I were to replicate my studies again, I would need a more powerful computer equipped with a multi-core processor. For this reason, I chose to analyze the last four minutes of video for each participant. Consequently, the videos that I analyzed may not have fully capture the emotions that participants expressed during the entirety of my experiments.

Limitations

There are several limitations with this research that are worth mentioning. First, my results were found within the artificial context of laboratory experiments using samples of undergraduate students. It is for this reason that one cannot generalize from my samples to larger populations of adults. These limits aside, the controlled environment of experiments allowed me to test a specific process identified by my proposed theory. Second, my experiments only asked participants questions about their perceived levels of trust, commitment, and cohesion in groups. I did not include questions asking participants about how much they believed their partners developed trust, commitment, of cohesion during group tasks. It is possible that perceptions of these outcomes as reported by actors are partly a function of how they formed their own beliefs about social solidarity in groups.

Third, I had several problems in measuring the facial expressions of emotions for actors. These limitations were discussed in detail above. Some problems included issues with the frame rates used during video recording, participants obstructing their faces in these videos, and the computing power required to measure facial expressions in these videos. For these reasons, caution is needed when interpreting the results and meaning of findings based on the facial recognition software. Future research is required to fully test the

relationship between facial expressions, actual feelings, and how one displays these feelings in their face during interactions with others.

Chapter 10: Conclusion

This research identifies a specific chain of events that leads people to rely on subtle features of their surroundings when deciding how to promote collective action in groups. Social exchange theory has identified what features of networks affect the attitudes and behaviors of people in groups (Molm et al. 2007; Lawler et al. 2008); recent work has shown when these effects happen in networks (Kuwabara 2011). I extend this line of research by explaining *how* features of social context affect group dynamics.

Identity control theory (ICT) proposes that people want to control how they perceive their surroundings. They do this by comparing their perceptions with some identity standard and deciding how best to reduce differences between the two. Identities are defined by ICT as sets of meanings that we organize into coherent schemas within our minds. ICT broadly defines identity as meanings that relate to groups (e.g. gender), roles within these groups (e.g. occupation), or the values held by actors regardless of the roles they occupy (e.g. goals). The latter of these identities is where identity control theory intersects with social exchange theory.

Social exchange theory assumes that actors begin group tasks with the goal of accumulating resources for themselves. If we assume that goals have meaning for actors, then it follows that resource accumulation represents an identity standard as defined by identity control theory. ICT proposes that

actors will behave in ways to match their perceptions with identity standards. Thus, changing how actors perceive their interactions with others may change the means by which actors achieve their goals. For my studies, collective action is the optimal strategy for actors to gain resources during group tasks. The proposed theory of context in social exchange explains how features of social context affect the means by which actors promote collective action in groups, leading to trust, commitment and cohesion between group members.

Future Research

The proposed theory has implications for research on groups in sociology. Specifically, it shows that the exchange of resources between people represents an expression of one's attempt to control how they perceive their experiences. Results in support of my proposed theory show that perceptions of self and others significantly impacts what actors do with resources in groups. And, what actors do with resources significantly affects their perceptions of the group as a cohesive entity. Not all features of social context have the same effect, however. In my last study, I found evidence that actors generally ignored the effects of group context when deciding how to behave in groups. These results show that people are not passively responding to their surroundings, but actively selecting particular contextual features and ignoring others as they organize their perceptions of experience in groups.

If context affects how actors behave in groups, then perhaps a wider range of features that define social context would affect the means by which actors promote collective action during group tasks. My proposed theory of context in social exchange could provide an important link between other sociological constructs (e.g. status or power) and the formation of social solidarity in groups.

For example, could status differences in groups affect how much actors rely on generosity or punishment in groups? The salience assumption of status characteristics theory assumes that actors will initially define features of people as task relevant, even when these features have nothing to do with a particular task (e.g. gender differences of group members during gender neutral tasks). My proposed theory explains how actors rely on subtle features of context to promote collective action in groups. It follows that these actors may rely on features such as status characteristics during social exchange tasks. Thus, my proposed theory provides a link that could explain how status organizing processes affect the formation of social solidarity in groups.

In a second example, could perceptions of social context by actors affect who has power over whom in various networks of social exchange? Network exchange theory defines power as the capacity to get what one wants even when others resist. This capacity is located within network structures that delimit who may get what resources from whom in groups. Thus, it is the distribution of resources in networks that creates power differences between

group members. According to my proposed theory, changing the subtle features of social context within these networks alter what actors do with resources in groups. It follows that context may affect the distribution of resources in networks over time, leading to changes in levels of power that form between group members. We need additional research to fully understand when actors decide to rely on features of social context and how this reliance affects a broad range of sociological constructs. The proposed theory of context in social exchange is a step toward this understanding.

Appendices

Appendix A - Registration Materials

Recruitment Advertisement

—

The sociology department is looking for undergraduate volunteers to participate in a social science experiment. You are guaranteed \$15 for 1-hour of your time. In addition, you will have an opportunity to win \$100 in a raffle.

Sign-up online: <http://ter.ps/labstudy>

Or e-mail the study coordinator: mposard@gmail.com

—

Registration System, Screen 1



University of Maryland Laboratory Study

What am I signing up for? This experiment looks at how people behave in groups.

How long is it? Under 1-hour.

Will I get paid? Absolutely! You are guaranteed \$15 and you could also win \$100 in a raffle. Not bad for less than 1-hour of your time.

Where do I go? LeFrak Hall on the University of Maryland campus, which is across from the South Campus Dining Hall

Is this legit? Yes. We have approval from the University of Maryland's Institutional Review Board. So, any and all information about you will be kept confidential.

If none of these times work for you, just e-mail us for a different time! The experimental administrator's e-mail is: mposard@umd.edu

Note: You can only complete this study one time.

