A THEORY OF INTRAUNIT JUSTICE CLIMATE AND TEAM EFFECTIVENESS

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TABLE OF CONTENTS

LIST OF TABLES ...............................................................................................................8

LIST OF FIGURES ..............................................................................................................9

ABSTRACT .......................................................................................................................10

CHAPTER 1
INTRODUCTION .............................................................................................................11

CHAPTER 2
ORGANIZATIONAL JUSTICE AND JUSTICE CLIMATE .............................................15
A Brief Review of the Justice Literature .......................................................................15
   Distributive Justice ....................................................................................................15
   Procedural Justice .....................................................................................................16
   Interactional Justice ....................................................................................................17
   Effects of Organizational Justice ..............................................................................17
Justice Climate ..............................................................................................................18
   Overview ....................................................................................................................18
   Antecedents ................................................................................................................18
   Outcomes ...................................................................................................................20
   Moderators ................................................................................................................22
   Multi-Foci Justice Climate ........................................................................................23
Chapter Summary ..........................................................................................................24

CHAPTER 3
TEAMMATES AS A SOURCE OF JUSTICE PERCEPTIONS .....................................25
Teammates and Justice .................................................................................................25
Limitations of Past Research .........................................................................................27
Chapter Summary ..........................................................................................................29

CHAPTER 4
INTRAUNIT JUSTICE CLIMATE ..............................................................................30
A Three-Dimensional Structure of Intraunit Justice Climate ......................................32
   Distributive Intraunit Justice Climate ($IJC_D$) ........................................................32
   Procedural Intraunit Justice Climate ($IJC_p$) ...........................................................33
   Interactional Intraunit Justice Climate ($IJC_I$) .........................................................34
Chapter Summary ..........................................................................................................34

CHAPTER 5
OVERALL MODEL .......................................................................................................36
Teamwork Quality .........................................................................................................37
Previous Research on Teamwork Quality ....................................................................42
**TABLE OF CONTENTS – CONTINUED**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Relationship between IJC and Teamwork Quality</td>
<td>46</td>
</tr>
<tr>
<td>Distributive IJC</td>
<td>46</td>
</tr>
<tr>
<td>Procedural IJC</td>
<td>49</td>
</tr>
<tr>
<td>Interactional IJC</td>
<td>52</td>
</tr>
<tr>
<td>Effects of Teamwork Quality</td>
<td>56</td>
</tr>
<tr>
<td>Team Performance</td>
<td>56</td>
</tr>
<tr>
<td>Unit-Level Citizenship Behavior</td>
<td>59</td>
</tr>
<tr>
<td>Satisfaction with Teammates</td>
<td>63</td>
</tr>
<tr>
<td>Effects of Intraunit Justice Climate</td>
<td>65</td>
</tr>
<tr>
<td>The Mediating Role of Teamwork Quality on IJC and Team Outcomes</td>
<td>67</td>
</tr>
<tr>
<td>Input-Process-Output (I-P-O)Model</td>
<td>67</td>
</tr>
<tr>
<td>Chapter Summary</td>
<td>68</td>
</tr>
<tr>
<td><strong>CHAPTER 6</strong></td>
<td></td>
</tr>
<tr>
<td><strong>METHODS</strong></td>
<td></td>
</tr>
<tr>
<td>Sample</td>
<td>69</td>
</tr>
<tr>
<td>Procedures</td>
<td>70</td>
</tr>
<tr>
<td>Time I</td>
<td>70</td>
</tr>
<tr>
<td>Time II</td>
<td>71</td>
</tr>
<tr>
<td>Time III</td>
<td>71</td>
</tr>
<tr>
<td>Sample Characteristics</td>
<td>71</td>
</tr>
<tr>
<td>Measures</td>
<td>72</td>
</tr>
<tr>
<td>Time I</td>
<td>72</td>
</tr>
<tr>
<td>Time II</td>
<td>73</td>
</tr>
<tr>
<td>Time III</td>
<td>74</td>
</tr>
<tr>
<td>Chapter Summary</td>
<td>75</td>
</tr>
<tr>
<td><strong>CHAPTER 7</strong></td>
<td></td>
</tr>
<tr>
<td><strong>RESULTS</strong></td>
<td></td>
</tr>
<tr>
<td>Data Aggregation</td>
<td>76</td>
</tr>
<tr>
<td>Confirmatory Factor Analysis</td>
<td>78</td>
</tr>
<tr>
<td>Hypothesis Testing</td>
<td>88</td>
</tr>
<tr>
<td>Correlations</td>
<td>88</td>
</tr>
<tr>
<td>Models</td>
<td>90</td>
</tr>
<tr>
<td>Relationship between IJC and Teamwork Quality</td>
<td>91</td>
</tr>
<tr>
<td>Relationship between Teamwork Quality and Outcome Variables</td>
<td>91</td>
</tr>
<tr>
<td>Mediating Models – IJC and Performance</td>
<td>92</td>
</tr>
<tr>
<td>Mediating Models – IJC and Unit-Level Citizenship Behavior</td>
<td>92</td>
</tr>
<tr>
<td>Mediating Models – IJC and Satisfaction With Teammates</td>
<td>93</td>
</tr>
<tr>
<td>Chapter Summary</td>
<td>94</td>
</tr>
</tbody>
</table>
## CHAPTER 8

### DISCUSSION

- **Overview** ................................................................. 95
- **Findings** ........................................................................ 95
  - *Intraunit Justice Climate* ............................................... 95
  - *The Link between Intraunit Justice Climate and Teamwork Quality* ........ 97
  - *The Link between Teamwork Quality and Outcome Variables* ............. 100
  - *Mediating Models* ..................................................... 102
- **Limitations** .................................................................. 103
- **Future Research** .......................................................... 104
- **Practical Implications** .................................................. 106
- **Conclusion** ................................................................. 107

### APPENDIX

- **MEASURES USED IN THIS STUDY** ................................. 108
- **REFERENCES** ............................................................. 112
LIST OF TABLES

Table 1: Results of Data Aggregation ................................................................. 77
Table 2: Confirmatory Factor Analysis – Intraunit Justice climate .................. 80
Table 3: Confirmatory Factor Analysis – Teamwork Quality .......................... 83
Table 4: Confirmatory Factor Analysis – Outcome Variables .......................... 86
Table 5: Means, Standard Deviations, Reliability coefficients, and Inter-correlations Of All Measured Variables ......................................................... 90
LIST OF FIGURES

Figure 1: Fully Mediating Model .......................................................................................36
Figure 2: Intraunit Justice Climate (Three-Factor Model) ................................................81
Figure 3: Intraunit Justice Climate (One-Factor Model) ...................................................82
Figure 4: Teamwork Quality (Super-Ordinate Model) .....................................................84
Figure 5: Teamwork Quality (One-Factor Model) .............................................................85
Figure 6: Outcome Variables (Three-Factor Model) .........................................................87
Figure 7: Outcome Variables (One-Factor Model) ............................................................88
ABSTRACT

This dissertation evaluates a model linking intraunit justice climate to outcome variables (team performance, unit-level citizenship behavior, and satisfaction with teammates) through the mediating role of teamwork quality. Intraunit justice climate (IJC) is defined as the shared perception that team members treat each other fairly. IJC includes three dimensions: distributive, procedural, and interactional justice. Distributive IJC refers to the extent to which team members receive what they deserve based on their contribution. Procedural IJC refers to the extent to which team members use fair procedures in the decision making process in the team. Interactional IJC refers to the extent to which team members treat each other fairly interpersonally. In this dissertation, I argue that a high level of IJC may influence the pattern and quality of interaction among team members (teamwork quality), which in turn may influence team outcomes. This model was tested in a longitudinal study using 164 undergraduate project teams (N = 570). Participants responded to three surveys (each separated by four weeks) which assessed IJC (Time I), teamwork quality (Time II), unit-level citizenship behavior, and satisfaction with teammates (Time III). I also obtained team project grades as an indicator of team performance. Results of the study indicate that teamwork quality mediated the relationship between two dimensions of intraunit justice climate: distributive and procedural IJC, and indicators of team effectiveness: unit-level citizenship behavior and satisfaction with teammates. Theoretical and practical implications of these findings and directions for future research are discussed.
CHAPTER 1

INTRODUCTION

A significant trend that has occurred in the workplace over the last several decades is the widespread use of teams (Campion, Medsker, & Higgs, 1993; Guzzo & Dickson, 1996; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Levine & Moreland, 1990). Researchers and practitioners have hailed teams as a remedy to the traditional individually-based work structure that can no longer meet demands for greater efficiency and innovation in today’s business world (Hackman, 1987; Leavitt, 1975). As a result, many organizations have reengineered their work structures to accommodate the use of teams. Arguably, teams are superior to individuals for a number of reasons. First, the use of teams may pool knowledge and ideas from individuals with diverse functional backgrounds and expertise (Sundstrom, DeMeuse, & Futrell, 1990). Second, the exchange between these team members may spark the creation of novel ideas which may increase a team’s problem-solving abilities and lead to better performance. Third, the use of teams may build commitment, increase motivation, improve efficiency, and facilitate the implementation of decisions (Gladstein, 1984).

However, the use of teams is not without its concerns and problems. While some research has reported positive outcomes following the use of teams, no such effects have been found in others (Allen & Hecht, 2004). Indeed, researchers have found that the use of teams may lead to such problems as social loafing and interpersonal conflict, which may adversely influence performance (Janis, 1972; Thompson, 2000). These findings have led researchers and practitioners to caution that the recommendation to replace an
individually-based structure with teams may be pre-mature and more research is needed to identify factors that may predict the effectiveness of teams in organizations.

Among the factors that have been found to be related to team effectiveness, one that has received considerable research attention in recent years is justice climate. Justice climate is defined as “a distinct team level cognition regarding how fairly the team as a whole is treated [procedurally]” (Colquitt, Noe, & Jackson, 2002, p. 84). In other words, it is concerned with how fairly team members perceive they have been treated by an outside authority figure. Unlike previous justice research that tends to be conducted at the individual level, research on justice climate is predicated on the premise that the evaluation of justice can emerge out of a sense-making process, thus leading to similarity of justice perceptions among team members. Recent research on justice climate has shown that team members converge on their justice perceptions. Additionally, justice climate has proven to be a useful predictor of work attitudes (Colquitt et al., 2002; Liao & Rupp, 2005), unit performance (Simons & Roberson, 2003), and unit citizenship behavior (Ehrhart, 2004).

Nevertheless, it is important to note that justice climate focuses on an authority figure as the source of shared justice perceptions. Various scholars have argued that the traditional focus on an authority as the sole source of justice perceptions is too limited and that there is a need to examine whether shared justice perceptions may be influenced by other sources. As Liao and Rupp (2005) have argued “An employee could potentially make differential justice perceptions about her or his supervisor, upper management, the organization as a whole, coworkers, subordinates, customers, and so forth” (p. 243,
emphasis added). Echoing this position, De Cremer (2002) claimed that “the same psychological process [justice perceptions] may occur in intragroup relationships without an authority” (p. 1336, emphasis added). These arguments suggest that other than an authority figure, treatment by one’s teammates may also shape a team’s shared justice perceptions.

The examination of teammates as the source of shared justice perceptions is particularly timely given the recent popularity of non-hierarchical (self-managed) teams (Cohen, Chang, & Ledford, 1997; Langfred, 2004). In these teams, members enjoy a high level of autonomy in managing their daily activities, including setting the goals for the team, benchmarking their own performance, and managing the decision-making processes, without direct intervention from the management (Manz & Sims, 1987). Since self-managed teams typically involve a great deal of interactions among team members, it can be expected that the behavior of one’s teammates may influence one’s justice perceptions and may have a large impact on team outcomes (Alper, Tjosvold, & Law, 2000; Langfred, 2004). However, these effects have not yet been thoroughly examined in the existing justice literature.

To fill in the gap in the current literature, Cropanzano, Li, and James (2007) recently introduced a construct called intraunit justice climate (IJC), defined as a shared perception among team members of how fairly they treat one another. The introduction of the construct of IJC is important for a number of reasons. First, it answers the call for more research on justice perceptions coming from non-authority sources (De Cremer, 2002; Liao & Rupp, 2005). Second, it provides an additional perspective on factors
influencing team effectiveness. Thus, this dissertation attempts to understand the
construct of intraunit justice climate and to develop a model that links it to team
effectiveness. Specifically, I propose that intraunit justice climate may influence
teamwork quality within the team, which in turn may influence team effectiveness.

The structure of this dissertation is as follows. In Chapter 2, I provide an overview
of the justice literature, with special emphases on the construct of justice climate. In
Chapter 3, I review the literature on teammates as a source of justice perceptions. In
Chapter 4, I introduce the construct of intraunit justice climate and explicate its
theoretical basis. Chapter 5 develops the specific model that is examined in the present
study. Chapter 6 discusses the method that I used in an empirical study to examine the
model. In Chapter 7, I present the results of the study. In Chapter 8, I discuss the findings
for research and practice, address the limitations, and point to avenues for future research.
CHAPTER 2
ORGANIZATIONAL JUSTICE AND JUSTICE CLIMATE

A Brief Review of the Justice Literature

In recent decades, organizational justice has become an important topic in organizational behavior research (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Cohen-Charash & Spector, 2001). Justice researchers have found that individuals care about whether they have been treated fairly by an authority figure, and that fairness perception has important implications for their work-related attitudes and behavior (Cropanzano, Byrne, Bobocel, and Rupp, 2001). Traditionally, justice researchers tend to distinguish three types of justice perceptions that people experience. These are distributive, procedural, and interactional justice.

**Distributive Justice**

Distributive justice is concerned with the fairness of the outcomes. Early research on distributive justice was guided by equity theory (Adams, 1965). According to Equity theory, individuals compare the ratio of their input and output with the same ratio of a referent other. Individuals perceive equity when the two ratios are equivalent. In contrast, a sense of inequity may emerge when the two ratios are not equivalent. For example, when one exerts more effort than a referent other but receives the same amount of reward, this outcome may be perceived as unfair. Adams (1965) made a number of predictions on how one may respond to a state of inequity. For example, he predicted that being overpaid may lead one to increase the quality of the output, whereas being underpaid may motivate one to reduce the quantity or the quality of the output in order to
restore equity. Although research has suggested both overpay (one is paid more than what he/she deserves based on one’s input relative to a referent other) and underpay (one is paid less than what he/she deserves based on one’s input relative to a referent other) may lead to inequity (Greenberg, 1988), it appears that the deleterious effects may be more pronounced when one is underpaid (Walster, Berscheid, & Walster, 1973). Although most research tends to focus on equity as the basis of fairness judgment, researchers have found that other criteria, such as need and equality, may also be taken into account (Leung & Bond, 1984; Leung & Park, 1986).

