

TWO ESSAYS ON TEAM PERSPECTIVES IN SALES

A Dissertation

Presented to

The Faculty of the C.T. Bauer College of Business

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

By

Babu L. John Mariadoss

August 2007

**TWO ESSAYS ON
TEAM PERSPECTIVES IN SALES**

**TWO ESSAYS ON
TEAM PERSPECTIVES IN SALES**

APPROVED:

Michael Ahearne
Associate Professor of Marketing
Co-Chairperson of Committee

Edward Blair
Professor of Marketing
Co-Chairperson of Committee

Adwait Khare
Assistant Professor of Marketing

John Mathieu
Professor of Management
University of Connecticut

Arthur D. Warga
Dean, C. T. Bauer College of Business

© Copyright by Babu L John Mariadoss, 2007

ALL RIGHTS RESERVED

To my family, friends and faculty

ABSTRACT

Teams have become a ubiquitous feature of the marketing functions in organizations, however, the increased use of the team-based approach in marketing has not been matched by an increased understanding of how to foster enhanced team effectiveness in specific marketing contexts. This dissertation comprises two essays that investigate the impact of team process variables on team performance. In the first essay, using a longitudinal, multisource sample of 878 sales professionals aligned in 200 sales teams, we examine the influence of empowering leadership on team commitment, team organizational citizenship behaviors (OCBs), and team performance by employing a multilevel framework. We find that team commitment mediates the effect of leader empowerment behaviors on team OCBs, leader empowerment behaviors interact with team commitment as related to sportsmanship and civic virtue, team OCBs exhibit significant relationships with subsequent team performance, and team members' mean sales experience moderates the effect of team OCBs on team performance. In the second essay, in a field survey of 114 dyadic sales teams, we address the distinctions in team processes, and test the mediating role of action processes between planning processes and performance. We measure and test whether Shared Mental Models (SMMs) interact with team processes, particularly whether, in addition to their direct effects on team performance, they moderate the effects of team processes on team performance. SMMs significantly interacted with planning processes to produce action processes, but in opposite directions. Taskwork SMMs also significantly predicted team performance. Mediation tests showed that planning processes only had an indirect effect on performance through action processes.

TABLE OF CONTENTS

ABSTRACT	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
ANTECEDENTS AND CONSEQUENCES OF CITIZENSHIP BEHAVIORS IN SALES TEAMS: A MULTILEVEL ANALYSIS	1
INTRODUCTION	2
CONCEPTUAL MODEL AND HYPOTHESES	4
Team OCBs	4
Antecedents of OCBs	5
Leader Empowering Behaviors	6
Team Commitment	7
LEBs and Team OCBs	8
Team OCBs and Sales Team Performance	13
Team Sales Experience	16
METHOD	18
Participants and Design	18
Construct Measures	19
ANALYTIC STRATEGY	24
RESULTS	25
Baseline Models	25
Influences on Team OCBs	27
Influences on Team Performance	28
DISCUSSION	29
Antecedents of Team OCBs	30
Effects of Team OCBs on Unit Performance	32
LIMITATIONS	36
THEORETICAL AND MANAGERIAL IMPLICATIONS	37
CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH	38

REFERENCES	40
APPENDIX	46
INVESTIGATING THE INFLUENCE OF SMMs ON SALES TEAM PROCESSES AND SALES TEAM PERFORMANCE	52
INTRODUCTION	53
CONCEPTUAL MODEL AND HYPOTHESES	57
Literature Review	57
Shared Mental Model Theory	58
Team Processes	60
Planning and Action Processes	63
Team Processes and Performance	64
SMMs and Team Processes	67
SMMs and Team Performance	68
Moderating Influences of SMMs	69
METHODS	72
Sample and Procedures	72
Construct Measures	74
ANALYSIS AND RESULTS	78
DISCUSSION	81
IMPLICATIONS	84
Theoretical Contributions	84
Managerial Implications	84
LIMITATIONS AND FUTURE RESEARCH	85
CONCLUSION	86
REFERENCES	87
APPENDIX A CONSTRUCT SCALES	96
APPENDIX B PATHFINDER SIMILARITY SCORES	98

LIST OF TABLES

TABLE 1.1:	CONSTRUCT SCALES	46
TABLE 1.2:	STUDY VARIABLE DESCRIPTIVE STATISTICS AND CORRELATIONS	48
TABLE 1.3:	RESULTS OF WITHIN AND CROSS-LEVEL REGRESSION ANALYSES	49
TABLE 2.1:	STUDY VARIABLE DESCRIPTIVE STATISTICS AND CORRELATIONS	99
TABLE 2.2A:	MEDIATION OF ACTION PROCESSES	99
TABLE 2.2B:	MAIN EFFECTS OF PLANNING & SMMS ON ACTION PROCESSES	100
TABLE 2.2C:	FULL MODEL - MAIN EFFECTS	102
TABLE 2.2D:	MODERATING EFFECTS OF SMMS ON PLANNING → ACTION PROCESSES	103
TABLE 2.2E:	FULL MODEL	104

LIST OF FIGURES

FIGURE 1.1:	HYPOTHESIZED RELATIONSHIPS	50
FIGURE 1.2:	TEAM SPORTSMANSHIP → TEAM PERFORMANCE MODERATED BY AVERAGE SALES EXPERIENCE	51
FIGURE 1.3:	TEAM CIVIC VIRTUE → TEAM PERFORMANCE MODERATED BY AVERAGE SALES EXPERIENCE	51
FIGURE 2.1:	CONCEPTUAL MODEL FOR THE INFLUENCE OF SHARED MENTAL MODELS ON TEAM PROCESSES AND TEAM PERFORMANCE	105
FIGURE 2.2:	FULL MODEL	106
FIGURE 2.3:	MEDIATION OF ACTION PROCESSES	107
FIGURE 2.4:	INTERACTION OF SMMs AND PLANNING PROCESS	108

**ANTECEDENTS AND CONSEQUENCES OF CITIZENSHIP BEHAVIORS IN
SALES TEAMS: A MULTILEVEL ANALYSIS**

INTRODUCTION

Teams have increasingly become a preferred form of organization for various marketing activities including new product development (Sarin and Mahajan 2001), sales (Cespedes, Doyle, and Freedman 1989), and after-sales customer service (Deeter-Schmelz and Ramsey 2003). Teams are attractive because of the work-related, informational and the motivational benefits they can provide. Work-related benefits include task-sharing and workload-sharing: individuals sharing tasks and working together can achieve outcomes that are beyond the capabilities of individuals working alone (Katzenbach and Smith 1993). Informational benefits include access to information and information integration: individuals in teams have access to a larger pool of information than any single team member (Sethi 2000). Motivational benefits of teams include coaching, peer-motivation and peer-monitoring (Guzzo and Dickson 1996; Smith-Jentsch, Mathieu, and Kraiger 2005).

The increased use of teams has led to increased research on the factors that contribute to high team performance (Mathieu, Gilson, and Ruddy, 2006). One concept that has received considerable attention in this regard is organizational citizenship behaviors (OCBs). OCBs are discretionary behaviors on the part of the employee that are believed to directly promote the effective functioning of the organization, without necessarily influencing an employee's objective productivity (Podsakoff and MacKenzie 1994; Netemeyer et al. 1997). Past literature has identified three types of OCBs: helping behavior (e.g., helping and assisting coworkers), sportsmanship (e.g., non-complaining behaviors), and civic virtue (e.g., participating in meetings, offering constructive suggestions). It has been theorized that these behaviors may serve the motivational and

coaching functions of teams and as a result promote their effective functioning (e.g., Organ 1988, 1990a; Schnake 1991; Smith, Organ, and Near 1983; Williams and Anderson 1991).

Three broad issues have risen in the managerial literature on OCBs. First, the relationship between OCBs and performance has been inconsistent. Results have varied across different study contexts, for example, helping behaviors have been found to have a positive effect on performance in one study (Podsakoff, Ahearne, and MacKenzie 1997), but a negative effect in another (Podsakoff and MacKenzie 1994). Such inconsistencies have led researchers to speculate that these relationships may be moderated by other variables (Podsakoff et al. 2000; Podsakoff and MacKenzie 1997). However, no research on moderators has been conducted till date. A second broad issue in the OCB literature concerns the influence of various antecedents. There has been substantial research on the antecedents of OCBs that shows them to be affected by employee characteristics (traits and attitudes), task characteristics, organizational characteristics, and leader behaviors. However, little attention has been devoted to considering mediated relationships nor moderating influences that may exist among such influences. Of particular interest to us, the inter-relationship of leader behaviors and employee characteristics has not been considered.

The third issue in the extant OCB literature is methodological in nature, in that, previous work has generally employed cross-sectional and single level designs. As a result, the direction of causality is open to the question: do OCBs influence performance, or does performance lead to OCBs, i.e., are teams with better performance more inclined

and/or more able to engage in citizenship behaviors. The present research seeks to address these issues.

Using the context of sales teams of a major international pharmaceutical company, we report a multi-level, multi-period study which considers particular classes of leader behaviors and employee attitudes – Leader Empowering Behaviors (LEBs) and team commitment respectively. We test mediation and moderation effects to demonstrate that LEBs not only play a role in shaping employee attitudes in teams but also provide an environment in which these attitudes can better foster team OCBs and thus team performance. We also consider the possible moderating influence of job experience on the relationship between team OCBs and performance, as suggested (but not tested) by Podsakoff et al. (2000) and Podsakoff and MacKenzie (1997), and we find that such moderation does occur. We address issues of causality by capturing longitudinal performance data at two different times, with team OCBs in between; this approach effectively controls for baseline performance and demonstrates the effects of team OCBs on performance.

CONCEPTUAL MODEL AND HYPOTHESES

Team OCBs

As we mentioned previously, OCBs represent discretionary individual behavior that, in aggregate, positively affects organizational dynamics (Organ 1988). Three main types of organizational citizenship behavior have been identified in the marketing literature (Podsakoff and MacKenzie 1994): helping behavior, sportsmanship, and civic virtue. Conceptually, helping behavior is a composite of several types of citizenship behavior—altruism, courtesy, peacekeeping, and cheerleading—that Organ (1988, 1990a,

b) identifies, all of which share the theme of helping coworkers (team members) solve or avoid work-related problems. Sportsmanship is a willingness on the part of a team member to tolerate less-than-ideal circumstances without “complaining,... railing against real or imagined slights, and making federal cases out of small potatoes” (Organ 1988, p. 11). Civic virtue is behavior that indicates that an employee responsibly participates in and is concerned about the life of the team.

The central issue that drives the development of a theoretical framework for OCBs is whether the different forms of team OCBs have positive effects on performance. Podsakoff and Mackenzie (1994) showed that helping, sportsmanship, and civic virtue all exhibited independent effects on sales unit performance. However, in a later study, Podsakoff, Ahearne, and MacKenzie (1997) found that helping behavior influenced product quality, but sportsmanship and civic virtue did not. In contrast, Walz and Niehoff (1996) found that sportsmanship and civic virtue reduced customer complaints, but helping behavior was unrelated to this outcome. Therefore, in an attempt to clarify the nature of the consequences of team OCBs on team performance, we will consider team members’ experience as a potential moderator of the relationships between team OCBs and performance. On the side of antecedents, in addition to relationships of leader behaviors and team commitment with team OCBs, we will also study the inter-relationships between these antecedents. The conceptual framework guiding our study is shown in Figure 1.

(Place Figure 1.1 near here)

Antecedents of OCBs

Extant research has identified four major categories of antecedents: individual (or employee) characteristics, task characteristics, organizational characteristics, and leadership behaviors. Although the earliest studies concentrated primarily on employee attitudes, dispositions, and leader supportiveness (e.g., Bateman and Organ 1983; Organ 1988; Smith, Organ, and Near 1983), later research extended leadership behaviors to include transformational and transactional leadership behaviors (e.g., Podsakoff, MacKenzie, and Bommer 1996a; Podsakoff et al. 1990). Among the antecedents to OCBs that have been examined, leader behaviors (e.g., transformational leadership) and organizational commitment have been found to be strong and consistent predictors of OCBs.

We consider leader behaviors to be an important category of antecedents to OCBs, because in contrast to other antecedent categories (i.e., demographic, attitudinal, and dispositional variables), senior management can control and shape leader behaviors more easily. Although senior management can make changes in the demographic profile of their sales force by changing hiring practices and can make modifications to corporate policies that affect attitudinal and dispositional variables, these changes take a long time. Changing sales management behaviors can be achieved in a timely and effective manner by modifying management training practices, changing management policies, and altering sales management hiring practices.

Leader Empowering Behaviors

One type of leadership behavior that appears to be important in a team context is LEB. This concept has been widely researched (Ahearne, Mathieu, and Rapp 2005), and has been shown to be related to OCBs. The academic literature on empowerment has

treated the construct of LEB in several different ways. Spreitzer (1996) refers to empowerment as a psychological state in which people feel more able and competent. Similarly, Kirkman and Rosen (1999) define empowerment as a multidimensional construct that consists of the empowered individual feeling more “potent” and “autonomous” and believing that his or her work has more “meaning” and “impact”. Both conceptualizations treat empowerment as an end state. Conversely, Conger and Kanungo (1988) refer to empowerment not as a feeling or a result but as a leadership behavior that fosters favorable outcomes, such as follower persistence and self-efficacy. In this sense, empowerment is a “motivational construct” that management practices with the intent of moving followers to action (Conger and Kanungo 1988, p. 473). On the basis of Conger and Kanungo’s (1988) and Hui’s (1994) work, we define LEBs as behaviors that (1) enhance the meaningfulness of the team’s work, (2) foster the team’s participation in decision making, (3) express confidence in high performance, (4) facilitate the accomplishment of group goals, and (5) encourage autonomy.

Team Commitment

Research conducted in the past decade or so has generally supported a positive relationship between organizational commitment and OCBs (Becker 1992; Gregersen 1993; Mayer and Schoorman 1992; Morrison 1994; Munene 1995; Organ 1990a; Shore and Wayne 1993). Podsakoff, MacKenzie, and Bommer’s (1996b) meta-analysis reported that organizational commitment was positively related to all three forms of OCB. Thus, at the individual level of analysis, organizational commitment has been a strong predictor of OCBs. However, previous research has also suggested that work-related commitment is a multidimensional phenomenon that can be directed toward different entities or foci such

as ones' organization, profession, or team (Becker 1992; Bishop et al. 2005; Reichers 1985). Applying a multi-focus perspective, Becker (1992) found that commitment to foci other than the organization (e.g., coworkers) explains significant variance in OCB that is not accounted for by organizational commitment. Bishop and Scott (1997) found that both team and organizational commitment were related to a willingness to engage in OCB.

Given the team-based selling context of the current study, our focus is on team commitment defined as the collective psychological attachment that the members feel toward the team. Previous research has also shown that team commitment is linked to extrarole behavior (Hackman 1987; Scott and Townsend 1994). When team members are committed to the team, the "shadow of the future" motivates them to work together in a way that is beneficial to their future team relationships, which results in higher citizenship behaviors. Team members who are committed to the team and plan to remain in the team in the future can be expected to engage in more helping behaviors toward their teammates. When team members know they are going to "be around for a while," they tend to abstain from complaining behaviors and exhibit more civic virtue by offering suggestions and fulfilling their team obligations. Accordingly, we hypothesize the following:

- H₁: Team commitment is positively related to (a) team helping behaviors, (b) team sportsmanship, and (c) team civic virtue.

LEBs and Team OCBs

Enhancing the meaningfulness of work. When a team leader enhances the meaningfulness of work, team members understand how their work is related to the roles

of other team members, and they are in a better position to identify and execute the helping behaviors that other team members may require. Employees who believe that their work is meaningful are less likely to complain and more likely to exhibit sportsmanship behaviors because they understand the higher purpose of their work. The meaningful work in which the team members are engaged becomes worthy of personal effort and participation, and thus civic virtue is stimulated.

Fostering participation in decision making. When a team leader fosters participation in decision making, team members tend to feel that they are an important part of the team and have inputs that are essential to the achievement of team goals and performance expectations. This feeling of importance will result in increased helping behavior towards their teammates. When salespeople have some control over or some say in the environment in which they work, they develop the ability to bear discomforts, which in turn improves sportsmanship. Team members expend more effort and time working toward higher goals if their advice is sought and considered in the formulation of decisions that affect the team. In addition, team members who participate in decisions may believe that they have a stake in the output of that decision; that is, organizational goals and team members' goals are intertwined (Frey 1993). Hence they will be more willing to provide help or make recommendations to accomplish team goals.

Expressing confidence in high performance. When a team leader expresses managerial confidence in an employee's high performance or ability to perform his or her job, team members can concentrate on other extra-role tasks without being as concerned about their own job performance. Salespeople that are secure in their support network have an enhanced sense of personal power, impact, and self-determination (Spreitzer

1996) and therefore are more likely to go beyond their own job requirements and help others in their tasks. Furthermore, salespeople are more likely to complain about adverse conditions when they are not comfortable with their ability to perform at high levels. This complaining is a mechanism of ego protection because poor levels of future performance can be attributed to external factors (e.g., other people in the organization, poor environmental conditions, lack of adequate support; see Seligman and Schulman 1986). Therefore, a team leader's expression of confidence in an employee's high performance leads to better sportsmanship behaviors on the part of the team members. Similarly, salespeople who feel confident in their personal position within the work group have the security and power to note areas for improvement without fear of censure.

Facilitating goal accomplishments. When a team leader facilitates goal accomplishments, team members can spend less time worrying about their own formal job requirements and more time and effort on extra-role tasks that increase team effectiveness. When employees are provided with the resources to accomplish their goals, they come to "own" their roles and take responsibility for them (Conger and Kanungo 1988). Also, when salespeople lack the resources to make them efficient, they are forced to spend more time trying to accomplish in-role tasks and are more prone to complaining to managers. Therefore, by facilitating goal accomplishments, leaders can promote sportsmanship behaviors within the team.

Providing autonomy from bureaucratic constraints. When a team leader provides autonomy from bureaucratic constraints by removing barriers that prevent high performance, team members have the flexibility that encourages innovative thought and new, possibly more effective, methods of achieving team goals and objectives. Under

autonomy, the absence of constraints makes salespeople feel more comfortable interacting with and assisting others in their tasks. When a leader provides his or her sales team with autonomy from bureaucratic constraints, team members are freer to use their personal resources to deal with other job aspects that may be less than ideal, which in turn leads to sportsmanship behaviors. Salespeople that feel bureaucratically unshackled gain the power of creative expression and free contribution. Thus, individual creativity is enhanced, which aids in team meetings and decision making and contributes to the improved performance of the organization. On the basis of the foregoing discussion, we hypothesize the following:

H₂: LEBs will be positively related to (a) team helping behaviors, (b) team sportsmanship, and (c) team civic virtue.

Leader empowering behaviors may also affect OCBs through their impact on team commitment. Prior research has shown that LEBs may foster individual commitment to the organization (Allen and Meyer 1990, 1996; Bycio, Hackett, and Allen 1995; Jermier and Berkes 1979; Rhodes and Steers 1981; Walumbwa and Lawler 2003). Social exchange theory (Thibaut and Kelley 1959), the theory of psychological contracts (e.g., Rousseau 1989), and the norm of reciprocity (Gouldner 1960) predict that employees respond to working conditions that are satisfying and to workplace processes, outcomes, and interactions that are fair by exhibiting commitment to the organization (Dalal 2005).

Different facets of empowering behaviors lead to the creation of positive attitudes and positive peer experiences among the empowered team members (Wellins, Byham, and Wilson 1991). By enhancing the meaningfulness of work, team leaders provide a

purpose to the work that the team members are doing, thus creating an enabling condition for the team to work together. When leaders express confidence in the performance of followers, the resulting high levels of support and trust inherent in the empowered team system contributes to higher commitment levels among team members (Manz and Sims 1993; Wellins, Byham, and Wilson 1991). A leader who opens the domain of decision authority to the group encourages team members to open their domain of work to other members, making the overall notion of teamwork more integrated and holistic (Yan and Sorensen 2002). Wall and colleagues (1986) find no effect of autonomous team membership on employees' organizational commitment; this is attributed to an overwhelming team commitment effect (Kirkman and Rosen 1999). Moreover, when external leaders exhibit empowering behaviors, they are often viewed as an extension of the team. Therefore, employees who feel empowered by their external leaders and are satisfied with their leaders are likely to want to maintain membership in the team (Bishop and Scott 2000). Because LEBs influence team commitment, and because team commitment affects the different forms of OCB, we conceptualize a model in which LEBs drive salespeople's attitude toward team commitment, which in turn drives team citizenship behaviors. On the basis of the foregoing discussion, we hypothesize the following:

H₃: Team commitment mediates the relationship between LEBs and (a) team helping behaviors, (b) sportsmanship, and (c) team civic virtue.

The influence of empowering leadership may also interact with team commitment as related to OCBs. Empowered sales team environments are characterized by salespeople who are unshackled from bureaucratic prescriptions about how to work and,

in general, are free to operate as they choose. In such an environment, it would be easier for committed employees to engage in behaviors that benefit their intention to remain committed to the team in the future. The logic is that if salespeople are “left to their own devices,” those who are highly committed to their teams will be in a position to do everything possible to enable the achievement of team goals. Stated differently, committed employees who operate in unempowered environments may not be able to exhibit the citizenship behaviors they want to exhibit, even if they are aware that such behaviors will benefit both the team and themselves in the long run. In addition, because successful empowerment leads to an increased sense of ownership of tasks and responsibilities (Druskat and Wheeler 2003), empowered and committed salespeople own the responsibility of achieving team objectives and are able to engage in all the necessary behaviors (e.g., helping, sportsmanship, civic virtue) that enable the team to reach its objectives. Therefore, we anticipate that empowering leadership moderates the path from team attitude to team behaviors (see Figure 1.1), such that the relationships are stronger in more empowered settings. Accordingly, we hypothesize the following:

- H₄: LEBs positively moderate the relationship between team commitment and (a) team helping behaviors, (b) team sportsmanship, and (c) team civic virtue.

Team OCBs and Sales Team Performance

A fundamental assumption of the OCB literature is that OCBs enhance group and organizational effectiveness (Organ 1988; Podsakoff, Ahearne and MacKenzie 1997). Several authors (Organ 1988, 1990a; Smith, Organ, and Near 1983; Schnake 1991; Williams and Anderson 1991) have noted the potential impact of OCBs on organizational

performance. It has been argued (Borman and Motowidlo 1993, p. 88; Organ 1988; Smith, Organ, and Near 1983) OCBs contribute to organizational performance because they provide an effective means of managing the interdependencies among members of a work team and, thus, “lubricating” the social machinery of the organization, reducing friction, and increasing efficiency. According to Podsakoff, Ahearne and MacKenzie (1997), OCBs enhance group and organizational performance because they (1) free up resources so they can be used for more productive purposes, (2) reduce the need to devote scarce resources to purely maintenance functions, (3) help coordinate activities both within and across work groups, (4) strengthen the organization’s ability to attract and retain the best employees, (5) increase the stability of the organization’s performance, and (6) enable the organization to adapt more effectively to environmental changes. Although all OCBs are expected to increase team performance, the different forms of team OCBs help increase team performance in unique ways.

