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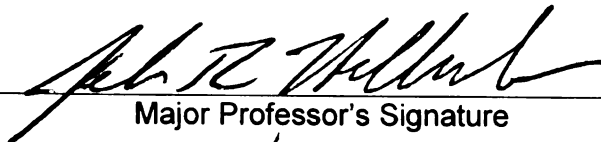
TEAM STRUCTURE AS PRECURSOR OF INDIVIDUALS' SELF
CONSTRUALS – A MULTIDIMENSIONAL AND MULTI-LEVEL
INVESTIGATION

presented by

Matthias Spitzmueller

has been accepted towards fulfillment
of the requirements for the

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Behavior/Human Resource
Management


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ABSTRACT

TEAM STRUCTURE AS PRECURSOR OF INDIVIDUALS' SELF CONSTRUALS – A MULTIDIMENSIONAL AND MULTI-LEVEL INVESTIGATION

By

Matthias Spitzmueller

Past research on teams has identified a number of structural dimensions as powerful predictors of team functioning and team performance (Campion, Medsker, & Hicks, 1993; Hackman & Wageman, 1995). What the different approaches to team structure have in common is that they all vary the extent to which individuals are tightly coupled, loosely coupled, or decoupled from other team members. Previous research has largely assumed that extreme forms of coupling are generally desirable. This has been questioned, however, by more recent findings which indicate that extreme forms of coupling in teams may also have undesirable consequences. In this dissertation, I will attempt to resolve these discrepant findings by investigating the social psychological consequences of different degrees of coupling in teams. Specifically, I will examine how team structures with varying degrees of coupling relate to individuals' self-construals, that is, how coupling in teams predicts the extent to which individuals define themselves as independent of others or related to others. Drawing from optimal distinctiveness theory, I predict that individuals will strive to accomplish a state of optimal distinctiveness, which can best be realized in loosely coupled team structures. Moreover, consistent with structural contingency theory (Moon et al., 2004), I predict that culturally-based individual differences, personality variables, and cognitive ability moderate the influence of team structure on individuals' perceptions of optimal distinctiveness.

To my parents – Thank you for encouraging me to dream and to pursue this journey.

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INTRODUCTION

Research on team structure has been studied under a variety of different approaches. These different approaches generally focus on different dimensions of team structure. For example, Wageman (1995) examined the role of task interdependence in teams, Manz and Sims (1987) and Kirkman and Rosen (1999) chose to focus on team self-management. Van der Vegt, Emans, and Van de Vliert theorized that outcome interdependence constitutes another central dimension of team structure, and Hedlund, Ilgen, and Hollenbeck (1998) focused on the role of the communication medium in teams for decision making accuracy.

Johnson and colleagues recently provided a useful classification system for these different dimensions of team structure, proposing that teams can be classified by their degree of complexity and energy that are required to maintain their social structure (Johnson, Hollenbeck, Humphrey, Ilgen, Jundt, & Meyer, 2006). They asserted that tight horizontal connections between team members, tight vertical connections between team members and team leaders, and collective goals and rewards create the most complex form of coupling between team members. A similar classification scheme for the complexity of coupling has been provided in the field of organization theory by Weick (Weick, 1976; Orton & Weick 1990), who differentiated between organizational units which are decoupled, loosely coupled, or tightly coupled.

Research on team structure has generally advocated the use of extreme forms of coupling in teams. For example, Wageman (1995) reported positive effects of tight horizontal coupling for team outcomes. Similarly, Manz and Sims (1987), Kirkman and Rosen (1999) and Spreitzer (1995) found that vertical decoupling between team members

and team leaders is associated with superior individual and team outcomes, such as productivity, proactive work behaviors, customer satisfaction and job satisfaction. Indeed, when studying the results of this research, one would expect that organizations would have implemented or aspire to implement team structures which provide tight horizontal coupling between team members and decoupling between team members and team leaders.

Interestingly, however, this runs counter to common practice in organizations. Most organizations have started to create loosely coupled teams with intermediate degrees of horizontal coupling between team members and intermediate degrees of vertical coupling between a leader and team members. Hackman (2009) provided an insightful explanation for why organizations tend to employ loosely coupled team structures, shying away from the extreme forms of coupling advocated by most of previous research on team structure:

The challenge for a leader, then, is to find a balance between individual autonomy and collective action. Either extreme is bad, though we are generally more aware of the downside of individualism in organizations, and we forget that teams can be just as destructive by being so strong and controlling that individual voices and contributions and learning are lost (p. 105).