**Procedural Justice**

Researchers have argue that people are not only concerned with the outcome (distributive justice), but also the manner in which the outcome is distributed. Thus, the construct of procedural justice was introduced to describe the extent to which decision-making processes are fair (Lind & Tyler, 1988). In their classic work, Thibaut and Walker (1968) argued that in the litigation process, people tended to favor a system that allowed them to assume process control, or voice, relative to a system that denied their voice. Indeed, they found that when people were able to control the process, they perceived the system as being fair even if the outcome was unfavorable to them. Following the lead of Thibaut and Walker (1968), Leventhal (1976, 1980) further advanced the procedural justice literature by suggesting the six rules of process fairness. These six rules are consistency, accuracy, bias suppression, error correctability, ethicality, and representativeness. In other words, rules and procedures are considered fair when they are applied consistently, use accurate information as the basis of the
decision, suppress biases in the decision-making process, have a mechanism in place to correct errors, follow ethical guidance, and are representative. These six rules have been incorporated into justice research and scales to operationalize the construct of procedural justice (e.g., Blader, 2007; Colquitt, 2001).

*Interactional Justice*

Besides the fairness of outcome and process, researchers suggest that one additional dimension of organizational justice concerns the fairness of interpersonal treatment, which is termed interactional justice (Bies, 2001). Interactional justice is sometimes divided into two components: interpersonal and informational justice (Greenberg, 1993). Interpersonal justice concerns whether one has been treated with respect and dignity. Informational justice concerns whether one has been provided with sufficient and timely information.

*Effects of Organizational Justice*

A large body of research has been conducted that attests to the effects of justice perceptions on important work-related outcome variables. Specifically, when employees are treated unfairly, they may respond negatively by lowering their performance, reducing discretionary behavior that may benefit the organization, looking for employment elsewhere, or sabotaging the properties of the organization. In two large scale meta-analyses (Colquitt et al., 2001; Cohen-Charash & Spector, 2001), justice perceptions have been found to be related to attitudes (such as organizational commitment, turnover intention, and job satisfaction) and behavior (performance, organizational citizenship behavior, and counter-productive behavior).
Justice Climate

Overview

Traditionally, organizational justice research has been conducted at the individual level. That is, it assesses the extent to which one thinks he/she has been treated fairly and how he/she may respond to it. However, recent research suggests that team members develop similar perspectives in terms of how fairly a team has been treated by an authority figure (Roberson, 2006a, 2006b). Referencing the organizational climate literature, justice researchers created a construct called justice climate to describe this shared perception of fairness (Naumann & Bennett, 2000).

An important justification of justice climate is the social information processing theory (Salancik & Pfeffer, 1978). According to the theory, employees do not operate in an organizational vacuum. Instead, they engage in active interactions with each other to make sense of events that occur in the workplace. Exposure to justice/injustice may trigger a sense-making process within the team. When team members receive questionable treatments from an authority figure, they may turn to each other to discuss their experience and exchange their interpretations of the events (Roberson, 2006a, 2006b). This collective sense-making process may yield a homogeneous evaluation of fairness within the team. This process is likely to occur when a set of distribution decisions, rules and procedures, and interpersonal treatments have been applied uniformly across most of the team members. In the sections below, I briefly discuss research that has been done on the construct of justice climate.

Antecedents
Several researchers have examined the antecedents of justice climate. Naumann and Bennett (2000), who should be credited for being the first to term this construct as justice climate, argued that it is important to examine factors that predict how team members come to an agreement on (procedural) justice climate. They termed this justice climate variance. Using a sample of 220 employees from two banks in 40 different locations, Naumann and Bennett found that group cohesion and visibility of supervisors in handling justice were predictive of the variance of procedural justice climate.

According to social information processing theory (Salancik & Pfeffer, 1978), interaction among team members facilitates the creation of justice climate. This proposition was directly tested with a recent study by Roberson (2006a). Based on 124 undergraduate student project teams, Roberson found that, contrary to her prediction, a combination of unfavorable outcomes and fair procedures was most likely to trigger sense-making activities and led to the worst team outcomes (performance and commitment). Consistent with her prediction, more sense-making discussion led to a higher level of agreement on justice climate.

Naumann and Bennett (2000) and Roberson (2006a) only focused on factors influencing the variance of justice climate. Researchers argue that justice climate has another dimensions: justice climate level. While justice climate variance is concerned with the agreement among team members on how fairly a team has been treated, justice climate level refers to the favorability of fairness evaluations within a team (i.e., how fairly they have been treated). Colquitt and colleagues (2002) conducted a study to investigate factors predicting the variance and level of justice climate. Using 88 teams of
auto parts employees (n = 1747), Colquitt and colleagues found that team size and collectivism were related to the level of justice climate, whereas team size and demographic diversity were related to the variance of justice climate.

**Outcomes**

Beyond the antecedents of justice climate, researchers have also examined the effects of justice climate on outcome variables. Mossholder, Bennett, and Martin (1998) examined justice climate among employees from a savings and loan corporation that had offices located in different areas of the country. Relying on cross-level analyses (employees were embedded in a number of different locations), Mossholder and colleagues (1998) found that there was sufficient within-unit homogeneity and between-unit heterogeneity in justice climate, a prerequisite to operationalize a unit-level variable (Bryk & Raudenbush, 1992; James, Demaree, & Wolf, 1984). Additionally, they found that justice climate accounted for variance on outcome variables above and beyond the variance explained by justice perceptions experienced at the individual level. These later findings are particularly important, as they suggest that conceptualizing justice as a unit-level construct is more than a statistical artifact. Instead, it provides an important mechanism to understand work-related attitudes and behavior.

These results were replicated in a subsequent study (Naumann & Bennett, 2000). In a study of employees working in banks in different locations, Naumann and Bennett (2002) found that procedural justice climate accounted for additional variance on helping behavior above and beyond variance explained by justice experienced at the individual level.
Earlier I discussed the distinction between the level and variance of justice climate. Colquitt and colleagues (2002) argued that the variance and the level of justice climate were not only predicted by different antecedents, they also interacted to influence outcome variables. Specifically, they found that the variance of justice climate moderated the relationship between justice climate level and outcome variables (team absenteeism and performance), such that the relationship became stronger when the variance of justice climate was low.

Moliner, Martinez-Tur, Peiro, Ramos, and Cropanzano (2005) examined the relationship between justice climate and unit-level burnout. Like Colquitt and colleagues (2002), they also separately examined the effects of justice climate level and variance. One unique contribution of this study is that it was the first study to examine distributive justice at the unit level (as opposed to most of the past research that only focused on either procedural or interactional justice at the aggregated level). Another unique aspect of this paper is that it focused on unit-level well-being (as opposed to well-being at the individual level) as the outcome of justice climate. Based on 324 employees working in 108 work units, these authors found that justice climate level was related to the level of burnout experienced at the unit level. Additionally, they replicated Colquitt and colleague (2002) by finding an interactive effect of justice climate level and variance on burnout. In other words, the effects of climate level on burnout were moderated by the variance of the climate. Finally, they found that justice climate variance was related to the variance of burnout at the unit level. It is worth noting that they found these effects primarily in
interactional justice climate whereas no such effects were found in procedural or
distributive justice climate.

Spell and Arnold (2007) examined whether the interactions of different types of
justice climates explained variance on employee well-being above and beyond the direct
effects of justice perceptions at the individual level. This was the first study to examine
the interactive effects of justice climate whereas previous research tended to focus on the
direct effects. Using a sample of 483 employees nested within 57 teams, Spell and Arnold
(2007) found that distributive and procedural justice climate interacted to influence
employee anxiety and depression, even when the main effects of individual-level justice
perceptions were controlled for.

Thus far, most of the past research simply focused on the effects of justice climate
on individual-level outcomes. Simons and Roberson (2003) extended previous research
by examining the effects of aggregated justice perceptions on organizational level
outcomes, including business-unit level employee turnover and customer satisfaction
ratings. Simons and Roberson focused on two aggregated levels of justice perceptions:
departmental and business-unit (hotel, in this particular study) levels. Using 4539
employees from 783 departments nested within 97 business units, Simons and Roberson
found that the aggregated level of justice perceptions was related to unit-level outcomes.

Moderators

Ambrose and Schminke (2003) extended these findings by focusing on the
moderating role of contextual factors on the relationship between justice climate and
outcome variables. The contextual factor that they examined was organizational structure,
defined as the typical way that relationships are organized in an organization. Ambrose and Schminke (2003) made a distinction between two types of organizational structure: mechanic versus organic. A mechanical structure is characterized by centralized power, formalized role relationships, and a hierarchical channel of communication. In contrast, an organic structure is characterized by decentralized power, adaptable role relationships, and open and flexible communications. Ambrose and Schminke (2003) argued that in mechanistic organizations where formal rules and procedures are given more weights in decision-making processes, procedural justice climate may be more salient. In contrast, in organic organizations where the focus is on open and informal interactions, interactional justice climate may be more salient. The relative importance of these two types of justice climate under different organizational structures may also influence the social exchange process. Specifically, they argue that procedural justice climate may be more strongly related to perceived organizational support in mechanistic organizations whereas interactional justice climate may be more strongly related to supervisor trust in organic organizations. Results of a field study provided support to these hypotheses.

**Multi-Foci Justice Climate**

Most of the research on justice climate did not distinguish justice perceptions coming from different sources. However, research on multi-foci justice suggests that individuals distinguish justice perceptions coming from different sources and develop reactions towards the sources accordingly (Cropanzano, Prehar, & Chen, 2002; Masterson, Lewis, Goldman, & Taylor, 2000; Rupp & Cropanzano, 2002). Thus far, multi-foci research has been done at the individual level. Liao and Rupp (2005) brought
this body of research to the unit-level by examining whether justice climate may also be formed with different sources and how they may impact individual and team outcomes. The two different sources that they examined were supervisor and organization. Based on a survey of 231 members from 44 teams, Liao and Rupp (2005) found that sources (supervisor versus organization) crossed with types (procedural versus informational versus interpersonal) to create six distinct justice climate variables. In addition, Liao and Rupp (2005) found that organization-focused procedural and informational justice climate and supervisor-focused procedural and interpersonal justice climate were significantly related to important outcome variables such as group performance and OCB, even when the effects of individual-level justice perceptions were controlled for.

Chapter Summary

In this chapter, I reviewed past research on justice climate. An important contribution of this body of literature is that it brings justice research from the individual level to the team/organizational level. As demonstrated by several scholars (e.g., Ambrose & Schminke, 2003; Naumann & Bennett, 2000), unit members do converge on their perceptions on how fairly their unit (be it a team or an organization) has been treated by an authority figure. Such shared perceptions of fairness, as researchers have demonstrated, may have important implications for organizations. One important caveat, however, is that it still focuses on authority as the source of justice perceptions. In the next chapter, I review research focusing on justice perceptions coming from alternative sources, such as one’s teammates.
CHAPTER 3
TEAMMATES AS A SOURCE OF JUSTICE PERCEPTIONS

Teammates and Justice

Notably, all of the studies reviewed in the last chapter focus on an authority figure as the source of justice climate. Therefore, it is important to examine whether shared justice perceptions may come from other sources. One important source may be ones’ teammates. In recent years, there have been some studies examining teammates as a potential source of justice perceptions. Most of these studies built on the social identity theory (Tajfel & Turner, 1979). According to the theory, identification with the ingroup may lead to intergroup differentiation and outgroup derogation. However, an important question that has not yet been fully addressed in the social identity literature is: what are the factors that predict one’s identification with the ingroup? Several researchers argue that one such factor is respect demonstrated by fellow group members to the focal person. This argument is consistent with the organizational justice literatures. Specifically, perceptions of interactional justice, as a result of respect, may lead to one’s identification with a group (Lind & Tyler, 1988). Several empirical studies have provided evidence in support of this argument.

De Cremer (2002) examined the effects of being treated with respect on team members’ contribution towards the team. De Cremer (2002) argued that respect from one’s teammates connotes the message of social inclusion, which may increase one’s self-esteem. Therefore, he argued that respect from other team members may influence a person’s team-serving behavior. Results of a lab study indicate that respectful treatment
increased the perceptions of inclusiveness and team member’s contribution to the team. One interesting finding of this study is that respect influenced the perceived inclusiveness and contribution of peripheral members, but no such effects were found with core group members. One explanation for these findings is that core group members do not need respect to affirm one’s status within the team. In contrast, peripheral members may rely on respect to evaluate their relationships with others in the group, as a result, they may become more responsive to respect/disrespect demonstrated by fellow teammates.

Branscombe, Spears, Ellemers, and Doosje (2002) examined whether group status and respectful treatment by ingroup members interact to influence one’s motivation to perform group-serving activities. Building on social identity theory and the literature on group dynamics, Brandscombe and colleagues (2002) argue that members are more likely to identify with their ingroup when the ingroup is discriminated by a prestigious outgroup. This tendency is increased, they argue, when individuals are treated with respect by their ingroup. That is because respect by other members of the ingroup conveys messages of inclusion and high social status. As such, they are willing to exert effort for the benefit of the team. However, when devalued group members are not treated with respect by their ingroup, they are unlikely to exhibit group serving behavior. In a lab experiment, they found substantial support for their argument. That is, individuals were most likely to perform group-serving behavior when they were members of a devalued group and when they were treated with respect by their ingroup.

Simon and Sturmer (2003) examined the mediating role of collective identification on the relationship between intragroup respect and group-serving behavior.
In a lab study, Simon and Sturmer (2003) found that when one was treated with respect by fellow group members, they were likely to develop collective identification with the group, which motivated them to exhibit behavior that served the interest of the team. In a separate study, Simon and Sturmer (2005), however, found no evidence suggesting that the relationship between ingroup respect and group-serving behavior was mediated by intragroup acceptance.

Ellemers, Doosje, and Spears (2004) examined people’s emotional and cognitive response to respect coming from ingroup and outgroup. These authors found that while respect from the ingroup increased one’s self-esteem, no such effects were found when the respect was from the outgroup. Additionally, they found that when one did not receive respect from the ingroup, respect from the outgroup compromised the self instead of promoting it. That is because respect form one’s ingroup may have more impact on one’s identity. However, when respect is not coming from the right group, it may undermine one’s group identity or raise issues about one’s loyalty to the ingroup.

Limitation of Past Research

These studies are encouraging, as they demonstrate that interaction among team members may have important implications for team outcomes. Nevertheless, several limitations are worth noting, which may set the stage for a more comprehensive examination of justice perceptions coming from teammates in the present study.

First, these studies focus on the presence or absence of respect demonstrated by fellow teammates. This focus is consistent with research on interactional justice that is concerned with the manner in which people treat each other interpersonally. However,
research on organizational justice has identified two additional types of justice perceptions: distributive and procedural justice. Indeed, concerns about distributive and procedural fairness from teammates figure prominently in people’s justice evaluations. For example, in a recent study by Kirkman, Jones, and Shapiro (2000), team members raised concerns about the distribution of rewards and workloads within a team. Similarly, in a study of self-managed teams, Ezzamel and Willmott (1998) found that the team-based reward system was the source of considerable stress and anger because members believe that some “slackers” reaped the benefit of the system without contributing their due share to the team performance. Thus, more research on the perceptions of distributive and procedural justice coming from teammates is certainly warranted.

The second limitation is that most of these studies examine justice perception as an individual-level variable. As the discussion of justice climate suggests, team members communicate with each other about their experience in the team (Salancik & Pfeffer, 1978). These exchanges provide an important channel through which team members may make sense of their team environment. Additionally, such communications may facilitate the convergence of justice perceptions and lead to the formation of unit-level justice climate.

A third limitation of previous research is that most of these studies used artificial teams that had a limited duration of existence. These teams did not have a history of interaction, nor did they have the prospect of working together again in the future. Additionally, the outcomes of team activities tended to be inconsequential. As such, these
teams may not form a shared perception of the extent to which team members treat each other fairly.