Team helping and team performance. Helping behavior in the form of voluntary actions that help teammates with work-related problems (e.g., sharing sales strategies, voluntarily helping orient new salespeople), actions that help prevent work-related problems from occurring (e.g., touching base with fellow team members before initiating actions that might affect them), and attempts to help prevent or resolve dysfunctional conflicts (e.g., helping other team members resolve their disputes over customers or commissions) may reduce the need for team members or managers to spend energy and time on purely group maintenance functions. Helping behavior may also help increase team performance by enhancing (1) team spirit, morale, or cohesiveness; (2) the team’s ability to coordinate its activities; (3) the effective allocation of team resources; and (4)

team efficiency. Several previous studies have found empirical support for this hypothesis in non-sales contexts (Podsakoff, Ahearne, and MacKenzie 1997; Walz and Niehoff 1996). Helping fellow team members in the performance of work-related tasks should result in increased organizational performance as long as the individuals providing such assistance do not permit their task contributions to suffer such that the overall sum of contributions is less rather than greater as a result of the efforts expended in assisting other team members to perform their tasks (Podsakoff and MacKenzie 1994).

Team sportsmanship and team performance. Complaining behavior is likely to consume a great deal of manager and coworker time in addressing these behaviors (e.g., unplanned meetings with salespeople, responding to grievances). Good sportsmanship behavior should increase team productivity and performance because such behavior allows managers to devote more time to productive activities, such as planning, scheduling, problem solving, and organizational analysis (Organ 1988). Poor sportsmanship behaviors may also be an indicator of a sales team's inflexibility, which becomes important when adapting and selling to customers. For example, sales team members who lack the flexibility to adapt to changes in corporate policy are likely to have problems adapting to changing customer policies or needs. Humphrey and Ashforth (1994) and Bitner (1990) show that customers evaluate service encounters more favorably when employees are able to adapt to their special needs and requests. In addition, Spiro and Weitz (1990) also show that the practice of adaptive selling is correlated with salesperson performance.

Team civic virtue and team performance. Sales representatives who show high levels of civic virtue responsibly participate in and are concerned about the life of the

company (e.g., they actively participate in team meetings; they take the initiative to offer ideas about how company operations or procedures can be improved). A salesperson's recommendations designed to improve team efficiency through the implementation of new or modified operational procedures, methods, or technology should result in increased organizational and team efficiency, assuming that the suggestions are meaningful and actionable. This sharing of ideas also increases creativity and reduces the likelihood of "group think" (i.e., unproductive, like-minded thinking), which has been shown to result in decreased group productivity and performance (Bernthal and Insko 1993; Neck and Manz 1994). Sales team members who exhibit high levels of civic virtue also attend and participate in team meetings. Smith, Organ, and Near (1983) and Karambayya (1989) note that participation in team meetings contributes to (sales) team performance because it provides an effective means of coordinating activities among team members (i.e., call activity, sampling activity, and sales strategies) and thus increases the collective outcomes the achieves. Thus, we hypothesize the following:

H₅: (a) Team helping behaviors, (b) team sportsmanship, and (c) team civic virtue are positively related to sales team performance.

Team Sales Experience

Previous reviews of the performance outcomes of OCBs propose that there could be potential moderating effects of individual differences of experience on the relationships (Podsakoff and MacKenzie 1997; Podsakoff et al. 2000). For example, it has been suggested that helping behavior has different effects on performance of employees with varying levels of experience. At the team level of analysis, Mohammed, Mathieu and Bartlett (2002) found that members' average task-related experience related

significantly to team contextual behaviors. Moreover, members' experience has traditionally been considered as a significant moderator of the effectiveness of various leader behaviors on team effectiveness. For example,

Yun, Faraj and Sims (2005) found that the positive relationship of empowering leadership on team effectiveness was more pronounced among teams with high levels of task experience. Given that we envision team OCBs are mediating the influence of empowering leader behaviors in this study, we hypothesize that team members' average task-related (i.e., sales) experience will moderate the OCB→performance relationships.

Helping behavior among teams with high member sales experience is likely to be beneficial and contribute positively to performance. Such help is more likely to prove valuable to other members than if members had less task-relevant experience. Similarly, civic behaviors are only likely to be beneficial if they are well targeted and valuable for other team members. Alternatively, participation in team activities such as meetings at the expense of important customer calls may become counterproductive if members are not experienced enough to manage their time effectively between in-role and extra-role activities. Constructive suggestions to others may be more of a distraction than a benefit if they come from inexperienced members. On the other hand, we expect the influence of experience on the effects of sportsmanship to be different from that of helping and civic virtue. At higher levels of experience, salespeople learn to better handle adverse situations and ensure that the negative outcomes of team-member complaining behavior are mitigated. In other words, at higher levels of team experience, team members can better cope with the complaining behaviors, and therefore the positive effect of

sportsmanship on team performance will not be high. On the basis of the foregoing discussion, we hypothesize the following:

H₆: Team experience moderates the positive effect of (a) team helping behaviors and (b) team civic virtue on sales team performance such that, the higher the level of team experience, the greater are the performance effects of helping and civic virtue. (c) Conversely, team experience negatively moderates the positive effect of sportsmanship on sales team performance such that the higher the level of team experience, the more diminished are the performance effects of sportsmanship.

METHOD

Participants and Design

We sampled 1394 salespeople working in a sales team structure for a major international pharmaceutical company. The company determines team size on the basis of the area of coverage and total market size within a sales territory. Each team was composed of between four and ten salespeople. All teams are managed by a sales manager responsible for managing the sales process within teams. Of the 1394 sales representatives in the company that we contacted for this study, we obtained 1072 (77%) survey responses. A number of authors have noted the importance of gathering data from more than one respondent when assessing the attitudes/beliefs of a larger group to assess reliability of the judgments (Kumar and Dillon 1990; Bagozzi and Philips 1982). To assess inter-rater reliability within sales teams, a minimum criterion of two salespeople per sales team was used. This minimum criterion of two salesperson responses per sales team yielded a usable sample of 878 (63%) sales representatives in 200 teams.

Construct Measures

This study required the collection of the three dimensions of team OCBs (i.e., helping, sportsmanship, and civic behaviors), team commitment, LEBs, and sales team performance information. We gathered all the team OCB, team commitment, and LEB measures directly from sales team members. We gathered team performance measures from company records. We aggregated team members' assessments of the different OCBs, team commitment, and LEBs to the sales team level. Thus, we used the "sales team" itself as the referent for these measures.

The scale development progressed through two stages. First, we adapted existing scales and ensured that they were applicable to a pharmaceutical sales team setting. Second, we discussed construct definitions and items with company representatives to confirm their applicability to the pharmaceutical sales context.

LEBs. An important issue for understanding the influence of leaders' behaviors pertains to their theoretically appropriate level of operationalization and analysis. Leadership can be understood as dyadic phenomena between each member and a leader or as more of an average leadership phenomenon in which leaders treat all members in a fairly consistent manner (e.g., Graen and Ul-Bien 1995; Schriesheim et al. 2001). In our case, on the basis of the initial qualitative interviews with members of the sales teams, leaders, and human resource department representatives, we determined that leaders tended to adopt consistent styles for all teams. Therefore, we adopted a cross-level model that conceptualized and examined average leader behaviors in relation to team-level processes. We had 200 cases of leadership empowering behavior at the team level, which we aggregated at the leader level to form 115 cases of LEB. In other words, 30 leaders

oversaw the work of one team apiece and 85 leaders oversaw the work of two teams apiece.

We assessed LEBs using five multi-item subscales (21 items in total) that focused on (1) enhancing the meaningfulness of work, (2) fostering participation in decision making, (3) expressing confidence in high performance, (4) facilitating goal accomplishment, and (4) providing autonomy from bureaucratic constraints. We developed these scales on the basis of Conger and Kanungo's (1988) conceptual work and Hui's (1994) and Thomas and Tymon's (1994) empirical work, and we adapted them to the pharmaceutical sales team context. These scales demonstrated acceptable psychometric properties in previous research (e.g., Ahearne, Mathieu, and Rapp 2005). We worded all LEB items to capture the behaviors of the sales manager (e.g., "Our sales manager...") toward a sales team (e.g., "... asks my sales team"). All leader items were rated on seven-point agreement scales and used "our manager" as the referent. We averaged the five scale scores to create a single composite score of an individual salesperson's rating of LEBs.

The LEB scale was focused on *average leader behaviors* for which within leader (i.e., team) agreement must be demonstrated. We used James, Demaree and Wolf's (1984) r_{wg} agreement index to justify aggregating team responses to the average team leader level. In addition, we report intraclass correlations that represent whether measures are sufficiently reliable to model effects at the team level (Bliese, 2000). Finally, we calculated aggregate level scale internal consistencies using the average item response per individual as the inputs (see Chen, Mathieu, & Bliese, 2004). The empowering leadership scale exhibited high average agreement (median $r_{wg} = .93$), ICC and aggregate

reliabilities (ICC.58; $\alpha = .98$). Table 1.2 contains correlations and descriptive statistics for all study variables. We should note that the cross-level correlations between the leader behaviors and the team level variables were calculated by assigning the average leader scores to all their teams. Whereas these correlations have not been adjusted for the lack of independence, they do provide a rough gauge of the magnitude of cross-level relationships.

(Place Table 1.2 near here)

Team OCBs. We measured the three aspects of team OCB in this study (i.e., helping, sportsmanship, and civic [virtue] behaviors) using scales we adapted from the work of MacKenzie, Podsakoff, and Fetter (1993), Podsakoff and MacKenzie (1994), and MacKenzie, Podsakoff, and Ahearne (1998). To ensure that the team OCB items did not tap aspects of the teams' sales performance, we asked the director of human resources, several district sales managers, and sales training associates whether they believed that helping, sportsmanship, and civic virtue were discretionary forms of behavior that the formal reward structure in the company did not explicitly recognize. Then, we asked them to indicate whether the specific items used to operationalize the team OCBs were appropriate examples of citizenship behavior in a pharmaceutical sales context. Finally, we worded all the items to capture team OCBs at the team level rather than at the individual level (e.g., "Members of my sales team...").

We measured helping behavior with a five-item scale, including items such as "Members of my sales team willingly give of their time to help pod members who have work-related problems," "Members of my sales team willingly share their expertise with teammates (e.g., sharing sales techniques and coordinating sales efforts)," and "Members

of my sales team touch base with other team members before initiating actions that might affect them.” We measured sportsmanship behavior with three items, including “Members of my team always find fault with what other team-mates are doing,” “Members of my sales team tend to make problems seem bigger than they really are,” and “Members of my sales team waste a lot of time complaining about trivial matters.” We measured civic virtue with three items, such as “Members of my sales team attend and actively participate in all team meetings” and “Members of my sales team provide constructive suggestions about how the team could improve its effectiveness.” Respondents assessed these items on seven-point Likert-type agreement scales, and we averaged item responses to form scores for each team OCB type. Subsequently, we aggregated the individual-level measures for team OCBs to the team level. The team helping behavior scale exhibited high average agreement (median $r_{wg} = .94$), ICC and aggregate reliabilities (ICC = .96; $\alpha = .94$). The team sportsmanship scale exhibited high average agreement (median $r_{wg} = .75$), ICC and aggregate reliabilities (ICC = .40; $\alpha = .88$). The team civic virtue scale exhibited high average agreement (median $r_{wg} = .76$), ICC and aggregate reliabilities (ICC = .64; $\alpha = .77$).

It could be argued that the three team OCB types are similar constructs which should be combined, particularly given the relatively high correlations that have been observed. To assess the discriminant validity of the three team OCBs, in line with the suggestions of Bagozzi and Philips (1982), we fit a three-factor CFA model to the helping, sportsmanship and civic virtue items, and compared it with a one-factor model that fit all sets of items to a single factor. To gauge model fit, we report the Standardized

Root Mean Square Residual (SRMR)¹ and the Comparative Fit Index (CFI; Bentler, 1990). We also report χ^2 values that provide a statistical basis for comparing the relative fit of the two models. The three-factor model yielded an acceptable fit of χ^2 (62 d.f.) = 215.16 (CFI = .91, SRMR = .04). In contrast, fitting all sets of items to a one-factor model produced a deficient fit of χ^2 (65 d.f.) = 393.04 (CFI = .84, SRMR = .07), which is significantly worse than the two factor model ($\Delta\chi^2$ (3) = 177.88, $p < .001$).

Team Commitment. In light of the observations by Organ and Ryan (1995) and Podsakoff et al. (2000) that it is more appropriate to treat dispositional variables as social constructs and to measure them from the point of view of a person's coworkers or leader (e.g., rating from others) than from the person's own point of view (e.g., self-ratings), we assessed our measure of team commitment using the three-item scale that Kirkman and Rosen (1999) use to measure team commitment; we included items such as "members of my team are loyal to each other" and "members of my team expect to work together for a long time." This scale measures the extent to which team members believe that the other team members are committed to the team. Respondents assessed these items on seven-point Likert-type agreement scales, and we averaged item responses to form a summary score. Subsequently, we aggregated the individual-level measures for team commitment to the team level. The team commitment scale exhibited high average agreement (median $r_{wg} = .84$), ICC and aggregate reliabilities (ICC = .62; $\alpha = .91$)².

¹ SRMR is a measure of the standardized difference between the observed covariance and predicted covariance. SRMR values in a well-fitting model will be 0.05 or less (Byrne, 2000).

² It may also be noted that high correlations were observed between team commitment and the team OCBs. We therefore tested the discriminant validity of the four variables by fitting a four-factor model to the helping, sportsmanship, civic virtue, and team commitment items. We established discriminant validity by calculating the shared variance between pairs of constructs, and verified that they were lower than the average variance extracted (AVE) for each construct (Gerbing and Anderson, 1988; Fornell and Larcker,

Team Member Sales experience. We measured experience as members' years in a sales job. We aggregated this measure to the team level to form a measure of the team's average experience in the sales job.

Team Performance. We obtained the measures for current team performance and baseline performance from company records. The measure we used was a total percentage of quota across all product lines. We used quota-based performance to help control for differences in sales territories, competitors, and other potential confounding factors; this has been shown to be a good objective measure of salesperson job effectiveness (Churchill et al. 1985). Sales teams' quotas are set annually by a consulting company in conjunction with corporate sales management and are based on market information and company records. Quotas are discussed with team members to ensure that the teams understand the methods used to set their territory's annual quota. We obtained team performance data three months after we collected the survey measures; we assessed baseline performance using quarterly performance data for the period that was one year before that of current team performance data.

ANALYTIC STRATEGY

We analyze a cross-level framework with baseline and current team performances, team commitment, and team OCBs, representing team-level (i.e., lower level, $n = 200$) variables that are subject to (higher level, $N = 115$) influences of average LEBs. Moreover, the longitudinal design, along with the theoretical framework we

1981). Specifically, we found that the AVE for both team helping (AVE = .87) and team commitment (AVE = .89) were larger than the square of the correlation between the team helping and team commitment ($r^2 = .53$) and hence passed Fornell and Larcker's (1981) test, evidencing discriminant validity between the measures. Similarly, the AVE for both team sportsmanship (AVE = .86) and team commitment (AVE = .89) were larger than the square of the correlation between the team sportsmanship and team commitment ($r^2 = .54$). Finally, the AVE for both team civic virtue (AVE = .86) and team commitment (AVE = .89) were larger than the square of the correlation between the team sportsmanship and team commitment ($r^2 = .73$).

outlined previously, provides a basis for specifying the causal order of variables to be modeled.

We employed hierarchical linear modeling (HLM; Bryk and Raudenbush 1992; Hofmann 1997; Raudenbush and Bryk 2002) to analyze the cross-level model we depict in Figure 1. Cross-level models test relationships that both reside within a level of analysis and traverse levels of investigation. A key characteristic of these models is the potential for higher-level variables (e.g., LEB) to influence lower-level variables either through direct effects on intercepts and/or through cross-level moderation of slopes (Hofmann 1997). In addition to the direct relationship and moderation effects within the team level, we also hypothesized three cross-level moderation effects emanating from LEBs, which we analyze with a series of two-level HLM models. To facilitate comparisons of the magnitudes of effects that stem from differently scaled variables, as well as across levels of analyses, we standardized all lower-level variables in the total matrix (i.e., across 200 teams). We then standardized the LEB variable across the 115 leaders. Therefore, all variables are in z-score form, and higher values represent greater amounts of each variable. We then report unstandardized weights for all relationships. In effect, this is like using total group-centering techniques, which have been recommended for testing both direct and moderated cross-level effects (Chen, Mathieu, and Bliese 2004; Hofmann and Gavin 1998).

RESULTS

Baseline Models

Given the hierarchical nature of study, it is important to first calculate baseline (or null) models for our team-level outcome variables (Raudenbush and Bryk 2002), the

different team OCBs. These analyses clarify how much variance resides within and between LEBs and also serve as a foundation for subsequent analyses. After controlling for baseline performance levels, the null model for salespeople's team helping behaviors indicated that 14% of total variance resided at the leader level (II) ($\chi^2(114) = 150.40, p < .01$), which justifies the modeling of cross-level effects. Similarly, 30% of the total variance in salespeople's team sportsmanship resided at the leader level, which also supports cross-level modeling ($\chi^2(114) = 199.44, p < .001$). For civic virtue, 9% of total variance resided at the leader level and the chi-square test was only marginally significant ($\chi^2(114) = 133.49, p < .10$). Nevertheless, we modeled the hypothesized cross-level influences because the χ^2 is an omnibus test that is fairly insensitive to specific cross-level effects (Snijders and Bosker 1999), and because we advanced such hypotheses a priori (Lee and Bryk 1989).

We used three level 1 and level 2 intercept-only models to test our mediation hypotheses. Each of which had a different dimension of team OCB (i.e., Helping, Sportsmanship and Civic Virtue). For example Team Helping was modeled as:

$$\text{Level 1: Team Helping} = b_0 + b_1 \text{ Team Commitment} + \text{error}$$

$$\text{Level 2: } b_0 = c_{00} + c_{01} \text{ LEB} + \text{error}$$

$$b_1 = c_{10}$$

We used the following level 1 and level 2 intercept-only models to test our cross-level moderation hypotheses. Each of which had a different dimension of team OCB (i.e., Helping, Sportsmanship and Civic Virtue). For example Team Helping was modeled as:

$$\text{Level 1: Team Helping} = b_0 + b_1 \text{ Team Commitment} + \text{error}$$

$$\text{Level 2: } b_{0j} = c_{00} + c_{01} \text{ LEB} + \text{error}$$

$$b_{ij} = c_{10} + c_{11} \text{ LEB}$$

In these models, b_0 and b_1 are the level 1 intercepts and slope parameters, c_{00} and c_{10} are level 2 intercept parameters, and c_{01} and c_{11} are the level 2 slope parameters, respectively.

Influences on team OCBs

We performed a series of HLM analyses to test our hypothesized relationships. The left-hand side of Table 3 presents the results of the HLM analyses of linear effects. Hypotheses 1-3 concern the role of team commitment as a mediator of the relationship between LEBs and team OCBs (i.e., LEBs \rightarrow Team Commitment \rightarrow Team OCBs). We first regressed each of the team OCBs on team linkage. Finally, we regressed each OCB on to both team commitment and LEBs. In these analyses, the previously significant cross-level influence of LEBs on team helping and on team civic virtue dropped to nonsignificant levels ($\gamma = -.01$, ns and $\gamma = .01$, ns, respectively commitment and obtained a significant relationship in each instance: team helping H_{1a} : $\beta = .83$, $p < .01$; team sportsmanship H_{1b} : $\beta = .63$, $p < .01$; and team civic virtue H_{1c} : $\beta = .72$, $p < .01$. These findings are consistent with H_1 and establish the team commitment \rightarrow OCBs linkages.

Next, we regressed team OCBs onto LEBs and obtained significant cross-level gamma (akin to regression betas) relationships in each instance: team helping H_{2a} : $\gamma = .25$, $p < .01$; team sportsmanship H_{2b} : $\gamma = .30$, $p < .01$; and team civic virtue H_{2c} : $\gamma = .25$, $p < .01$. These results are consistent with H_2 and establish the initial LEB \rightarrow OCBs precondition for mediation tests (Baron and Kenny 1986). Next, we regressed team commitment onto LEBs and obtained a positive and significant cross-level relationship ($\gamma = .32$, $p < .01$). This finding is consistent with H_3 and established the LEB \rightarrow team

commitment). In contrast, although also lower in magnitude, the direct cross-level relationship of LEB on sportsmanship was still significant ($\gamma = .10, p < .05$). In summary, collectively these results are consistent with the inference that team commitment fully mediates the influence of LEBs on team helping and civic virtue OCBs, and partially mediates the influence of LEBs on team sportsmanship.

Finally, we considered whether LEBs and team commitment interacted as related to team OCBs. To test this, we introduced the leader empowerment variable as a moderator of the lower-level relationships (i.e., H_{2a-c}). The results of these analyses appear in the right-hand part of Table 3. The results revealed that LEBs positively moderated the team commitment–team sportsmanship behavior relationship (H_{4b} : $\beta = .13, p < .01$). As we anticipated, the positive slope for the effect of team commitment on sportsmanship was steeper for teams that worked for more empowering leaders. Leader empowerment also positively moderated the team commitment–team civic virtue relationship (H_{4c} : $\beta = .05, p < .05$). As we anticipated, the positive slope for the effect of team commitment on civic virtue was steeper when leaders were more empowering.

Influences on team performance

Turning our attention to the right side of our model, we now consider the relationships between the three team OCBs and team performance, and whether members' average sales experience moderates such relations. We should add that baseline team performance was included in all of these analyses in order to isolate performance variance that occurred following our assessment of OCBs. First, we regressed team performance simultaneously on to the three OCBs, members' sales experience, and baseline performance. Beyond the expected relationship with baseline

performance ($\beta = .26, p < .001$), only the relationship with team helping behavior (H_{5a} : $\beta = .30, p < .05$) was positive and significant, as we anticipated. These results provide support for H_{5a} but not for team sportsmanship H_{5b} or civic virtue behaviors H_{5c} .