Mon 2/9/15	Tue 2/10/15	Wed 2/11/15	Thu 2/12/15	Fri 2/13/15
9:00-AM	9:00-AM	9:00-AM	9:00-AM	9:00-AM
10:00-AM	10:00-AM	10:00-AM	10:00-AM	10:00-AM
11:00-AM	11:00-AM	11:00-AM	11:00-AM	11:00-AM
12:00-PM	12:00-PM	12:00-PM	12:00-PM	12:00-PM
1:00-PM	1:00-PM	1:00-PM	1:00-PM	1:00-PM
2:00-PM	2:00-PM	2:00-PM	2:00-PM	2:00-PM
3:00-PM	3:00-PM	3:00-PM	3:00-PM	3:00-PM
4:00-PM	4:00-PM	4:00-PM	4:00-PM	4:00-PM
5:00-PM	5:00-PM	5:00-PM	5:00-PM	5:00-PM
6:00-PM	6:00-PM	6:00-PM	6:00-PM	6:00-PM



Time Zone: Americas / New York

Registration System, Screen 2
Toward top of page



University of Maryland Laboratory Study

BOOKING: Friday, February 13, 2015 5:00 PM

* **FIRST AND LAST NAME:**

* **WHAT YEAR ARE YOU IN SCHOOL?**

Freshman

Sophomore

Junior

Senior

Other

Note: You must be a current undergraduate student at the University of Maryland.

* **WHAT IS YOUR UNIVERSITY OF MARYLAND STUDENT ID NUMBER?**

* **PLEASE ENTER YOUR EMAIL ADDRESS:**

You will see statements that describe some people. Please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you?

* **IT IS IMPORTANT TO THIS PERSON TO THINK UP NEW IDEAS AND BE CREATIVE; TO DO THINGS ONE'S OWN WAY.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **IT IS IMPORTANT TO THIS PERSON TO BE RICH; TO HAVE A LOT OF MONEY AND EXPENSIVE THINGS.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

Registration System, Screen 2
Towered the bottom of the page

* **LIVING IN SECURE SURROUNDINGS IS IMPORTANT TO THIS PERSON; TO AVOID ANYTHING THAT MIGHT BE DANGEROUS.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **IT IS IMPORTANT TO THIS PERSON TO HAVE A GOOD TIME; TO "SPOLI" ONESELF.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **IT IS IMPORTANT TO THIS PERSON TO HELP THE PEOPLE NEARBY; TO CARE FOR THEIR WELL-BEING.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **BEING VERY SUCCESSFUL IS IMPORTANT TO THIS PERSON; TO HAVE PEOPLE RECOGNIZE ONE'S ACHIEVEMENTS.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **ADVENTURE AND TAKING RISKS ARE IMPORTANT TO THIS PERSON; TO HAVE AN EXCITING LIFE.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

* **IT IS IMPORTANT TO THIS PERSON TO ALWAYS BEHAVE PROPERLY; TO AVOID DOING ANYTHING PEOPLE WOULD SAY IS WRONG.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

Registration System, Screen 2 Toward the bottom of the page

*** LOOKING AFTER THE ENVIRONMENT IS IMPORTANT TO THIS PERSON; TO CARE FOR NATURE AND SAVE LIFE RESOURCES.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

*** TRADITION IS IMPORTANT TO THIS PERSON; TO FOLLOW THE CUSTOMS HANDED DOWN BY ONE'S RELIGION OR FAMILY.**

Very much like me

Like me

Somewhat like me

A little like me

Not like me

Not at all like me

SRKBE

Type the five letters:

Registration System, Screen 3



University of Maryland Laboratory Study

Thanks. You're Booked! The experiment will take place @ 0221 LeFrak Hall on the University of Maryland campus

Online Registration System

E-mail Reminder Sent to Participants

FROM: Marek N. Posard
TO: Marek N. Posard
BCC: Experimental Participants Here

SUBJECT: REMINDER: Experiment Tomorrow (*DAY, MONTH DATE HERE*) @ *TIME HERE*

Hello!

You have registered for an experiment **tomorrow @ TIME HERE**. The experiment will take place in **Computer Lab #5 inside LeFrak Hall**. Just go up the ramp and you will see a sign directing you to this computer lab.

You are guaranteed \$15 for under 1 hour of your time. You could also win a raffle where the prize is \$100.

Your participation is critical to this experiment and we are looking forward to your arrival! Please note: **it is very important that you come on time tomorrow** - otherwise we may have to send other people in your group home.

Thanks,
Marek

Marek N. Posard
Experimental Administrator



Appendix B - Introductory Presentation

Experimenter's Introductory Presentation Slides (Read from left to right)



LOOKING GLASS INC.

This experiment is divided into different periods. There will be 30 periods in total.



Your Group Everyone Else

You will be in a group with two other participants for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other participants contributed to the same group project.

You will then have a chance to punish these other participants.

Stage #1

At the beginning of a period, each participant in the group will receive 20 tokens. We will refer to these tokens as the "initial endowment."


You can contribute none, some, or all of your endowment to the group project. Each of the other two participants will also make this decision simultaneously.

Whatever participants do not contribute to the group project is theirs to keep.

For example...

 **10**
Your contribution to the group project

 **20**
Participant #2's contribution to the group project

 **0**
Participant #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other participants receive from the group project.

In this example, each participant would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	10 Kept + 15 from the group = 25 Tokens
Participant #2	20	20	0.50	15	0 Kept + 15 from the group = 15 Tokens
Participant #3	20	0	0.50	15	20 Kept + 15 from the group = 35 Tokens

Stage #2

The second stage is also where you can punish the other participants in the group by reducing their earnings. These participants will simultaneously make the same decision about punishing you, too.

Each participant can **spend 1 token to send 2 "deduction points"** to someone else in the group. So, each deduction point will **take away 2 tokens from someone else**.

For each period, participants can buy a maximum of 10 "deduction points" for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	25 Tokens
Participant #2	20	20	0.50	15	15 Tokens
Participant #3	20	0	0.50	15	35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Participant #2	Participant #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	+15	+35
- Tokens Spent to Punish Others	-5	-10	0
- Deduction Points from Others	0	0	-30
= Earnings for this Period	+20	+5	+5

What if my total goes into the negative?

At the end of this game, everyone in the experiment will receive a “bonus” of tokens from the computer.

If your total earnings goes into the negative (i.e. you earn -50 tokens), then the game will deduct 50 tokens from your final bonus.

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal \$100 in cash.

The more tokens you earn, the greater likelihood that you could win \$100 in cash.

Your raffle is separate from others in the group.

You and the other two participants could theoretically win \$100 cash from each of your separate raffles.

Appendix C - Study 1 Materials

Study Instruction Screens (Read from left to right)

This experiment is a simulation of how employees at a company make decisions at work.