Chapter Summary

In summary, as I review in this chapter, previous research has examined how fair treatment by teammates, operationalized as respect, may influence one’s identification with the team and team-serving behavior. Building on this body of literature, I focus on the construct of intraunit justice climate in the next chapter.
CHAPTER 4
INTRAUNIT JUSTICE CLIMATE

As the review in the last chapter suggests, there are theoretical reasons to believe that individuals consider fairness even in the absence of a formally constituted authority figure (Branscombe et al., 2002; De Cremer, 2002; Simon & Sturmer, 2003, 2005). Justice perceptions, in other words, can emerge from the collective dynamics of groups. This construct was termed intraunit justice climate (IJC, Cropanzano et al., 2007), and defined as the shared perception of how fairly team members treat one another.

While IJC is a new idea, it follows logically from early research on social exchange theory. In his classic work, Mauss (1925) observed that many archaic societies were organized by the principle of reciprocal exchange (for similar classic observations, see Malinowski, 1932). A defining feature of these principles is the use of gifts to maintain social relationships among members of the community. In these societies, gifts carried a sacred power that engages the gift giver and receiver. A gift came with an explicit assumption that it would be reciprocated in a certain way and at (or at least by) a certain time. Thus, retuning the favor was the prerequisite for inclusion in a community. Failure to return a gift would be seen as inappropriate. In the present terminology, one would be performing an injustice, or at least an insult, to the original gift-giver. For this reason, failure to exchange the right things in the correct fashion would reduce one’s social status and risked social expulsion.

Viewed from this perspective, the exchange of gifts among members of the community goes beyond the instrumental or materialistic function, and communicates the
symbolic message of social obligation and social standing (this principle is shared by other theoretical perspectives, such as the group engagement model proposed by Tyler & Blader, 2003a; 2003b). Accordingly, social groups and even entire societies can be organized “upwards” as a structure emerges from the pattern of interactions (e.g., Cook, Emerson, & Gillmore, 1983; Molm, 2000; Sahlins, 1972). Unlike a bureaucracy, which is formally constituted under the aegis of an authority (Ouchi, 1980), these self-organizing systems can yield stable groups that are bound together by their shared understanding of social norms as well as the mutual benefits of the exchange (Graeber, 2004).

The implications of these anthropological findings for IJC are two-fold. First, communities develop a set of principles on what is the appropriate way to treat each other among members. These principles are self-reinforcing, and may even be devoid of the external influence of leadership (Graeber, 2004). Developed over time, they become part of the climate widely shared among members of the community and have powerful impact on members’ behavior. IJC may follow the same approach. A team is like a social system, whereby the relationships among team members are built on a set of principles, such as team members receiving what they deserve, using fair procedures to make decisions, and treating each other with respect. These principles, much like the gift system existing in the archaic societies, provide guidance on how team members should treat each other. Thus, behavior by team members is judged in reference to these principles, and observation or violations of these principles become a shared reality. As Fiske (1991) pointed out, justice perceptions flow from social relations. When relations with teammates are undermined, perceptions of injustice are experienced.
Second, exchange has symbolic meanings, conveying the message of trust (or distrust), inclusion (or exclusion), and obligations. Mauss (1925) used the potlatch system in the American Northwest to illustrate this point. Under this system, failure to give, receive, and return a gift may threaten one’s social status within a community. Exchange among teammates may also connote the same message. When teammates don’t treat each other fairly (when IJC is low), it signals that they are not valued and respected in the team. This point is nicely summarized by Cropanzano, Rupp, Mohler, and Schminke (2001, p. 33), who suggested that “transactions among people are tied to individuals’ standings among their peers.”

A Three-Dimensional Structure of Intra-Unit Justice Climate

The earlier discussion suggests that collective perceptions of justice do not require a formal authority, as in a self-managed work team (Kirkman & Shapiro, 1997). I can go further, as examples from the anthropological literature are also suggestive of the structure of IJC. Consistent with the contemporary understanding of fairness (e.g., Cohen-Charash & Spector, 2001), there is evidence for three types of IJC. Distributive IJC is an assessment of some concrete outcome that is exchanged, such as the food provided at a potlatch (Mauss, 1925). Procedural IJC is an evaluation of the exchange process, such as Kula Rings in Melanesia (Malinowski, 1932). Interactional IJC is an assessment of how one person treats another. For example, in a culture that is oriented around authority ranking, respect is expected by those in power (Fiske, 1991).

**Distributive Intraunit Justice Climate (IJC_D)**

Distributive IJC is defined as the extent to which teammates receive what they
deserve based on their contribution. In many organizations, the use of teams is also accompanied by a fundamental change to the compensation structure, with the traditional individual-based reward scheme being replaced by a team-based reward scheme (Kirkman & Shapiro, 2000). Under this scheme, team members are rewarded and evaluated based on the collective performance of the team. Although an incentive system like this has considerable merits (such as promoting collaboration among team members and mutual learning), it also creates agency problems such as free-riding and social loafing (George, 1992). To the extent that everyone receives the same amount of rewards in a team-based reward system, the contribution of each team member to the overall team performance becomes a salient issue. Team members may experience frustration and injustice when their teammates reap the benefit of a team reward system without contributing their share to the team endeavor (Ezzamel & Willmott, 1998).

Procedural Intraunit Justice Climate ($IJC_P$)

Procedural IJC refers to the perceived fairness of the procedures and decision-making process within the team. Research on procedural justice suggests that when evaluating the fairness of procedures, individuals attend to elements such as opportunity to voice their opinion, influence on the decision-making process, accuracy of information used for decision-making, and consistency of the way decisions are made (Leventhal, 1976; Masterson, 2001). Although procedural justice has been examined almost exclusively in the organizational context, the same set of principles may also be applied in the team context. Specifically, in the absence of an authority figure, members of self-managed teams are responsible for the decision-making process. As such, the use of fair
procedures, such as encouraging the participation of team members in the decision
making process and suppressing biases, may be particularly important. Violations of
fairness principles in the decision-making process may instigate strong reactions from
team members.

Interactional Intraunit Justice Climate (IJC)

In the context of a team environment, I conceptualize interactional IJC as the
perceived quality of interpersonal treatment from teammates. Low interactional IJC is
similar to the construct of incivility, because both constructs describe low-intensity
behavior intended to harm others and violate interpersonal norms. According to Anderson
and Pearson (1999), uncivil behavior by one person may trigger retaliatory response from
another person, which may lead to the escalation of an incivility spiral. In addition, a
dyadic incivility spiral may spill over to the entire organization, creating the norm of
incivility and leading people to treat each other with disrespect, distrust, and intolerance.
Donovan and colleagues (Donovan, Drasgow, & Munson, 1998) found that interpersonal
treatment among teammates was an important predictor of work-related attitudes such as
job satisfaction and job withdrawal. These findings are analogous to other studies
showing that perceptions of respect by one’s teammates were related to anxiety about
acceptance by others and one’s motivation to engage in team-serving behavior (Sleebos,
Ellemers, & de Gilder, 2006).

Chapter Summary

In this chapter, I introduced the construct of intraunit justice climate, defined as a
shared perception of the extent to which teammates treat each other fairly. I discussed its
theoretical basis and the three dimensions. In the next chapter, I present a comprehensive model linking intraunit justice climate to important outcome variables.
CHAPTER 5

OVERALL MODEL

In the present study, I examine the effects of intraunit justice climate on team effectiveness through the mediating role of teamwork quality. A schematic representation of this model is presented in Figure 1. In the sections below, I separately discuss the link between IJC and teamwork quality, the link between teamwork quality and team effectiveness, and the link between IJC and team effectiveness.

Figure 1

Fully-Mediating model
Teamwork Quality

According to Hoegl and Gemuenden (2001), teamwork quality is a superordinate construct referring to the level and quality of interaction among team members. Since this concept focuses on how teammates collaborate with each other in the pursuit of team goals, it includes neither task work behavior (i.e., the technical aspect of the task that exists independent of the team, Morgan, Salas, & Glickman, 1993), nor human sentiments (e.g., emotion, motivation).

Hoegl and Gemuenden (2001) argued that the overall construct of teamwork quality is manifested in six dimensions. The conceptualization of teamwork quality as a six-dimension construct is consistent with past research that tends to cluster teamwork into two categories: task and relational (Bales, 1958). Specifically, task processes include three dimensions: effort, balance of contribution, and coordination dimension. These dimensions are related to the accomplishment of team goals and perform functions that allow teams to “solve the objective problem to which the group is committed” (Gladstein, 1984, p. 500). Interpersonal processes include the other three dimensions: mutual support, cohesion, and communication. These dimensions perform “maintenance functions” (Gladstein, 1984, p. 500) that are designed to “build, strengthen, and regulate group life.”

Teams that are characterized by a high quality of teamwork demonstrate behavior that can be summarized by six facets (see figure 4). As the six facets are indicative of the overall construct, they are very highly correlated with each other. Consistent with this conceptualization, most of the past research operationalized teamwork quality as a
composite variable (with the exception of Hoegl and Parboteeha, 2006, in which all six dimensions were used). Given that teamwork quality is a higher-order construct represented by these six dimensions, I will discuss them in the sections below.

*Communication.* Communication is crucial to a team’s success because it provides the channel thru which information and knowledge can be exchanged and evaluated, and activities can be coordinated (Burgoon, 1977; Cragan & Wright, 1990). Indeed, communication has been described as heart of team process (Shaw, 1981). Team communication has a number of dimensions, including frequency, formality, and openness. Frequency refers to the amount of interaction between team members. They can take the form of face-to-face or computer-assisted communications. Frequent communication is particularly important when the task is complicated or innovative and requires a high level of coordination (Hirokawa, 1990). Formality of communication concerns the preference between formal means (e.g., memo, scheduled meeting) and unstructured means (spontaneous conversation or meeting) of communication. Past research suggests that teams that communicate informally tend to be more effective than those that have to rely on structured channels of communications. The reason is that informal communication is less time consuming and may allow team members to respond in a timely manner to market turbulence or customer demands (Pinto & Pinto, 1990). As Hoegl and Gemuenden (2001) argued, when team members do not communicate with each other directly, it may interfere with the exchange of information and knowledge and lead to delay in the implementation of decisions within the team. Openness of information is also important because when information is not shared among team
members, the expertise of team members can not be integrated, which may lead to poor decisions (Stasser, 1992).

Coordination. Marks, Sabella, Burke, and Zaccaro (2002) defined coordination as “the management of synchronous and/or simultaneous activities and involves information exchange and mutual adjustment of action to align the pace and sequencing of team members’ contribution with goal accomplishment” (pp. 5-6). According to Zalesny, Salas, and Prince (1995), coordination includes four components: goals (identify the goals for the team), activities/task (decompose the overall goal into sub-goals and decide the tasks required for the accomplishment of these sub-goals), team members (assign task to members who possess the skills required for task accomplishment), and interdependence (coordinate task activities). Coordination is vital to a team that requires the contribution from all team members and the effectiveness of one member’s action hinges upon the action of another team member. A team is well coordinated when it specifies actions needed for task completion, scans for potential conflicts in subtasks, and ensures alignment between member behavior and the goals of the team (Kabanoff & O’Brien, 1979). This allows these teams to integrate each team member’s behavior to produce a coherent collective. In contrast, an ill-coordinated team tends to produce poor outcomes because it prevents members from performing at a logical sequence, hinders them from performing at the best of their potential, and may result in duplicated or wasted effort.

Balance of member contributions. Teams can balance members’ contribution by delegating tasks to those who have the capability to perform them (Seers, 1989). This is
particularly important when team members come from different functional backgrounds and possess complementary expertise (Lovelace, Shapiro, & Weingart, 2001; Randel & Jaussi, 2003). In these teams, it is critical that team members bring their expertise to bear for the tasks (De Dreu & West, 2001). Recent research on cross-functional teams speaks to this issue. Although cross-functional teams are believed to be key to the success of innovative projects that require diverse perspectives, empirical findings on these teams have been mixed (Ancona & Caldwell, 1992). One important reason is that team members fail to apply their expertise to the task. It is possible that team activities (decision-making process) are dominated by a few team members who discourage others from engaging in activities beneficial to the team (Hoegl & Gemuenden, 2001). As a result, team members may be unwilling or unable to contribute their expertise to the task.

*Mutual support.* Mutual support is related to the extent to which team members handle conflict competitively or cooperatively, assist each other when help is needed, and develop and respect others’ ideas. Tjosvold and colleagues (Alper et al., 1998, 2000; Chen, Liu, & Tjosvold, 2005; Tjosvold, 1998; Tjosvold, Hui, & Yu, 2003) introduced the notion of competitive versus cooperative conflict within the team. In a cooperative conflict, team members recognize that they all share a common goal. Therefore, conflict, while inevitable, may be resolved by sharing information, taking each other’s perspective, communicating feelings directly, and providing support to each other. In contrast, in a competitive conflict, team members place their self-interest above the interest of the team. As a result, they see conflict as a zero-sum game whereby one’s gain comes at the expense of others in the team. A competitive conflict may lead team
members to avoid direct communication, dismiss others’ ideas, amplify differences instead of resolving them, and damage the relationships. Past research suggests that while cooperative conflict tends to lead to positive outcomes such as a higher level of innovation and performance, competitive conflict tends to result in decision impasse and strains relationships among team members (Alper et al., 1998, 2000; Tjosvold, 1998).

**Effort.** A team’s success hinges upon team members’ willingness to exert effort on behalf of the team. In teams whose success depends on the effort of all members, performance deficit may occur when one or more members make little effort towards goal attainment (Kidwell & Bennett, 1993; Liden, Wayne, Jaworski, & Bennett, 2004). Research on social loafing suggests that there are a number of reasons why team members may fail to perform at their full potential. First, since individual effort may not be identifiable in a team context, individuals may be able to “hide in the crowd.” The tendency to withhold effort increases when the task is highly interdependent, which renders it difficult to identify individual contribution (Williams, Harkins, & Latane, 1981). Second, team members may also fail to exert sufficient effort because they believe that others also fail to do so. As a result, the notion of being taken advantage of (because others are putting in less effort while receiving the same amount of reward) is aversive, which may motivate one to reduce effort for the team (Schnake, 1991).

**Cohesion.** Cohesion refers to the extent to which members feel a strong attachment to each other and a desire to remain as part of the team (Beal, Cohen, Burke, & McLendon, 2003). Researchers have found that cohesion is an important property of a team, predicting team outcomes such as performance, perceived team utility,
communications among team members, and conflict (Beal et al., 2003; Mullen & Copper, 1994). Following previous research (Mullen & Copper, 1994), Hoegl and Gemuenden (2001) suggest that cohesion includes three dimensions. These are the extent to which team members are attracted to each other, the extent to which they are committed to the task, and the extent to which they identify themselves with the team. In a recent meta-analysis, Beal and colleagues (2003) found that all three components of team cohesion were all independently and significantly related to team performance. Consistent with these findings, Hoegl and Gemuenden (2001) incorporate all three dimensions into their conceptualization of the construct of cohesion.