(Place Table 1.3 near here)

Finally, to test the hypothesized moderating effect of members' sales experience, we regressed team performance on to the three OCBs, team mean sales experience, and three interaction terms (one each between experience and the OCBs). The results of these analyses appear in the top right-hand part of Table 3 and in Figures 2 and 3. The results revealed that team sales experience had no effect on the team helping influence (H_{6a} : $\beta = -1.21, ns$). However, team sales experience did moderate the civic virtue influence (H_{6c} : $\beta = 2.58, p < .05$), and had an influence on the sportsmanship relationship (H_{6b} : $\beta = -1.51, p < .05$). Plots of these two interactions appear in Figures 2 and 3, respectively. As depicted, sportsmanship exhibited a positive slope when team sales experience was relatively low, but non-significant negative slopes when experience was relatively high, while civic virtue exhibited positive slopes when team sales experience was relatively high, and negative slopes when experience was relatively low.

(Place Figure 1.2 and 1.3 near here)

DISCUSSION

Despite the growing interest in the use of sales teams and even though the sales forces in a majority of *Fortune* 500 companies are aligned in team selling situations, to the best of our knowledge, this study represents the first empirical test of the antecedents and performance consequences of team OCBs in a multilevel setting. We found support for the mediation of team commitment between OCBs and LEBs, the moderation of LEB

on the relationship between team commitment and both team sportsmanship and team civic virtue. In general, the findings support the conclusion that LEBs influence team OCBs indirectly rather than directly. This was the case for helping behavior and for civic virtue, but not for sportsmanship. It appears that LEBs influence team helping behavior and civic virtue primarily by increasing team commitment. We also found support for the relationships between LEBs and OCBs. However, contrary to our hypotheses, we found the effects of the team OCBs on sales team performance only for team helping behavior; job experience moderated the effects of sportsmanship and civic virtue on sales team performance.

Antecedents of Team OCBs

The analyses provide support for the hypothesis that LEBs drive team OCBs through team commitment. Previous studies have not examined these mediation effects. Although prior studies established the relationship between team commitment and OCBs, the path between LEBs and team commitment was not shown. Our results indicate that the effect of leader behaviors on helping and civic virtue behaviors is not direct but rather works through their effect on team commitment. However leader behaviors have a more direct effect on sportsmanship behaviors. The partial mediation effect of team commitment for sportsmanship shows that when LEBs are high, team members avoid complaining behaviors. In an empowered state, employees have nothing to complain about but themselves. The findings from the mediation tests suggest that leader behaviors can drive employee attitudes toward the team, which in turn influence employee behaviors toward team members.

The interaction between LEBs and team commitment also yielded notable results. Our results show that LEBs moderate the effect of team commitment on sportsmanship and civic virtue but not on helping behavior. Committed team members might engage in helping behaviors regardless of whether they are empowered, because being empowered would not motivate committed team members to help one another any more than would their own affective attachment to the team. It also follows that even under non-ideal LEB situations, members who are highly committed to the team might break rules to help their teammates. This could be true in the light of both affective and calculative commitment. However, LEBs exert their influence by strengthening the effect of team commitment on team sportsmanship and civic virtue. This means that increasing LEBs can benefit team sportsmanship and civic virtue in two different ways: by increasing team commitment, which in turn affects these citizenship behaviors, and by increasing the effect size of team commitment on specific citizenship behaviors. Therefore, with respect to improving team sportsmanship and civic virtue behaviors, firms can get a greater “bang for their buck” by increasing leader behaviors rather than just team commitment. However, if the objective is to increase helping behaviors within the team, changing leader behaviors will not lead to the required results; to increase helping behaviors, it is necessary to effect a change in employee attitudes toward the team. Thus, for teams that lack in helping behaviors, leaders should plan and implement programs to improve employee attitudes. However, changing employee dispositions may be much more difficult to achieve than improving leader behaviors because changes to the former take a long time, whereas senior management can more easily control and shape the latter. Therefore, the overall takeaway from the results of the mediation and moderation models is that behavior change with

respect to complaining and civic behaviors is best realized by targeting leaders, whereas change in helping behaviors within the team is best achieved by targeting the individual team members.

Effects of Team OCBs on Unit Performance

The data supported the hypothesis that team helping behaviors predict sales team performance. The implication of this finding is that sales teams perform better when members willingly share their expertise with teammates (e.g., sharing sales techniques, coordinating sales efforts), assist other team members in targeting potential clients, help orient new team members, try to prevent conflict with other team members, prevent dissension among team members, and praise fellow sales team members when they do outstanding work. This finding is consistent with recent research on the effect of OCBs on team performance (Podsakoff et al. 1997; MacKenzie, Podsakoff, and Ahearne 1996). Another notable finding is that the other two forms of team OCBs do not have significant main effects on sales team performance. Two previous studies found a significant, positive effect of sportsmanship on unit performance (Podsakoff, Ahearne, and MacKenzie 1997; Podsakoff and MacKenzie 1994), and two other studies failed to find a significant effect (MacKenzie, Podsakoff, and Ahearne 1996; Walz and Niehoff 1996). Specifically, MacKenzie, Podsakoff, and Ahearne (1996) use a similar sample to that of the current study (i.e., pharmaceutical sales teams). This leads us to speculate more confidently that sportsmanship behaviors in sales team contexts may not be related to better team performance. One reason for this could be that the theory does not hold in this context. Another reason could be that there are other variables moderating this relationship, one of which we proposed and tested in the current study. The results of the

main effect of civic virtue on team performance is particularly surprising, considering that barring one study (Podsakoff, Ahearne, and MacKenzie 1997), civic virtue has consistently been shown to affect unit performance (MacKenzie, Podsakoff, and Ahearne 1996; Podsakoff and Mackenzie 1994; Walz and Niehoff 1996). Perhaps civic virtue behaviors take longer than three months (i.e., the time lag used both in this study and in Podsakoff, Ahearne, and MacKenzie's [1997] study) to translate into performance gains. Another possibility is that there are other variables that moderate this relationship, such as team members' sales experience.

The effect of the helping behavior–experience interaction on team performance was not significant, indicating that the effects of helping behavior on sales team performance were unaffected by the increase or decrease in team members' sales experience. However, team members' sales experience showed significant moderation effects on the effects of sportsmanship and civic virtue on sales team performance. This leads us to believe that the absence of significant effects of sportsmanship and civic virtue on sales team performance could be attributed to the moderating effects of the salespeople's experience. Our results show that the experience–sportsmanship interaction term is negative and significant, indicating that team members' sales experience negatively moderates the relationship between sales team sportsmanship and sales team performance. This finding supports our original hypothesis about the negative moderation effect of experience. An examination of the slopes for sportsmanship at low and high levels of experience shows that when team experience is low, sportsmanship has a positive effect on team performance. At low levels of experience, team members have not yet learned how to handle uncomfortable situations. Therefore, team members'

complaining behaviors may not only eat up productive time, but also disrupt the normal work atmosphere and mood, thus affecting the team's performance as a whole. At higher levels of experience, the effect of sportsmanship on performance is reversed. However, a sub-group regression of team performance on team OCBs of high experience teams (teams with over the mean team experience of 10.30 years), controlling for prior performance, shows that the attenuating effect of sportsmanship on performance was not significant. Hence, our results show that at low team experience levels, sportsmanship can have positive effects, but not at high team experience levels.

We also find that team members' sales experience positively moderates the civic virtue–team performance relationship, in support of our hypothesis. However, an examination of the plot for the interaction (see Figure 1.3) reveals that the effects of civic virtue on team performance under high team experience are positive, but for lower levels of team experience, this is not the case. This may be a result of the differential quality of suggestions or the nature of team members' participation in team meetings. Suggestions that come from salespeople from teams with lower sales experience may not be helpful, or their participation may not result in useful discourse. It is also possible that salespeople who are recipients of the suggestions do not put them to good use or waste their time by adopting the more impractical suggestions. With experience comes the wisdom to separate the wheat from the chaff. Thus, at lower levels of team experience, civic virtue can prove detrimental to team performance, whereas at higher experience levels, civic virtue can have positive outcomes.

The results of our study indicate that the relationship between OCBs and team performance is not as clear cut as originally hypothesized by Organ (1988). As we have

discussed earlier, the findings of prior empirical studies have been very inconsistent with regard to the relationship between OCBs and team performance. Our results show that under certain conditions, all OCBs do have an impact on team performance. We show that only when team experience is accounted for, can we explain the nature of the relationships between these constructs. These, however, are by no means simple interactions. It is important for researchers to note that high levels of team experience can help as well as hurt team performance.

The moderation of experience suggests different recruitment strategies for improving team performance. Our findings indicate that changing team composition to result in a high level of average sales experience may result in better team performance only if civic virtue behaviors are high. If team sportsmanship is high, the best strategy would be to maintain the average team experience at low levels. Overall, however, the results of the study suggest that changing employee attitudes improves helping behaviors, which leads to superior team performance. If it becomes too difficult or expensive to change employee attitudes toward the team, management can plan and implement programs to change leader behaviors in an attempt to effect changes in sportsmanship and civic virtue. Depending on the extent of these behaviors, the composition of the teams can be modified.

Though we originally did not hypothesize it in our study, we regressed baseline performance onto helping, sportsmanship, and civic virtue behaviors. The effects were not significant. But when we regressed team performance onto baseline performance, our results were significant. Thus, our design helped us to inform the question of the causal order of OCBs and performance. This research question was motivated by observation

made in past review studies (Podsakoff and MacKenzie 1997; Podsakoff et al. 2000), that there has never been a test of the assumption that OCBs cause unit effectiveness. It is possible that sales teams that perform well have more time, are under less pressure, and/or have members who are more satisfied than units that do not perform well. Such salespeople would be more willing to engage in extra-role behaviors. This would suggest that team performance causes citizenship behavior rather than vice versa. Since our results show that baseline performance was not related to any form of team OCB and that baseline performance was positively related to team performance, we consider this a preliminary test for the direction of causality of OCB consequences. It is also possible that high-performing groups report that they engage in citizenship behaviors just because they believe that high-performing groups help one another, are good sports, and exhibit civic virtue (Bachrach, Bendoly, and Podsakoff 1999; Staw 1975). However, we were not able to test this in our study; the only way to test this would be through the use of experimental manipulations in a laboratory setting.

LIMITATIONS

As with all research, it is important to note the limitations of this study. We used a cross-sectional field study to collect the data used in this research. The sales teams were the source of all three measures (i.e., LEB, team commitment, and team OCB ratings). This could have affected the results in two ways. First, this allows for problems with common method variance or same-source variation (i.e., the strength of the associations between the LEBs and OCBs could be due to common method variance). Second, this design does not eliminate the potential effects of implicit leadership theories. Several studies have suggested (e.g., Bryman 1987; Lord et al. 1978) that people have many

theories about what makes an effective leader. These implicit theories have been shown to correspond with leadership researchers' conceptual models. When a leader provides cues of good (poor) performance, followers tend to evaluate that leader as high (low) in the leadership dimensions. Thus, the potential limitation is that sales teams rated their sales manager high (low) in LEB because they perceived the sales manager's performance as good (poor) in some overall sense, not because the manager actually engaged in the particular behaviors. The findings may also be limited in generalizability because this study had a single frame, the pharmaceutical industry. The model should be tested further with other independent samples from a variety of sales contexts.

THEORETICAL AND MANAGERIAL IMPLICATIONS

This study contributes to the theoretical literature on OCBs in many different ways. First, it extends research on OCBs, which in the past has focused primarily on individual antecedents and outcomes, to team-level variables. Second, researchers rarely have examined the combined effect of both leader and employee variables on OCBs. Our findings illustrate team commitment's mediation of the effect of LEBs on OCBs. Our study demonstrates the effect that LEBs can have on team members' attitudes, which in turn can drive team members' behaviors. We believe that this finding can have a profound impact on the literature on OCBs and teams because of its more nuanced understanding of the process of attitude formation in the context of teams. Third, our study provides boundary conditions for (a) the impact of team commitment on OCBs as well as (b) the performance impact of OCBs in a team setting. The study thus helps resolve the inconsistencies in prior research regarding the performance of OCBs. Fourth, our study advances the understanding of predictor–criterion relationships across levels of

analysis. Although recent research has recognized the importance of comparing relationships across levels, studies have focused primarily on methodological issues. Our findings—for example, those regarding the antecedents of team OCBs—suggest the relevance of considering average leader-level behaviors when hypothesizing team-level relationships. Methodologically, the causal nature of the OCB-Performance relationships has remained unclear in the past. This study takes the first step in that direction, by clarifying the direction of causality of the OCB-Performance link.

The findings of the study have many implications for practitioners. Our finding that LEBs are related both to team commitment and to OCBs suggests that managers should consider how they can engage in empowering behaviors more effectively. It is important for sales management to understand how to get team leaders to exhibit such behaviors. Managers must also use different strategies based on the specific OCB outcomes they want their team members to exhibit. Because helping behaviors have a direct main effect on team performance, managers can achieve better helping behaviors in their teams by improving salespeople's commitment to the team. Sales managers should work closely with human resources departments to design programs and events that can foster salespeople's attachments to the team. This study also has implications for the strategies that managers could consider when recruiting team members. When forming teams, managers must consider both the history of team members' helping behaviors and the team members' experience because both variables are important to team performance.

CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH

This research responds the clarion call in the field to examine potential mediators

among the antecedents of OCBs and boundary conditions that can explain inconsistencies in the previous findings regarding the OCB–performance link. Although this study is only a modest step in this direction, there are many potential areas for further research. For example, because citizenship behaviors have been hypothesized to influence organizational success through a variety of mechanisms (e.g., Podsakoff and MacKenzie 1997), further research could attempt to determine whether some citizenship behaviors work through one mechanism, while others work through another (Podsakoff et al. 2000). It is also possible that different forms of OCBs have different organizational and team outcomes. Further research could examine not just financial measures of team effectiveness (e.g., percentage of quota) but also customer measures (e.g., customer satisfaction.), business process improvements (e.g., best practices, service quality), and employee criteria (e.g., team satisfaction, turnover, job involvement). A further extension along these lines would then be to determine whether OCBs have stronger effects on some links in this team effectiveness value chain than on others. Another area that would benefit from additional research would be to examine other potential moderators of the impact of team OCBs on sales team performance. Potential moderators of the relationship between LEBs and sales team effectiveness that Perry, Pearce, and Sims (1999) identify include selling-task interdependence, selling-task complexity, and customer heterogeneity. Further research could also study whether related constructs, such as organizational and team commitment, or team OCBs and OCBs, have similar or different antecedents and outcomes. It is also possible that certain forms of OCBs are good for teams, whereas others are suitable in the larger organizational context.

REFERENCES

- Allen, Natalie J. and John P. Meyer (1990), "The Measurement and Antecedents of Affective, Continuance and Normative Commitment to the Organization," *Journal of Occupational Psychology*, 63 (1), 1–18.
- and ---- (1996), "Affective, Continuance, and Normative Commitment to the Organization: An Examination of Construct Validity," *Journal of Vocational Behavior*, 49, 252–76.
- Bachrach, Daniel G., Elliot Bendoly, and Philip M. Podsakoff (1999), "Attributions of the 'Causes' of Performance as an Alternative Explanation of the Organizational Citizenship Behavior/Organizational Performance Relationship," paper presented at the National Academy of Management Meetings, Chicago (August).
- Bagozzi, Richard P. and Lynn W. Phillips (1982), "Representing and Testing Organizational Theories: A Holistic Construal," *Administrative Science Quarterly*, 27 (3), 459–89.
- Baron, Reuben M. and David A. Kenny (1986), "The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations," *Journal of Personality and Social Psychology*, 51 (6), 1173-1182.
- Bateman, Thomas S. and Dennis W. Organ (1983), "Job Satisfaction and the Good Soldier: The Relationship Between Affect and Employee Citizenship," *Academy of Management Journal*, 26, 587–95.
- Becker, Thomas E. (1992), "Foci and Bases of Commitment: Are They Distinctions Worth Making?" *Academy of Management Journal*, 35 (1), 232–44.
- Bentler, Peter M. (1990), "Comparative fit indexes in structural models," *Psychological Bulletin* (107), 238-246.
- Bernthal, Paul R. and Chester A. Insko (1993), "Cohesiveness Without Groupthink: The Interactive Effects of Social and Task Cognition," *Group and Organization Management*, 18 (March), 66–88.
- Bishop, James W. and Dow Scott (1997), "Employee Commitment and Work Team Productivity," *HRMagazine*, 11, 107–111.
- and ---- (2000), "Organizational and Team Commitment in a Team Environment," *Journal of Applied Psychology*, 85, 439–50.
- , ----, Michael G. Goldsby, and Russell Cropanzano (2005), "A Construct Validity Study of Commitment and Perceived Support Variables: A Multi-Foci Approach Across Different Team Environments," *Group and Organization Management*, 30, 153–80.
- Bitner, Mary Jo (1990), "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses," *Journal of Marketing*, 54 (April), 69–82.
- , Bernard H. Booms, and Mary Stanfield Tetreault (1990), "The Service Encounter: Diagnosing the Favorable and Unfavorable Incidents," *Journal of Marketing*, 54 (January), 71–84.
- Bliese, Paul D. (2000), "Within-group agreement, non-independence, and reliability: Implications for data aggregation and analyses," in *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*, S. W. J. Kozlowski, ed. San Francisco, CA: Jossey-Bass, 349-381.

- Borman, Walter C. and Stephen J. Motowidlo (1993), "Expanding the Criterion Domain to Include Elements of Contextual Performance," in *Personnel Selection in Organizations*, Neal Schmitt, Walter C. Borman, and Associates, eds. San Francisco: Jossey-Bass, 71–98.
- Bryk, Anthony S. and Stephen W. Raudenbush (1992), *Hierarchical Linear Models: Applications and Data Analysis Methods*. Thousand Oaks, CA: Sage Publications.
- Bryman, Alan P. (1987), "The Generalizability of Implicit Leadership Theory," *Journal of Social Psychology*, 127, 129–41.
- Bycio, Peter, Rick D. Hackett, and Joyce S. Allen (1995), "Further Assessments of Bass's (1985) Conceptualization of Transactional and Transformational Leadership," *Journal of Applied Psychology*, 80 (4), 468–78.
- Byrne, Barbara M. (2000), *Structural Equation Modeling With Amos: Basic Concepts, Applications, and Programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cespedes, Frank V., Stephen X. Doyle, and Robert J. Freedman (1989), "Teamwork for Today's Selling," *Harvard Business Review*, 67 (2), 44–51.
- Chen, Gilad, John E. Mathieu, and Paul D. Bliese (2004), "A Framework for Conducting Multilevel Construct Validation," *Research in Multi-Level Issues: The Many Faces of Multi-Level Issue*, 3, 273–303.
- Churchill, Gilbert A., Neil M. Ford, Steven W. Hartley, and Orville C. Walker (1985), "The Determinants of Salesperson Performance: A Meta-Analysis," *Journal of Marketing Research* 22 (May), 103–118.
- and Rabindra N. Kanungo (1988), "The Empowerment Process: Integrating Theory and Practice." *Academy of Management Review*, 13 (July), 471–82.
- Dalal, Reeshad S. (2005), "A Meta-Analysis of the Relationship Between Organizational Citizenship Behavior and Counterproductive Behavior," *Journal of Applied Psychology*, 90, 1241–55.
- Deeter-Schmelz, Dawn R. and Rosemary P. Ramsey (2003), "An Investigation of Team Information Processing in Service Teams: Exploring the Link Between Teams and Customers," *Journal of the Academy of Marketing Science*, 31, 409–424.
- Druskat, Vanessa Urch and Jane V. Wheeler (2003), "Managing from the Boundary: The Effective Leadership of Self-Managing Work Teams," *Academy of Management Journal*, 46, 435–57.
- Fornell, Claes and David F. Larcker (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, 28 (February), 39-50.
- Frey, Robert (1993), "Empowerment or Else," *Harvard Business Review*, 71 (September–October), 4–12.
- Gerbing, David W. and James C. Anderson (1988), "An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment," *Journal of Marketing Research*, 25 (May), 186–92.
- Gouldner, Alvin W. (1960), "The Norm of Reciprocity: A Preliminary Statement," *American Sociological Review*, 25, 161–78.
- Graen, George B. and Mary Uhl-Bien (1995), "Relationship-Based Approach to Leadership: Development of Leader-Member Exchange (LMX) Theory of Leadership over 25 Years: Applying a Multi-Level Perspective," *Leadership Quarterly*, 6 (2), 219–47.

- Gregersen, Hal B. (1993), "Multiple Commitments at Work and Extrarole Behavior During Three Stages of Organizational Tenure," *Journal of Business Research*, 26, 31–47.
- Guzzo, Richard A. and Marcus W. Dickson (1996), "Teams in Organisations: Recent Research on Performance and Effectiveness," *Annual Review of Psychology*, 46, 307–338.
- Hackman, Richard J. (1987), "The Design of Work Teams," in *Handbook of Organizational Behavior*, J. Lorsch, ed. Englewood Cliffs, NJ: Prentice Hall, 315–42.
- Hofmann, David A. (1997), "An Overview of the Logic and Rationale of Hierarchical Linear Models," *Journal of Management*, 23 (6), 723–44.
- and Mark B. Gavin (1998), "Centering Decisions in Hierarchical Linear Models: Implications for Research in Organizations," *Journal of Management*, 24 (5), 623–41.
- Hui, Chun (1994), "Effects of Leadership Empowerment Behaviors and Followers' Personal Control, Voice, and Self-Efficacy on In-Role and Extra-Role Performance: An Extension and Empirical Test of Conger and Kanungo's Empowerment Process Model," doctoral dissertation, Indiana University.
- Humphrey, Ronald H. and Blake E. Ashforth (1994), "Cognitive Scripts and Prototypes in Service Encounters," in *Advances in Services Marketing and Management*, T. Swartz, D.E. Bowen, and S.W. Brown, eds. Greenwich, CT: JAI Press.
- James, Lawrence R., Demaree, Robert G., and Wolf, Gerrit (1984), "Estimating within-group interrater reliability with and without response bias," *Journal of Applied Psychology*, 69(1), 85-98.
- Jermier, John M. and Leslie J. Berkes (1979), "Leader Behavior in a Police Command Bureaucracy: A Closer Look at the Quasi-Military Model," *Administrative Science Quarterly*, 24 (1), 1–23.
- Karambayya, Rekha (1989), "Contexts for Organizational Citizenship Behavior: Do High Performing and Satisfying Units Have Better 'Citizens,'" working paper, York University, Ontario.
- Katzenbach, J.R. and D.K. Smith (1993), *The Wisdom of Teams: Creating the High-Performance Organization*. Boston: Harvard Business School.
- Kirkman, Bradley L. and Benson Rosen (1999). Beyond Self-Management: Antecedents and Consequences of Team Empowerment," *Academy of Management Journal*, 42 (1), 58–74.
- Kumar, Ajith and William R. Dillon (1990), "On the Use of Confirmatory Measurement Models in the Analysis of Multiple-Informant Reports," *Journal of Marketing Research*, 27 (February), 102-112.
- Lee, Valerie E. and Anthony S. Bryk (1989), "A multilevel model of the social disturbance of educational achievement," *Sociology of Education*, 62 (3), 172-192.
- Lord, Robert G., John F. Binning, Michael C. Rush, and Thomas J. Carter (1978), "The Effect of Performance Cues and Leader Behavior on Questionnaire Ratings of Leader Behavior," *Organizational Behavior and Human Resources*, 21, 27–39.
- MacKenzie, Scott B., Philip M. Podsakoff, and Michael J. Ahearne (1996), Unpublished data analysis, School of Business, Indiana University.
- , ----, and ---- (1998), "Some Possible Antecedents and Consequences of In-Role and Extra-Role Salesperson Performance," *Journal of Marketing*, 62 (July), 87–98.