We believe that people are more productive, perform better, and are more engaged when **they focus on who they are inside.**

To this end, we have contracted with Looking Glass Inc. – a private research firm that specializes in assessing the personal values, strengths, and talents of individuals.

Based on your responses to the pre-study questions, Looking Glass Inc. has generated a personalized report on your personality traits.

This experiment is divided into different periods. There will be 30 periods in total.



Your Group Everyone Else

You will be in a group with two other participants for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other participants contributed to the same group project.

You will then have a chance to punish these other participants.

Stage #1

At the beginning of a period, each participant in the group will receive 20 tokens. We will refer to these tokens as the “initial endowment.”

You can contribute none, some, or all of your endowment to the group project. Each of the other two participants will also make this decision simultaneously.

Whatever participants do not contribute to the group project is theirs to keep.

For example...

10
Your contribution to the group project

20
Participant #2's contribution to the group project

0
Participant #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other participants receive from the group project.

In this example, each participant would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Stage #2

The second stage is also where you can punish the other participants in the group by reducing their earnings. These participants will simultaneously make the same decision about punishing you, too.

Each participant can **spend 1 token to send 2 “deduction points”** to someone else in the group. So, each deduction point will **take away 2 tokens from someone else.**

For each period, participants can buy a maximum of 10 “deduction points” for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	25 Tokens
Participant #2	20	20	0.50	15	15 Tokens
Participant #3	20	0	0.50	15	35 Tokens

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	10 Kept + 15 from the group = 25 Tokens
Participant #2	20	20	0.50	15	0 Kept + 15 from the group = 15 Tokens
Participant #3	20	0	0.50	15	20 Kept + 15 from the group = 35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Participant #2	Participant #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	+15	+35
- Tokens Spent to Punish Others	-5	-10	0
- Deduction Points from Others	0	0	-30
= Earnings for this Period	+20	+5	+5

What if my total goes into the negative?

At the end of this game, everyone in the experiment will receive a “bonus” of tokens from the computer.

If your total earnings goes into the negative (i.e. you earn -50 tokens), then the game will deduct 50 tokens from your final bonus.

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal \$100 in cash.

The more tokens you earn, the greater likelihood that you could win \$100 in cash.

Your raffle is separate from others in the group.

You and the other two participants could theoretically win \$100 cash from each of your separate raffles.

Personality Report: Cooperative



LOOKING GLASS INC.

PERSONALITY REPORT
MONTH DATE, YEAR

COOPERATIVE PERSONALITY TRAIT

“Stretch the circle wider.” This is the philosophy around which you orient your life. You want to include people and make them feel part of the group. In direct contrast to those who are drawn only to exclusive groups, you actively avoid those groups that exclude others. You want to expand the group so that as many people as possible can benefit from its support.

You hate the sight of someone on the outside looking in. You want to draw them in so that they can feel the warmth of the group. You are an instinctively accepting person. You cast few judgments. Judgment can hurt a person’s feelings. Why do that if you don’t have to? Your accepting nature does not necessarily rest on a belief that each of us is different and that one should respect these differences. Rather, it rests on your conviction that fundamentally we are all the same. We are all equally important. Thus, no one should be ignored. Each of us should be included. It is the least we all deserve.

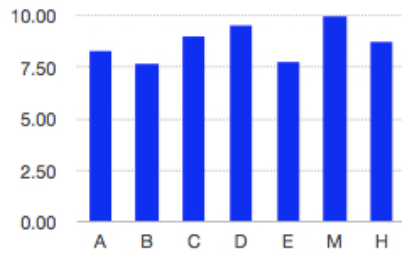
Input sounds like this:

Jeremy B., human resources manager: “During meetings, I seem to be able to sense when someone is disengaging from the group discussion, and I immediately draw them back into the conversation. Last week we got into a lengthy discussion about performance appraisals, and one woman wasn’t talking at all. So I just said, ‘Monica, you’ve had performance appraisals. Any thoughts on the subject?’ I really think this has helped me at work because when I don’t know the answer to something, very often it is the person I pull in who supplies the answer for me.”

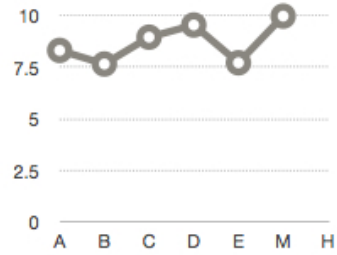
Andrea H., sales manager: “When I first started this job, I met people and became fast, furious friends with them almost on day one, only to find out later that, you know, this person’s got a lot of issues, and I’ve already included them in dinner parties and our social circle. My husband, Mark, is like ‘What is it exactly that made you want to include this person?’ And then it’s a matter of figuring out what pushed my buttons when I first met them, that made me enjoy them so much. And, you know, making sure that this is the aspect of them that Mark and I focus on . . . because once I included someone in my circle, I don’t know, you know, dump them.”

YOUR PERSONALITY SCORE: COOPERATIVE

ELEMENTS OF COOPERATIVE TRAIT



CROSS COMPONENT METRIC



ADJUSTED SCORE

8.69

CROSS COMPONENT METRIC

8.32

STANDARDIZED SCORE

8.51

NAME:	
ID NUMBER:	
RESEARCH INITIALS	

Please take a moment to reflect about your personality traits. You can write whatever you would like, but you only need to write 4 or 5 sentences.

Personality Report: Competitive



LOOKING GLASS INC.

PERSONALITY REPORT
MONTH DD, YEAR

COMPETITIVE PERSONALITY TRAIT

When you look at the world, you are instinctively aware of other people's performance. Their performance is the ultimate yardstick. No matter how hard you tried, no matter how worthy your intentions, if you reached your goal but did not outperform your peers, any achievement feels shallow. Like all competitors, you only need yourself. You need to compare. If you can compare, you can compete, and if you can compete, you can win. And when you win, there is no feeling quite like it.

You like measurement because it facilitates comparisons. You like the other competitors because they invigorate you. You like contests because they must produce a winner. You particularly like contests where you know you have the inside track to be the winner. Although you are gracious to your fellow competitors and even stoic in defeat, you don't compete for the fun of competing. You compare to win. Over time you will come to avoid contests where winning seems unlikely.