And indeed, other more recent research suggests that the preference for loosely coupled team structures may be normative as well as descriptive. For example, using a command and control simulation in a laboratory study, Ellis et al. (2003) showed that team learning was optimized in a hybrid team structure which blended a tightly coupled functional structure with a decoupled divisional structure. Restated, team learning was

superior in a loosely coupled team structure which avoided the disadvantages of tightly coupled or decoupled team structures. Moreover, recent research on structural contingency theory and structural adaptation theory (Hollenbeck et al., 2002; Johnson et al., 2006) showed that the effectiveness of any team structure depends on the external fit of the team structure with its environment and on the internal fit of the team structure with team member characteristics. Again, this negates the notion that extreme forms of coupling in teams are superior per se.

Overall, these findings call for more research on the consequences of different degrees of coupling in teams. In this dissertation, I will adopt a different approach to studying the consequences of different degrees of coupling in teams by focusing on the social psychological consequences of tightly coupled, loosely coupled, and decoupled team structures. Indeed, we know relatively little about the psychological consequences of coupling in teams, and how these consequences affect individuals' ability to function effectively as team members. In particular, what is missing is a better understanding of the influence of different degrees of coupling in teams on individuals' self-construals, and how this effect impacts individuals' ability to function effectively as team members. With the term self-construal, I am referring to "the extent to which the self is defined as being intertwined and connected to others (an interdependent self-construal) and separate, unique, and autonomous from others (an independent self-construal)" (Holmvall & Bobocel, 2008, p. 150). This is a notable omission when we consider that seminal research on organizational structure has often addressed the important role of structure as an antecedent of individuals' self-construals.

For example, Blau noted that the structure of social positions among which people are distributed exerts important influences on social life and on how individuals think of themselves as members of larger collectives (Blau, 1977). Similarly, Weick posited that organizational structures determine the level of “preoccupation with linguistic work and the social construction of reality” (Weick, 1976, p. 13). Both Blau and Weick emphasize the role of structure for individuals’ self-construals and for meaning creation – an important aspect of structure which has generally not been addressed in team research (cp. Parker, 2003; Sewell, 1998 for noteworthy exceptions).

To summarize, I argue that our understanding of team structure could be improved by investigating the social psychological implications of different degrees of coupling in teams, that is, by investigating how different degrees of coupling between team members are associated with team members’ perceptions of belongingness and distinctiveness. I propose that loosely coupled team structures allow individuals to attain a state of optimal distinctiveness which maximizes individuals’ ability to function effectively at work.

Contributions

Given the important role of team structure for meaning creation in teams, and also noting the problems associated with previous research on team structure, I intend to make the following contributions to research on different degrees of coupling in teams.

First, this is one of the first empirical studies which investigates loose coupling in teams as a solution to the problems associated with extreme forms of coupling, acknowledging the common organizational practice to create loosely coupled teams. This dissertation adds to our understanding of team structures by proposing that individuals

require an optimal balance between elements of tightly coupled social systems and decoupled social systems.

Second, I will explain the preference for loosely coupled team structures by focusing on the social psychological consequences of different degrees of coupling in teams. Drawing on optimal distinctiveness theory (Brewer, 1991), I propose that team structure will predict individuals' self-construals, that is, perceptions of belongingness and distinctiveness. Loosely coupled team structures will allow team members to experience a state of optimal distinctiveness, which will in turn predict a range of outcomes, including subjective well-being, self-efficacy, voice behaviors, learning, job performance, and team identification. By investigating the social psychological mechanisms through which team structure affects these outcomes, this study is integrating a structural approach to teams with a social psychological approach to team behavior. Blending these two approaches provides us with a powerful perspective to examine the complex interplay of structure and cognition and behavior in teams.

Third, drawing from structural contingency theory and structural adaptation theory (Hollenbeck et al., 2002, Moon et al., 2004), I investigate how the social psychological implications of different configurations of team structure depend on the internal fit of the team structure with team member characteristics. This is consistent with early theorizing on structural contingency theory (Burns & Stalker, 1961), which argued that there is no one best way to organize, and that the effectiveness of organizational structures depends on the environment in which the organization is operating and on the fit of structure with internal characteristics of the organization.