- , ----, and Richard Fetter (1993), "The Impact of Organizational Citizenship Behavior on Evaluations of Salesperson Performance," *Journal of Marketing*, 57 (January), 70–80.
- Manz, Charles C. and Henry P. Sims (1993), *Superleadership: Leading Others to Lead Themselves*. New York: Prentice Hall.
- Mathieu, John E., Lucy L. Gilson, and Thomas M. Ruddy (2006), "Empowerment and team effectiveness: an empirical test of an integrated model," *Journal of Applied Psychology*, 91 (1), 97-108.
- Mayer, Roger C. and David Schoorman (1992), "Predicting Participation and Production Outcomes Through a Two-Dimensional Model of Organizational Commitment," *Academy of Management Journal*, 35 (3), 671–84.
- Mohammed, Susan, John E. Mathieu, and Albert L. Bartlett (2002), "Technical-administrative task performance, leadership task performance, and contextual performance: Considering the influence of team-and task-related composition variables," *Journal of Organizational Behavior*, 23 (7), 795-814.
- Morrison, Elizabeth W. (1994), "Role Definitions and Organizational Citizenship Behavior: The Importance of the Employee's Perspective," *Academy of Management Journal*, 37, 1543–67.
- Munene, John C. (1995), "'Not-on-Seat': An Investigation of Some Correlates of Organizational Citizenship Behavior in Nigeria," *Applied Psychology: An International Review*, 44, 111–22.
- Neck, Christopher P. and Charles C. Manz (1994), "From Groupthink to Teamthink: Toward the Creation of Constructive Thought Patterns in Self Managed Work Teams," *Human Relations*, 47 (August), 929–53.
- Netemeyer, Richard G., James S. Bowles, Daryl McKee, and Robert McMurrian (1997), "An investigation into the antecedents of organizational citizenship behaviors in a personal selling context," *Journal of Marketing*, 61 (3), 85-98.
- Organ, Dennis W. (1990a), "The Motivational Basis of Organizational Citizenship Behavior," in *Research in Organizational Behavior*, Vol. 12, B.M. Staw and L.L. Cummings, eds. Greenwich, CT: JAI Press, 43–72.
- (1990b), "The Subtle Significance of Job Satisfaction," *Clinical Laboratory Management Review*, 4, 94–98.
- (1988), *Organizational Citizenship Behavior: The Good Soldier Syndrome*. Lexington, MA: Lexington Books.
- and Katherine Ryan (1995), "A Meta-Analytic Review of Attitudinal and Dispositional Predictors of Organizational Citizenship Behavior," *Personnel Psychology*, 48 (Winter), 775–802.
- Perry, Monica L., Craig L. Pearce, and Henry P. Sims Jr. (1999), "Empowered Selling Teams: How Shared Leadership Can Contribute to Selling Team Outcomes," *Journal of Personal Selling and Sales Management*, 19 (3), 35–51.
- Podsakoff, Philip M., Michael J. Ahearne, and Scott B. MacKenzie (1997), "Organizational Citizenship Behaviors and Quality and Quantity of Work Group Performance," *Journal of Applied Psychology*, 82 (April), 262–70.
- and Scott B. MacKenzie (1994), "Organizational Citizenship Behavior and Sales Unit Effectiveness," *Journal of Marketing Research*, 31 (August), 351–63.

- and ---- (1997), "The impact of organizational citizenship behavior on organizational performance: A review and suggestions for future research," *Human Performance*, 10 (2), 133-151.
- , ----, and Bommer (1996a), "Transformational Leader Behaviors and Substitutes for Leadership as Determinants of Employee Satisfaction, Commitment, Trust, and Organizational Citizenship Behaviors," *Journal of Management*, 22, 259-98.
- , ----, and ---- (1996b), "A Meta-Analysis of the Relationships Between Kerr and Jermier's Substitutes for Leadership and Employee Job Attitudes, Role Perceptions, and Performance," *Journal of Applied Psychology*, 81, 380-99.
- , ----, Robert H. Moorman, and Richard Fetter (1990), "Transformational Leader Behaviors and Their Effects of Followers' Trust in Leader, Satisfaction, and Organizational Citizenship Behavior," *Leadership Quarterly*, 1, 107-142.
- , ----, Julie B. Paine, and Daniel G. Bachrach (2000), "Organizational Citizenship Behaviors: A Critical Review of the Theoretical and Empirical Literature and Suggestions for Future Research," *Journal of Management*, 26 (3), 513-64.
- Raudenbush, Stephen W. and Anthony S. Bryk (2002), *Hierarchical Linear Models: Applications and Data Analysis Methods*, 2d ed. Thousand Oaks, CA: Sage Publications.
- Reichers, Arnon E. (1985), "A Review and Reconceptualization of Organizational Commitment," *Academy of Management Review*, 10 (3), 465-76.
- Rhodes, Susan R. and Richard M. Steers (1981), "Conventional Vs. Worker Owned Organizations," *Human Relations*, 34, 1013-1035.
- Rousseau, Denise M. (1989), "Psychological and Implied Contracts in Organizations," *Employee Rights and Responsibilities Journal*, 2, 121-39.
- Sarin, Shikhar and V. Mahajan (2001), "The Effect of Reward Structures on the Performance of Cross-Functional Product Development Teams," *Journal of Marketing*, 65 (April), 35-53.
- Schnake, Mel (1991), "Organizational Citizenship: A Review, Proposed Model, and Research Agenda," *Human Relations*, 44 (July), 735-59.
- Schriesheim, Chester A., Stephanie L. Castro, Xiaohua (Tracy) Zhou, and Francis J. Yammarino (2001), "The Folly of Theorizing 'A' but Testing 'B': A Selective Level-of-Analysis Review of the Field and a Detailed Leader-Member Exchange Illustration," *The Leadership Quarterly*, 12, 515-51.
- Scott, K. Dow and Anthony M. Townsend (1994), "Teams: Why Some Perform and Other Do Not," *HRMagazine*, 8, 62-67.
- Seligman, Martin E.P. and Peter Schulman (1986), "Explanatory Style as a Predictor of Productivity and Quitting Among Life Insurance Sales Agents," *Journal of Personality and Social Psychology*, 50, 832-38.
- Sethi R. (2000), "New Product Quality and Product Development Teams," *Journal of Marketing*, 64, 1-14.
- Shore, Lynn M. and Sandy J. Wayne (1993), "Commitment and Employee Behavior: Comparison of Affective Commitment and Continuance Commitment with Perceived Organizational Support," *Journal of Applied Psychology*, 79 (5), 774-80.
- Smith, C. Ann, Dennis W. Organ, and Janet P. Near (1983), "Organizational Citizenship Behavior: Its Nature and Antecedents," *Journal of Applied Psychology*, 68, 655-63.

- Smith-Jentsch, Kimberly A., John E. Mathieu, and Kurt Kraiger (2005), "Investigating Linear and Interactive Effects of Shared Mental Models on Safety and Efficiency in a Field Setting," *Journal of Applied Psychology*, 90, 523–35.
- Snijders, Tom A. B. and Bosker, Roel J. (1999), *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. London: Sage.
- Spiro, Rosann L. and Barton A. Weitz (1990), "Adaptive Selling: Conceptualization, Measurement, and Nomological Validity," *Journal of Marketing Research*, 27, 61–69.
- Spreitzer, Gretchen M. (1996), "Social Structural Characteristics of Psychological Empowerment," *Academy of Management Journal*, 39 (April), 483–504.
- Staw, B.M. (1975), Attribution of the 'Causes' of Performance: A General Alternative Interpretation of Cross-Sectional Research on Organizations," *Organizational Behavior and Human Performance*, 13, 414–32.
- Thibaut, John W. and Harold H. Kelley (1959), *The Social Psychology of Groups*. New York: John Wiley & Sons.
- Thomas, Kenneth W. and Walter G. Tymon Jr. (1994), "Does Empowerment Always Work: Understanding the Role of Intrinsic Motivation and Personal Interpretation," *Journal of Management Systems*, 6, 39–54.
- Wall, Toby D., Nigel J. Kemp, Paul R. Jackson, and Chris W. Clegg (1986), "Outcomes of Autonomous Workgroups: A Long-Term Field Experiment," *Academy of Management Journal*, 29, 280–304.
- Walumbwa, Fred O. and John J. Lawler (2003), "Building Effective Organizations: Transformational Leadership, Collectivist Orientation, Work-Related Attitudes, and Withdrawal Behaviors in Three Emerging Economies," *International Journal of Human Resource Management*, 14, 1083–1101.
- Walz, Sandra M. and Brian P. Niehoff (1996), "Organizational Citizenship Behaviors and Their Effect on Organizational Effectiveness in Limited-Menu Restaurants," in *Academy of Management Best Papers Proceedings*, J.B. Keys and L.N. Dosier, eds. 307–311.
- Wellins, Richard S., William C. Byham, and Jeanne M. Wilson (1991), *Empowered Teams: Creating Self-Directed Work Groups That Improve Quality, Productivity, and Participation*. San Francisco: Jossey-Bass.
- Williams, Larry J. and Stella E. Anderson (1991), "Job Satisfaction and Organizational Commitment as Predictors of Organizational Citizenship and In-Role Behavior," *Journal of Management*, 17 (September), 601–617.
- Yan, Jun and Ritch L. Sorenson (2002), "An Empirical Assessment of the Contribution of Leadership, Attitudes, and Behaviors to Collective Entrepreneurship," in *Proceedings of 2002 United States Association for Small Business and Entrepreneurship National Conference*, Reno, Nevada, 17–20 (January).
- Yun, Seokhwa, Samer Faraj, Henry P. Sims, Jr. (2005), "Contingent leadership and effectiveness of Trauma resuscitation teams," *Journal of Applied Psychology*, 90 (6), 1288-1296.

APPENDIX**Table 1.1****CONSTRUCT SCALES****OCB – Helping**

1. Members of my sales pod willingly give of their time to help pod members who have work-related problems.
2. Members of my sales pod willingly share their expertise with podmates.
3. Members of my sales pod help orient new pod members.
4. Members of my sales pod take steps to try to prevent conflict with other pod members.
5. Members of my sales pod try to act as mediators when other pod members have disagreements.
6. Members of my sales pod praise fellow workers when they do outstanding work.

OCB – Sportsmanship

1. Members of my sales pod always find fault with other pod members. (reverse coded)
2. Members of my sales pod tend to make problems seem bigger than they really are. (reverse coded)
3. Members of my sales pod waste a lot of time complaining about trivial matters. (reverse coded)

OCB – Civic Virtue

1. Members of my sales pod frequently are late to or unprepared for pod meetings. (reverse coded)
2. Members of my sales pod attend and actively participate in all pod meetings.
3. Members of my sales pod provide constructive suggestions about how the pod could improve its effectiveness

Team Commitment

1. Members of my pod are loyal to each other
2. Members of my pod expect to work together for a long time
3. Members of my pod trust each other

Table 1.2
Study Variable Descriptive Statistics and Correlations

	Mean	SD	1	2	3	4	5	6	7	8
Team Level^a										
1. Helping	5.76	.60	.94 ^c							
2. Sportsmanship	5.41	.78	.683(**)	.88 ^c						
3. Civic Virtue	5.70	.60	.748(**)	.693(**)	.77 ^c					
4. Team commitment	5.66	.69	.830(**)	.668(**)	.733(**)	.91 ^c				
5. Team Experience	10.30	4.08	-.104	-.081	-.100	-.109				
6. Performance	2.93	.74	.094	-.040	-.004	.151(*)	.042			
7. Baseline Performance	2.83	.28	.014	.035	.053	.082	-.054	.254(**)		
Leader Level^b										
8. LEB	5.79	.58	.251(**)	.308(**)	.254(**)	.323(**)	-.051	.156(*)	.156	.98 ^d

Note. ^a N = 200 teams, ^b N = 115 leaders; Cross level correlations were calculated by assigning average leader scores to all members and are not adjusted for lack of independence. ^c Aggregate Team Level scale alphas, ^d Aggregate Leader Level scale alphas;

** Correlation is significant at the 0.01 level (2-tailed).

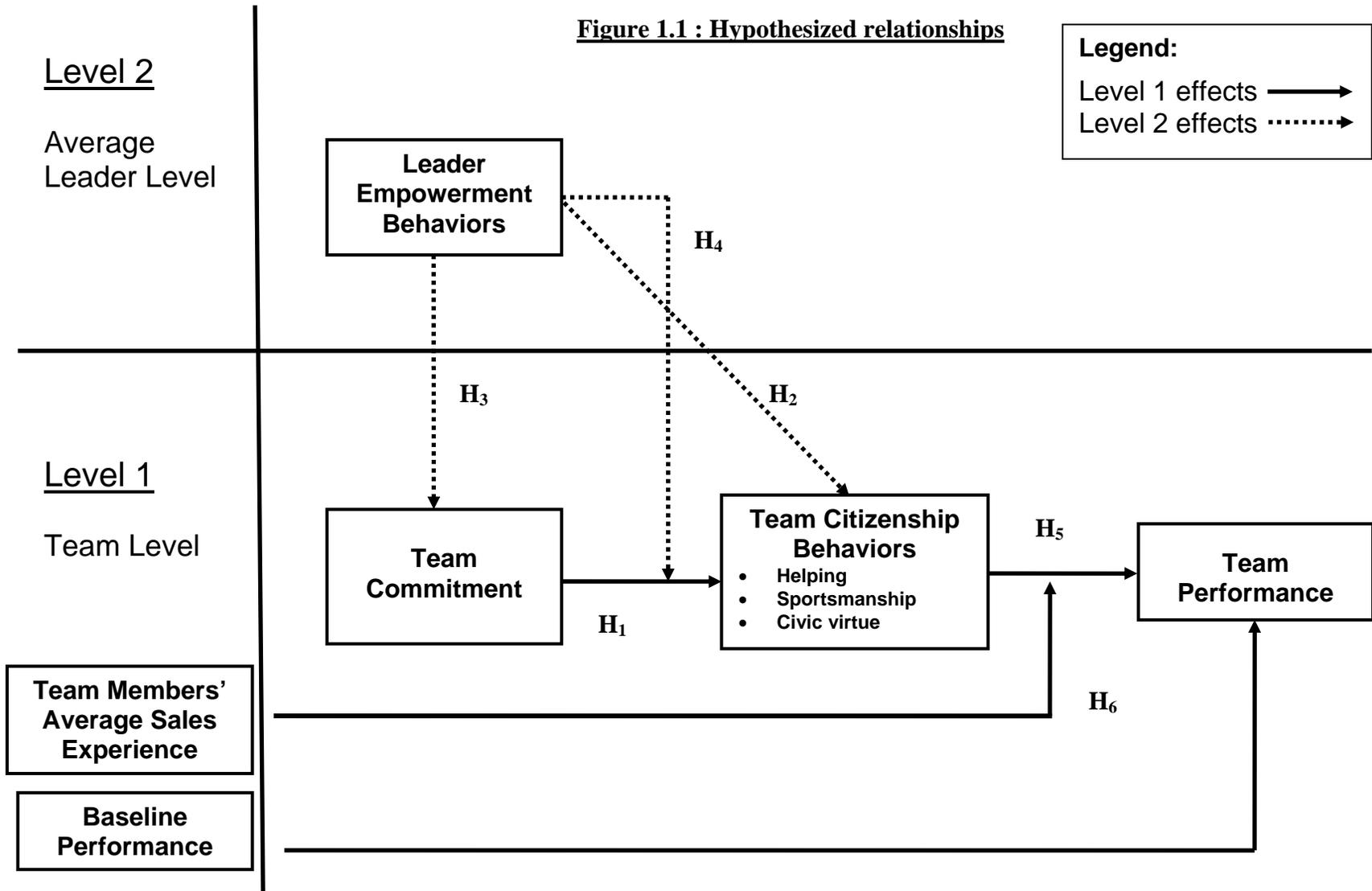
* Correlation is significant at the 0.05 level (2-tailed).

Table 1.3
Results of Within and Cross-Level Regression Analyses

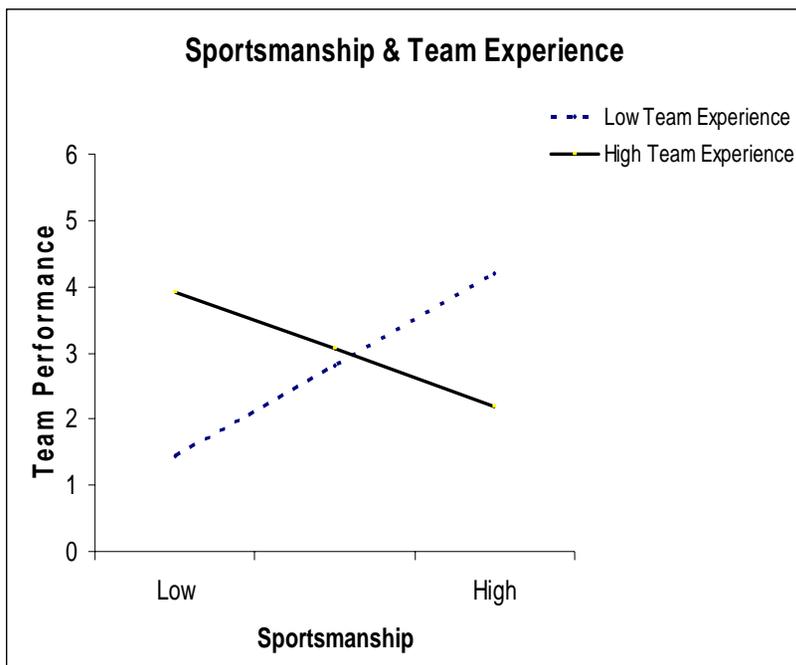
		Independent Variables	Dependent Variables for Linear Models						Dependent Variables for Final Models, Including Cross-Level Moderation Models					
			Team Commitment	Helping		Sportsmanship		Civic Virtue		Performance	Helping	Sportsmanship	Civic Virtue	Performance
				DP	MP	DP	MP	DP	MP					
Linear	Effects	Team commitment		.83**		.63**		.72**		.83**	.65**	.73**		
		LEBs	.32** ^a	.25**	-.01	.30**	.10**	.25**	.01		-.02	.14**	.03	
		Helping								.30**				.58*
		Sportsmanship								-.16				.34
		Civic virtue								-.12				-.76**
		Sales experience								.06				.16
		Baseline performance			.01		.03		.05		.26**			
Moderation	Effects	Team commitment × LEBs								-.02	.13**	.05*		
		Helping × Sales experience												-1.21
		Sportsmanship × Sales experience												-1.51*
		Civic virtue × Sales experience												2.58**

^{*}p < .05, ^{**}p < .01.
^aThe given value is the standardized parameter estimate. DP = direct path that does not include team commitment, and MP = mediated path that is mediated by commitment.

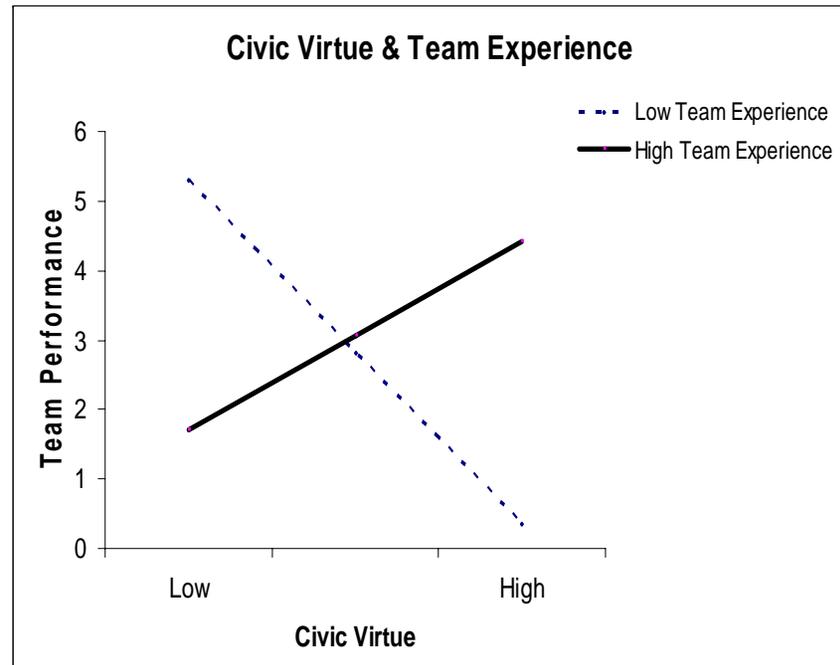
Figure 1.1 : Hypothesized relationships



**Figure 1.2: TEAM SPORTSMANSHIP → TEAM PERFORMANCE
MODERATED BY AVERAGE SALES EXPERIENCE (H_{6b})**



**Figure 1.3: TEAM CIVIC VIRTUE → TEAM PERFORMANCE
MODERATED BY AVERAGE SALES EXPERIENCE (H_{6c})**



Leader Empowering Behaviors

Encouraging autonomy

1. My manager allows my pod to determine what needs to be done.
2. My manager allows my pod to do our job our way.
3. My manager allows our pod to make important decisions quickly to satisfy customer needs.
4. My manager allows our pod to make its own choices.

Enhancing meaningfulness of work

1. My manager helps my pod understand the importance of my work to the overall effectiveness of the organization.
2. My manager helps my pod understand how our job fits into “the bigger picture.”
3. My manager helps my pod understand how the objectives and goals of our pod relate to that of the entire organization.
4. My manager helps my pod understand the positive impact we have on our customers.