Input sounds like this:

Jeremy B., human resources manager: "I'm not a big sailor, but I love the America's Cup. Both boats are supposed to be exactly the same, and both crews are top-notch athletes. But you always get a winner. One of them had some secret up their sleeve that tipped the balance and enabled them to win more often than lose. And that's what I am looking for -- that secret, that tiny edge."

Andrea H., sales manager: "For me, being number one will always be a big thing. What I saw was that I had to be the number one employee in my work group! The number one employee in my company! The number one employee in my industry! Across the board -- number ones!"

YOUR PERSONALITY SCORE: COMPETITIVE

ELEMENTS OF COMPETITIVE TRAIT



CROSS COMPONENT METRIC



ADJUSTED SCORE

8.69

CROSS COMPONENT METRIC

8.32

STANDARDIZED SCORE

8.51

NAME:	
ID NUMBER:	
RESEARCH INITIALS	

Please take a moment to reflect about your personality traits. You can write whatever you would like, but you only need to write 4 or 5 sentences.

Group Task Screens Cooperative Personality

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Participant 1	0	0.00	--	--	--
Participant 2	0	0.00	--	--	--

How many tokens do you want to contribute to the group project:

Ready

YOUR PERSONALITY SCORE: COOPERATIVE

ALLOCATION SCORE: **8.69** CROSS-COMPARISON METRIC: **8.32** DISPOSITIONAL SCORE: **8.51**

Group Task Screens Competitive Personality

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Participant 1	0	0.00	--	--	--
Participant 2	0	0.00	--	--	--

How many tokens do you want to contribute to the group project:

Ready

YOUR PERSONALITY SCORE: COMPETITIVE

ALLOCATION SCORE: **8.69** CROSS-COMPARISON METRIC: **8.32** DISPOSITIONAL SCORE: **8.51**

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	0	0.0	20.0
Participant 1	0	0.00	0	0.0	0.0
Participant 2	0	0.00	0	0.0	0.0

How many deduction points do you want to allocate to the other participants? You can spend 1 token to send 2 deduction points to someone else.

Participant 1: Participant 2:

Ready

YOUR PERSONALITY SCORE: COOPERATIVE

ALLOCATION SCORE: **8.69** CROSS-COMPARISON METRIC: **8.32** DISPOSITIONAL SCORE: **8.51**

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	0	0.0	20.0
Participant 1	0	0.00	0	0.0	0.0
Participant 2	0	0.00	0	0.0	0.0

How many deduction points do you want to allocate to the other participants? You can spend 1 token to send 2 deduction points to someone else.

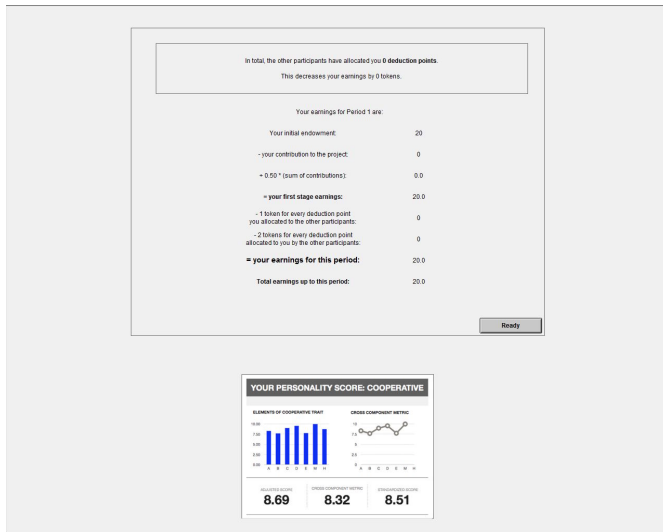
Participant 1: Participant 2:

Ready

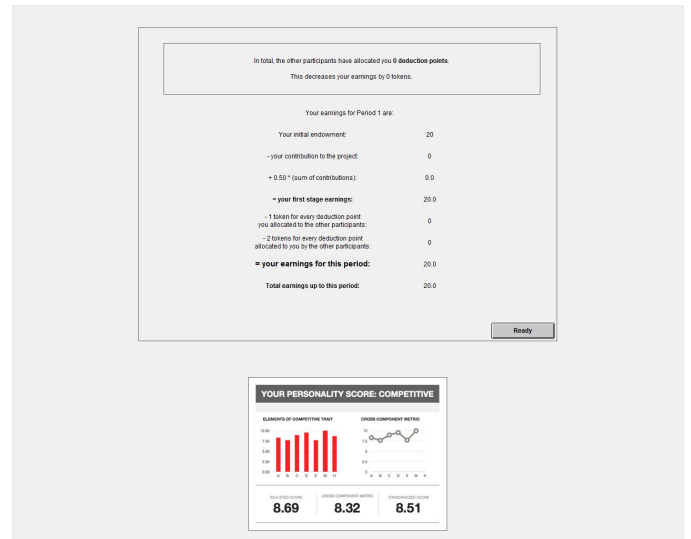
YOUR PERSONALITY SCORE: COMPETITIVE

ALLOCATION SCORE: **8.69** CROSS-COMPARISON METRIC: **8.32** DISPOSITIONAL SCORE: **8.51**

Group Task Screens Cooperative Personality



Group Task Screens Competitive Personality



Manipulation Checks

We gave you a personality report at the beginning of this experiment. Did this report give you a more competitive or cooperative score?

	Competitive					Cooperative					
	0	10	20	30	40	50	60	70	80	90	100
Your Personality Score											

What do you think your personality score is?

	Competitive					Cooperative					
	0	10	20	30	40	50	60	70	80	90	100
I think my personality score is...											

In your opinion, how accurate was the personality score that we gave you?

	Inaccurate					Accurate					
	0	10	20	30	40	50	60	70	80	90	100
I think my personality score was...											

Appendix D - Study 2 Materials

Study Instruction Screens Collaborators as Partners

This experiment is a simulation of how employees at a company make decisions at work.

You will be in a group with two other collaborators for the entire experiment.

Please take a moment to reflect about working with collaborators in a group. Describe the role of collaboration in this group. Give an example of filtering your world and your decisions within this collaborative group.

You have 1 minute to write.

This experiment is divided into different periods. There will be 30 periods in total.



Your Group Everyone Else

You will be in a group with two other collaborators for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other collaborators contributed to the same group project.