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Fourth, this study provides an account of the consequences of two different dimensions of team structure, both of which vary the degree of coupling in teams. Specifically, this study investigates how team structure affects optimal distinctiveness on the individual level of analysis, and how this in turn predicts a broad range of criteria.

Finally, findings will inform practitioners on how to design work teams such that they allow individuals to function effectively, yet at the same time also satisfy their psychological needs for both assimilation and uniqueness.

Overview

My dissertation will be structured in the following manner. First, I will review relevant research on organizational structure and team structure, focusing on the role of structure for individuals' self-construals, behavior, and ultimately, performance. This will be followed by a summary of optimal distinctiveness theory, which will serve as the dominant theoretical framework to guide my hypothesis development. Second, drawing from structural contingency theory (Burns & Stalker, 1961; Hollenbeck et al., 2002), I will develop hypotheses on three sets of relationships, including the relationships of team structure with individuals' self-construals; the moderating role of individual differences in these relationships; and the relationships of individuals' self-construals with outcomes. Figure 1 summarizes the overall model of this dissertation, Figure 2 organizes the model by levels, differentiating between team- and individual-level of analysis. Third, I will empirically test these hypotheses utilizing data obtained from a laboratory study. Fourth, I will discuss the theoretical and practical implications of my findings.

Figure 1. *Summary of Overall Model – Organized by Level*

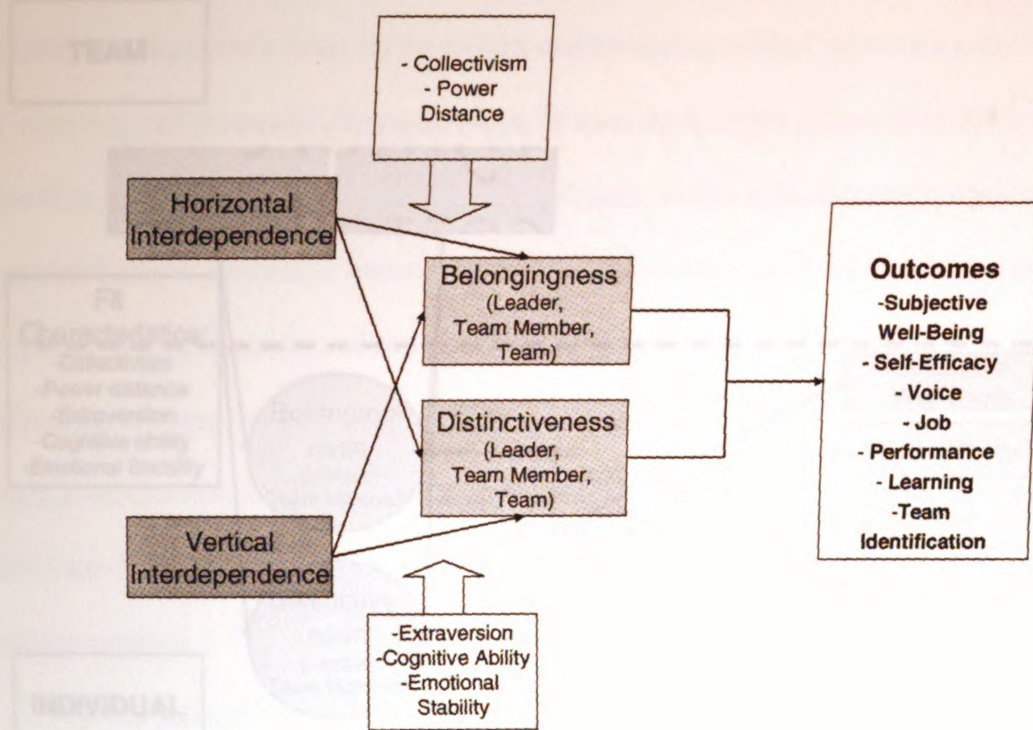
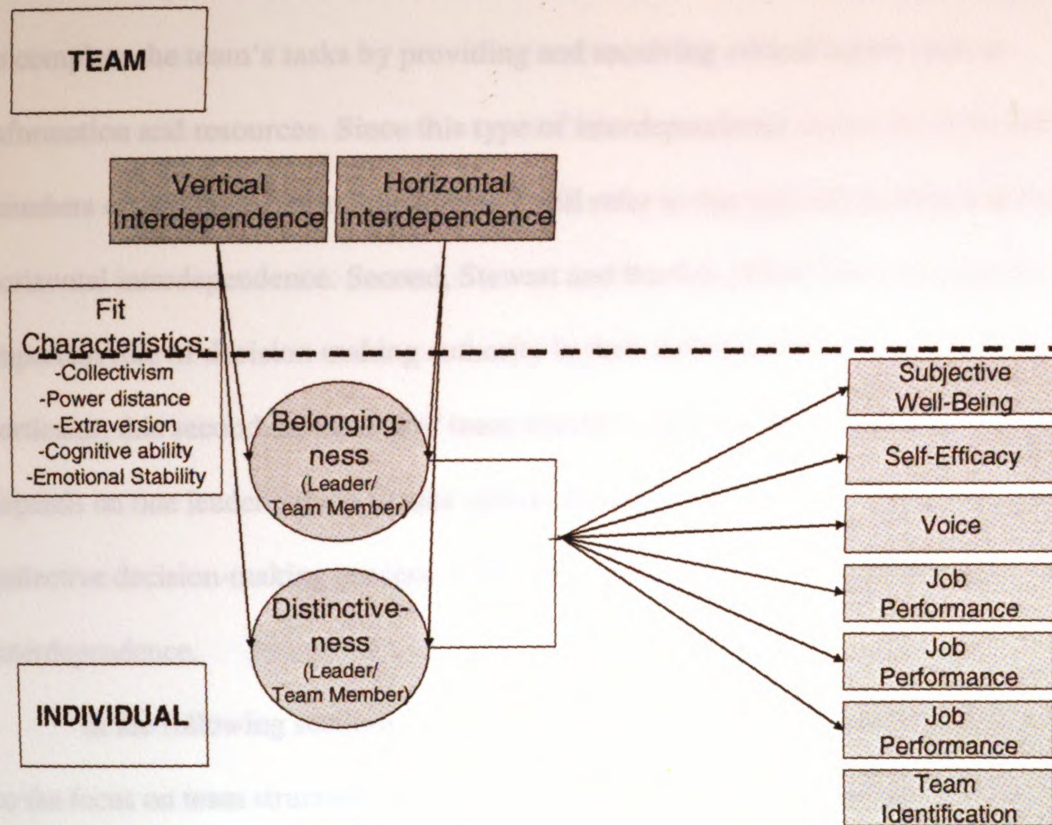