Expressing confidence in high performance

1. My manager always shows confidence in my pod’s ability to do a good job.
2. My manager believes that my pod can handle demanding tasks.
3. My manager believes in my pod’s ability to improve even when we make mistakes.

Fostering opportunities for participation in decision making

1. My manager encourages my sales pod members to express ideas/suggestions
2. My manager listens to my sales pod’s ideas and suggestions.
3. My manager uses my pod’s suggestions to make decisions that affect us.

Facilitating Goal Accomplishments

1. My manager makes sure our pod has adequate training to do our jobs effectively.
2. My manager helps my pod to identify what we need in order to achieve our performance goals.
3. My manager helps my pod overcome obstacles to our performance.
4. My manager always makes sure that my pod has the resources needed for effective performance.

**INVESTIGATING THE INFLUENCE OF SHARED TEAM MENTAL MODELS
ON SALES TEAM PROCESSES AND SALES TEAM PERFORMANCE**

INTRODUCTION

Firms increasingly use teams to perform different activities - e.g., new product development (Sarin and Mahajan 2001), front-office operations (de Jong et al. 2004), sales (Cespedes et al. 1989) and after-sales customer service (Deeter-Schmelz and Ramsey 2003). Teams are viewed as being advantageous not only because members who share their tasks and work together can achieve beyond the capabilities of individuals working alone (Marks et al. 2001), but also because team-based work structures can pool information (Sethi 2000), coordinate performance (Dennis 1996, Rathnam et al. 1995), better utilize expertise, minimize the impact of workload on one individual, and maximize the use of increasingly more sophisticated technology (Smith-Jentsch 2001). In particular, teams may be the desired form of organization for functions such as new product development and sales, as they are viewed more suitable for complex tasks, and allow benefits such as workload sharing, team member monitoring, developing and contributing expertise on subtasks (Smith-Jentsch 2005). As Katzenbach and Smith (1993; p.15) suggest, “in any situation requiring the real-time combination of multiple skills, experiences, and judgments, a team inevitably gets better results than a collection of individuals operating within confined job roles and responsibilities”.

The increased use of teams has led to increased research interest on the factors that contribute to high team performance (Mathieu et al. 2000). Among several variables that have been suggested and studied as being antecedents to team performance, such as empowerment, extra-role behaviors, team processes and team mental models, two variables that have received recent research attention are team processes and shared mental models. Specifically, there has been increased attention on developing theoretical

models of team effectiveness, with team processes occupying a central role (Marks et al. 2001). Team processes have been defined as “how” teams achieve their outcomes (Weingart 1997), and have been shown to impact team outcomes (Campion et al. 1993; Gladstein 1984).

The concept of shared mental models or team mental models, another important antecedent of team performance, has recently received much theoretical attention and concerns the influence of team members’ mental models on team related processes and behaviors (Mathieu et al. 2000). The notion of a team mental model or shared mental models (SMM) refers to an organized understanding of relevant knowledge or belief that is shared by team-members (Cannon-Bowers et al. 1993; Klimoski and Mohammed 1994; Mohammed et al. 2000), and that help people to describe, explain and predict events in their environment (Rouse and Morris 1986). Recent theoretical developments in team mental models have suggested that to the extent to which team members share common mental models, they will be able to execute important team processes and thereby be more effective. This claim has also been supported by recent empirical evidence which have shown positive relationships between SMMs, team processes, and performance outcomes (Smith-Jentsch et al. 2005; Marks et al. 2002, 2001; Mathieu et al 2005, 2000; Stout et al. 1999).

Historically, the team process literature has used the variable “team process” as a broad umbrella term that denotes several process activities (like goal setting or strategy development) that take place when a team is set out to achieve its objectives. However, recent research has emphasized the temporal nature of the team processes that are being executed, and has forwarded a temporally based taxonomy that include three types of

team processes – planning processes, action processes, and interpersonal processes (Marks et al. 2001). While it has been conceptually argued that the three types of processes have a temporal sequence and have an impact on team performance, it is also possible that they can have different antecedents, and the different type of processes could impact performance differently, i.e. directly or indirectly. While past research has empirically studied the effects of team processes on performance, it has not examined them in a temporally controlled setting, whereby the sequential nature of the team processes could be ascertained.

In a similar vein, past SMM research has also not considered the temporal nature of team processes, and has therefore not adopted the team process taxonomies that have been recently introduced into the team process literature. All team processes that have been examined in the contexts of SMM research have always been conceptualized as happening at the same point in time. Consequently, to date, the literature on SMMs and the concept of temporally based team processes has existed as two separate streams. Here, we propose that the two streams should be integrated. In fact, such integration will allow us to examine the interaction relationships between SMMs and the different types of processes, as they influence performance. Though past SMM research has documented the main effects of SMMs on team processes and performance, it has not studied their interactions with team processes as they relate to team performance.

Overall, in this study we seek to (1) address the distinctions in team processes as they affect team performance, (2) ask whether SMMs interact with team processes, particularly whether, in addition to their direct effects on team performance, they moderate the effects of team processes on team performance, (3) examine two types of

SMMs, *viz.* taskwork and teamwork mental models, as to whether they have similar or differential effects as they impact team processes and team performance, and (4) test our hypotheses in a natural field setting with a customer interface, *i.e.*, key account sales teams. We plan to address the issue of temporally based team processes by collecting data in multiple time periods, *i.e.*, planning processes at time 1, action processes at time 2 and team performance at time 3.

Theoretically, this research introduces the stream of shared mental models theory into the marketing literature. The theory of shared cognitions and shared team mental models is a growing stream of research in psychology and organization science, and has will have tremendous potential value with regard to team effectiveness in the sales and marketing contexts. First, the research integrates the SMM and team process literature by including a rich classification of team processes that have been forwarded in recent team process literature (Marks et al. 2001). Therefore, the most important contribution of the current research to the theoretical understanding of the domain of team effectiveness lies in the expansion of the nomological net of team mental models, to include and empirically test an expanded set of distinct team processes. Second, though SMM scholars have suggested the existence of two types of SMMs, so far, only three studies have examined the influence of both teamwork and taskwork SMMs. By specifying and examining the effects of both teamwork and taskwork SMMs, this study adds to the current state of knowledge on the effects of SMMs on team performance. Third, this study will be the first to investigate the moderating influences of SMMs on the effect of team processes on performance.

Methodologically, most studies of SMMs and performance have used undergraduate students who performed laboratory team tasks (Smith-Jentsch et al. 2005). The generalizability of these studies to members of naturally occurring work teams who perform complex tasks in field settings is an important issue. This research will address this shortcoming by testing the hypotheses in a natural field setting, i.e., pharmaceutical sales. This will also be the first time that the concept of SMMs is empirically tested in a task-context that involves boundary spanning and customer interaction.

Practically, since the study is conducted in a sales setting, the findings from the study will directly inform sales managers about the relative importance of strategies (like team selection, team composition, and team training) that can be implemented at different stages team development. For example, if the findings of the study show SMMs significantly interact with team processes at specific phases of a performance cycle, then by measuring the team mental models, managers can identify teams that have highly shared mental models and recompose the teams during that particular phase. On the other hand, if the relative effects on performance seem to be stronger for team processes than that for SMMs, managers can invest in task related training that can ensure better team processes. Further, the findings of the effect of the two types of SMMs, can help managers decide the kind of mental models that should be nurtured at specific situations, in addition to aiding sales managers to identify sales training needs and carry out sales training evaluation (e.g., Smith-Jentsch et al. 2005).

CONCEPTUAL MODEL AND HYPOTHESES

Literature Review

In this section, we first review the literature on shared mental models and define the mental model constructs that we will be examining in this research. We then briefly review the literature on team processes and discuss the concept of temporally based team processes that we plan to use in this research. Drawing from these discussions, we present our conceptual model and research hypotheses for the study.

Shared Mental Model Theory

The concept of SMMs in teams has been a popular mechanism used to help explain team functioning. SMMs help explain how teams are able to cope with difficult and changing task conditions (Cannon-Bowers, Salas, and Converse 1993). The general theory of SMMs is that teams whose members have a shared understanding of their task, team, and environment will perform more effectively than those without (Mohammed, Klimoski, and Rentsch 2000). In fact, SMMs have been recognized as a necessary condition for effective teams as is evident in the words of Langan-Fox, Code, and Langenfield-Smith (2000), where they mention that “effective team functioning requires the existence of a shared or team mental model.” SMM theory offers an explanation of “how teams can quickly and efficiently adjust their strategy ‘on the fly’” (Mathieu et al. 2000, p 274).

Mental Models. Mental models (MMs) are organized knowledge structures that allow individuals to interact with their environment (Mathieu et al. 2000). MMs allow people to predict and explain the behavior of the world around them, to recognize and remember relationships among components of the environment, to construct expectations for what is likely to occur next (Rouse & Morris, 1986), and to draw inferences, make predictions understand phenomena, decide which actions to take, and experience events

vicariously (Johnson-Laird, 1983). Thus, mental models serve three crucial purposes: they help people to describe, explain, and predict events in their environment.

SMM definitions. There exists a plethora of other terms used throughout the literature that refer to the phenomenon of SMMs. In an extensive review of SMMs, Klimoski and Mohammed (1994) provide a list of the different terms that have been used – e.g., group situation awareness, team schema similarity, intersubjectivity, collective mind, transactive memory, group mind, common cause maps, shared frames, teamwork schemas, socio-cognition, etc. Similarly, several different definitions of the concept are available throughout the literature. Mohammed and Dumville (2001) defined SMMs as “organized understanding of relevant knowledge that is shared by team members” (p. 89). Cannon-Bowers, Salas, and Converse (1993) define SMMs as cognitive representations of task requirements, procedures and role responsibilities that members hold in common. The definitions of SMM depend upon what is being shared. Cannon-Bowers and Salas (2001) suggest that “what is shared” can fall under one of four broad categories: task-specific knowledge, task-related knowledge, knowledge of team-mates and attitudes/beliefs. In this study, we define taskwork and teamwork SMMs as the similarity or sharedness of task-related beliefs that team members hold about their taskwork and teamwork, respectively.

Types of SMMs. The bulk of the past research on SMMs has typically considered two distinct types of SMMs (Cooke et al. 2000; Kraiger and Wenzel 1997; Levesque, Wilson, and Wholey 2001; Mohammed and Dumville 2001; Rentsch and Klimoski, 2001). This is based on the general notion among researchers that two distinct tracks of team performance exist. The taskwork track focuses on operations-related behaviors

relatively idiosyncratic to the tasks to which teams were assigned, whereas the other track, teamwork, includes activities that strengthen the relationships, communication, and coordination within teams (Ilgen 1999). In short, “taskwork represents what it is that teams are doing, whereas teamwork describes how they are doing it with each other” (Marks, Mathieu, and Zaccaro, 2001, p. 357).

In the following section, we discuss the literature on team processes, and the recent developments in the conceptualization of these processes.

Team Processes

Traditionally researchers investigating team issues have adopted McGrath’s (1964) input-process-outcome (I-P-O) framework (e.g., Cohen & Bailey 1997; Gladstein 1984; Goodman, Ravlin, and Argote 1986; Guzzo and Shea 1992; Hackman 1987; Hackman and Morris 1975). Inputs represent starting conditions of a group, such as its material or human resources; processes represent dynamic interactions among group members as they work on a group’s task; and outcomes represent task and non-task consequences of a group’s functioning (Martins, Gilson, and Maynard 2004). The I-P-O framework views processes as mediating mechanisms linking such input variables as members, teams, and organizational characteristics with such team outcome criterion as performance quality and quantity, as well as members’ reactions (Marks, Mathieu, and Zaccaro 2001).

A review of the existing team literature reveals that almost all of the variables that have been studied in the past fall into one of the three different categories of the I-P-O model. The bulk of the recent empirical research on teams either explicitly or implicitly invokes the I-P-O model (Ilgen, 2005). However, Marks, Mathieu, and Zaccaro (2001)

have noted that many constructs presented by researchers trying to invoke the “I-P-O” model as processes are not really processes at all, but rather emergent cognitive or affective states. These emergent construct characterize properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes and outcomes (e.g., collective efficacy, potency, cohesion, and situational awareness). Emergent states are not processes in and of themselves because they do not describe or represent the member interaction or team actions that lead toward outcomes, but are products of team experiences (including team processes) and become new inputs to subsequent processes and outcomes.

Definition. Based on the work of Marks, Mathieu and Zaccaro (2001), we define team processes as members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing task work to achieve collective goals. Team processes involve members’ interacting with other members and their task environment, and are the means by which members work interdependently to utilize various resources to yield meaningful outcomes.

Although past researchers have traditionally examined I-P-O relationships within a single task accomplishment period, actual team performance trajectories consist of several I-P-O-types cycles that run sequentially and simultaneously. In our study, we adopt Marks, Mathieu and Zaccaro’s (2001) temporally based taxonomy of team processes that draws from the idea that teams perform in temporal cycles of goal-directed activity, called “episodes” (Weingart 1997; Zaheer et al. 1999). Episodes are distinguishable periods of time over which performance accrues and feedback is available (Mathieu and Button 1992). Since, over time, team performance can be best viewed as a

series of related I-P-O episodes, I-P-O should be seen as attached to episodes and sub-episodes, rather than to the entire life cycle of the team.

Team processes taxonomy. Various taxonomies of team processes have been proposed in the past (e.g., Neiva, Fleishman, and Rieck 1978; Fleishman and Zaccaro 1992; Prince and Salas 1993). However, in this research, we use the taxonomy specified by Marks, Mathieu, and Zaccaro (2001), because of its multiphase perspective, its recognition of the fact that teams use different processes simultaneously, and over performance episodes, in order to multitask effectively. According to this taxonomy, ten team process dimensions are nested within three superordinate categories: planning or transition phase processes, action phase processes and interpersonal processes.

Planning phases are periods of time when teams focus primarily on evaluation and/or planning activities to guide their accomplishment of a team goal or objective. We will concentrate on two specific planning processes in this research - goal specification and strategy formulation. We selected these two specific processes based on the sales setting in which these processes were examined, and due to the fact that the team output in our study was measured in terms of amount of sales (Marks, Mathieu, and Zaccaro 2001; p. 370). Since the *Goal specification* refers to the identification and prioritization of goals and subgoals for mission accomplishment. *Strategy formulation and planning* refer to the development of alternative courses of action for mission accomplishment. On the other hand, action phases are periods of time when teams conduct activities leading directly to goal accomplishment. *Action phase processes* include such activities as team monitoring and backup responses, and coordination. We selected team backup and coordination as the two specific processes to be studied, since we felt that the sales team

tasks in our particular field setting required high member interdependency (Tesluk et al. 1997). Finally, *interpersonal processes* represent the processes teams use to manage interpersonal relationships, such as conflict management, motivating and confidence building, and affect management.

Goal specification is one of the important processes that teams perform during the planning phase of team processes. During this process, teams develop and assign overall goals and sub-goals that indicate what and how much the team must accomplish, within certain time and with certain quality. Strategy formulation and planning involves decision-making about how team members will achieve their missions, discussion of expectations, relay of task-related information, prioritization, role assignment, and the communication of the plan to all team members. Team monitoring and backup response, a dimension of the action phase processes, is defined as team members assisting each other to perform their tasks by teammate coaching and/or helping. Coordination is the process of orchestrating the sequence and timing of interdependent actions. The more interdependent the tasks, the more teams rely on coordination as central process for effective functioning (Tesluk et al. 1997). The conceptual framework guiding our study is shown in Figure 2.

Planning and Action processes

One of the most cited ways for improving cooperation in a team is to develop a common vision, superordinate goals and objectives (Denton 2006). A common vision gives a group a way to direct, motivate, constrain and unify members (Collins and Paras 1994). Classic organizational theory emphasizes the importance of goals in the organization (Simon 1964). It has been suggested that while competitive goals cause

intragroup conflict, the presence of superordinate goals, as evolved in a team setting, can give rise to intergroup cooperation (Sherif 1962). It has also been empirically shown that to the extent that superordinate goals are developed in a team, intergroup cooperation will increase within the team (Pinto, Pinto, and Prescott 1993). Teams that develop and assign goals in their planning phases will be better aware of specific shortcomings of team members' achievements relative to goals, and be able to provide the required backup behaviors to get their performance back on track. Also, planning and goal setting can achieve coordination by having all members headed towards the same broad target. Group goal setting has also been found to improve cooperation and communication in groups (Weldon and Weingart 1993; Locke and Latham 1990).

Teams that devote attention to joint strategy formulation are not only aware of the expectations and assignments of team members with respect to the group goals, but also feel responsible for the goals. This will give rise to effective monitoring of team members during the action phases, and better backup behaviors whenever there is a slack. Stout et al. (1999) examined the relationships between strategy development and coordinated team performance on a helicopter defense/ surveillance simulation, and found that strategy development related to greater levels of unsolicited information sharing and coordination. Teams that involve in strategy development processes during their planning phases will achieve greater awareness of how team members will achieve their goals and the role assignments of the team members, thus allowing for smoother coordination in interdependent group tasks. Hence, we posit:

- H1: The degree to which planning processes are performed in a team will be positively related to the level of team action processes.

Team Processes and Performance

Action processes like team backup behaviors have been shown to affect team effectiveness in a number of earlier studies (Podsakoff et al. 1997; MacKenzie et al. 1996). Team helping or backup processes reduce the need for team members to spend energy and time on purely group maintenance functions. Helping may also help to increase team performance by enhancing team spirit, morale, or cohesiveness and the team's ability to coordinate their activities. Similarly, coordination is also one of the most important aspects of teamwork (Bowers, Braun, & Morgan, 1997; Brannick & Prince, 1997; Dickinson & McIntyre, 1997) and requires team members to adjust their own activities in response to the activities of other members (Dickinson & McIntyre, 1997). Coordination is not only necessary when members must carry out certain actions simultaneously or sequentially, but coordination and backup (Dickinson & McIntyre, 1997) are also required in tasks that are less rigidly structured, to ensure that no wasted effort is incurred by needless duplication of actions. Several concepts encapsulate the meaning of coordination - coordination (Argote 1982; Van de Ven et al. 1976), collaboration (Trist 1977), cooperation (Schermerhorn 1975), and integration (Gupta et al. 1986; Lawrence and Lorsch 1967). All these terms describe the notion of individuals working together to accomplish a specific task, and the lowest common denominator which integrates these concepts is "joint behavior toward some goal of common interest" (Pinto et al. 1993, p.1286). Coordination is also necessary to manage interdependencies within the task (Malone and Crowston 1994). Coordination has been shown to clarify team members' expectations and lead to optimal effort and resource allocation, and facilitate task accomplishment (McGrath 1984; Sundstrom et al. 1994). Campion et al. (1993) find that group perceptions of workload sharing, communication, and cooperation

within the group are related to objective measures of productivity. Milanovich, Muñiz, Salas, and Cannon-Bowers (1999) provide evidence that groups fail when coordination is deficient. Several researchers have also suggested that cooperative behavior is positively related to task performance (e.g. Gladstein 1984; Hackman 1983). Therefore, we expect action processes like coordination and backup behaviors exhibited in a team to have an effect on team performance.

Past research has shown that there appears to be a strong evidentiary basis for the beneficial effects of planning processes like group goal setting processes (Guzzo and Dickson 1996) and strategy formulation (Gist et al. 1987). When individuals participate in a group goal-setting procedure, their commitment to achieve the goals and performance will increase (Lawler and Hackman 1969; Schefflen, Lawler and Hackman 1971). Several researchers have also noted the importance of strategy formulation for effective group performance (Gladstein 1984), particularly for complex tasks (Hackman, Brouseau, and Weiss 1976). Stout et al. (1999) found that strategy development led to higher performance during high workload situations. Tesluk and Mathieu (1999) found that teams that were most likely to overcome problems were those that anticipated problems in advance and had contingency plans in place from the very beginning.

Weldon et al. (1991) provide evidence that group goals raise member efforts and that efforts translate into increased group performance. The beneficial effects of group goals on performance have also been shown to be mediated by the degree of cooperation they stimulate in groups (Weldon and Weingart 1993; Locke and Latham 1990). Hence, team goal specification processes will affect team performance by affecting team backup processes, which in turn impact performance. Also, since team members' active

involvement in a team's strategy development processes can increase awareness of role assignments and resource requirements, team backup and coordination processes consequently improve, and as a result impact team performance. Hence, we posit that the impact of team planning processes on performance will be directed through intermediate action process such as team backup and coordination processes. Thus, we posit:

H2: The positive impact of a team's planning activities on team performance will be mediated by the level of team action processes.

SMMs and Team Processes

Past research suggests that teams that must adapt quickly to changing task demands may have to draw on shared or common mental models (Cannon-Bowers et al. 1993). In order to adapt effectively, team members must predict what their teammates are going to do and what they are going to need in order to do it. Therefore, the function of SMMs is, "to allow team members to draw on their own well-structured knowledge as a basis for selecting actions that are consistent and coordinated with those of their teammates" (Mathieu et al. 2000, p 274). The overlap of individuals' mental models within a team would lead to greater shared expectations and explanations within a team, which in turn leads to improved coordination, communication and other team behaviours, which in turn leads to superior team performance (Rouse, Cannon-Bowers, and Salas 1992). In short, the shared mental models approach explains team performance through the mental models of individuals.

Action Processes. The action processes we consider in this research are those of coordination and team backup processes. SMM literature suggests that the primary benefit of shared mental models will be in terms of coordination (Baker & Salas 1997; Cannon-Bowers et al. 1993; Kraiger and Wenzel 1997; Moreland et al. 1996). Group

members who have a shared understanding of each other's informational needs, task contingencies and response tendencies, can coordinate their actions. Shared mental models help collaborators form accurate explanations and expectations about the task and each other, thus helping them coordinate explicitly (Espinosa et al. 2001; Cannon-Bowers et al. 1993; Klimoski and Mohamed 1994; Rouse and Morris 1986). These are applicable to fast paced real-time contexts like medical emergency rooms and aircraft carriers where team members act in a highly coordinated fashion with little communication, and low SMMs can lead to uncoordinated activities that can cause errors that lead to accidents (Helmreich 1997; Weick 1990; 1993; Weick and Roberts 1993).

Past research has found that shared team mental models significantly enhanced coordinated performance in teams operating a tank simulator (Minionis 1995). Increased shareness across individual mental models has been shown to aid communication under high workload and result in improved coordinated team performance, on low fidelity flight simulators (Stout et al. 1999). We expect that SMMs will have a similar effect on coordination and backup behaviors in sales team contexts. Hence, we posit:

- H3: The degree of a team's (a) taskwork and (b) teamwork SMMs will be positively related to the degree of action processes that are carried out in a team.