You will then have a chance to punish these other collaborators.

Study Instruction Screens Competitors as Partners

This experiment is a simulation of how employees at a company make decisions at work.

You will be in a group with two other competitors for the entire experiment.

Please take a moment to reflect about working with competitors in a group. Describe the role of competition in this group. Give an example of filtering your world and your decisions within this competitive group.

You have 1 minute to write.

This experiment is divided into different periods. There will be 30 periods in total.



Your Group Everyone Else

You will be in a group with two other competitors for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other competitors contributed to the same group project.

You will then have a chance to punish these other competitors.

Study Instruction Screens Collaborators as Partners

Stage #1

At the beginning of a period, each collaborator in the group will receive 20 tokens. We will refer to these tokens as the “initial endowment.”

You can contribute none, some, or all of your endowment to the group project. Each of the other two collaborators will also make this decision simultaneously.

Whatever collaborators do not contribute to the group project is theirs to keep.

For example...

 10

Your contribution to the group project

 20

Collaborator #2's contribution to the group project

 0

Collaborator #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other collaborators receive from the group project.

In this example, each collaborator would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	10 Kept + 15 from the group = 25 Tokens
Collaborator #2	20	20	0.50	15	0 Kept + 15 from the group = 15 Tokens
Collaborator #3	20	0	0.50	15	20 Kept + 15 from the group = 35 Tokens

Study Instruction Screens Competitors as Partners

Stage #1

At the beginning of a period, each competitor in the group will receive 20 tokens. We will refer to these tokens as the “initial endowment.”

You can contribute none, some, or all of your endowment to the group project. Each of the other two competitors will also make this decision simultaneously.

Whatever competitors do not contribute to the group project is theirs to keep.

For example...

 10

Your contribution to the group project

 20

Competitor #2's contribution to the group project

 0

Competitor #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other competitors receive from the group project.

In this example, each competitor would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	10 Kept + 15 from the group = 25 Tokens
Competitor #2	20	20	0.50	15	0 Kept + 15 from the group = 15 Tokens
Competitor #3	20	0	0.50	15	20 Kept + 15 from the group = 35 Tokens

Study Instruction Screens Collaborators as Partners

Stage #2

The second stage is also where you can punish the other collaborators in the group by reducing their earnings. These collaborators will simultaneously make the same decision about punishing you, too.

Each collaborator can **spend 1 token to send 2 “deduction points”** to someone else in the group. So, each deduction point will **take away 2 tokens from someone else.**

For each period, collaborators can buy a maximum of 10 “deduction points” for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Collaborator #2. But, you do spend 5 tokens to send 10 deduction points to Collaborator #3.

Collaborator #2 spends 10 tokens to send 20 deduction points to Collaborator #3, but does not punish you.

Collaborator #3 does not punish anybody.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	25 Tokens
Collaborator #2	20	20	0.50	15	15 Tokens
Collaborator #3	20	0	0.50	15	35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Collaborator #2	Collaborator #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	+15	+35
- Tokens Spent to Punish Others	-5	-10	0
- Deduction Points from Others	0	0	-30
= Earnings for this Period	+20	+5	+5

Study Instruction Screens Competitors as Partners

Stage #2

The second stage is also where you can punish the other competitors in the group by reducing their earnings. These competitors will simultaneously make the same decision about punishing you, too.

Each competitor can **spend 1 token to send 2 “deduction points”** to someone else in the group. So, each deduction point will **take away 2 tokens from someone else.**

For each period, competitors can buy a maximum of 10 “deduction points” for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Competitor #2. But, you do spend 5 tokens to send 10 deduction points to Competitor #3.

Competitor #2 spends 10 tokens to send 20 deduction points to Competitor #3, but does not punish you.

Competitor #3 does not punish anybody.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	10	0.50	15	25 Tokens
Competitor #2	20	20	0.50	15	15 Tokens
Competitor #3	20	0	0.50	15	35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Competitor #2	Competitor #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	+15	+35
- Tokens Spent to Punish Others	-5	-10	0
- Deduction Points from Others	0	0	-30
= Earnings for this Period	+20	+5	+5

What if my total goes into the negative?

At the end of this game, everyone in the experiment will receive a “bonus” of tokens from the computer.

If your total earnings goes into the negative (i.e. you earn -50 tokens), then the game will deduct 50 tokens from your final bonus.

What if my total goes into the negative?

At the end of this game, everyone in the experiment will receive a “bonus” of tokens from the computer.

If your total earnings goes into the negative (i.e. you earn -50 tokens), then the game will deduct 50 tokens from your final bonus.

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal **\$100 in cash**.

The more tokens you earn, the greater likelihood that you could win **\$100 in cash**.

Your raffle is separate from others in the group.

You and the other two collaborators could theoretically win \$100 cash from each of your separate raffles.

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal **\$100 in cash**.

The more tokens you earn, the greater likelihood that you could win **\$100 in cash**.

Your raffle is separate from others in the group.

You and the other two competitors could theoretically win \$100 cash from each of your separate raffles.

Group Task Screens Collaborators as Partners

This is period # 1.					
	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Collaborator 1	20	0.50	--	--	--
Collaborator 2	20	0.50	--	--	--

How many tokens do you want to contribute to the group project:

Group Task Screens Competitors as Partners

This is period # 1.					
	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Competitor 1	20	0.50	--	--	--
Competitor 2	20	0.50	--	--	--

How many tokens do you want to contribute to the group project:

Please wait for the other collaborators.

Please wait for the other competitors.

Group Task Screens Collaborators as Partners

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	1	1.5	20.5
Collaborator 1	20	0.50	1	1.5	20.5
Collaborator 2	20	0.50	1	1.5	20.5

How many deduction points do you want to allocate to the other collaborators? You can spend 1 token to send 2 deduction points to someone else.

Collaborator 1: Collaborator 2:

Group Task Screens Competitors as Partners

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	1	1.5	20.5
Competitor 1	20	0.50	1	1.5	20.5
Competitor 2	20	0.50	1	1.5	20.5

How many deduction points do you want to allocate to the other competitors? You can spend 1 token to send 2 deduction points to someone else.

Competitor 1: Competitor 2:

In total, the other collaborators have allocated you 2 deduction points.
This decreases your earnings by 4 tokens.