Previous Research on Teamwork Quality

The construct of teamwork quality has been used in a number of recent studies. In their initial effort to validate the construct of teamwork quality, Hoegl and Gemuenden (2001) surveyed 145 software development teams. They found that teamwork quality was correlated significantly with team performance evaluated by team members, team leaders, and project managers (although it explained more variance in performance rated by team members than performance rated by team leaders and managers). Teamwork quality was also found to be significantly related to perceived personal success of team members.

These results were replicated in a longitudinal study involving 39 cross-functional teams (Hoegl, Weinkauf, & Gemuenden, 2004). These teams engaged in both intrateam and interteam coordination in a new product development project. Results of the study indicated that although teamwork quality was significantly related to team performance, the effect was stronger at the initial phase of the project than at the later phase of the
project. These findings suggest that teamwork quality is important for a team to deal with
the challenge of uncertainty at the initial stage of the project. Its importance is somewhat
reduced at the later stage when the low level of uncertainty requires less collaboration
among team members. Additionally, teamwork quality was related to project
commitment and coordination with other teams.

Hoegl, Ernst, and Proserpio (2007) investigated whether the effects of teamwork
quality on performance may be moderated by team member proximity. They argue that
the effects of teamwork quality on performance would be stronger when team members
are more geographically dispersed, for two reasons. First, teamwork quality is more
likely to leverage the knowledge potential of all team members who are dispersed. That is
because as teams become more dispersed, teamwork quality becomes more relevant. In
other words, in these teams, it is more important for team members to share information,
exert sufficient effort towards team activities, coordinate each others’ action, provide
mutual support, use all team members’ potential, and identify themselves with the team.
Second, the role of team leaders in dispersed teams becomes less critical, because they
are less likely to have direct access to all team members. As such, in these teams, the
weaker influence of team leaders on team activities can be compensated by a high level
of teamwork quality. In other words, a high level of teamwork quality can ensure that
dispersed teams continue to function even without the hands-on supervision of team
leaders. Based on the same dataset used in Hoegl and Gemuenden (2001), they found
substantial support for their hypothesis.
Hoegl and Proserpio (2004) investigated the relationship between team member proximity and teamwork quality. They argued that proximity, defined as the extent to which teammates are physically close to each other, may have positive effects on the six facets of teamwork quality. The reasoning was that close proximity of team members may facilitate the frequent and spontaneous communication within the team, allow members to structure their activities to improve synchronization, draw on each other’s strength, provide assistance to each other when needed, develop strong ties among team members, and reduce the tendency of social loafing. Results of a study using 145 software development teams from Germany showed that five of the six factors of teamwork quality were significantly correlated with team members proximity (with the exception of balance of contribution).

Hoegl, Parboteeah, and Gemuenden (2003) argued that the relationship between teamwork quality and team efficiency and effectiveness may be moderated by the level of innovativeness of the team project. They argued and found that the relationship was stronger when the team projects were high on innovative, but lower or even non-significant when the level of innovation was low. The reasoning was that projects that are highly innovative require more collaboration among team members and exchange of resources. As a result, teams that have a high level of teamwork quality may be better equipped to head off these challenges. In contrast, when projects are low or moderate in innovativeness, they require less collaboration among team members. Thus a high level of teamwork quality may be less relevant in these situations.
Hoegl and Parboteeah (2006) examined the effects of the distribution of decision-making authority on teamwork quality. The decision-making authority can rest either inside or outside of the team. When decisions are made external to the team, team members may experience a low level of autonomy. As such, it may interfere with the distribution of information, create difficulties with the coordination of team activities, undermine task-oriented motivation (effort and task knowledge), result in less mutual support, and reduce team members’ identification with the team. In contrast, when team members share the responsibilities to make decisions, they may be motivated to expend effort towards the tasks, exchange task-related information, coordinate their activities, balance each other’s contribution, and eventually lead to more mutual support among team members. Results of a study using 145 software development teams from Germany provided mixed support for these arguments. Specifically, external influence on team decision making was significantly related to effort, cohesion, and balance of contribution, but not significantly related to the other three dimensions of teamwork quality. Additionally, internal equality in decision-making was significantly related to five of the six dimensions of teamwork quality, with the exception of team coordination.

Easley, Devaraj, and Crant (2003) examined teamwork quality in the context of the use of team-based work systems. Using 24 teams of MBA students, these authors found that teamwork quality was related to a team’s use of collaborative system, which in turn was related to the team’s creativity performance.

Hoegl and Parboteeah (2003) examined the moderating role of teamwork quality on the relationship between team goal setting and team performance in innovative
projects. They reasoned that a high quality of teamwork may reduce the uncertainties involved in innovative team projects, which may enhance the effects of team goal setting. Results of a study using 145 software project teams in Germany provided substantial support for this argument.

Overall, teamwork quality has been found to be related to team performance, facilitate the team goal setting process, and compensate for the lack of geographical proximity of team members. Additionally, the effects of teamwork seem more pronounced when the team project is innovative and when teams are at the early stage of development. Given the importance of teamwork quality as a team process, it is important to examine its antecedents. One antecedent, as I argue in this paper, is intraunit justice climate.

The relationship between IJC and Teamwork Quality

In this section, I discuss the relationship between the three dimensions of intraunit justice climate and teamwork quality.

*Distributive IJC*

Distributive IJC is concerned with the perceived fairness of rewards relative to contribution in the team. When distributive IJC is high, team members perceive that the reward that they receive is consistent with the contribution they make to the team. In contrast, when distributive IJC is low, team members believe that relative to others, they have contributed more but are not rewarded accordingly. Distributive IJC may influence the pattern of interaction among team members.
Effort. Distributive IJC refers to the extent to which team members are rewarded based on their contribution to the team. Distributive IJC may be related to the effort dimension of teamwork quality. When team members perceive that their teammates reap the benefits without contributing to the team performance, they may cease to exert effort towards the team. Two theoretical perspectives may account for these effects. First, according to the equity theory (Adams, 1965), individuals compare the ratio of their input versus output with the same ratio of reference others. A sense of equity is achieved when the ratios are equivalent, while inequity is perceived when one’s ratio is greater or smaller than the same ratio of others. Inequity may lead to undesirable outcomes, such as anger, interpersonal conflict, and reduction of effort. Since most individuals are motivated to maintain equity, perceived low distributive IJC may lead to reduction of effort. Second, according to research on the “sucker effect” (Schnake, 1991), most individuals loathe to become a “sucker” (receiving the same amount of rewards as everyone else while exerting more effort than others). As a result, they may reduce their effort when they believe that their teammates are not contributing adequately to deserve the rewards they receive (low distributive IJC).

Balance of Contribution. Distributive IJC may also influence the balance of contribution within the team. A team has a good balance of contribution when team members contribute their knowledge to their full potential. Hckman (1987) argued that teams can achieve effectiveness if team members possess expertise required to complete tasks and use them efficiently. However, as Hckman argued, a team may have all the members who “cover all the right bases, but … … not capable of carry out well that it
was created to do” (p. 327). This can happen when some team members fail to contribute their task-relevant knowledge and skills (low distributive IJC), leaving the task to others who have relatively little task competence.

**Coordination.** A team that is characterized by a low level of distributive intraunit justice climate may also interfere with the coordination of team activities among team members. According to Zalesny and colleagues’ (1995) model of coordination, an important component of coordination is to map team members to task in order to increase the efficiency of task accomplishment. However, when distributive IJC is low, team members may not be assigned to tasks for which they have the required skills for successful performance. Alternatively, team members may be given tasks that they are not capable of doing. In both cases, teams may encounter coordination problems due to a low level of distributive IJC. A second reason is that it may disrupt the game plan that has been specified before the task execution (Larson & Schaumann, 1993). As such, when some members fail to follow the “scripts” others may find it hard to coordinate each others’ activities.

**Cohesion.** It is also expected that distributive IJC may be related to team cohesion. When team members believe that they are carrying more weight than others but are not compensated accordingly, they may become less motivated in team activities and less committed towards team task. Additionally, when they believe that their teammates take advantage of the team-reward system for their own benefits and place their own interest above the interest of the team, they may be less likely to be attracted to them,
which may also influence their integration with the team (Hoigaard, Safvenbom, &
Tonnessen, 2006).

*Communication.* Distributive IJC may also influence the way team members
communicate with each other. According to Equilibrium theory (Bales, 1953), groups
engage in both task and socioemotional activities. Problems that groups encounter on
their tasks, such as the perceptions of some team members receiving more than what they
deserve, may spill over to their socioemotional activities, such as communications. In
other words, low distributive IJC may trigger interpersonal resentment, thus inhibiting the
communication processes among team members.

*Mutual support.* The mutual support dimension of teamwork quality concerns
how team members address conflict in their team. Conflict can be framed as either
competitive or cooperative, depending on the perceived motives of the other party
involved in the conflict (Tjosvold, 1998). When distributive IJC is low, team members
may believe that others place their self-interest above the interest of the team. As such,
they may be less likely to see their goals as interdependent upon each other. They may
also see the conflict as a way their teammates use to promote personal agendas and serve
their own interest. Therefore, they are less likely to resolve their conflict in a constructive
manner and to come to a mutually agreeable solution.

Hypothesis 1: Distributive IJC is related to teamwork quality.

*Procedural IJC*

Procedural IJC refers to the shared perceptions of the extent to which teams use
fair procedures in the decision-making process. The relationship between procedural IJC
and team-related outcomes can be accounted for by social exchange theory (Blau, 1964). According to the theory, fair treatment by one’s teammates may facilitate the formation of social exchange relationships among team members. Social exchange, unlike economic exchange, involves socioemotional resources, such as trust, commitment, and mutual support. In other words, fair treatments represent a good-will gesture, which may be reciprocated by positive task process and interpersonal interactions.

**Coordination.** Procedural IJC may be related to the coordination of team activities for a number of reasons. First, fair procedures convey the message of social inclusion (Lind & Tyler, 1988; Blader & Tyler, 2005). When perception of procedural IJC is high, team members may be more motivated to engage in behavior for the benefit of the team. As a result, they may be more likely to engage in collaborative interaction, which may allow them to integrate their behavior in the pursuit of team goals. Second, a high level of procedural IJC may imply that one’s interest is aligned with the interest of others in the same team (Lind, 2001). As such, team members are more willing to subject themselves to the coordination of team activities. In other words, they are willing to adjust their “pace” in order to “accommodate for the range of preferred work pace expressed by team members” (Zalesny et al., 1995). Supporting these arguments, Sinclair (2003) found that high procedural justice was related to more cooperation among team members.

**Cohesion.** Procedural IJC may also influence the level of cohesion within the team. As group value model suggests, people use their group as a reference point of their self-worth (Blader & Tyler, 2005). A high level of procedural IJC may shape one’s self-definition and allow one to link one’s self-worth or self-image to the group that he/she
belongs to. This may create feelings of pride as part of the team and respect for other team members (Lind & Tyler, 1988; Tyler, 1987). As a result, they may be more likely to identify themselves with the team, become more committed to the task, and develop more trust on their teammates.

**Mutual support.** Procedural IJC may also be related to mutual support among team members. When procedural IJC is high, individuals are more likely to define relationship with other team members as cooperative. As a result, they may be able to handle conflict within the team in a constructive manner, cooperate with each other in the pursuit of the team goals, and appreciate each other’s input. As Tjsvold (1998, p. 300) argued, “protagonists who affirm each other as people rather than reject each other are more likely to believe that their goals are cooperative and to integrate perspective and reach agreement” In contrast, when procedural IJC is low, team members may be more likely to define the relationship as competitive. As a result, they are less likely to trust others in the team, assist others when help is needed, and develop each other’s ideas.

**Effort.** Individuals’ willingness to expend effort towards team’s tasks may also be influenced by procedural IJC. As Kidwell and Bennett (1993) argue, a strong norm of fairness in the team may provide cues that team members care about each other. This norm may provide guidance on one’s contribution decisions to team effort. In other words, fairness norms may temper the tendency to withhold effort (in order to exploit public good) and motivate employees to contribute to the team’s task.

**Balance of contribution.** A low level of procedural IJC is characterized by the dominance of a few team members over important decisions (Hoegl & Gemuenden,
This may be detrimental to the integration of team expertise. As Sethi argued (2000), success of cross-functional teams rests on team members’ abilities to carefully attend to each others’ perspective, question and challenge their respective assumptions, and reach a common understanding among themselves. This requires a high level of procedural IJC so that team members can freely voice their opinion to team decisions.

Communication. Procedural IJC may also impact communication within a team. Teams that are high on procedural IJC may have a participative structure whereby divergent views of team members are presented (Pierro, Mannetti, De Grada, Livi, & Kruglanski, 2003). Thus in these teams, participation in group decision making is distributed evenly, which may promote the communication within the team. However, when procedural IJC is low, team communication may be characterized by an autocratic fashion whereby a few members dominate the decision-making process. These individuals may assume most of the speaking roles leaving the rest either with the role of listeners or not being part of the communication process.

Hypothesis 2: Procedural IJC is related to teamwork quality.

Interactional IJC

Interactional IJC refers to the extent to which team members treat each other fairly interpersonally. A low level of interactional IJC may be exhibited in a number of ways, for example, team members may argue with each other, put each other down, and treat each other with disrespect. Interactional IJC can be considered as an “ambient stimuli” that is available to all team members as a result of their participation in the team activities (Hackman, 1976). As Hackman argued, ambient stimulus may provide
important information about the characteristics of a team and guidance for behavior. The effects of interactional IJC can be accounted for by social learning theory (Bandura, 1997). According to social learning theory, individuals model the behavior of others in their social environment. O’Leary-Kelly, Griffin, and Glew (1996) argue that when team members work in an environment where interpersonal problems pervade, they may use the information to guide their interaction with others within the team. Thus when interactional IJC is low, it may impact the quality of interaction among team members.

Communication. Most team projects require frequent, open, and informal communication among team members. Such communications facilitate the exchange of information. Network researchers argue that social relationship is an important antecedent of the exchange of task-related information (Albrecht & Ropp, 1984). A key to maintain social relationships is interactional IJC. A high level of interactional IJC may create psychological safety that will promote an uninhibited exchange of information without the fear of ridicule and embarrassment (Edmondson, 1999). In contrast, a low level of interactional IJC may lead to unpleasant confrontations. As a result, team members may withdraw from engaging in communication with others within the team in order to avoid conflict. Additionally, low interactional IJC may also create barriers in direct and spontaneous communication, leading them to resort to more formal or indirect forms of communications.

Cohesion. Interactional IJC may also influence the level of cohesion within the team. Interactional IJC may provide the channel thru which team members can build stronger ties with each other, develop attraction to each other, and foster identification
with the team. Additionally, the positive interaction may also motivate them to be committed to the tasks in order to enhance the success of the team. This argument is consistent with the social exchange theory (Blau, 1964). When team members treat each other fairly interpersonally, they may reciprocate by demonstrating a higher level of task commitment, and developing a strong tie with teammates and identification with the team. In contrast, low interactional IJC may strain relationship and reduce one’s identification with the team. When individuals do not identify with their team, they may not be concerned with the success of the team, neither will they contribute to its success.