SMMs and Team Performance

Literature abounds with evidence on the role of shared mental models and team performance (e.g., Oser et al. 1989; Kleinman and Serfaty 1989; Cannon-Bowers and Salas 1990; Orasunu 1990; Rouse, Cannon-Bowers, and Salas 1992; Converse, Cannon-Bowers and Salas 1991; Cannon-Bowers, Salas, and Converse 1993; Rentsch and Hall

1994; Klimoski and Mohammed 1994; Kraiger and Wentzel 1997). The common theme that emerges from this rich literature is that shared mental models allow team members to draw conclusions and make predictions in a like manner (Kraiger and Wentzel 1997; Cannon-Bowers et al. 1993), and hence facilitate effective team performance. The common understanding of the task environment and their own team provide the team members with the ability to make similar interpretations and calculations upon which to base their strategies and behavior. Team effectiveness could also be driven in part by the “compatibility of expectations” that are provided by shared mental models (Cannon-Bowers et al. 1993). In the context of a sales team, SMMs provide sales people the ability to predict and interpret the strategies and behaviors of team-mates in complex buying situations. When sales team members share common beliefs about how the task is to be accomplished, the ensuing smoothness in operations allows for efficiency of their sales-call efforts. Based on extensive evidence available for the SMM – performance relationship, we posit:

- H4: The degree of a team’s (a) taskwork and (b) teamwork SMMs will be positively related to team performance.

Moderating Influences of SMMs

Although past research has investigated the main effects of SMMs on team processes and performance, there is no published study that has examined how team SMMs can influence the effect of team processes on subsequent team processes they exhibit over a series of performance episodes. For example, SMMs could exert an influence on the impact of planning processes on action process like coordination and backup. In other words, planning processes that take place in a team that has common

understanding about the teamwork and taskwork of their teammates may be able to convert plans into actions more effectively. Teams that have a high level of shared beliefs and understanding of the task will be able to coordinate and exhibit appropriate backup behaviors without having to spend extra effort on maintenance functions. Team members will be better prepared with ready answers when faced with ambiguous situations, and while having to make crucial decisions in the absence of the other team members, they will be able to take quicker decisions with confidence. Teams with discrepant mental models, however, may need to execute the coordination functions and backup behaviors with more care, and because they have to wait for consensus at every point of process execution, the efficiency and the quality of the resultant action processes will suffer.

Hence we posit:

- H5: The degree of a team's (a) taskwork and (b) teamwork SMMs will moderate the impact of planning processes on action processes such that at higher level of SMMs, the positive effect of planning processes will be strengthened.

It has been suggested that the manner in which SMMs operate is related to task demands (Stout, Cannon-Bowers, and Salas 1996). Under conditions where team members have common understanding of the team-members' role assignments and taskwork, the backup processes that are implemented will be with specific relevance to situational needs, therefore ensuring that these (action) processes are directly convertible into performance benefits. When team-members hold accurate schemas of their teammates' schemas of the team work, team members will have accurate explanations for their teammates' behaviors, and will be able to better understand and predict their teammates' reactions (Rentsch and Zelno 2003). This becomes much more important when

teams engage in tasks that are fast-paced and dynamic (Mathieu et al. 2000), e.g., new product development, sales, etc. This understanding can lead the helping team members to modify and adapt their helping behaviors such that these behaviors suit their teammates and also be more appropriate for the current task situation. Team members also may exhibit different helping behaviors to those team members who seem to need help because of a lack of ability, relative to other team members who seem to need help due to lack of effort (LePine et al. 2002). Also, team members with high SMMs may accurately determine the form of helping intended to benefit the group, after noting how the characteristics of a team's low performer influence peers (LePine and Van Dyne 1998). Thus, team-members with an adequate understanding of the teamwork as well as their taskwork environment may better determine the exact form and content of their helping behaviors, so that the team backup processes they perform are effective.

The effects of coordination can be realized only under conditions of high SMMs, because they allow members to predict the information and resource requirements of their teammates, and thus ensure that the coordinated action processes are followed up with effective closing strategies. In a sales context, this becomes much more relevant because coordinated call efforts combined with helping behaviors of the team members will result in performance, only if the sales teams can convert these action processes effectively into fruitful physician prescriptions. Teams with high SMMs will be able to better perform these processes and thus reap the benefits of coordinated efforts. Also, even well coordinated teams might experience what Steiner (1972) refers to as "process losses" due to coordination. This happens because the execution of coordinated action processes come at the cost of weathering severe challenges like communication, group tension, etc.

Therefore even while perfectly coordinated processes are executed, teams may experience “communication breakdowns”, or “get out of sync” (Marks, Mathieu, and Zaccaro 2001). Teams with high SMMs will be insulated from such problems because they can keep in check the process losses that may result while the action processes are being executed. Coordinated teams that have differences in mental models would experience other process losses in terms of lack of adaptability, and such inability to adapt quickly in dynamic environments will be detrimental to team success. Hence we posit:

- H6: The degree of a team’s (a) taskwork and (b) teamwork SMMs will moderate the impact of action processes on team performance such that at higher level of SMMs, the positive effect of action processes will be strengthened.

METHODS

Sample and procedures

This research was conducted in the nephrology division of a large U.S. pharmaceutical company in the biotech device industry. The sample for this study was drawn from key account sales teams that were composed of regional salespeople and regional sales managers or key account managers who were in charge of selling dialysis drugs and drug infusion systems to major accounts in their territory. The type of key accounts that were served by the key account teams included dialysis clinics, managed care facilities, hospitals and oncology clinics. Organized geographically and by the specific type of products, these key account teams were composed of either a regional salesperson and a regional sales manager, or a regional salesperson and a key accounts manager, depending upon the area of coverage and total market size within a sales

territory. The regional salespeople were product specialists who could provide key account customers with better and more accurate product information. Larger and major accounts that were strategically important for the company's nephrology business were assigned to teams comprising key account managers, who had superior product knowledge with respect to the drug and greater experience in handling those particular types of customers. Other accounts were handled locally by teams that included the regional sales managers, who would supervise and provide support to the key account salesperson directly handling the accounts.

The key account setting provides a rich context for testing our theories of processes as well as taskwork and teamwork mental models. First, since the key accounts represented an important segment for the company's business in the nephrology division, the key account teams were engaged in elaborate planning phase processes that include goal specification and strategy formulation. All members of key account teams received training for each of their product lines on carrying out these standardized processes. The dynamic and heightened nature of competition in this specific type industry, as well as the specific products that were marketed by the company ensured that key account team members had adequate chances to exhibit coordination and backup processes as they worked to achieve their sales goals. Second, though the teams that we studied had to work together in unison with each other on each of their key accounts, selling to widely different types of key account customers called for totally different set of sales processes. This meant a high level of task specialization, and hence the teams had specific tasks assigned to each of their members. Thus, we feel that the key account teams allowed us to study not only a variety of team process that took place separately in time, but also

capture them in a very dynamic process environment that required different types of processes at different points in time.

Data collection took place at two times. At Time 1, we collected survey measures of the planning processes, taskwork and teamwork mental models. We gathered the mental model measures from 114 dyadic teams. At Time 2, five months following Time 1 data collection, we collected the action processes. We conducted both waves of data collection through an online survey. We collected performance data one month following the time 2 data collection. The response rate was 91 and 95% per cent, for time 1 and time 2 data collection respectively, and 100 per cent for performance data. The strong management endorsement for the survey, coupled with the follow up emails both from our end and top management personnel, led to the high response rate. Key account team members had an average of 7.8 years of industry experience, and 11.75 years of specific company experience. The salespeople had a sales experience of 4.4 years and worked in their teams an average of 3.03 years. On an average the salespeople worked for 44.85 hours a week.

Construct Measures

This study required the collection of the three team processes i.e., planning, action and interpersonal processes, taskwork and teamwork mental models, and key account team performance information. We gathered the mental model measures directly from key account team members, the team process measures from the regional sales people and team performance measures from company records.

The scale development progressed through two stages. First, existing team process scales were adapted to insure that they were applicable to a pharmaceutical sales

team setting. Following this, for the measurement of the mental models of team members, construct definitions and items were discussed with company representatives to confirm their applicability to the pharmaceutical sales context.

Planning Processes. We assessed team planning processes using two multi-item subscales (10 items in total) that focused on (1) goal specification and (2) strategy formulation processes in the team. We developed these scales on the basis of the conceptual work of Marks, Mathieu, and Zaccaro (2001), and we adapted them to the pharmaceutical sales team context. Our exploratory factor analysis showed that all items measuring planning processes loaded on one component. We later created a latent score from the two sub-scale scores using a second order reflective model using PLS Graph. We found that the average variance extracted by the goal specification and strategy formulation sub-scales was lower than the square of the correlation between the two constructs, and hence concluded that the two sub-scales were not discriminant (Fornell and Larcker 1981). We also found that the planning processes scale demonstrated acceptable psychometric properties (reliability = 0.99).

Action Processes. We assessed team action processes using two multi-item subscales (10 items in total) that focused on (1) coordination and (2) backup processes in the team. We developed the sub-scales on the basis of the conceptual work of Marks, Mathieu, and Zaccaro (2001), and we adapted them to the pharmaceutical sales team context. Our exploratory factor analysis showed that all items measuring planning processes loaded on one component. We later created a latent score from the two sub-scale scores using a second order reflective model in PLS Graph. The scale demonstrated acceptable psychometric properties (reliability = .96). We also found that the average

variance extracted by the coordination and backup sub-scales was lower than the square of the correlation between the two constructs, and hence concluded that the two sub-scales were not discriminant (Fornell and Larcker 1981).

Mental models. Researchers commonly assess mental models by presenting respondents with a list of concepts and asking respondents to describe the relationships among the concepts (e.g., Marks et al., 2002; Mathieu et al., 2000; Stout et al., 1999). To assess team members' taskwork mental models, we asked each team member to judge the relatedness of 5 concepts or statements describing team procedures, equipment, and tasks. Participants were given the following instructions: 'The terms in the following pages relate to what you think about the inter-relationships between each other's tasks. Please rate how much these terms are related to each other, with respect to your team tasks.' Team members rated the relatedness of all pairs of concepts (15 pairs), using a 7-point response scale (1:unrelated and 7:highly related). Concepts included: 'Team member's knowledge or proficiency with his/her own processes and procedures', 'Team member's knowledge or proficiency with the other team-member's processes & procedures', 'Team member's understanding of the other members' tasks', 'Team member's understanding of the team's tasks', 'Team members agreeing on a strategy to carry out the team tasks', and 'Effectiveness of the team'. To obtain a measure of each team member's teamwork mental model, we asked participants to judge the relatedness of the 5 concepts describing team interaction processes and the characteristics of team members (e.g., 'Team members working well together', 'Team members agreeing with each other on issues facing the team', 'Team members communicating openly with each other', and 'Team members backing up each other to carry out the team tasks'.) Here too, participants rated the

relatedness of all pairs of statements (i.e., 15 pairs), on a 7-point response scale (1:unrelated and 7:highly related). We included the item ‘The team is highly effective’ as one of the 5 concepts in both the taskwork and the teamwork mental models, as we sought to capture team members’ understanding of the relationship of the mental model concepts to each other and to team effectiveness. To develop the statements for the taskwork SMM and teamwork SMM measures, we drew on Cannon-Bowers et al.’s (1993) descriptions of team mental models and the items used previously by Lim and Klein (2006), and adapted them in consultation with sales reps and sales managers from our focal firm. Specifically, we began our research by asking two sales managers separately, to describe the characteristics critical for team effectiveness. We compiled the responses from these managers and categorized them into the taskwork and teamwork domains, and used this data in conjunction with Lim and Klein’s (2006) concepts, ultimately ending up with 5 statements for each mental model.

Like Marks et al. (2002), Stout et al. (1999) and Lim and Klein (2006), we used the structural assessment technique Pathfinder (Schvaneveldt, 1990) to generate each team member’s taskwork and teamwork mental models. Essentially, Pathfinder creates a model, or network, based on each respondent’s ratings of the similarity between the each pair of statements in the model. Each statement in the model is represented as a node in the network. Statements that the respondent rated as high in similarity are closely linked in the respondent’s model. Statements that the respondent rated as low in similarity are less closely linked in the respondent’s model. Pathfinder represents the closeness of the link between of statements with a numerical weight.

Shared Mental Models. Building on prior mental model research using Pathfinder (e.g., Marks et al. 2002; Stout et al. 1999; Lim and Klein 2006), we computed taskwork SMMs by calculating the mental model similarity using Pathfinder, to assess the similarity between each team member's taskwork mental model and the teamwork mental model of every other member of his team; the similarity measure is the proportion of common links in relations to the total number of links present in both networks (Schvaneveldt 1990). We used the same procedures to calculate each team's teamwork SMMs by arriving at the mental model similarity score. Similarity score can range from 0 to 1. Hence, a score of 0.2 would mean that 20 per cent of the mental model structure is shared (See Appendix B for a detailed example of the calculation of similarity scores, using Pathfinder).

Team performance. We obtained the measures for team performance from company records. The measure we used was total share of market across all product lines and collected two months after the action processes were measured.

Control Variables. We also measured the sales reps' months of experience in the company, sales job, industry and the territory. We also measured how many hours the sales rep worked during a week. We used these variables as control variables, as prior experience has been shown to be related to team processes.

ANALYSIS AND RESULTS

The hypothesized model was estimated using Partial Least Squares (PLS) since this approach accounts for the effects of measurement error, and is preferable to OLS regression, that assumes error-free measurement. PLS allows the predictor and dependent variables to be viewed as latent constructs that cannot be observed directly, and uses

multiple indicators to operationalize the latent constructs. PLS also allows us to model latent constructs under conditions of non-normality and small to medium sample sizes (Chin and Newsted 1999), and is robust to violations of multivariate normality (Chin 1998a, 1998b; Chin and Gopal 1995; Compeau and Higgins 1995).

We analyzed a baseline model with company experience, sales experience, industry experience, territory experience and hours worked as control variables and action processes as the dependent variable. The R-square for action in the baseline model was 0.46. We then estimated the model with action as the dependent variable with the other predictors – planning, Taskwork SMMs and Teamwork SMMs, and assessed the increase in explained variance in action, and obtained an R-square of 0.51, a 5% increase in explained variance over the baseline model. We further estimated a baseline model with performance as the dependent variable and with planning and action processes, and found that the R-square for performance in model was 0.02. We then estimated the increase in explained variance in performance, and obtained an R-square of 0.10, an 8% increase in explained variance over the baseline model.

Hypothesis 1 concerns the influence of planning process on action processes performed in a team. We propose in H_1 that planning process will have a positive influence on action process performed in a team. In our analyses, consistent with H_1 , the results indicate a strong and significant effect on action processes ($H_1: \beta = 0.66, p < .01$).

We propose in H_2 that planning process will have a positive influence on team performance through its effect on action processes. In our analyses, the path from action process to performance was positive and marginally significant ($\beta = 0.16, p < .10$). However, though planning was significantly related to action processes, the direct path

from planning to performance was not significant ($\beta = 0.16$, ns). Hence, H_2 was not supported.

(Place Table 2.2A and 2.2B near here)

Turning our attention to the influence of SMMs on the team processes and performance, we first consider the main effects of SMMs on action processes and team performance, and then the moderating effect of SMMs on such relationships. We propose in H_{3a} that taskwork SMMs will be positively related to action processes. Our results indicate a strong positive relationship between taskwork SMMs and action processes (H_{3a} : $\beta = 0.12$, $p < .05$). Similarly, H_{3b} states that team work SMMs will be positively related to action processes, but our results fail to support the hypothesis (H_{3b} : $\beta = 0.02$, ns). We propose in H_{4a} that taskwork SMMs will be positively related to team performance. Similarly, H_{4b} states that teamwork SMMs will be positively related to team performance. Our results indicate support H_{4a} but not H_{4b} (H_{4a} : $\beta = 0.23$, $p < .05$; H_{4b} : $\beta = 0.11$, ns).

(Place Table 2.2C near here)

We propose in H_{5a} that taskwork SMMs will positively moderate the effect of planning processes on action processes. However, contrary to our expectation, the results indicate a negative interaction between taskwork SMMs and planning processes as they influence action processes (H_{5a} : $\beta = -0.17$, $p < .05$). Similarly, H_{5b} states that teamwork SMMs will positively moderate the effect of planning processes on action processes. Our results indicate a significant interaction between teamwork SMMs and planning processes in the expected direction, as they influence action processes (H_{5b} : $\beta = 0.20$, $p < .05$).

(Place Table 2.2D near here)

We propose in H_{5a} that taskwork SMMs will positively moderate the effect of action processes on team performance. Similarly, H_{5b} states that teamwork SMMs will positively moderate the effect of action processes on team performance. Our results indicate support neither H_{5a} ($\beta = 0.06$, ns) nor H_{5b} ($\beta = -0.13$, ns). In summary, collectively these results are consistent with our expectation that SMMs moderate the influence of planning processes on action processes, but do not support our expectations about the moderating effect of SMMs on the impact of action processes on team performance.

(Place Table 2.2E near here)

DISCUSSION

The purpose of this study was to integrate two rich streams of team literature *viz.* shared mental models and teams processes, and thereby unearth new relationships that have hitherto not been considered. Consonant with the call for the use of temporally based process taxonomies by team process scholars (e.g., Marks, Mathieu, and Zaccaro 2001), we tested the proposition that team action processes mediate the relationship between planning processes and performance. The moderating influence of SMMs on the relationship between team processes and performance was another issue that was yet to be explored. Also, SMM researchers (e.g., Kim and Klein 2006) have acknowledged that there is sparse research examining the influence of multiple mental models. We addressed these issues in our study by examining the moderating influences of both taskwork and teamwork mental models. Our findings lend partial credence to our argument that SMMs do moderate certain process relationships.

Our findings suggest that there indeed exists distinct phases in which distinct types of processes take place. We measured planning and action process in two time periods separately, and found that planning processes indirectly affected team performance through its effect on action processes. We find this interesting because though the effects of various processes on performance have been tested in past SMM research, this indirect effect of planning processes and action processes has not been shown in a multi-period setting. Our results also supported the distinction between taskwork and teamwork mental models, in that they had unique effects on action processes and performance. Taskwork SMMs were related significantly to action processes as well as performance, while teamwork SMMs were not. These results also confirm existing empirical evidence that SMMs are related to team processes and team performance.

In terms of the hypothesized moderating influences of SMMs on the path between planning and action processes, we found that both taskwork and teamwork SMMs interacted significantly with planning processes with respect to their effect on action processes. However, the effects of taskwork SMMs were distinctly different from those of teamwork SMMs. Though taskwork SMMs had a positive effect on action processes, they negatively interacted with planning processes. In contrast, teamwork SMMs positively moderated the planning to action processes relationship. Again, this result supported our distinction between taskwork and teamwork SMMs, though we did not specify unique and different effects for the two types of SMMs. We were surprised that the results did not reveal a significant interaction of SMMs and action processes.

The difference in the signs of the significant interactions of taskwork SMMs and teamwork SMMs suggest that the two types of SMMs may be working using two different mechanisms. Though we did not hypothesize a negative interaction between taskwork SMMs and planning processes, it looks like taskwork SMMs not only exert a direct main effect on action processes, but also substitute for the effect of planning processes. In the absence of high taskwork SMMs, planning processes may have a strong effect on action processes, but not in the presence of high taskwork SMMs. There is a significant substitution effect of taskwork SMMs for the effect of planning processes, as task SMMs tend to have a strong effect on action processes when planning processes are low. Thus we can see that each of these variables - planning processes and taskwork SMMs seem to chip-in to result in better action processes, in the absence of the other.

We see a totally different effect with teamwork SMMs – they do not have a direct effect on action processes, but enhance the effect of planning processes through a positive interaction with planning processes. This is an important result, when compared with the direct effect of taskwork SMMs on performance, because this suggests that there is an overall direct effect of taskwork SMMs but not for teamwork SMMs.

Overall, our results show that there does exist distinctions in team processes as they affect team performance, and that planning processes exert only an indirect effect on team performance through their effect on action processes. SMMs interact with team planning processes only as they influence action processes, but not with action processes as they influence team performance. Finally, the two types of SMMs, *viz.* taskwork and teamwork mental models do have widely differential effects as they impact team processes and team performance.

IMPLICATIONS

Theoretical Contributions

Integrating two theoretical streams. By demonstrating that temporally based processes have an effect on team performance in the context of two different types of shared mental models, we extend previous work in both SMMs and team processes. We provide a comprehensive model of how temporally based team processes affect team performance in the presence of shared mental models. Thus, we provide the theoretical basis to the inclusion of the temporally based team processes – planning processes and action processes in the nomological net of team mental models.

Interactions of SMMs. We show that taskwork SMMs have a direct effect on action processes, but interact negatively with planning process as to their effect on action processes, while teamwork SMMs interact positively with planning processes. This is important to the Shared Mental Models literature, because such interactions have not been hypothesized and tested.

Multiple Mental Models. Our findings extend the SMM literature by demonstrating that both taskwork and teamwork SMMs are associated with effective action processes. Specifically, this research contributes to Shared Mental Model theory by showing that taskwork and teamwork SMMs have unique and effects on action processes. We are also able to show the relative importance of taskwork SMMs vis-à-vis teamwork SMMs in their ability to explain action processes and predict performance.

Managerial Implications

Team Composition. Our results show differential effects for the two types of SMMs. This tells sales managers two things. First, SMMs can be measured during

different phases of the team performance cycle, and used to identify and compose teams high on taskwork SMMs and teamwork SMMs. Since taskwork SMMs can substitute for planning processes, teams that are identified to be lacking planning processes can be disbanded and recomposed to result in high taskwork SMMs. Second, when teams are better at performing planning processes, teams should be composed based on high teamwork SMMs, to get better action processes.

Team Training. Our results show that only taskwork SMMs and action processes have a direct effect on performance. This means that sales managers should invest in task related training that can ensure better action processes. Sales managers should also test the level of taskwork and teamwork SMMs constantly, and recommend additional training for the teams that score low on sharedness.

LIMITATIONS AND FUTURE RESEARCH

This research is limited in a number of respects. This research did not focus on the effect of planning processes on SMMs. Decision making and problem solving with mental models relies on running the mental model (e.g. Klein, 1993) and so a task involving planning processes should test this underlying theoretical process. Existing literature suggests that SMMs can be greatly beneficial in planning processes. It has been argued that less overt planning time is required by teams with shared mental models because team members will be able to predict what others will expect of them and so it will not be necessary to verbalize this (Rouse et al., 1992). Optimum planning will occur when mental models completely overlap and performance will degrade the less similar mental models are (Banks and Millward 2000). However, since we collected the measures of SMMs and planning processes at the same time, we did not include in our

model a relationship between planning and SMMs. Interpersonal processes that pervade the gamut of planning and action processes, is an important constituent of team processes that take place during a performance episode (Marks, Mathieu, and Zaccaro 2001). However, we did not include this construct in our model. Also, the performance measure that we included was a two-month average of the market shares of the members which might be subject to seasonal instability.