Your earnings for Period 1 are:

Your initial endowment:	20
- your contribution to the project:	-1
+ 0.50 * (sum of contributions):	1.5
= your first stage earnings:	20.5
- 1 token for every deduction point you allocated to the other collaborators:	-2
- 2 tokens for every deduction point allocated to you by the other collaborators:	-4
= your earnings for this period:	14.5
Total earnings up to this period:	14.5

In total, the other competitors have allocated you 2 deduction points.
This decreases your earnings by 4 tokens.

Your earnings for Period 1 are:

Your initial endowment:	20
- your contribution to the project:	-1
+ 0.50 * (sum of contributions):	1.5
= your first stage earnings:	20.5
- 1 token for every deduction point you allocated to the other competitors:	-2
- 2 tokens for every deduction point allocated to you by the other competitors:	-4
= your earnings for this period:	14.5
Total earnings up to this period:	14.5

Manipulation Checks

Did you view the other participants in your group more like competitors or collaborators?

	Competitors							Collaborators			
	0	10	20	30	40	50	60	70	80	90	100
I viewed the other participants in my group more like...											

Did the other participants in your group behave more like competitors or collaborators?

	Competitors							Collaborators			
	0	10	20	30	40	50	60	70	80	90	100
The other participants in my group behaved more like...											

During the group project, did the computer refer to the other participants in your group as competitors or collaborators?

- Competitors
- Collaborators

Appendix E - Study 3 Materials

Study Instruction Screens Cooperative Condition

This experiment is a simulation of how employees at a company make decisions at work.

You will be in a group with two other participants for the entire experiment.

This group simulates a work group in a company called **Looking Glass Incorporated.**



Look Glass Incorporated is a multinational company that began in 1932. It was during this time that our founders crafted what we call the **Looking Glass Core Values.**

The Looking Glass Core Values are based on a simple premise: Our company is more productive, people perform better, and our employees are more engaged when everyone focuses on:

- **Teamwork**
- **Cooperation**
- **Results**



Teamwork, cooperation, and results are spelled out in our core values. Put simply, these core values are what drives our work groups – just like the one you are in right now – to reach results each and every day.

Please write our core values on the piece of paper that we gave you: **Teamwork, Cooperation, and Results.**



Study Instruction Screens Competitors Condition

This experiment is a simulation of how employees at a company make decisions at work.

You will be in a group with two other participants for the entire experiment.

This group simulates a work group in a company called **Looking Glass Incorporated.**



Look Glass Incorporated is a multinational company that began in 1932. It was during this time that our founders crafted what we call the **Looking Glass Core Values.**

The Looking Glass Core Values are based on a simple premise: Our company is more productive, people perform better, and our employees are more engaged when everyone focuses on:

- **Individualism**
- **Competition**
- **Results**



Individualism, competition, and results are spelled out in our core values. Put simply, these core values are what drives our work groups – just like the one you are in right now – to reach results each and every day.

Please write our core values on the piece of paper that we gave you: **Individualism, Competition, and Results.**



Study Instruction Screens Cooperative Condition

This experiment is divided into different periods. There will be 30 periods in total.



You will be in a group with two other participants for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other participants contributed to the same group project.

You will then have a chance to punish these other participants.

Stage #1

At the beginning of a period, each participant in the group will receive 20 tokens. We will refer to these tokens as the “initial endowment.”

You can contribute none, some, or all of your endowment to the group project. Each of the other two participants will also make this decision simultaneously.

Whatever participants do not contribute to the group project is theirs to keep.

For example...

10
Your contribution to the group project

20
Participant #2's contribution to the group project

0
Participant #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other participants receive from the group project.

In this example, each participant would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Study Instruction Screens Competitive Condition

This experiment is divided into different periods. There will be 30 periods in total.



You will be in a group with two other participants for the entire experiment. Each period will have two stages.

In the first stage, you will decide how many tokens to contribute for a group project. In the second stage, you will see how much the other participants contributed to the same group project.

You will then have a chance to punish these other participants.

Stage #1

At the beginning of a period, each participant in the group will receive 20 tokens. We will refer to these tokens as the “initial endowment.”

You can contribute none, some, or all of your endowment to the group project. Each of the other two participants will also make this decision simultaneously.

Whatever participants do not contribute to the group project is theirs to keep.

For example...

10
Your contribution to the group project

20
Participant #2's contribution to the group project

0
Participant #3's contribution to the group project

The game will add these contributions together and multiply this total by 0.50.

The total is how much you and the other participants receive from the group project.

In this example, each participant would receive 15 tokens from the group (i.e. $30 \times .50 = 15$)

Study Instruction Screens Cooperative Condition

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	.50	10	15	10 Kept + 15 from the group = 25 Tokens
Participant #2	20	.50	20	15	0 Kept + 15 from the group = 15 Tokens
Participant #3	20	.50	0	15	20 Kept + 15 from the group = 35 Tokens

Stage #2

The second stage is also where you can punish the other participants in the group by reducing their earnings. These participants will simultaneously make the same decision about punishing you, too.

Each participant can **spend 2 tokens to buy 1 "deduction point"** for use against someone else in the group. Each deduction point will **take away 1 token from someone else**.

For each period, participants can buy a maximum of 10 "deduction points" for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in this Stage
You	20	.50	10	15	25 Tokens
Participant #2	20	.50	20	15	15 Tokens
Participant #3	20	.50	0	15	35 Tokens

Study Instruction Screens Competitors Condition

Stage #2

The second stage is where you view the earnings for everyone in the group.

	Initial Endowment	Contribution	Project's Multiplication Factor	Income from the Project	Earnings in this Stage
You	20	.50	10	15	10 Kept + 15 from the group = 25 Tokens
Participant #2	20	.50	20	15	0 Kept + 15 from the group = 15 Tokens
Participant #3	20	.50	0	15	20 Kept + 15 from the group = 35 Tokens

Stage #2

The second stage is also where you can punish the other participants in the group by reducing their earnings. These participants will simultaneously make the same decision about punishing you, too.

Each participant can **spend 2 tokens to buy 1 "deduction point"** for use against someone else in the group. Each deduction point will **take away 1 token from someone else**.

For each period, participants can buy a maximum of 10 "deduction points" for each person in the group.