**Mutual support.** Interactional IJC may also influence the level of interpersonal support within the team. A high level of interactional IJC may create a cooperative context, which may lead to the belief that their goals are linked. In other words, when team members believe that their teammates are trustworthy, they are likely to cooperate with each other by exchanging task-related information, taking into account each other’s perspectives, and becoming committed to finding a solution that may maintain relationships among team members (Tjosvold, 1998). In contrast, a low level of interactional IJC may create relationship conflict within the team. As a result, team members may frame their relationship with others as rivalry and their goals as irreconcilable. This may interfere with a team’s task-related activities, reduce members’ willingness to be receptive of others’ ideas and support each other, and lead to frustration and anger.

**Effort.** Interactional IJC may also influence the level of effort that team members exert on team tasks. According to the collective effort model (CEM, Karau & Williams,
1993), team members are more likely to work hard and exert effort towards team tasks when they believe that the collective outcome is meaningful and significant to them. According to CEM, meaningful outcomes can be subjective, such as one’s feeling of belongingness and self-worth. When team members perceive a high level of interactional IJC, they may develop a strong identification with the team. In other words, their self-worth is linked to the achievement of the team. As such, the success of the team may have important implications for their self-evaluation. Therefore, they may be more likely to exert effort towards team tasks.

**Coordination.** Coordination is essential to the effectiveness of a team. When coordination is high, team members make numerous contributions to the collective team effort, and the success of one member’s behavior is contingent upon the timely and correct contribution of other members (Zalesny et al., 1995). According to social learning theory (Bandura, 1997), individuals observe and emulate others’ behavior. Therefore, when they believe that team members don’t treat each other fairly interpersonally (low interactional IJC), they may respond by withholding their contribution towards team activities and are less willing to synchronize their own action with the action of their teammates.

**Balance of contribution.** The effectiveness of a team also depends on the extent to which it can tap the diverse expertise and skills that members bring to the team. When the specialized knowledge and skills of all members in the team are fully utilized, it may result in better decisions and more innovative products. However, when interactional IJC is low, team members may shift their focus from task-related activities to interpersonal
problems. As such, they may opt to avoid interpersonal conflict by withholding the expression of task disagreements (Mooney, Holahan, & Amason, 2007), which may interfere with a team’s ability to incorporate the skills and expertise of its team members to find integrative and innovative solutions.

Hypothesis 3: Interactional IJC is related to teamwork quality.

Effects of Teamwork Quality

Teamwork quality may have implications for the team. Here I will discuss the effects of teamwork quality on team performance, unit-level citizenship behavior, and satisfaction with teammates.

Team performance

There are reasons to believe that all six dimensions of teamwork quality are related to team performance.

Communications. There are a number of reasons to expect that effective communication may facilitate team performance. First, communication provides the channel through which important information is exchanged, which may provide the basis for decision-making within the team. Second, timely exchange of information may reduce response time and allow team members to react more proactively to errors. Third, communications allow team members to influence decision preferences of others within the group (Hirokawa & Rost, 1992). The positive relationship between communication and team performance has been well-documented in the literature. For example, in a study involving 145 software development teams, Hoegl and Gemuenden (2001) found a
strong correlation between the two indexes of team performance (effectiveness and efficiency) and team communication.

Coordination. Teams engage in coordinating activities when they formulate action plans in relation to the team goals (McGrath, 1984; Hackman & Morris, 1975). Such activities include identifying tools and techniques, delegating tasks to each team member, and specifying the optimal sequence of task duties (Weldon, Jehn, & Pradhan, 1991). Coordination provides the mechanism to integrate team members’ skills and knowledge and minimize problems such as process loss, which may be related to a higher level of team performance. In a study of 42 groups, Weldon and colleagues (1991) found that coordination was an important predictor of group performance.

Balance of contribution. Research has shown that one critical antecedent of effective performance in cross-functional teams is that team members bring their expertise to bear on team tasks. When there is a balance of contribution, teams may have a larger pool of diverse knowledge and expertise that can be used to improve performance (Gebert, Boerner, & Kearney, 2006). Additionally, balance of contribution may also ensure that team members perform activities within their expertise area (Milliken & Martins, 1996). In support of this argument, Hoegl and Gemueden (2001) found that balance of contribution was related to the innovative performance of software development teams.

Mutual support. When team members believe that they are pursuing the same goals, they may be more likely to frame their conflict as cooperative (Tjosvold, 1998). As such, they cooperate with each other as they move towards the achievement of the goals.
Such cooperation may promote the exchange of new ideas, improve relationships, and increase commitment to the tasks (Tjosvold, Tang, & West, 2004). In contrast, when team members believe that their goals are not congruent with each other, they may be more likely to frame their conflict as competitive (Tjosvold, 1998). As such, they may undermine each others’ effort in the pursuit of team goals. Such competitions may strain relationships and impair team performance. Consistent with these ideas, researchers have found that cooperative conflict promotes team performance whereas competitive conflict undermines it (Chen, Tjosvold, & Liu, 2006; Tjosvold, Hui, Ding, & Hu, 2003).

*Effort.* Effort reflects the physical and mental energy that team members expend towards the completion of team tasks. Weingart (1992) suggests that effort includes two components: intensity and duration. When group members focus more attention on the task (intensity) and work longer (duration), team performance may increase. However, group performance may suffer when some members fail to contribute to the best of their effort (Shepperd, 1993). Supporting this argument, past research on social loafing has found that team performance declines when some team members do not expend sufficient effort (Hardy, 1990).

*Cohesion.* Cohesion concerns the extent to which team members identify themselves with the team and the level of commitment they exhibit towards team performance. When team cohesion is high, team members are more likely to bond together. As such, they may be motivated to work together, become committed to team goals, assist each other, and coordinate their activities (Hackman, 1992; Wech, Mossholder, Steel, & Bennett, 1998). Several meta-analyses have shown that cohesion is
related to team performance (effectiveness and efficiency) (Beal et al., 2003; Mullen & Copper, 1994).

Hypothesis 4: Teamwork quality is related to team performance.

Unit-Level Citizenship Behavior

There are also reasons to believe that teamwork quality may be related to unit-level citizenship behavior. In recent years, researchers have expressed a lot of interest in citizenship behavior given its demonstrated effects on organization performance (Organ, 1988, 1990). Citizenship behavior is defined by Organ (1988, p. 4) as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization.” There have been many different ways to operationalize citizenship behavior, such as helping behavior, altruism, pro-social behavior, and contextual performance.

Traditionally, citizenship behavior has been examined at the individual level. More recently, researchers have started to examine citizenship behavior at the unit level. Unit-level citizenship behavior is defined as “normative level of OCB performed within a unit” (Ehrhart, 2004, p. 64). Thus unit-level citizenship behavior functions as lubricants that smooth the operations within the team. Unit-level citizenship behavior is distinct from individual-level citizenship behavior in a number of ways. First, individual-level citizenship behavior focuses on individual behavior. In contrast, unit-level citizenship behavior focuses on a shared understanding of the level of citizenship behavior that has been performed by members within the unit. An important implication of this distinction is that for individual-level citizenship behavior, the referent is typically the respondent. In
contrast, for unit-level citizenship behavior, the referent is shifted to the unit (members in general). Second, since unit-level citizenship behavior is concerned about the shared perceptions, there should be reasonable within-unit agreement in order to aggregate it to the unit level (Ehrhart, Bliese, & Thomas, 2006; Ehrhart & Naumann, 2004).

There have been a number of conceptual and empirical studies that focus on unit-level citizenship behavior. Using a sample of 40 work crews in a paper mill, Podsakoff, Ahearne, and MacKenzie (1997) found that unit-level citizenship behavior was related to production quantity and product quality. Similarly, using 31 military units, Ehrhart and colleagues (2006) found that unit-level citizenship behavior was related to various indicators of military unit effectiveness. Most noteworthy, Ehrhart and Naumann (2004) developed a group norm approach to understand unit-level citizenship behavior.

According to their model, unit-level citizenship behavior functions as group norms that are initiated by individual citizenship behavior, developed through interaction among group members, provide guidance for behavior, and influence social identity. In the sections below, I will discuss how teamwork quality is related to unit-level citizenship behavior.

Coordination. According to Ehrhart and Naumann (2004), unit-level citizenship behavior develops when team members have the opportunities to observe each other’s behavior. When team members observe others performing citizenship behavior, they may also exhibit such behavior because it may benefit the team as a whole. According to social learning theory, behavior can be learned by observation. When the level of coordination is high, team members must work together to complete a task. The close
working relationship may facilitate the social learning process. As such, team members may imitate the citizenship behavior exhibited by others, thus enhancing unit-level citizenship behavior. Additionally, Ehrhart and Naumann (2004) argue that a close working relationship among team members may also lead them to feel obligated to contribute to the success of the team, thus motivating them to perform more citizenship behavior.

**Effort.** Van der Vegt, Van de Vliert, and Oosterhof (2003) argue that when some team members benefit from other’s effort without contributing anything in return, it may trigger interpersonal distrust. As such, team members may be less likely to act pro-socially towards the team, for fear that such behavior may render them more vulnerable to exploitation. Ehrhart and Naumann (2004) also made a similar observation, arguing that a group norm of citizenship behavior is most likely to establish when there is a perception that most people perform behaviors aimed to benefit the team (instead of themselves).

**Cohesion.** There are a number of reasons to expect that group cohesion may also be an important antecedent of unit-level citizenship behavior. First, when group cohesion is high, there is a motivation to improve the performance of the team (Mullen & Copper, 1994). As such, team members may be more likely to place the group interest above self interest by performing citizenship behavior towards the team. Second, a cohesive team also provides more opportunities for team members to interact with each other (Ehrhart & Naumann, 2004). The frequent interaction may allow them to observe each other’s team-serving behavior and accept it as part of the group norm.
Mutual support. Tjosvold, Hui, and Yu (2003) argued that the handling of conflict within the team may have implications for the exhibition of unit-level citizenship behavior. When conflict is handled cooperatively, team members may come to recognize that their goals are aligned. As such, they may be more likely to exchange task-related information and take into account of each other’s viewpoint, a process that may eventually lead to better solutions. In contrast, when conflict is handled competitively, team members may see themselves as engaging in a win-lose struggle. Competitive conflict may undermine the decision-making process and damage relations. Tjosvold and colleagues (2003) argued that while cooperative conflict promotes task reflexivity (the extent to which team members reflect upon on their task strategies and team processes), competitive conflict undermines it. Task reflexivity, in turn, may enhance coordination of team activities and promote the level of citizenship behavior exhibited within the team. Results of their study provided strong support to this argument.

Communication. According to Ehrhart and Naumann (2004), team members establish norms for citizenship behavior that may facilitate the functioning of the team. Ehrhart and Naumann (2004) argued that in order to activate the norm for citizenship behavior, team members need to interact with each other to share their expectations. By communicating with each other, team members may come to identify citizenship behavior that may be essential to the team, encourage each other to emulate the behavior, and reward the exhibition of the behavior and punish/reprimand those who withhold the behavior.
Balance of contribution. One well-documented problem with diverse teams is that opposing views and perspectives may lead to conflict and reduce the synergy within the team (Jehn, Northcraft, & Neale, 1999). In other words, teams fail to reconcile and utilize the diverse perspectives and information that their members bring to the team. When there is a balance of contribution, team members are able to elaborate and integrate their diverse views, which may lead to a higher quality decision-making process and better performance (van Knippenberg, De Dreu, & Homan, 2004). Such collaborations may also reduce the threat of social categorization within the team, promote positive interactions, and set the stage for more helping behavior among team members.

Hypothesis 5: Teamwork quality is related to unit-level citizenship behavior.

Satisfaction with Teammates

A third dependent variable that I examine in this study is satisfaction with teammates. Satisfaction with teammates refers to team members’ affective attractions to each other. In this dissertation, I argue that satisfaction with teammates is related to all six dimensions of teamwork quality.

Communication. Satisfaction is a socio-emotional outcome derived from the interactions with others within the team. Teams characterized by open and rich communication may provide a personally fulfilling experience for team members; as such, they may become satisfied with their teammates. Consistent with this argument, in Gladstein’s (1984) comprehensive analysis of group effectiveness, openness of communication was one of the process variables that were related to teammate satisfaction.
Coordination. Coordination ensures that team members adjust each other’s behavior in order to synchronize team activities and enable the team to perform a task (Marks et al., 2002). Such coordination reduces friction among team members and increases their satisfaction with the team experience. As Van der Vegte, Emans, and Van de Vliert (2001) argued, “working together to get the job done generally fosters camaraderie and friendship and can thereby heighten feelings of belonging and attachment to the group” (p. 5). In contrast, a low level of coordination among team members may create difficulties to complete task requirements and lead to process loss (Steiner, 1972), thus compromising their positive experience.

Effort. Satisfaction with teammates may also be related to perceptions that others exert effort towards team performance. When team members believe that others receive the same amount of rewards while contributing less, they may feel being taken advantage of (Schnake, 1991). Such perceptions may reduce their positive attitudes towards their teammates. In contrast, when all members willfully contribute full effort to the completion of team task, it may create solidarity and strengthen the affective bond among them. The resulting sense of “oneness” may provide a positive experience of working in the team.

Mutual support. The interaction among team members is in part guided by how they define their personal goals relative to the goals of others within the same team. When they believe that the goals are linked, they may be more likely to cooperate with each other in the effort to find the best solution to problems (Tjosvold, 1998). This belief may also lead to reciprocation of good-will gestures, positive expectations, and exchange
of information. Such cooperation may also produce better team performance and increase positive feelings towards each other (Stanne, Johnson, & Johnson, 1999). In contrast, when team members believe that one’s success comes at the expense of others’ loss, they may compete against each other. As such, it may interfere with team process, lead to hostile interaction, undermine relationships, and create frustration and angers.

Cohesion. Group cohesion may also positively influence one’s satisfaction with teammates. In a cohesive group, team members are attracted to each other and identify themselves with the team. As such, they may have positive experiences of interacting with their teammates. As Forsythe (1990) pointed out, “cohesive groups are often more enjoyable” (p. 87).

Balance of contribution. Researchers have found that when team members bring their expertise to the team and engage in collaborative problem solving, they may experience more interpersonal liking (van Knippenberg et al., 2004). That is because they are less likely to focus on intergroup biases and are more likely to focus on elaborating the viewpoints and perspectives from their teammates.

Hypothesis 6: Teamwork quality is related to satisfaction with teammates.

Effects of Intraunit Justice Climate

In the section below, I discuss the relationship between intraunit justice climate and the three dependent variables: team performance, unit-level citizenship behavior, and satisfaction with teammates.

Performance. There are conceptual reasons to anticipate a link between IJC and team performance. First, when team members witness or suspect that other members fail
to contribute their fair share of effort, they may withhold effort themselves in order to restore a state of equity (Schnake, 1991). Second, when teammates do not treat each other fairly, it may create a hostile environment that may deplete attentional resources that could have been used to improve team performance (Jehn, 1994). Third, low IJC may also interrupt normal communications among team members and compromise a team’s abilities to coordinate activities aimed at maintaining a desirable level of performance. In contrast, when individuals are treated fairly by their teammates, they may be motivated to reciprocate by exhibiting team-oriented behavior and improving the performance of the team.

Unit-level citizenship behavior. IJC may also promote the communal relationship within the team. When team members treat each other fairly, they may perceive a strong obligation to reciprocate (Blau, 1964). Such communal relationships may motivate them to perform citizenship behavior to maintain the welfare and promote the success of the team. As Ehrhart and Naumann (2004) argued, “group members in communal relationships experience a sense of obligation to fulfill the needs of their partners and give them help without expecting something in return” (p. 969). In contrast, when IJC is low, individuals may place self-interest above the group interest. As such, they may be less likely to go above and beyond their role requirements.