Another limitation of this research is that our measure of team mental models required us to choose the specific concepts that we asked the respondents to compare. Team-members' mental models may differ not only in structure but content. Moreover, using our measures, we could only assess the perceived causal relationships implicit in respondents' mental models. Measures that allow respondents to report the content as well as structure, and the causal relationships underlying their mental models would prove more predictive of team performance. Finally, though our sample size of 114 teams is typical of team studies, it nevertheless limited our statistical power.

In terms of future research, the findings of this study can pave way to a rich stream of SMM research in the sales and marketing field. Though we did not speculate on the how and why taskwork SMMs would differ from teamwork SMMs, results of this study can be a starting point to future research and theorizing on how these two types of SMMs differ. Another research area that holds promise for SMM theory in marketing is the exploration of how divergent and low SMMs can aid in driving innovation and creativity among new product teams and sales teams.

CONCLUSION

Our findings suggest that the distinctions of planning and action processes do matter, in a shared mental model context. Also, we know that shared understanding in teams not only exert a direct effect on team processes and performance, but also influence the effectiveness of some of these processes. However, several questions remain to be answered, but the current findings advance understanding of unique differences in the working of the different type of shared mental models, and suggest that continuing research that concentrates on exploring these differences is likely to yield new theoretical insights as well as practical interventions to enhance team performance.

REFERENCES

- Ahearne, Michael J., Podsakoff, Philip M. and MacKenzie, Scott B. (in press), "Determinants of Sales Team Success: An Empirical Examination of the Indirect Effects of Leadership Empowerment Behaviors on Sales Team Performance," *Journal of the Academy of Marketing Science*.
- Argote, L. (1982), "Input uncertainty and organizational coordination in hospital emergency units," *Administrative Science Quarterly*, 27: 420-434.
- Baker, D.P. and Salas E. (1992), "Principles for measuring teamwork skills," *Human Factors*, 34(4), 469-475.
- Baldwin T.T., Bedell M.D., and Johnson J.L. (1997), "The social fabric of a team-based MBA program: network effects on student satisfaction and performance," *Academy of Management Journal*, 40:1369-97.
- Banks, A.P. and Millward, L.J. (2000), "Running shared mental models as a distributed cognitive process," *British Journal of Psychology*, November.
- Bowers, C.A., Braun, C., and Morgan, B.B., Jr. (1997), *Team workload: Its meaning and measurement*, In M.T. Brannick, E. Salas, & C. Prince (Eds.), *Team performance assessment and measurement: Theory, research, and applications*. Hillsdale, NJ: Lawrence Erlbaum Associates (pp. 85-108).
- Brannick, M. T., and Prince, C. (1997), *Overview of team performance Measurement*, In M. T. Brannick & E. Salas & C. Prince (Eds.), *Team Performance Assessment and Measurement* (pp. 3-16), Mahwah, NJ: Lawrence Erlbaum Associates.
- Campion, M.A, Medsker, G.J. and Higgs, A.C. (1993), "Relations between work group characteristics and effectiveness: Implications for designing effective work groups," *Personnel Psychology*, 46: 823-850.
- Cannon-Bowers, J. A., Salas, E., and Converse, S. A. (1993) "SMMs in expert decision making teams," in *Current issues in individual and group decision making*, Ed. N. J. Castellan, Jr., Hillsdale, NJ: Erlbaum, 221-246.
- Cannon-Bowers, J. E. and E. Salas (2001), "Reflections on Shared Cognition," *Journal of Organizational Behavior*, 22(March): 195-202.
- , and ----. (1990), "Cognitive psychology and team training: Shared mental models in complex systems," Symposium presented at the 5th annual conference of the Society for Industrial and Organizational Psychology, Miami, FL.
- Cespedes, Frank V., Doyle, Stephen X. and Freedman, Robert J. (1989), "Teamwork for Today's Selling," *Harvard Business Review*, Vol. 67 (2), p44-51.
- Chin, W. W. (1998a), "Issues and opinion on structural equation modeling," *MIS Quarterly*, 22(1), pp vii-xvi.
- Chin, W. W. (1998b), *The partial least squares approach for structural equation modeling*, In George A. Marcoulides (Ed.), *Modern Methods for Business Research*, Lawrence Erlbaum Associates, pp. 295-336.
- Chin, W. W. and Gopal, A. (1995), "Adoption intention in GSS: Relative importance of beliefs," *The Data Base for Advances in Information Systems*, 26(2/3), pp. 42-64.
- Chin, W.W. and Newstead, P.R.(1999). *Statistical Strategies for Small Sample Research*, In Hoyle, R.H. (ed) "Structural Equation Modeling" London: Sage Publications.

- Cohen, S. G., and D. E. Bailey (1997), "What makes teams work: Group effectiveness research from the shop floor to the executive suite," *Journal of Management*, 23: 239-290.
- Compeau, D. R. and C. Higgins (1995), "Computer self-efficacy: Development of a measure and initial test," *MIS Quarterly*, 19(2): 189-211.
- Converse, S., Cannon-Bowers, J. A., and Salas, E. (1991), "Team member shared mental models," Proceedings of the 35th Human Factors Society Annual Meeting, (pp. 1417-21), Santa Monica, CA: Human Factors and Ergonomics Society.
- Cooke, N. J., Salas, E., Cannon-Bowers, J. A., and Stout, R. J. (2000), "Measuring Team Knowledge," *Human Factors*, 42:1, pp. 151-173.
- Crawford, Jeffrey L., and Haaland Gordon A. (1972), "Predecisional information-seeking and subsequent conformity in the social influence process," *Journal of Personality and Social Psychology*, 23: 112-119.
- De Jong, Ad, De Ruyter, Ko, and Lemmink, Jos, "Antecedents and Consequences of Service Climate in Boundary-Spanning Self-Managing Service Teams," *Journal of Marketing*, Vol. 68 (April), 2004, 18-35.
- Deeter-Schmelz, Dawn R. and Ramsey, Rosemary P. (2003), "An Investigation of Team Information Processing in Service Teams: Exploring the Link Between Teams and Customers," *Journal of the Academy of Marketing Science*, Vol. 31, pp. 409-424.
- Dennis, A.R. (1996), "Information Exchange and Use in Group Decision Making: You Can Lead a Group to Information But You Can't Make It Think," *MIS Quarterly*, 20, 433-455.
- Denton, D. Keith and Richardson, Peter, (2006), "Team-building webs," *Team Performance Management*, 12(1), 17 - 22.
- Dickinson, T. L., and McIntyre, R. M. (1997), *A conceptual framework for teamwork measurement*, In M. T. Brannick, E. Salas, & C. Prince (Eds.), *Team Performance Assessment and Measurement, Theory, Methods, and Applications* (pp. 19-43). Mahwah, NJ: Lawrence Erlbaum Associates.
- Dyer, William G. (1987), *Team Building: Issues and Alternatives*, Reading, MA: Addison-Wesley, 1987.
- Espinosa, Alberto J., Krant, Robert E., Lerch, Favier F., Slaughter, Sandra A., Herbsleb, James D., Mockus, Audris (2001), "Shared Mental Models and Coordination in Large-scale, Distributed Software Development," Twenty Second International Conference on Information Systems, New Orleans, LA.
- Fleishman, A., and Zaccaro, S.J. (1992), *Toward a taxonomy of team performance functions*, In R.W. Swezey & E. Salas (eds.), *Teams: Their training and performance*, (pp. 31-56). Norwood, NJ: Ablex.
- Fornell, C., and Larcker, D. (1981), "Structural equation models with unobservable variables and measurement error," *Journal of Marketing Research*, 18(1), 39-50.
- Gist, M. E., Locke, E. A., and Taylor, M. S. (1987), "Organizational behavior: Group structure, process, and effectiveness," *Journal of Management*, 13(2), 237-257.
- Gladstein, D. (1984), "Groups in context: A model of task group effectiveness," *Administrative Science Quarterly*, 29: 499-517.
- Goodman, P. S., Ravlin, E., and Argote, L. (1986), *Current thinking about groups: Setting the stage for new ideas*, In P. S. Goodman & Associates, Eds., "Designing effective work groups" San Francisco: Jossey-Bass.

- Gupta, Ashok K., S.P. Raj, and David Wilemon (1986), "A Model for Studying the R&D–Marketing Interface in the Product Innovation Process," *Journal of Marketing*, 50 (April), 7–17.
- Guzzo, R. A., and Dickson, M. W. (1996) "Teams in organizations: Recent research on performance and effectiveness," *Annual Review of Psychology*, 47: 307-338.
- Guzzo, R. A., and Shea, G. P. (1992), "Group performance and intergroup relations in organizations", In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology*, Vol 3 (2nd ed.). Palo Alto, CA, US: Consulting Psychologists Press.
- Hackman, Richard J. (1987), *The design of work teams*, In J. W. Lorsch (Ed.), *Handbook of Organizational Behavior* (pp. 315-342). Englewood Cliffs, NJ: Prentice-Hall.
- (1983), "A Normative Model of Work Team Effectiveness," *Research Project on Group Effectiveness*, Technical Report No 2, Office of Naval Research, Code 442, Yale School of Organizational Management.
- , Kenneth R. Brousseau, and Jon A. Weiss (1976), "The interaction of task design and group performance strategies in determining group effectiveness," *Organizational Behavior and Human Performance*, 16: 350 365.
- and Morris, C. G. (1975), *Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration*, In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 8). New York: Academic Press.
- Helmreich, R. L. (1997), "Managing Human Error in Aviation," *Scientific American*, 277(5), p. 40.
- Ilgel, D. R. (1999), "Teams in organizations: Some implications," *American Psychologist*, 54, 129-139.
- Ilgel, D. R., Hollenbeck, J. R., Johnson, M. and Jundt, D. (2005). Teams in organizations, From I-P-O Models to IMO models. *Annual Review of Psychology*, 56, 517-543.
- Johnson, David W. (1973), "Communication in conflict situations: A critical review of the research," *International Journal of Group Tensions*, 3: 46-67.
- Johnson-Laird, P. N. (1983), *Mental models: Towards a cognitive science of language, inference, and consciousness*, Cambridge, MA: Harvard University Press.
- Jones, G. R., George, Jennifer M. (1998), "The Experience and Evolution of Trust: Implications for Cooperation and Teamwork," *Academy of Management Review*, 23, 531-546.
- Katzenbach, J.R. & Smith, D.K. (1993), "*The Wisdom of Teams: Creating the High-performance Organization*," Boston: Harvard Business School.
- Klein, M. (1992), "Supporting Conflict Management in Cooperative Design Teams," *Proceedings of the 11th International Workshop on DAI*, Glen Arbor, MI.
- Kleinman, D. L. and Serfaty, D. (1989), "Team performance assessment in distributed decision-making," in *Proceedings of the Symposium on Interactive Networked Simulation for Training* (Orlando), 22 -27.
- Klimoski, R. and Mohammed, S. (1994), "Team mental model: construct or metaphor," *Journal of Management*, 20, 403-37.
- Kraiger, K., and Wenzel, L. (1997), "Conceptual Development and Empirical Evaluation of Measures of Shared Mental Models as Indicators of Team Effectiveness," in *Team*

- Performance Assessment and Measurement, eds. M. Brannick, E. Salas, and C. Prince, Lawrence Erlbaum Associates, Hillsdale, NJ.
- Langan-Fox, J., Code, S. L., Gray, R., and Langfield-Smith, K. (2002), "Supporting employee participation: Attitudes and perceptions in trainees, employees and teams," *Group Processes and Intergroup Relations*, 5, 53-82.
- Lawler, E. E., and Hackman, J. R. (1969), "Impact of employee participation in the development of pay incentive plans: A field experiment," *Journal of Applied Psychology*, 53, 457-471.
- Lawrence, P. R., & Lorsch, J. W. (1967), "*Organization and environment: Managing differentiation and integration*," Boston: Harvard University, Division Research Graduate School of Business Administration.
- LePine J.A., and Van Dyne L. (1998), "Predicting voice behavior in work groups," *Journal of Applied Psychology*, 83:853-68.
- , Hollenbeck J.R., Ilgen D.R., Colquitt J.A., Ellis A. (2002), "Gender composition, situational strength, and team decision-making accuracy: a criterion decomposition approach," *Organizational Behavior and Human Decision Processes*, 88:445-75.
- Levesque, L. L., Wilson, J. M., & Wholey, D. R. (2001). "Cognitive divergence and shared mental models in software development project teams," *Journal of Organizational Behavior*, 22, 135-144.
- Lim, B-C., and Klein, K. J. (2006), "Team mental models and team performance: A field study of the effects of team mental model similarity and accuracy," *Journal of Organizational Behavior*, 27, 403-418.
- Locke, E. A., and Latham, G. P. (1990), *A theory of goal setting and task Performance*, Englewood Cliffs, NJ: Prentice Hall.
- MacKenzie, Scott. B., Podsakoff, P. M., and Ahearne, M. (1996), Unpublished data analysis. Indiana University School of Business: Bloomington, Indiana.
- , -----, and ----- (1998), "Some Possible Antecedents and Consequences of In-Role and Extra-Role Salesperson Performance," *Journal of Marketing* 62 (July), 87-98.
- , -----, and ----- (1993), "The Impact of Organizational Citizenship Behavior on Evaluations of Salesperson Performance," *Journal of Marketing* 57(January): 70-80.
- , -----, and Julie Beth Paine (1998), "Effects of Organizational Citizenship Behaviors and Productivity on Evaluations of Performance at Different Hierarchical Levels in Sales Organizations," *Journal of the Academy of Marketing Science* 27(4): 396-410.
- , -----, and Richard Fetter (1991), "Organizational Citizenship Behavior and Objective Productivity as Determinants of Managerial Evaluations of Salespersons' Performance," *Organizational Behavior and Human Decision Processes* 50: 123-150.
- Malone, T. W. and Crowston, K. (1994), "The interdisciplinary study of coordination," *ACM Computing Surveys*, 26(1):87-119.
- Marks M.A., Sabella M.J., Burke C.S., and Zaccaro S.J. (2002), "The impact of cross-training on team effectiveness," *Journal of Applied Psychology*, 87:3-13.
- Marks M.A., Zaccaro S.J., and Mathieu J.E. (2000), "Performance implications of leader briefings and team-interaction training for team adaptation to novel environments," *Journal of Applied Psychology*, 85:971-86.
- Marks, M. A., Mathieu, J.E., and Zaccaro, S. J. (2001), "A temporally based framework and taxonomy of team processes," *Academy of Management Review*, 26, 356-376.

- Martins, L.L., Gilson, L.L., and Maynard, M.T. (2004), "Virtual teams: A review of the literature and future directions," Academy of Management Conference (OCIS/OB Divisions); New Orleans, LA.
- Mathieu J.E, Heffner T.S., Goodwin G.F., Cannon-Bowers J.A., and Salas E. (2005), "Scaling the quality of teammates' mental models: equifinality and normative comparisons," *Journal of Organizational Behavior*, 26, 37-56.
- , ----, ----, Salas E., and Cannon-Bowers J.A. (2000), "The influence of SMMs on team process and performance," *Journal of Applied Psychology*, 85:273-83.
- Mathieu, J. E. and Button, S. B. (1992), "An examination of the relative impact of normative information and self efficacy on personal goals and performance over time," *Journal of Applied Social Psychology*, 22, 1758-1775
- McGrath, J E (1964), *Group Composition and Structure. Social Psychology: A Brief Introduction*, Holt, Rinehard and Winston, Inc., New York, pp. 72-86.
- McGrath, J.E. (1984), "*Groups: Interaction and Performance*," Englewood Cliffs, NJ: Prentice-Hall.
- McIntyre R.M., Salas E. (1995), "Measuring and managing for team performance: lessons from complex environments," in *Team Effectiveness and Decision-making in Organizations*, ed. RA Guzzo, E Salas, pp. 9-45, San Francisco, CA: Jossey-Bass.
- Milanovich, D.M., Muniz, E.J., Salas, E., and Cannon-Bowers, J.A. (1999), "Team derailment: An initial examination," Paper presented at the 14th annual meeting of the Society for Industrial and Organizational Psychology, Atlanta, GA.
- Minionis, D.P., Zaccaro, S.J., and Perez, R. (1995), "Shared mental models, team coordination, and team performance," Paper presented at the 10th annual meeting of the Society for Industrial and Organizational Psychology, Orlando, FL.
- Mohammed, S., and Dumville, B. (2001), "Team Mental Models: Expanding Theory and Measurement Through Cross-Disciplinary Boundaries," *Journal of Organizational Behavior*, 22, 89-106.
- Mohammed, S., Klimoski, R., and Rentsch, J. (2000), "The measurement of team mental models: We have no shared schema," *Organizational Research Methods*, 3(2), 123-165.
- Moreland, R. L., Argote, L., and Krishnan, R. (1996), *Socially shared cognition at work: Transactive memory and group performance*, In A. M. Brower (Ed.), What's social about social cognition? Research on socially shared cognition in small groups (pp. 57-84), Thousand Oaks, CA: Sage Publications.
- Morgan, B.B.Jr., Glickman, A.S., Woodward, E.A., Blaiwes, A.S., and Salas, E. (1986), "Measurement of Team Behaviors in a Navy Environment," NTSC Technical report, TR-86-014, (Orlando: Naval Training Systems Centre).
- Neiva, V.F., Fleishman, E.A., and Rieck, A.M. (1978), "Team dimensions: Their identity, their measurement, and their relationships," Technical report. Washington, D.C.: Arro.
- Netemeyer, Richard G., James S. Boles, Daryl O. McKee, and Robert McMurrian (1997), "An Investigation into the Antecedents of Organizational Citizenship Behaviors in a Personal Selling Context," *Journal of Marketing* 61 (June): 85-98.
- Organ, D. W. (1990a), "The motivational basis of organizational citizenship behavior. in Research in organizational behavior, B. M. Staw & L. L. Cummings eds. Vol. 12: 43-72. Greenwich, CT: JAI Press.

- Organ. D. W. (1990b), "The Subtle Significance of Job Satisfaction," *Clinical Laboratory Management Review*, 4, 94-98.
- Organ. D. W. (1988), *Organizational Citizenship Behavior: The Good Soldier Syndrome*. Lexington, MA: Lexington Books.
- Oser, R. L., McCallum, G. A., Salas E. and Morgan, B. (1989), "Toward a Definition of Teamwork: An Analysis of Critical Team Behavior," NTSC technical report no. 90-009 (Orlando: Naval Training Systems Centre).
- Pinto, M. B., Pinto, J. K., and Prescott, J. E. (1993), "Antecedents and Consequences of Project Team Cross-Functional Cooperation," *Management Science*, (39), pp. 1281-1297.
- Pinto, M.B. & Pinto, J.K. (1990), "Project team communication and cross-functional cooperation in new program development," *Journal of Product Innovation Management*, 7: 200-212.
- Podsakoff, Philip M., MacKenzie, Scott B., Paine, Julie B. and Bachrach, Daniel G. (2000), "Organizational Citizenship Behaviors: A Critical Review of the Theoretical and Empirical Literature and Suggestions for Future Research," *Journal of Management*, Vol. 26 Issue 3 : 513 – 564.
- , Michael J. Ahearne, and Scott B. MacKenzie (1997), "Organizational Citizenship Behaviors and Quality and Quantity of Work Group Performance," *Journal of Applied Psychology*, 82 (April), 262-270.
- , and Scott B. MacKenzie (1994), "Organizational Citizenship Behavior and Sales Unit Effectiveness," *Journal of Marketing Research*, 31 (August), 351-363.
- Porter, C.O.L.H., Hollenbeck, J.R., Ilgen, D.R., Ellis, A.P.J., West, B.J., and Moon, H.K. (2003), "Towards understanding backing up behaviors in work teams: The role of personality and the legitimacy of need for backing up others," *Journal of Applied Psychology*, 88, 391-403.
- Prince, C., and Salas, E. (1993), *Training research for teamwork in a military aircrew*, In E.L. Weiner, B.G. Kanki, and R.L. Helmrick (eds.), *Cockpit research management* (pp. 337-366). Orlando, FL: Academic Press.
- Rathnam, Sukumar, Mahajan, Vijay, and Whinston, Andrew B. (1995), "Facilitating coordination in customer support teams: a framework and its implications for the design of information technology," *Management Science*, 41(12), December, 1900-1921.
- Rentsch, J. R. and Hall, R. J. (1994), *Members of great teams think alike: A model of team effectiveness and schema similarity among team members*, In M. M. Beyerlein & D. A. Johnson (Eds.), *Advances in interdisciplinary studies of work teams: Theories of self-managing work teams* (Vol. 1, pp. 223-262). Greenwich, CT: JAI Press.
- and Klimoski, R. J. (2001), "Why Do Great Minds Think Alike? Antecedents of Team Member Schema Agreement," *Journal of Organizational Behavior*, 22, March, pp. 107-120.
- and Zelno, J. (2003), "The role of cognition in managing conflict to maximize team effectiveness: A team member schema similarity approach," in *International handbook of organization and cooperative teamworking*, eds. M. A. West, K. Smith, & D. Tjosvold, West Sussex, England: John Wiley & Sons, Ltd., 131- 150.
- Rouse, W. B., and Morris, N. M. (1986), "On looking into the black box: Prospects and limits in the search for mental models," *Psychological Bulletin*, 100, 3, 349-363.