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in this Stage
You	20	.50	10	15	25 Tokens
Participant #2	20	.50	20	15	15 Tokens
Participant #3	20	.50	0	15	35 Tokens

Study Instruction Screens Cooperative Condition

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in this Stage
You	20	.50	10	15	25 Tokens
Participant #2	20	.50	20	15	15 Tokens
Participant #3	20	.50	0	15	35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Participant #2	Participant #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	-15	+35
- Tokens Spent to Punish Others	5	10	0
- Deduction Points from Others	0	0	30
= Earnings for this Period	+21	-21	+5

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal **\$100 in cash**.

The more tokens you earn, the greater likelihood that you could win **\$100 in cash**.

Your raffle is separate from others in the group.

You and the other two participants could theoretically win \$100 cash from each of your separate raffles.

Study Instruction Screens Competitors Condition

Stage #2

Returning to the previous example, let us say the following occurs:

You do not punish Participant #2. But, you do spend 5 tokens to send 10 deduction points to Participant #3.

Participant #2 spends 10 tokens to send 20 deduction points to Participant #3, but does not punish you.

Participant #3 does not punish anybody.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in this Stage
You	20	.50	10	15	25 Tokens
Participant #2	20	.50	20	15	15 Tokens
Participant #3	20	.50	0	15	35 Tokens

Total Earnings

This would conclude a single period of exchange. The next period would follow.

NOTE: No one in the group will know who punished whom.

	You	Participant #2	Participant #3
Initial Endowment	20	20	20
Contribution to the Group Project	10	20	0
+ 0.50 X (sum of contributions)	15	15	15
= Earnings so Far	+25	-15	+35
- Tokens Spent to Punish Others	5	10	0
- Deduction Points from Others	0	0	30
= Earnings for this Period	+21	-21	+5

What do you get with these tokens?

Your tokens will go into a raffle where the winner gets one of several prizes that equal **\$100 in cash**.

The more tokens you earn, the greater likelihood that you could win **\$100 in cash**.

Your raffle is separate from others in the group.

You and the other two participants could theoretically win \$100 cash from each of your separate raffles.


Cooperative Condition, Study 3 Group Task Screens

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Participant 1	0	0.00	--	--	--
Participant 2	0	0.00	--	--	--

How many tokens do you want to contribute to the group project:

Ready




LOOKING GLASS INC.
TEAMWORK. COOPERATION. RESULTS.

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	--	--	--
Participant 1	0	0.00	--	--	--
Participant 2	20	0.50	--	--	--


How many tokens do you want to contribute to the group project:

Ready




LOOKING GLASS INC.
INDIVIDUALISM. COMPETITION. RESULTS.

Please wait for the other participants.



LOOKING GLASS INC.
TEAMWORK. COOPERATION. RESULTS.

Please wait for the other participants.



LOOKING GLASS INC.
INDIVIDUALISM. COMPETITION. RESULTS.

Cooperative Condition, Study 3


Competitive Condition, Study 3

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	1	0.5	19.5
Participant 1	0	0.00	0	0.0	0.0
Participant 2	0	0.00	0	0.0	0.0

How many deduction points do you want to allocate to the other participants? You can spend 1 token to send 2 deduction points to someone else.

Participant 1: Participant 2:




LOOKING GLASS INC.
TEAMWORK. COOPERATION. RESULTS.

This is period # 1.

	Initial Endowment	Project's Multiplication Factor	Contribution	Income from the Project	Earnings in the first stage
You	20	0.50	1	1.0	20.0
Participant 1	0	0.00	0	0.0	0.0
Participant 2	20	0.50	1	1.0	20.0

How many deduction points do you want to allocate to the other participants? You can spend 1 token to send 2 deduction points to someone else.

Participant 1: Participant 2:



LOOKING GLASS INC.
INDIVIDUALISM. COMPETITION. RESULTS.

In total, the other participants have allocated you 0 deduction points.
This decreases your earnings by 0 tokens.

Your earnings for Period 1 are:

Your initial endowment:	20
- your contribution to the project:	-1
+ 0.50 * (sum of contributions):	0.5
= your first stage earnings:	19.5
- 1 token for every deduction point you allocated to the other participants:	-2
+ 2 tokens for every deduction point allocated to you by the other participants:	0
= your earnings for this period:	17.5
Total earnings up to this period:	17.5

In total, the other participants have allocated you 1 deduction points.
This decreases your earnings by 2 tokens.

Your earnings for Period 1 are:

Your initial endowment:	20
- your contribution to the project:	-1
+ 0.50 * (sum of contributions):	1.0
= your first stage earnings:	20.0
- 1 token for every deduction point you allocated to the other participants:	-2
+ 2 tokens for every deduction point allocated to you by the other participants:	0
= your earnings for this period:	18.0
Total earnings up to this period:	18.0

Manipulation Checks

Did you view your group as more competitive or collaborative?

	Competitive					Collaborative					
	0	10	20	30	40	50	60	70	80	90	100
I viewed my group as more...											

Did your group behave more competitively or collaboratively?

	Competitively					Collaboratively					
	0	10	20	30	40	50	60	70	80	90	100
My group behaved more...											

What are the core values of Looking Glass Incorporated?

- Individualism. Competition. Results.
- Teamwork. Collaboration. Results.

Which one of these logos did you see on your computer screen during the group project?

- Logo A: Individualism. Competition. Results.



- Logo B: Teamwork. Cooperation. Results.



Appendix F - Questionnaire

Identity Questions

You will see statements that describe some people. Please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you?

It is important to this person to think up new ideas and be creative; to do things one's own way.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

It is important to this person to be rich; to have a lot of money and expensive things.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Living in secure surroundings is important to this person; to avoid anything that might be dangerous.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

It is important to this person to have a good time; to "spoil" oneself.

- Very much like you
- Like you
- Somewhat like you
- Not like you

- Not at all like you

It is important to this person to help the people nearby; to care for their well-being.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Being very successful is important to this person; to have people recognize one's achievements.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Adventure and taking risks are important to this person; to have an exciting life.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

It is important to this person to always behave properly; to avoid doing anything people would say is wrong.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Looking after the environment is important to this person; to care for nature and save life resources.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Tradition is important to this person; to follow the customs handed down by one's religion or family.