Satisfaction with teammates. When IJC is high, there is a shared perception that team members receive their fair share of rewards based on their contribution, enact fair procedures for decisions made in the team, and treat each other with respect. This creates an environment conducive for the formation of communal relationships among team
members (Blau, 1977). These relationships, symbolic of mutual trust and support, may provide a personally rewarding experience and become the source of positive emotions (Lawler & Yoon, 1993, 1996). When these positive emotions are attributed to one’s relationship with teammates, they will increase one’s satisfaction with teammates (Flynn, 2005).

The Mediating Role of Teamwork Quality on IJC and Team Outcomes

Earlier I argue that IJC may be related to the various dimensions of teamwork quality. Additionally, both IJC and teamwork quality are expected to be related to team outcomes such as team performance, team-level citizenship behavior, and teammate satisfaction. I argue that the effects of IJC on team outcomes are mediated by teamwork quality. This argument can be accounted for by the I-P-O Model.

*Input-Process-Output (I-P-O) Model*

According to the I-P-O model (Hackman, 1987; McGrath, 1984), team processes link team inputs (such as characteristics of team members, organizational resources) to team-related outcomes (such as team performance and teammate satisfaction). Marks and colleagues (2001, p. 357) defined team process as “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed towards organizing taskwork to achieve collective goals.” As such, it is the means through which team resources are converted into team outcomes. In this model, IJC characterizes the property of the team and functions as an input variable. Teamwork quality characterizes the interaction pattern of team members and functions as a process variable. The distinction of IJC and teamwork quality as input and process variables is
consistent with Marks and colleagues (2001) who also separate emergent states and process variables. Emergent states, according to Marks and colleagues (2001) are motivational level of the team, which should be distinct from the interaction pattern of the team, such as teamwork quality. Team performance, unit-level citizenship behavior, and teammate satisfaction are outcomes of the team process.

Hypothesis 7: Teamwork quality mediates the relationship between distributive (7a), procedural (7b), and interactional (7c) intraunit justice climate and team performance.

Hypothesis 8: Teamwork quality mediates the relationship between distributive (8a), procedural (8b), and interactional (8c) intraunit justice climate and unit-level citizenship behavior.

Hypothesis 9: Teamwork quality mediates the relationship between distributive (9a), procedural (9b), and interactional (9c) intraunit justice climate and satisfaction with teammates.

Chapter Summary

In this chapter, I developed a comprehensive model of team effectiveness. Specifically, I proposed that intraunit justice climate influences important outcome variables through its effects on a process variable, teamwork quality. This model is examined in the following chapter.
CHAPTER 6

METHODS

Sample

This model was tested with undergraduate project teams. These were cohorts of students newly admitted into the business college at the University of Arizona. As part of the program requirements, they were all enrolled in four core classes (Marketing, Management, Accounting, and Business Communication). In each of these classes, they formed three- to five- person teams and worked interdependently on several team projects throughout the entire semester. More specifically, each team was responsible for the operation of a start-up company. Their responsibilities included setting up the internal structure of the organization (management class), determining the product that they would like to launch and organizing a marketing campaign to promote the product (marketing class), streamlining the financial and accounting aspects of the organization (accounting class), and finally delivering a comprehensive presentation in front of a panel of judges (business communication class). Team membership, which was determined by the undergraduate program office, remained stable across these four classes.

The use of these undergraduate project teams is appropriate for this study, for three reasons. First, team members were graded based on team performance, which created a high level of outcome inter-dependence. The nature of these projects also required input from team members who came from different academic departments (most of the teams were staffed with students with different majors, such as accounting, finance, business management). Second, team members spent considerable time working
intensely with each other throughout the entire semester. In the course of working on these projects, they needed to face interpersonal and procedural challenges similar to those facing professional work teams. Third, past research also relied on student project teams to examine unit-level justice (Roberson, 2006a, 2006b).

I recruited participants from two management classes across two semesters (Fall of 2006 and Spring of 2007). The total enrollment of these two classes was 817. These two classes were taught by two different instructors. Since no significant difference was detected on the variables examined in the present study, as discussed in the following section, I combine these two classes in all the analyses.

Procedures

I conducted a longitudinal study. Specifically, all the students were surveyed three times over the course of the semester. The measures paralleled the presumed causal order. Justice was assessed at Time I. Four weeks later, I examined teamwork quality. The final survey, which was given four weeks after the Time II survey, examined the outcome variables.

Time I

In Time I, which was seven weeks into the semester, all the students in these two classes received an email from me requesting their assistance in this study. I stated in the email that the purpose of this study was to understand factors that may influence the effectiveness of teams in the workplace. Students were also told that, by completing these surveys, they may earn extra credits towards the management class that they were enrolled in. Embedded in the email was a link to the survey website. Survey #1 included
a measure of intraunit justice climate. A total of 718 students completed this first survey, representing a response rate of 88%. Among the participants who completed the survey, 42.9% were female and 26.4% were ethnic minorities. The mean age of the participants was 21.5 years. Participants were enrolled in a variety of majors, i.e., accounting (21.9%), marketing (21%); finance (18.7%); management (16.3%); MIS (8.1%); public administration (7.9%); and economics (6%). These students belonged to a total of 173 project teams (each team had at least one team member responding to this survey). The number of team members who participated varied across these teams. The average within team response rate was 87%.

**Time II**

Four weeks later, participants were sent a second email inviting them to complete the second survey, which included a measure of teamwork quality. A total of 728 students completed this second survey, representing a response rate of 89%. The average within-team response rate was 88%.

**Time III**

Four weeks later, participants received another email requesting their assistance with the third survey, which included measures of satisfaction with teammates and unit-level citizenship behavior. A total of 708 students completed this third survey, representing a response rate of 87%. The average within-team response rate was 86%.

**Sample Characteristics**

In total, out of a total of 814 students, 578 responded to all three surveys, representing a response rate of 71%. These individuals came from 172 teams. The
The average within-team response rate was 71%. Among these participants, 44% were female and 25% were ethnic minorities. Out of these 172 teams, eight of them included only one member who completed all three surveys. Thus, these teams were dropped from further analyses. Thus, 164 teams (172 minus eight) that included a total of 570 (578 minus eight) participants were used in the analysis.

Measures

All the measures used in this study are presented in the Appendix.

Time I

Participants responded to all the Time I measures with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The three measures of IJC have been validated in a separate study (Li, Cropanzano, & Benson, 2007).

Distributive IJC was measured with a 5-item Likert scale. I adapted some of the items from George (1992) because her measure reflects the extent to which team members contribute equitably to the team effort. A sample item was “The grade that my teammates have received for the projects is appropriate considering the quality of the work they have completed.” The Cronbach alpha was .88, indicating that this measure produced reliable scores. Procedural IJC was measured with a five-item scale reflecting members’ evaluations of the procedures used within the teams. These items were written based on the criterions proposed by Leventhal (1976). A sample item was “My teammates ignore each other’s inputs to the project.” The Cronbach alpha was .75. Interactional IJC was measured with a four-item scale developed by Donovan and colleagues (1998). These items assessed the extent to which teammates treat each other
with respect and help each other perform the task. A sample item was “My teammates
treat each other with respect.” The Cronbach alpha was .79.

Time II

Participants responded to all the Time II measures with a five-point likert scale
ranging from 1 (strongly disagree) to 5 (strongly agree).

Teamwork quality (Hoegl & Gemuenden, 2001) includes six dimensions.
Communication was measured with a 10 item scale, reflecting the frequency and manner
of exchange among team members. A sample item was “Team members communicate
mostly directly and personally with each other.” The Cronbach alpha was .77.
Coordination was measured with a four-item scale intended to assess the extent to which
team members synchronize their activities. A sample item was “The work within the
project is closely harmonized.” The Cronbach alpha was .74. Balance of contribution was
measured with a three-item scale. This scale measured the extent to which team members
bring their expertise to the team. A sample item was “Team members contribute to the
achievement of the team’s goals in accordance with their specific potentials.” The
Cronbach alpha was .56. Mutual support was measured with a six-item scale. This scale
measured the manner in which team members resolve the conflict in the team. A sample
item was “If conflicts come up, they are easily and quickly resolved.” The Cronbach
alpha was .88. Effort was measured with a four-item scale intended to assess the extent to
which team members exert effort towards the accomplishment of team goals. A sample
item was “Every team member makes the projects their highest priority.” The Cronbach
alpha was .75. Cohesion was measured with a ten-item scale. This scale measured team
members’ identification with the team and interpersonal attraction. A sample item was “Members of our team feel proud to be part of the team.” The Cronbach alpha was .81.

Time III

Participants responded to all the Time III measures with a five-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Satisfaction with teammates. Satisfaction with teammates was measured with a three item scale developed by Ven der Vegt and colleagues (2001). A sample item was “I am pleased with the way my teammates and I work together.” The Cronbach alpha was .96.

Unit-level citizenship behavior. Following Ven der Vegt and colleagues (2003), I examined two dimensions of unit-level OCB. One is helping behavior, which captured team members’ tendency to share each other’s workload. A sample item was “Team members help out those who have heavy workloads.” The other dimension is loyal behavior, which denoted team members’ propensity to go above and beyond the call of duties. A sample item was “Team members frequently do things that are not formally required but that contribute to the overall success of the team.” The Cronbach alpha for helping behavior was .89 and was .74 for the loyalty scale.

Team performance. With the permission of the instructors, I was able to gain access to the teams’ project grades in the management class. For the class in the Fall semester, the team project was to draw up an organizational chart. Team members were required to identify positions in the chart that could be filled in with local talents (team members) and positions that had to be filled from the external labor market. They needed
to provide justification for the decision and the criterion that they would use to select the appropriate people to fill in those positions. One teaching assistant graded the project on a scale of 0 to 100. The mean grade for this project was 94 (SD = 4.45). The small standard deviation and high mean raise the threat of range restriction, which I shall return to in the discussion section.

For the class in the spring semester, the team project was to deliver a report on human resources planning. In this report, team members were asked to determine the business functions (examples included business development, sales and marketing, production, etc) that would be needed in their organization and to assign team members to each of these functions. Additionally, they were asked to identify the business or knowledge gap between what the team members possessed and what they would ideally have, and to assemble an advisory board whose members may have the needed business background or knowledge to fill in the gaps. One teaching assistant graded the project on a scale of 0 to 50. The mean grade for this project was 46 (SD = 3.67). Since different grading scales were used in these two classes, I obtained the standardized score within each class and used it for the subsequent analyses.

Chapter Summary

In this chapter, I described the method that I used to evaluate the model that I proposed in the last chapter. Undergraduate project teams were recruited to participate in this study. They completed three surveys over the course of a semester. Most of the measures were adequately reliable. Results of the hypotheses tests are presented in the next chapter.
In this section, I evaluate the extent to which team members agreed with each other on the variables measured in the present study. Past research has argued that there must be sufficient within-team agreement to warrant aggregation to the team level (James et al., 1984). Following conventions, I computed the within-group inter-rater agreement index ($r_{wg(j)}$), the intra-class coefficient ICC(1), and the group mean reliability ICC(2). The $r_{wg(j)}$ provides an index of the extent to which team members agree with each other on those measures. Conventionally, the average $r_{wg(j)}$ should be equal to or greater than .70 to be considered appropriate for aggregation to the unit level. The values of ICC(1) and ICC(2) are derived from the analysis of variance (ANOVA). Group membership was used as an independent variable and the variable of interest was used as dependent variables. The mean square within group and the mean square between group, based on ANOVA, are used in the computations of ICC(1) and ICC(2). According to Bliese (1998), a small ICC(1) value suggests that there is considerable variability within each team whereas a large ICC(1) value suggests that there is some sort of cluster within the team. ICC(2) concerns the reliability of group mean scores. A high value of ICC(2) suggests that the group means are reliable, whereas a low value suggests the opposite. All these results are presented in Table 1.
Table 1

Results of Data Aggregation

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<tr>
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The mean r_{wg(j)} values were as follows: distributive IJC, .81; procedural IJC, .91; interactional IJC, .90; communication, .92; coordination, .85; balance of contribution, .81; effort, .76; mutual support, .92; cohesion, .92; satisfaction with teammates, .78; helping behavior, .88; loyal behavior, .76.

The ICC(1) and ICC(2) for the measures were: distributive IJC, .29 and .64; procedural IJC, .11 and .35; interactional IJC, .19 and .50; communication, .25 and .58;
coordination, .25 and .58; balance of contribution, .25 and .58; mutual support, .16 and .44; effort, .22 and .55; cohesion, .25 and .59; satisfaction with teammates, .41 and .74; helping behavior, .24 and .56; loyal behavior, .20 and .50. The ICC(1) values were compared favorably to ICC values reported in other studies (e.g., Simons & Roberson, 2003). The ICC(2) values were relatively low, probably due to the small team size. These results should be considered conservative given the unreliability of group means that attenuated the effect sizes (Bliese & Halverson, 1998; Hofmann & Jones, 2005). Based on these evidences, I aggregated all scale scores to the team level.

Confirmatory Factor Analysis

In the second step, I conducted confirmatory factor analyses (CFA) on the scales using AMOS 4.0. I evaluated the factor structure of the measures at both the individual and the team levels. Most of these scales have been analyzed at the individual level in past research. Therefore, evaluating the factor structures of these measures at the individual level may allow me to replicate results reported in past research. Additionally, the evaluation of these constructs at the team level may provide the basis for subsequent analyses, which are done at the team level.

Model fit was evaluated by the following indexes: the Chi-square test ($\chi^2$), the Comparative Fit Index (CFI), the Normed Fit Index (NFI), and the Root Mean Squared Error of Approximation (RMSEA). The use of $\chi^2$ test alone to evaluate model fit is problematic because chi-square values are overly sensitive to misfit. Therefore, in addition to the chi-square test, adequate fit can be inferred when the CFI and NFI are above .90 and the RMSEA is between .05 and .08 or less. RMSEA within the range of
.08 and .10 is considered mediocre fit, and RMSEA value above .10 is considered poor fit.