- , Cannon-Bowers, J. A., and Salas, E. (1992), "The role of mental models in team performance in complex systems," *IEEE Transactions on Systems, Man, and Cybernetics*, 22(6), 1296-1307.
- Sarin, Shikhar, and V. Mahajan, (2001), "The Effect of Reward Structures on the Performance of Cross-Functional Product Development Teams," *Journal of Marketing*, Vol. 65, No. 2, 35-53.
- Scheflen, K. C., Lawler, E. E., and Hackman, J. R. (1971), "Long-term impact of employee participation in the development of pay incentive plans: A field study revisited," *Journal of Applied Psychology*, 55, 182-186.
- Schermerhorn, John R. Jr. (1975), "Determinants of Interorganizational Cooperation," *Academy of Management Journal*, 18 (December), 846-56.
- Schnake, Mel (1991), "Organizational Citizenship: A Review, Proposed Model, and Research Agenda," *Human Relations*, 44 (July), 735-759.
- Schvaneveldt, R. W. (1990), *Pathfinder associative networks: Studies in knowledge organization*, Norwood, NJ: Ablex.
- Sethi R. (2000), "New product quality and product development teams," *Journal of Marketing*, 64:1-14.
- Sherif, M. (1962), *Intergroup relations and leadership*, New York: Wiley.
- Simon, H. A. (1964), "On the concept of organizational goals," *Administrative Science Quarterly*, 9, 1-22.
- Smith, C. Ann, Dennis W. Organ, and Janet P. Near (1983), "Organizational Citizenship Behavior: Its Nature and Antecedents," *Journal of Applied Psychology*, 68, 655-663.
- Smith-Jentsch, K. A., Campbell, G. E., Milanovich, D. M., & Reynolds, A. M. (2001), "Measuring teamwork mental models to support training needs assessment, development, and evaluation: Two empirical studies," *Journal of Organizational Behavior*, 22, 179-194.
- , Mathieu, J.E., and Kraiger, K. (2005), "Investigating linear and interactive effects of SMMs on safety and efficiency in a field setting," *Journal of Applied Psychology*, 90, 523-535.
- , Cannon-Bowers, J., Salas, E., & Milanovich, D. (1999), "Planning, SMMs, and coordinated performance: An empirical link is established," *Human Factors*, 41, 61-71.
- Stout, R.J., Salas, E. and Carson, R. (1994), "Individual task proficiency and team process: what's important for team functioning," *Military Psychology*, 6, 177-192.
- , Cannon-Bowers, J., Salas, E., & Milanovich, D. (1999), "Planning, SMMs, and coordinated performance: An empirical link is established," *Human Factors*, 41, 61-71.
- Sundstrom, E., Busby, P.L., McClane, W.E., and Bobrow, W.S. (1994), "Group processes and performance: Interpersonal behaviors in problem-solving," Paper presented at the meeting of Society for Industrial and Organizational Psychology, Nashville, TN.
- Tesluk, P. E et al., (1997), "Influences of organizational culture and climate on individual creativity," *Journal of Creative Behavior*, 31, 27-41.
- and Mathieu, J. E. (1999), "Overcoming roadblocks to effectiveness: Incorporating management of performance barriers into models of work group effectiveness," *Journal of Applied Psychology*, 84, 200-217.

- Thompson, J. D. (1967), "*Organizations in action*," New York: McGraw-Hill.
- Tjosvold, D., West, Michael A., and Smith, Ken G. (2003), "Teamwork and Cooperation: Fundamentals of Organizational Effectiveness," in *International handbook of organization and cooperative teamworking*, eds. M. A. West, K. Smith, & D. Tjosvold, West Sussex, England: John Wiley & Sons, Ltd., 3-8.
- Trist, E. (1977), "Collaboration in work settings: a personal perspective," *Journal of Applied Behavioral Science*, 73, 268-278.
- Van de Ven, A.H., Delbecq, A.L. and Koenig, R., (1976), "Determinants of coordination modes within organizations," *American Sociological Review*, 41(2), 1976, pp. 41-74.
- Wageman, R. (1995). Interdependence and group effectiveness. *Administrative Science Quarterly*, 40, 145- 180.
- Weick, K. (1990), "The Vulnerable System: An Analysis of the Tenerife Air Disaster," *Journal of Management*, (16:3), pp. 571-593.
- (1993), "The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster," *Administrative Science Quarterly*, 38(4), pp. 628-652.
- and Roberts, K. (1993), "Collective Mind in Organizations: Heedful Interrelating on Flight Decks," *Administrative Science Quarterly*, 38(3), pp. 357-381.
- Weingart, L. R. (1997), "How did they do that? The ways and means of studying group process," *Research in Organizational Behavior*, 19, 189-239.
- Weldon, E., and Weingart, L. R. (1993), "Group goals and group performance," *British Journal of Social Psychology*, 32: 307-334.
- , Jehn, K. A., and Pradhan, P. (1991), "Processes that mediate the relationship between a group goal and improved group performance," *Journal of Personality and Social Psychology*, 61, 555-569.
- Williams, Larry J. and Stella E. Anderson (1991), "Job Satisfaction and Organizational Commitment as Predictors of Organizational Citizenship and In-role Behavior," *Journal of Management*, 17 (September), 601-617.
- Zaheer, S., Albert, S., and Zaheer, A. (1999), "Time scales and organizational theory," *Academy of Management Review*, 24: 725-741.

APPENDIX A

CONSTRUCT SCALES

Measures for Planning Processes

To what extent does our team actively work to ... **Please circle one**

Goal Specification

Ensure that everyone on our team clearly understands our goals? 1 2 3 4 5

Link our goals with the strategic direction of the organization? 1 2 3 4 5

Prioritize our goals? 1 2 3 4 5

Set specific timelines for each of our goals? 1 2 3 4 5

Strategy Formulation

Develop an overall strategy to guide our team activities? 1 2 3 4 5

Prepare contingency (“if-then”) plans to deal with uncertain situations? 1 2 3 4 5

Know when to stick with a given working plan, and when to adopt a different one? 1 2 3 4 5

Specify the sequence in which work products should be accomplished? 1 2 3 4 5

Measures for Action Processes

To what extent does our team actively work to ...

Please circle one

Team Monitoring & Backup:

Develop standards for acceptable team member performance? 1 2 3 4 5

Balance the workload among our team members? 1 2 3 4 5

Assist each other when help is needed? 1 2 3 4 5

Inform team members if their work does not meet standards? 1 2 3 4 5

Seek to understand each other's strengths and weaknesses? 1 2 3 4 5

Team Coordination

Communicate well with each other? 1 2 3 4 5

Smoothly integrate our work efforts? 1 2 3 4 5

Coordinate our activities with one another? 1 2 3 4 5

Re-establish coordination when things go wrong? 1 2 3 4 5

Have work products ready when others need them? 1 2 3 4 5

1= Not at all; 2= Very Little; 3= To Some Extent; 4= To a Great Extent; 5= To a Very Great Extent

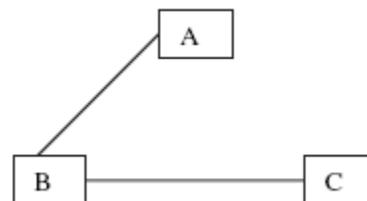
APPENDIX B

PATHFINDER SIMILARITY SCORES

(adapted from Lim and Klein 2006)

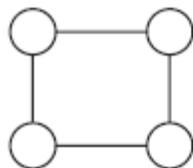
To calculate the similarity of two mental models, Pathfinder does the following steps: First, the software takes in raw scores (i.e., pairwise comparisons) in a form of upper or lower triangle matrix and generates a network for each member. In analyses, a link between two concepts in the Pathfinder network is only included if and only if the link is a minimum length path between the two concepts (Branaghan, 1990). For example, the following is the Pathfinder network for the three nodes (i.e., A, B, and C) given their pairwise ratings, based on a 1–7 response scale ranging from 1:‘Related,’ to 7:‘Unrelated’. In this case, the link between A and C does not exist simply because A to C via B is the minimum length path (i.e., $1 + 3 = 4$ which is less than 5, the direct path from A to C). This allows the PF network to capture the essential links by reducing the ‘noise’ in the raw proximity data.

	A	B	C
A	-		
B	1	-	
C	5	3	-



Secondly, Pathfinder compares two networks at a time to assess their similarity. The similarity score is calculated using the following formula $(X/[T-X])$ where X is the number of common links between the two networks and T is the total number of links in both networks. For example: Network A shows four links. Network B shows three of the same links. Hence, the Network A–Network B similarity score is $(3/[7-3]) = 0.75$, where 3 is the number of common links between the two networks and 7 is the total number of links in both networks.

Network A



Network B

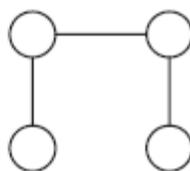


TABLE 2.1**Study Variable Descriptive Statistics and Correlations**

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1. Taskwork SMMs	0.53	0.19									
2. Teamwork SMMs	0.58	0.17	0.20**								
3. Planning processes	4.8	1.66	0.03	-0.24**							
4. Action processes	5.5	0.99	0.11	-0.07	0.64**						
5. Team Performance	0.37	0.15	0.26**	0.14	0.03	0.14					
6. Company experience (months)	140.98	69.78	0.01	-0.15	0.21*	0.00	-0.19				
7. Industry experience (months)	93.63	63.36	-0.03	-0.26**	0.09	-0.14	-0.27**	0.75**			
8. Sales experience (months)	52.85	36.28	0.17	0.05	0.02	-0.11	0.03	0.42**	0.48**		
9. Territory experience (months)	36.37	28.85	0.26**	0.09	-0.09	-0.15	0.09	0.25**	0.15	0.36**	
10. Hours worked	44.85	8.93	0.05	-0.09	0.32**	0.20*	-0.07	0.06	-0.10	-0.20*	0.06

* $p < .05$, ** $p < .01$; Two tailed significance

TABLE 2.2A
MEDIATION OF ACTION PROCESSES

Relationships	Standardized Beta Coefficient	T value	R- square
Planning → Action	0.665	9.89***	0.466
Planning → Performance	0.160	0.23	0.021
Planning → Action	0.586	5.84***	0.510
Action → Performance	0.169	1.66*	0.109
Planning → Performance	0.034	0.23	

* p<.10, ** p<.05, *** p<.01

TABLE 2.2B

MAIN EFFECTS OF PLANNING & SMMS ON ACTION PROCESSES

Relationships	Standardized Beta Coefficient	T value
CONTROL VARIABLES		
Company Experience → Action	0.065	0.50
Industry Experience → Action	-0.212	1.56
Sales Experience → Action	-0.060	0.61
Territory Experience → Action	-0.090	1.04
Number of hours Worked → Action	-0.053	0.74
Taskwork SMMs → Action	0.122	1.97**
Teamwork SMMs → Action	0.021	0.26
Planning → Action	0.663	7.84***

R-Square = 0.461

* p<.10, ** p<.05, *** p<.01

TABLE 2.2C

FULL MODEL - MAIN EFFECTS

Relationships	Standardized Beta Coefficient	T value
CONTROL VARIABLES		
Company Experience → Action	-0.065	0.53
Industry Experience → Action	-0.213	1.83*
Sales Experience → Action	-0.059	0.70
Territory Experience → Action	-0.090	1.20
Number of hours Worked → Action	-0.053	0.74
Taskwork SMMs → Action	0.122	2.02**
Teamwork SMMs → Action	0.021	0.29
Planning → Action	0.663	7.39***
Taskwork SMMs → Performance	0.228	2.59**
Teamwork SMMs → Performance	0.110	1.39
Action → Performance	0.124	1.69*

* p<.10, ** p<.05, *** p<.01

TABLE 2.2D

MODERATING EFFECTS OF SMMS ON PLANNING → ACTION PROCESSES

Relationships	Standardized Beta Coefficient	T value
CONTROL VARIABLES		
Company Experience → Action	0.120	1.12
Industry Experience → Action	-0.256	2.33**
Sales Experience → Action	-0.069	0.80
Territory Experience → Action	-0.112	1.49
Number of hours Worked → Action	-0.071	1.09
Taskwork SMMs → Action	0.154	2.30**
Teamwork SMMs → Action	0.008	0.13
Planning → Action	0.586	6.50
Taskwork * Planning → Action	-0.171	1.83*
Teamwork * Planning → Action	0.205	2.00**

R-Square = 0.510

* p<.10, ** p<.05, *** p<.01

TABLE 2.2E
FULL MODEL

Relationships	Standardized Beta Coefficient	T value
CONTROL VARIABLES		
Company Experience → Action	-0.256	1.08
Industry Experience → Action	0.121	2.15**
Sales Experience → Action	-0.069	0.71
Territory Experience → Action	-0.112	1.40
Number of hours Worked → Action	-0.071	1.14
Taskwork SMMs → Action	0.153	2.68**
Teamwork SMMs → Action	0.008	0.10
Planning → Action	0.586	6.76***
Taskwork * Planning → Action	-0.171	1.99**
Teamwork * Planning → Action	0.204	1.84*
Taskwork SMMs → Performance	0.226	2.84**
Teamwork SMMs → Performance	0.091	0.97
Action → Performance	0.168	2.01**
Taskwork * Action → Performance	0.069	0.73
Teamwork * Action → Performance	-0.131	1.32

* p<.10, ** p<.05, *** p<.01

Figure 2.1 : CONCEPTUAL MODEL FOR THE INFLUENCE OF SHARED MENTAL MODELS ON TEAM PROCESSES AND TEAM PERFORMANCE

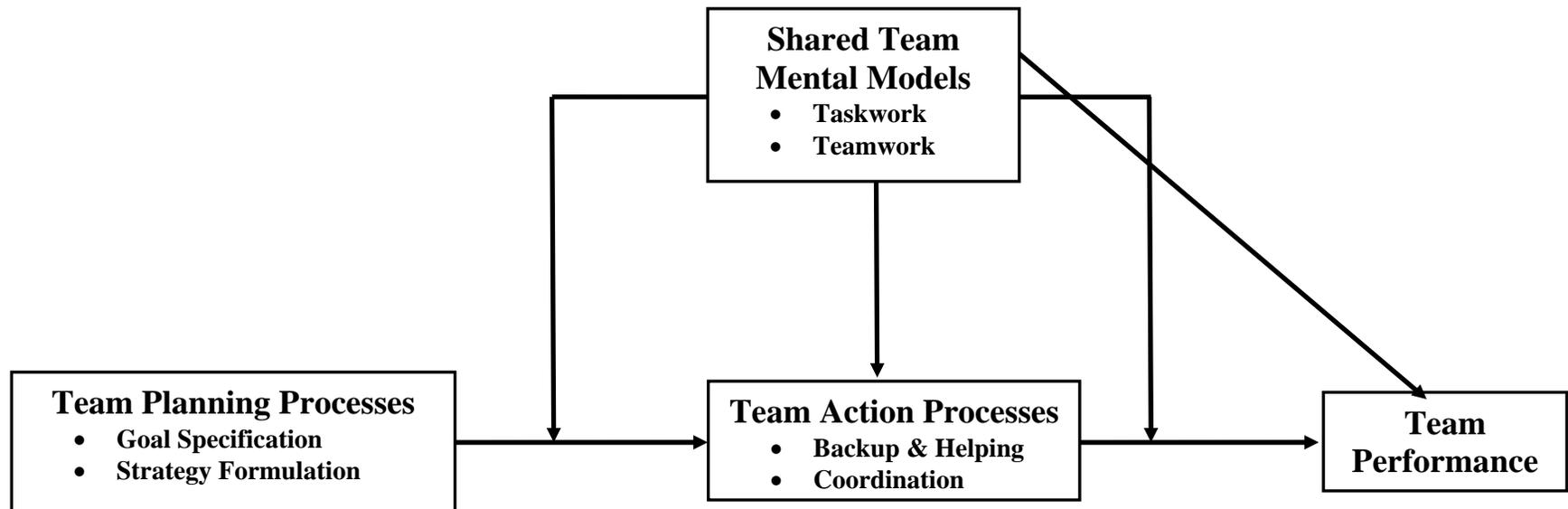


FIGURE 2.2
FULL MODEL

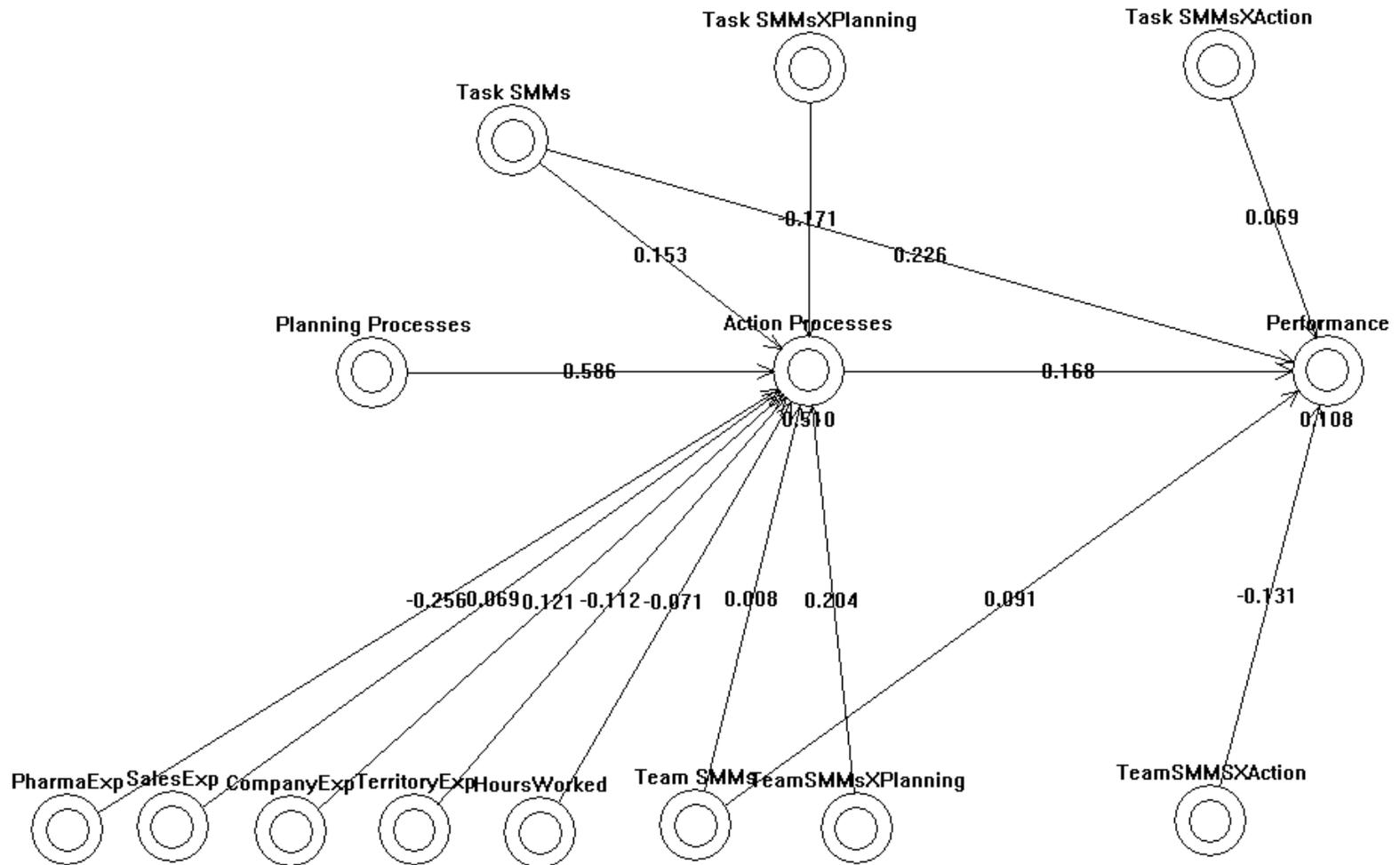


FIGURE 2.3
MEDIATION OF ACTION PROCESSES

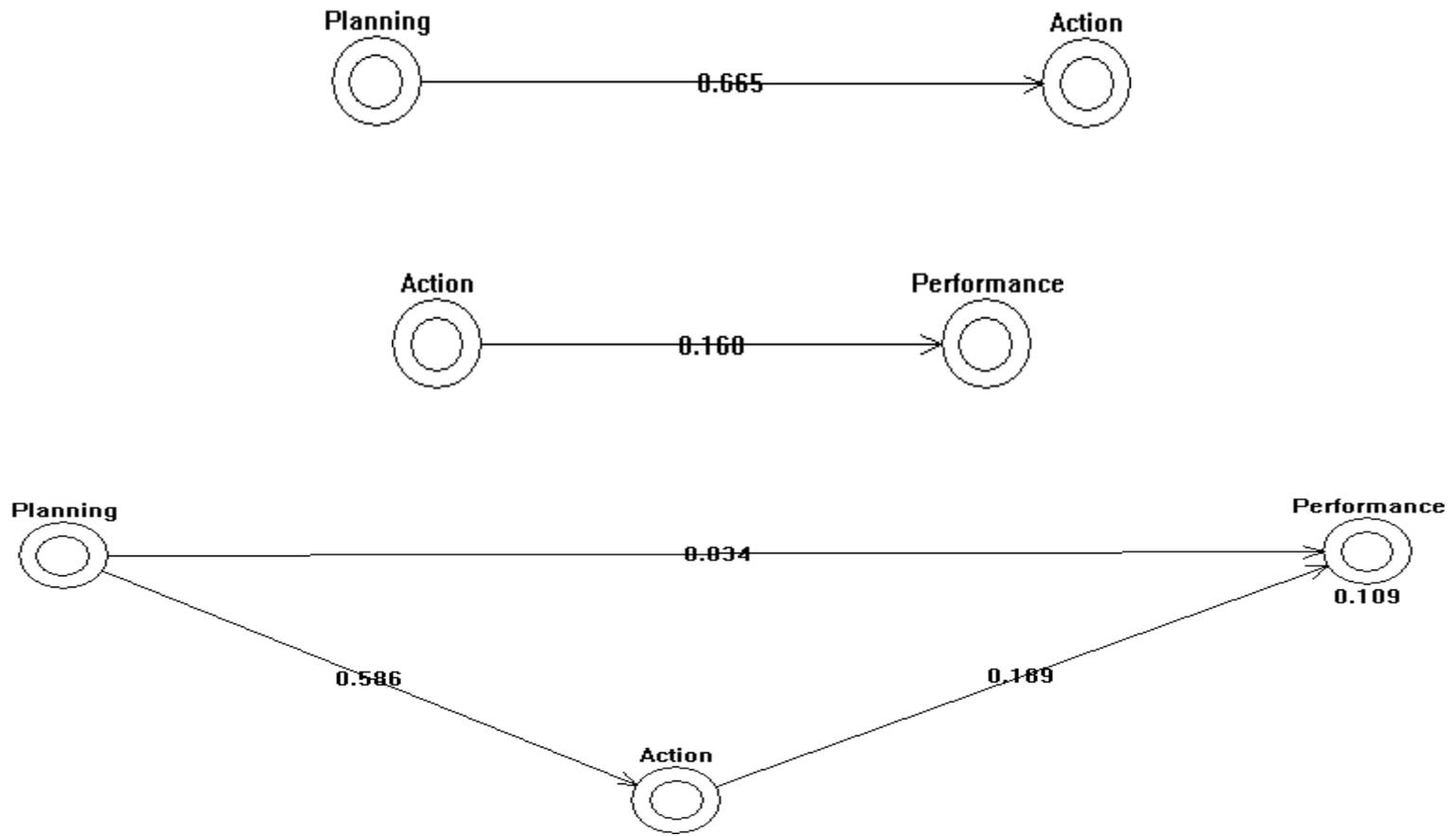


FIGURE 2.4

INTERACTION OF SMMs AND PLANNING PROCESSES