- Very much like you
- Like you
- Somewhat like you
- Not like you
- Not at all like you

Post Study Questions

What is the subject ID number that we gave you in this study? (e.g. 36)

How easy or difficult did you find the exchange task?

- | | | | | | | |
|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| Very Difficult | Difficult | Somewhat
Difficult | Neither
Difficult Nor
Easy | Somewhat Easy | Easy | Very Easy |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

How competitive or cooperative are you?

	Competitive Person		Cooperative Person								
	0	10	20	30	40	50	60	70	80	90	100
I am more of a...											

Next, we would like to know your impressions of Participant #1

How much did you trust Participant #1?

Not at all A lot

In general, how would you describe your feelings towards Participant #1 during the experiment?

Very negative Very positive

How committed were you to Participant #1?

Not at all A lot

On average, how much did Participant #1....

	0	2	4	6	8	10	12	14	16	18	20
How many tokens did Participant #1 contribute to the Group Project?											
How many tokens did Participant #1 spend punishing others in the group?											

Next, we would like to know your impressions of Participant #2

How much did you trust Participant #2?

Not at all A lot

In general, how would you describe your feelings towards Participant #2 during the experiment?

Very negative Very positive

How committed were you to Participant #2?

Not at all A lot

On average, how much did Participant #2.....

	0	2	4	6	8	10	12	14	16	18	20
How many tokens did Participant #2 contribute to the Group Project?											
How many tokens did Participant #2 spend punishing others in the group?											

Next, we would like to know about your relationship with BOTH PARTICIPANTS.

How much do you feel that you and the other participants worked well together?

Not at all Very much

How committed were you to the other participants?

Not at all Very much

How much did you trust the other participants?

Not at all Very much

In general, how would you describe your feelings towards the other participants?

Very negative Very positive

Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?

- Most people can be trusted
- You can't be too careful
- It depends

Think about the relationship you and the other participants had during the group task. How would you describe the relationship on each of the following?

Distant or Close

Distant										Close
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Cooperative or Conflictual

Cooperative										Conflictual
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Integrating or Fragmenting

Integrating										Fragmenting
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Solid or Fragile

Solid										Fragile
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Divisive or Cohesive

Divisive										Cohesive
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Team-Oriented or Self-Oriented

Team-Oriented										Self-Oriented
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which of the following best describes how you thought about yourself and the others in your group during the experiment? Pick one answer.

-

- Competitors, working against each other.
- Separate individuals, each working for ourselves.
- Separate individuals, but working together.
- A group, a team, working together

On the whole, do you think your interests were in conflict with the others in your group or were your interests in agreement?

In Conflict	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	In Agreement
-------------	---	--------------

Would you say that the motives of the others in your group were generally competitive or cooperative?

Competitive	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Cooperative
-------------	---	-------------

How much did you feel you were a part of a "group" with the other two during the experiment?

Not at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Plenty
------------	---	--------

How much influence did you have on your own outcomes?

Not at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Plenty
------------	---	--------

Feelings

Overall, how would you rate your feelings during this experiment? Use the scales below.

	I did not feel this way				I felt this way.						
	-100	-80	-60	-40	-20	0	20	40	60	80	100
Anger											
Contempt											
Disgust											

Fear																				
Joy																				
Sad																				
Surprise																				
Neutral																				

IdentityVerification

Remember those questions that you answered earlier? If you had to guess, how would the **other participants rate you** on these questions.

If we asked the **other participants to rate you** for each description, would they choose: very much like her/him, like her/him, somewhat like her/him, not like her/him, or not at all like her/him?

For each description, the **other participants in my group would rate me as...**

	Very much like her/him	Like her/him	Somewhat Like her/him	Not like her/him	Not at all like her/him
It is important to this person to think up new ideas and be creative; to do things one's own way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to this person to be rich; to have a lot of money and expensive things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Living in secure surroundings is important to this person; to avoid anything that might be dangerous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to this person to have a good time; to "spoil" oneself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to this person to help the people nearby; to care for their	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

well-being.

Being very successful is important to this person; to have people recognize one's achievements.

Adventure and taking risks are important to this person; to have an exciting life.

It is important to this person to always behave properly; to avoid doing anything people would say is wrong.

Looking after the environment is important to this person; to care for nature and save life resources.

Tradition is important to this person; to follow the customs handed down by one's religion or family.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Demographics

What is your name?

What is your University of Maryland ID Number?

What year were you born?

What year are you in college?

- Freshman
- Sophomore
- Junior
-

Senior

- Post-Senior Year

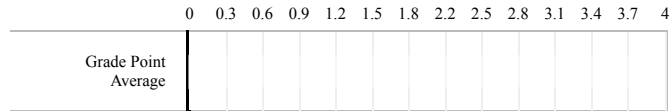
What is your gender?

- Male
- Female

What is your race?

- White
- Black
- Hispanic
- Asian
- Native American
- Other

What is your college GPA? (If this is your first semester at UMD, use your high school or community college GPA)



What is your primary major?

Are you in a fraternity or sorority?

- Yes
- No

Where you born outside of the United States?

- Yes
- No

If born outside of the United States, what country were you born in?

During your time at the University of Maryland, how many of these types of experiments have you completed (including this one)?

Final Questions

The UMD Student Crisis Fund helps our students discover the very essence of community - not only to spur one another on during ordinary times, but to lift up their fellow struggling student during extraordinary times of crisis.

Would you like to donate a percentage of your tokens to the UMD Student Crisis Fund? If these tokens are chosen in the lottery, we will donate \$100 for students in need at the University of Maryland.

	0	10	20	30	40	50	60	70	80	90	100
What percentage of your tokens do you want to donate to the UMD Student Crisis Fund?											

We told you that the study today was designed to look at factors that influence how people work together on group projects. Do you think there might be any other purpose to the study? If so, please explain.

How much effort did you put into this experiment?

Very little A lot

How much did you agree or disagree with the following statement: I was suspicious that my partners were not real human beings

Strongly Disagree
 Disagree
 Somewhat Disagree
 Neither Agree nor Disagree
 Somewhat Agree
 Agree
 Strongly Agree

This study is looking at how the social context influences your behavior and general perceptions of yourself and whether these perceptions mediate the degree to which people view the group and networks of social exchange as a whole in different ways.

Just so you know: All of your partners were in fact real people.

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