**Intraunit justice climate (IJC).** Results of these analyses are presented in Table 2. The individual level analysis was based on a sample size of 718. At the individual level, the three-factor model (Figure 2) of IJC that I proposed represented a reasonably good fit ($\chi^2 = 328.62, \text{df} = 74, p < .001; \text{CFI} = .96; \text{NFI} = .96; \text{RMSEA} = .069$). Against the three-factor model, I tested an alternative model that forced all items into one factor. The results for the one-factor model (Figure 3) represented a relatively poorer fit ($\chi^2 = 1357.36, \text{df} = 77, p < .001; \text{CFI} = .96; \text{NFI} = .96; \text{RMSEA} = .15$). These results suggest that compared with the one-factor model, the three-factor model fit the data better ($\Delta\chi^2 = 1028.74, \text{df} = 3, p < .001$). The group level analysis was based on a sample size of 171 teams (two teams had just one person each responding to this survey, thus they were removed from the analysis). The three-factor structure of the IJC also represented a reasonably good fit ($\chi^2 = 145.02, \text{df} = 74, p < .001; \text{CFI} = .99; \text{NFI} = .99; \text{RMSEA} = .075$). Comparatively, the one factor model provided a much worse fit ($\chi^2 = 497.19, \text{df} = 77, p < .001; \text{CFI} = .96; \text{NFI} = .96; \text{RMSEA} = .18$). The difference between these two models was statistically significant ($\Delta\chi^2 = 352.17, p < .001$).
Table 2

Confirmatory Factor Analysis – Intraunit Justice Climate

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Figure 2
Intraunit Justice Climate
(Three-Factor Model)
Teamwork quality. Results of these analyses are presented in Table 3. I also evaluated the factor structure of teamwork quality. At the individual level, which was based on a sample size of 728, the superordinate model (Figure 4, $\chi^2 = 4215.42$, df = 623, p < .001; CFI = .96; NFI = .96; RMSEA = .087) represented a reasonably good fit, relative to the one-factor model (Figure 5, $\chi^2 = 5044.35$, df = 629, p < .001; CFI = .95;
NFI = .95; RMSEA = .096). Similarly, at the team level (sample size equal to 171 teams),
the superordinate model also represented a better fit ($\chi^2 = 1574.37$, df = 623, p < .001;
CFI = .97; NFI = .95; RMSEA = .095), compared with the one-factor model ($\chi^2 =
1754.01$, df = 629, p < .001; CFI = .96; NFI = .94; RMSEA = .103).

Table 3

Confirmatory Factor Analysis – Teamwork Quality

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Figure 4

Teamwork Quality
(Super-Ordinate Model)
Unit-level citizenship behavior and satisfaction with teammates. Results of these analyses are presented in Table 4. Finally, I also evaluated the factor structure of the variables (loyalty, helping, and satisfaction with teammates) measured in Time III. At the
individual level (sample size equal to 708), relative to the three-factor model (Figure 6), the one factor model (Figure 7) that forced all the items together represented a poor fit ($\chi^2 = 1308.69$, df = 35, $p < .001$; CFI = .77; NFI = .76; RMSEA = .23). In contrast, the three-factor model provided a good fit to the data ($\chi^2 = 62.36$, df = 32, $p < .001$; CFI = .99; NFI = .99; RMSEA = .037). The difference between these two models was statistically significant ($\Delta \chi^2 = 1246.33$, $p < .001$). These results were replicated with the group level analysis (sample size equal to 173 teams). The three-factor model ($\chi^2 = 49.47$, df = 32, $p < .001$; CFI = .99; NFI = .98; RMSEA = .056) provided a better fit than the one-factor model ($\chi^2 = 338.92$, df = 35, $p < .001$; CFI = .85; NFI = .83; RMSEA = .23). The difference between these two models was statistically significant ($\Delta \chi^2 = 289.45$, $p < .001$).

Table 4

Confirmatory Factor Analysis – Outcome Variables

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Figure 6
Outcome Variables
(Three-Factor Model)
In summary, these results provided support for the intended structure of the measured variables, both at the individual level and the team level. Specifically, the three dimensions of intraunit justice climate, measured in Time I, were distinct from each other, as the three-factor structure was superior to the one-factor structure. Similarly, the six-factor superordinate model of teamwork quality was superior to the one-factor model, measured in Time II. Finally, the three outcome variables, measured in Time III, were distinct from each other, evidenced by the superiority of the three-factor model over the one-factor model.

Hypothesis Testing

Correlations
Table 5 presents the correlation among measured variables. Most of the variables were highly correlated with each other (except for performance, which will be discussed below). All three dimensions of intraunit justice climate, measured in Time I, were significantly related to all six dimensions of teamwork quality measured in Time II. Additionally, all three dimensions of intraunit justice climate were also significantly related to citizenship behavior and satisfaction with teammates, both measured at Time III. Contrary to my expectation, intraunit justice climate was not related to team performance. Similarly, all six dimensions of teamwork quality were significantly related to citizenship behavior and satisfaction with teammates. Team performance was not significantly related to teamwork quality, again failing to confirm the model.
Table 5

Means, Standard Deviations, Reliability Coefficients, and Inter-Correlations of All Measured Variables

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Reliability coefficients are presented at the diagonal.

Models

Path analysis was used to test the hypotheses. Specifically, multiple-item scales were aggregated by calculating the mean and these averages were treated as observed indicators (Hoegl & Gemuenden, 2001). The use of path analysis is appropriate given the large number of parameters to be estimated relative to the sample size (N = 164 teams) (Humphrey, Ellis, Conlon, & Tinsley, 2004; Shrout & Bolger, 2002). Using path analysis may also allow me to test the multiple paths simultaneously.

In the present study, I tested two models. In the first model (Figure 1, fully
mediating model), the paths between intraunit justice climate and outcome variables were set to be equal to zero. In the second model (partially mediating model), the paths between intraunit justice climate and outcome variables were allowed to be freely estimated. The proposed model was tested using the AMOS program. Model I (fully mediating model) provided a reasonably good fit ($\chi^2 = 147.89$, df = 61, $p < .001$; CFI = .95; NFI = .92; RMSEA = .093). Model II was less satisfactory ($\chi^2 = 140.12$, df = 49, $p < .001$; CFI = .95; NFI = .93; RMSEA = .11). There was no significant difference between these two models ($\Delta \chi^2 = 7.77$, df = 12, $ns$). Since Model I was more parsimonious, I will use Model I for the analyses below.

**Relationship between IJC and Teamwork Quality**

Hypothesis 1 posits that distributive IJC may be related to teamwork quality. This hypothesis was supported ($\beta = .46$, $p < .01$). Similarly, hypothesis 2 posits that procedural IJC may be related to teamwork quality. This hypothesis was also supported ($\beta = .27$, $p < .01$). Hypothesis 3 posits that interactional IJC may be related to teamwork quality. This hypothesis was not supported ($\beta = .14$, $ns$). Thus two of the three dimensions of intraunit justice climate were predictive of teamwork quality.

**Relationship between Teamwork Quality and Outcome Variables**

Hypothesis 4 posits that teamwork quality may be related to team performance. Consistent with my earlier comment, this hypothesis was not supported. The path between teamwork quality to team performance did not reach significance ($\beta = .10$, $ns$). Hypothesis 5 posits that teamwork quality may be related to citizenship behavior within the team. This hypothesis was supported. Teamwork quality was significantly related to
both dimensions of citizenship behavior: helping ($\beta = .71, p < .01$) and loyalty ($\beta = .65, p < .01$). Hypothesis 6 posits that teamwork quality may be related to satisfaction with teammates. This hypothesis was supported as well ($\beta = .84, p < .01$). Thus teamwork quality predicted a number of important outcome variables but team performance was not one of them.

Mediating Models – IJC and Performance

In the next step, I added the paths from intraunit justice climate to the three dependent variables. Hypothesis 7 posits that teamwork quality may mediate the relationship between intraunit justice climate and team performance. Recall that in the bivariate correlation analysis, the correlations between intraunit justice climate and performance were not significant. In the presence of the mediator (teamwork quality), the paths from intraunit justice climate to performance were also not statistically significant: Distributive IJC ($\beta = .04, ns$), Procedural IJC ($\beta = -.07, ns$), Interactional IJC ($\beta = -.11, ns$). Additionally, the indirect effects of the three dimension of intraunit justice climate on performance were also not significant: Distributive IJC ($\beta = .08, ns$), Procedural IJC ($\beta = .05, ns$), Interactional IJC ($\beta = .02, ns$). In other words, teamwork quality did not mediate the relationship between intraunit justice climate and performance. Thus, Hypothesis 7 was not supported. As one can readily see, a pattern existed whereby neither intraunit justice climate nor teamwork quality was related to team performance.

Mediating Models – IJC and Unit-Level Citizenship Behavior

Hypothesis 8 posits that teamwork quality may mediate the relationship between intraunit justice climate and citizenship behavior within the team. Recall that in the
bivariate correlation analysis, the correlations between intraunit justice climate and citizenship behavior were significant. In the presence of the mediator (teamwork quality), the direct paths from all three types of intraunit justice climate to citizenship behavior were not significant: Distributive IJC: helping (β = .07, ns) and Loyalty (β = -.05, ns), Procedural IJC: helping (β = -.03, ns) and Loyalty (β = .02, ns), Interactional IJC: helping (β = .09, ns) and Loyalty (β = .09, ns). Additionally, while the direct effects between intraunit justice climate and teamwork quality were not significant, the indirect paths involving distributive and procedural intraunit justice climate were significant: Distributive IJC: helping (β = .28, p < .05) and Loyalty (β = .28, p < .05), Procedural IJC: helping (β = .17, p < .05) and Loyalty (β = .17, p < .05), Interactional IJC: helping (β = .08, ns) and Loyalty (β = .08, ns). These results suggest that the relationship between distributive and procedural intraunit justice climate and citizenship behavior was mediated by teamwork quality. Of course, interactional justice did not show these effects. Thus, Hypotheses 8a and 8b were supported, but no support was found for Hypothesis 8c.

**Mediating Models – IJC and Satisfaction with Teammates**

Finally, Hypothesis 9 posits that teamwork quality may mediate the relationship between intraunit justice climate and satisfaction with teammates. Recall that in the bivariate correlation analysis, the correlations between intraunit justice climate and satisfaction with teammates were significant. In the presence of the mediator (teamwork quality), the direct links between the three dimensions of intraunit justice climate and satisfaction with teammates were not significant: Distributive IJC (β = .06, ns), Procedural IJC (β = -.03, ns), Interactional IJC (β = .04, ns). Additionally, while the
direct effects between intraunit justice climate and teamwork quality were not significant, the indirect paths involving distributive and procedural intraunit justice climate were significant: Distributive IJC (β = .36, p < .05), Procedural IJC (β = .21, p < .05), Interactional IJC (β = .104, ns). These results suggest that the relationship between distributive and procedural intraunit justice climate and satisfaction with teammates was mediated by teamwork quality, but the relationship for interactional justice was not. Thus, Hypotheses 9a and 9b were supported, but no support was found for Hypothesis 9c.

Chapter Summary

This chapter presented the results of a study I conducted to examine the comprehensive model proposed in Chapter Five. Results provided mixed support for the hypotheses. In summary, intraunit justice climate was related to teamwork quality, unit-level citizenship behavior, and satisfaction with teammates. Teamwork quality was related to unit-level citizenship behavior and satisfaction with teammates. Neither intraunit justice climate nor teamwork quality was related to team performance. Teamwork quality mediated the relationships between distributive and procedural intraunit justice climate and satisfaction with teammates and unit-level citizenship behavior. State the matter in the negative, it appears that all of the variables but the performance measure were in accordance with predictions. None of the predictors were associated with team performance. Likewise, interactional intraunit justice climate failed to predict teamwork quality. In the next chapter, I discuss the theoretical and practical implications of these findings.
CHAPTER 8

DISCUSSION

Overview

The primary purpose of this study is to examine a model linking intraunit justice climate to team outcome variables through the mediating effects of teamwork quality. To examine this model, I collected data from undergraduate student project teams. This study was conducted in a longitudinal manner, i.e., participants responded to three on-line surveys (separated by four weeks between surveys) about perceptions of fairness from their teammates (intraunit justice climate), pattern of interaction among team members (teamwork quality), satisfaction with teammates, and citizenship behavior in the team. I also obtained the performance measure based on the grades of the team projects.

This last chapter summarizes the major findings from this study in light of research on justice climate and teamwork. I also offer explanations for the lack of support for certain hypotheses. I then discuss the limitations of the present study and point to useful paths for future investigations. I close this chapter by discussing the practical implications of the present study.

Findings

*Intraunit Justice Climate*

In this dissertation, I empirically examined the construct of intraunit justice climate (Cropanzano et al., 2007). Intraunit justice climate is defined as a shared perception of how fairly team members treat each other. The introduction of this construct is a response to the justice climate literature that tends to restrict the source of
Justice perceptions to outside authority figures (e.g., Colquitt et al., 2002). This oversight is unfortunate, as past research conducted at the individual level has suggested that teammates may be a very important source of a person’s justice perceptions.

Based on past research, Cropanzano and colleagues (2007) suggested that intraunit justice climate includes three dimensions: distributive, procedural, and interactional intraunit justice climate. Distributive IJC is concerned with the perceptions that teammates receive their fair amount of rewards relative to their contribution. Procedural IJC is concerned with perceived fairness of the decision-making process used in the team. Interactional IJC is concerned with the fairness of interpersonal treatment among team members.

In the present study, I found that the three dimensions of IJC were highly correlated with each other. However, results of the confirmatory factor analysis suggest that the three-factor structure was superior to the one-factor structure. These results suggest that team members in general were able to distinguish these three different aspects of justice climates within the team. These results are consistent with past research conducted at the individual level and with an authority as the source of justice perceptions. For example, in their meta-analysis, Cohen-Charash and Spector (2001) reported that people can distinguish the three dimensions of justice perceptions despite their strong association.

It’s also worth noting that there was sufficient evidence to show that team members converged on their perceptions of how fairly they treated each other. The within-group inter-rater agreement index ($r_{wg(i)}$), the intra-class coefficient ICC(1), and
the group mean reliability ICC(2) were all relatively satisfactory, suggesting that there were within-team agreement and between-team differences on the three dimensions of IJC. These results are consistent with the social information processing theory (Salancik & Pfeffer, 1978). Specifically, when team members observed how they treated each other and discussed the interpretations of their experience, they were more likely to come to the same conclusion of the fairness of team climates.

The Link between Intraunit Justice Climate and Teamwork Quality

In the present study, I examined the effects of intraunit justice climate on teamwork quality. Teamwork quality is defined as the level of interaction among team members. According to Hoegl and Gemuenden (2001), teamwork quality is a superordinate construct indicated by six highly correlated dimensions: communication, coordination, mutual support, effort, balance of contribution, and cohesion. Results of the present study indicate that the superordinate model was superior to the one-factor model. In the present study, I argue that the three dimensions of intraunit justice climate may influence teamwork quality.

Distributive IJC. As hypothesized, distributive IJC was significantly related to teamwork quality. Distributive IJC was highly correlated with all six dimensions of teamwork quality in the bivariate correlations. Additionally, in the path analysis, distributive IJC was also significantly related to teamwork quality. The effects of distributive IJC on the level of interaction among team members are not particularly surprising. As I argued in the introduction, when there is a shared perception that team members receive what they deserve based on their contribution to the team project (rather
than capitalizing on the team reward system), it may increase the level of teamwork quality. In other words, team members are more likely to communicate with each other, coordinate their activities, exert effort towards the accomplishment of team goals, resolve their conflict cooperatively instead of competitively, bring their expertise to bear, and identify themselves with the team.

It is noteworthy that distributive IJC had the highest correlation with teamwork quality among the three dimensions. This finding is consistent with past research showing that when team rewards (team members are rewarded based on the collective performance of the team, rather than individual performance) are used in place of individual rewards, team members may be particularly concerned with the fairness of the distribution (Kirkman et al., 2000; Ezzamel & Willmott, 1998). Researchers have weighed on the pros and cons of using team rewards. On the one hand, it may foster team harmony and promote cooperation among team members. However, this system may open the door to potential exploitation. As I demonstrated in the present study, it is critically important to address the concerns of potential inequity created by the use of team rewards, as it may have significant impact on the teamwork process. DeMatteo, Eby, and Sundstrom (1998) argue that instead of adapting an either-or approach (either team rewards or individual rewards), organizations may opt for the use of a multiple reward type system. Researchers argue that the combination of different types of rewards may lead to better outcomes than the use of just one type of rewards (Lawler & Cohen, 1992; Pearce & Ravlin, 1987). Future research should examine the extent to which such reward systems may influence distributive IJC within the team.
Procedural IJC. As I hypothesized, procedural IJC was related to teamwork quality. Results of the bivariate correlation between procedural IJC and the path analysis (the path from procedural IJC to teamwork quality) both corroborated this conclusion. These findings underscore the importance of having a climate of fair procedures in teams. The importance of procedural IJC may be heightened in self-managing teams, such as those used in the present study. A high level of procedural IJC ensures that decision-making process is not being dominated by one or several members of the team. As Latham, Winters, and Locke (1994) argued, “participative decision making in autonomous work teams is effective because if subordinates have task-relevant knowledge and are allowed to share and implement it, the resulting decisions should have a positive effect on performance” (p. 61). Similarly, Campion and colleagues (1993) also found that participation in team-decision making was related to support and communication among team members.

Interactional IJC. Contrary to my expectations, interactional IJC was not related to teamwork quality (although it is important to note that interactional IJC was significantly related to teamwork quality in bivariate correlation). One possibility is that the three dimensions of IJC were too highly correlated with each other (ranging from .60 to .72). When variables are so highly correlated with each other, some of them may create redundant information, which may lead to problems in structural models when they are treated as being independent from each other (Tabachnick & Fidell, 1996). Given the high correlation between interactional IJC and the other dimensions, future research should explore ways to increase the distinctiveness of the IJC construct. For example, one
strategy may be to temporally separate the three justice measures.

The Link between Teamwork Quality and Outcome Variables

In the present study, I examined the relationship between teamwork quality and three outcome variables: team performance, unit-level citizenship behavior, and satisfaction with teammates. Results of this study provided support for two of the three hypotheses. Specifically, whereas teamwork quality was significantly related to unit-level citizenship behavior and satisfaction with teammates, it was not significantly related to team performance. In the sections below, I discuss the implications of these findings.

Performance. I proposed that teamwork quality may be related to team performance. This hypothesis is based on the link between the six dimensions of teamwork quality and performance that I discussed in the introduction. Specifically, when team members engage in collaborative interactions (communicate with each other, coordinate their activities, etc), they are expected to perform at a high level.

Unexpectedly, results of this study did not support the link between performance and teamwork quality. This result was particularly surprising as past research has linked performance to teamwork quality (Hoegl & Gemuenden, 2001; Hoegl et al., 2004). The most likely explanation is grade inflation. The mean of the performance measure was relatively high (the mean grade for this project in the Fall semester was 94 out of 100 and was 46 out of 50 for the spring semester) and there was little variability in the scores of performance measures (SD = 4.45 for the Fall semester and SD = 3.67 for the Spring semester). This may create range restriction and reduce the correlation between teamwork quality and the performance measure (Sackett & Yang, 2000).
Unit-level citizenship behavior. Consistent with the hypothesis, teamwork quality was related significantly to both dimensions of unit-level citizenship behavior. Citizenship behavior has received a lot of attention due to its effects on organizational performance (Organ, 1988, 1990). However, the investigation of citizenship behavior at the unit-level has been relatively recent. Several recent studies tended to focus on the effects rather than the antecedents of unit-level citizenship behavior (e.g., Ehrhart et al., 2006). In the present study, I found that a high quality of interaction among team members increased citizenship behavior within the team. This finding is consistent with both the social exchange theory (Blau, 1964) and the social information processing theory (Salancik & Pfeffer, 1978). Specifically, according to social exchange theory, team members reciprocate to the goodwill gestures exhibited by others in the team. When the level of teamwork is high, it provides the social context that may encourage team members to exhibit citizenship behavior as a form of reciprocation. Similarly, social information processing theory suggests that team members use information they gather from their teammates to guide their behavior. A high quality of interaction may allow team members to observe and emulate each other’s behavior. As Ehrhart and Naumann (2004) argued, such close interaction may create the norms of citizenship behavior that may convey behavioral expectations to the members of the team. This study is also consistent with empirical research showing that social contexts play a very important role in the level of citizenship behavior demonstrated in the team. For example, Bommer, Miles, and Grover (2003) found that individuals were more likely to display a high level of OCB when their coworkers also displayed those behaviors.
Satisfaction with teammates. That I found a significant relationship between teamwork quality and satisfaction with teammates was not particularly surprising. This finding is consistent with past research showing that a high level of interaction may foster solidarity among team members and increase their positive experience of working together as a team.

Mediating Models

In the present study, I also examined the mediating models of intraunit justice climate on outcome variables through the effects of teamwork quality. These hypothesized models received mixed support. In the section below, I discuss the implications of these findings.

Mediating models – IJC and performance. Teamwork quality was not related to team performance, as discussed earlier. Additionally, the links between intraunit justice climate and performance were also non-significant. Thus, no support was found for the mediating model linking intraunit justice climate to performance. I suspect that the high means and low variability of the performance measure, articulated earlier, might have contributed to the effects observed in the present study.

Mediating models – IJC and unit-level citizenship behavior and satisfaction with teammates. As hypothesized, the relationships between distributive and procedural IJC and citizenship behavior and satisfaction with teammates were mediated by teamwork quality. As the results suggest, the direct effects became non-significant in the presence of the mediator, attesting to the mediating mechanism of teamwork quality. These findings are important for two reasons. First, it opens the black box between intraunit
justice climate and team effectiveness and may encourage future research to explore other potential linking mechanisms.

Second, this study may also contribute to the understanding of different types of climates in groups and teams. In the present study, I conceptualize IJC as an antecedent of teamwork quality. This argument is consistent with the distinction between foundation and specific climates discussed in the organizational climate literature (Schneider & Bowen, 1993). Foundation climate refers to the shared perceptions of the broader environment. In contrast, specific climate refers to shared perceptions with respect to a narrow area. Schneider and Bowen (1993) argue that foundation climate may function as ambient stimuli that permeate the workplace. As Wallace, Popp, and Mondore (2006) argued, “foundation climate cue group behavior due to ambient stimuli that are resultant of such climates and are strengthened in more specific climates (Hackman, 1992). Ambient stimuli are part of the background of group functioning and cue group members to appropriate or inappropriate behavior and interactions” (p. 682). In other words, foundation climate may shape the specific climate within the team. In the present study, I argue that intraunit justice climate represents a broader-band climate because it is concerned with the general climate of the team (reward, procedures, and interaction patterns). In contrast, teamwork quality represents a narrow-band climate given its focus on interaction among team members, which may be influenced by the broader climate existing within the team.

Limitations

These results should be reviewed in light of the limitations of this study. First,
admittedly, the use of teams composed of undergraduate students may potentially limit the generalizability of the findings to work contexts. However, the teams used in the present study shared many similarities with teams in the organizations. For example, team members in the present study spent considerable time interacting with each other, worked on multiple projects together, shared a common goal, and their efforts were directly linked to their performance. These characteristics greatly strengthen the external validity of the present study, especially in view of research showing that studies using student samples yielded results convergent with those using non-student samples (Anderson, Lindsay, & Bushman, 1999). Nevertheless, future research should move beyond the context of the present study and re-examine these findings in an organizational setting (Guzzo & Shea, 1992).

Second, the use of self-report measures may raise concerns with common method variance (CMV). To avoid this problem, I consulted the various suggestions made by Podsakoff, MacKenzie, Lee, and Podsakoff (2003). I introduced a time lag between the measurement of the predictors and the outcome variables. Additionally, I conducted a confirmatory factor analysis, demonstrating that a single broad methods factor did not explain the data. Indeed, participants were able to discriminate among the different types of justice. Finally, measures were obtained from multiple sources.

Future Research

This study also points to many new directions for future research. First, in the present study, I investigated the role of teamwork quality as a mechanism that links intraunit justice climate to outcome variables. It is possible that there are other
mechanisms that may channel these effects. For example, one potential mechanism is team-members exchange (TMX). TMX refers to the quality of the exchange relationship among team members. Teams that are high on TMX are characterized by personal, open-ended, and flexible relationships. The notion that TMX may mediate the relationship between intraunit justice climate and outcome variables is consistent with social exchange theory. When team members treat each other fairly, they may perceive the need to reciprocate in order to maintain the exchange relationships, which in turn may promote team effectiveness.

Second, empirically, since past research tends to focus on the interactive effects of different types of justice (Brockner & Wiesenfeld, 1996), future research should examine how justice perceptions from different sources may interact with each other (Liao & Rupp, 2005). There are three potential avenues for future research. First, research may examine how one source of shared justice perceptions may precipitate the other source. According to social learning theory (Bandura, 1997), behavior can be acquired thru observations. Therefore, it is possible that when an authority figure treats his/her subordinates unfairly, the unfair behavior may have a trickle-down effect and lead team members to behave unfairly towards each other (Masterson, 2001). In contrast, the fair behavior of a leader may create an environment conducive to the formation of a high level of IJC. Second, it is also important to evaluate how individuals react to the different combinations of justice levels and justice sources (level of justice: high vs. low X source: leader vs. teammates). Unpacking these effects may allow researchers to make more accurate predictions on team processes. Third, researchers have found a match between
the different sources of justice perceptions and the relevant outcomes. For example, Masterson, Lewis, Goldman, and Taylor (2000) found that procedural justice (from organizations) was a better predictor of citizenship behavior targeting the organization, whereas interactional justice (from supervisors) was a better predictor of citizenship behavior targeting supervisors. This argument suggests that future research may examine whether intraunit justice climate may be a better predictor of outcome variables towards teammates, whereas justice climate may be a better predictor of outcome variables towards team leaders.

Third, future research should also examine the internal validity of the results presented in this study. One way to strengthen the internal validity of this study is to conduct an experiment. The use of an experiment has two advantages over a field study. First, participants may be randomly assigned to teams in an experiment. Second, the level of intraunit justice climate may be manipulated in an experiment. By manipulating the level of IJC in a team, the subsequent differences in teamwork quality and outcome variables may be attributed to IJC.

Practical Implications

This study also has practical implications for organizations interested in improving the effectiveness of work teams. As discussed at the opening chapter of this dissertation, there is no guarantee that the use of teams will lead to a higher level of effectiveness. Indeed, academic research and popular press have been replete with stories of teams failing to meet the expectations (Janis, 1972; Thompson, 2000). As the current study suggests, one important way to improve team effectiveness is to promote the
climate of fair treatment among team members. An important implication of this finding is that organizations should not only evaluate the fairness of organizational and supervisory distribution, procedures, and interpersonal interactions, but also attend to the justice perceptions coming from one’s teammates. In addition, organizations should take a more proactive approach in building a fair climate within a team. A number of recent studies have shown that justice training may shield employees against the pernicious effects of injustice and increase organizational citizenship behavior (e.g., Gilliland & Gilliland, 2001; Greenberg, 2006; Skarlicki & Latham, 1997). Therefore, organizations are advised to incorporate justice training in their team-building exercise and to assist team members to deal with injustice that they experience from their teammates.

Conclusion

In conclusion, this dissertation examines the effects of intraunit justice climate on team effectiveness through the mediating mechanism of teamwork quality. Results of a longitudinal study, with undergraduate student project teams as research participants, show that teamwork quality mediated the relationship between two dimensions of intraunit justice climate: distributive and procedural IJC, and indicators of team effectiveness: unit-level citizenship behavior and satisfaction with teammates. In sum, these results suggest that organizations attempting to improve team effectiveness can do so by promoting a climate of fairness among team members.
APPENDIX

MEASURES USED IN THIS STUDY

Intraunit Justice Climate

*Distributive IJC*

1. Some of my teammates have received a better grade for the team projects than they would have deserved.
2. The grade that my teammates have received for the projects is appropriate considering the quality of the work they have completed.
3. Some of my teammates did not do their share of the work, even though we have all received the same grade for the projects.
4. Some of my teammates did not meet their responsibilities, even though we have all received the same grade for the projects.
5. Some of my teammates put forth much less effort than other members of my team, even though we have all received the same grade for the projects.

*Procedural IJC*

1. My teammates are able to express their views and feelings about the way decisions are made in the team.
2. The way my teammates make decisions is free from personal bias.
3. My teammates ignore each other’s inputs to the project.
4. My teammates use correct information for the project.
5. The way my teammates make decisions is applied consistently.

*Interactional IJC*

1. My teammates help each other out.
2. My teammates argue with each other.
3. My teammates put each other down.
4. My teammates treat each other with respect.

Teamwork Quality

*Communication*

1. There is frequent communication within the team.
2. Team members communicate often in spontaneous meetings or phone conversations.
3. Team members communicate mostly directly and personally with each other.
4. There are mediators thru whom much communication among team members is conducted.
5. Project-relevant information is shared openly by all team members.
6. Important information is kept away from some team members in certain situations.
7. In our team there are conflicts regarding the openness of the information flow.
8. Team members are happy with the timeliness in which they receive information from other members.
9. Team members are happy with the precision of the information received from other team members.
10. Team members are happy with the usefulness of the information received from other team members.

Coordination

1. The work within the project is closely harmonized.
2. There are clear and fully comprehended goals for subtasks within our team.
3. The goals for subtasks are accepted by all team members.
4. There are conflicting goals in our team regarding subtasks.

Balance of Contribution

1. Our team recognizes the specific potentials (strengths and weakness) of individual members.
2. Team members contribute to the achievement of the team’s goals in accordance with their specific potentials.
3. Imbalance of member contributions causes conflicts in our team.

Mutual Support

1. Team members help and support each other as best as they can.
2. If conflicts come up, they are easily and quickly resolved.
3. Discussions and controversies are conducted constructively.
4. Suggestions and contributions of team members are respected.
5. Suggestions and contributions of team members are discussed and further developed.
6. Our team is able to reach consensus regarding important issues.
**Effort**

1. Every team member fully pushes the projects.
2. Every team member makes the projects their highest priority.
3. Our team put much effort into the projects.
4. There are conflicts regarding the effort that team members put into the projects.

**Cohesion**

1. It is important for the members of our team to be part of these projects.
2. Our team does not see anything special about these projects.
3. Team members are strongly attached to these projects.
4. These projects are important to our team.
5. All members are fully integrated in our team.
6. There are many personal conflicts in our team.
7. There is personal attraction between members of our team.
8. Our team is sticking together.
9. Members of our team feel proud to be part of the team.
10. Every team member feel responsible for maintain the success of the team.

**Satisfaction with Teammates**

1. I am satisfied with my teammates.
2. I am pleased with the way my teammates and I work together.
3. I am very satisfied with working in this team.

**Unit-Level Citizenship Behavior**

**Help**

1. Team members help out those who have heavy workloads.
2. Team members willingly help those who have project-related problems.
3. Team members are always ready to lend a helping hand to others around them.
4. Team members help others who can not make it to the team meeting.

**Loyalty**

1. Team members never avoid extra duties and responsibilities for the projects.
2. Team members frequently do things that are not formally required but that contribute to the overall success of the team.
3. Team members do much more than can be reasonably expected.
REFERENCES