Figure 2. Summary of Overall Model – Organized by Level



LITERATURE REVIEW

On a general level, organizational structure describes how “large numbers of persons are differentiated into smaller groups as well as how the independent actions of these differentiated groups are coordinated” (Hollenbeck et al., 2002, p. 600). Drawing from the work of Jones (1995) and Stewart and Barrick (2000), I define team structure as the configuration of relationships with respect to the allocation of tasks, responsibilities, and authority. This definition emphasizes the important role of interdependent relationships between team members as the building block of team structure. It also points to two central dimensions of team structure which have received most attention in

previous research: First, it points to the critical role of task interdependence, which reflects the degree to which team members initiate and receive interdependencies in order to complete the team's tasks by providing and receiving critical inputs such as information and resources. Since this type of interdependence occurs between team members on the same hierarchical level, I will refer to this type of interdependence as horizontal interdependence. Second, Stewart and Barrick (2000) acknowledged the important role of decision making authority in their definition of team structure. In particular, this second dimension of team structure describes the extent to which the team depends on one leader person to take critical decisions, or whether the team engages in a collective decision-making process. I will refer to this type of interdependence as vertical interdependence.

In the following sections, I review the literature relevant to the current study. Due to the focus on team structure as a precursor of individuals' self-construals, I will only review theories or concepts on organizational structures which are relevant to these topics and thus inform my theory and hypothesis development. After reviewing the relevant theories of structures on the macro and meso level of analysis, I will introduce optimal distinctiveness theory as a theoretical framework which will guide the development of my hypotheses on the effects of team structure for individuals' self-construals and performance.

Literature Review of Structure

In this section, I will review two literatures which have been influential for research on structure as an antecedent of individuals' self-construals in organizations. The first of these two streams represents macrolevel research on the effects of

organizational structure on cognitive and behavioral patterns in organizations (i.e., Barnard, 1938; Berger & Luckman, 1966; Burns & Stalker, 1961; Davis, 1949; Giddens, 1979; Merton, 1957; Parsons, 1960; Weber, 1964). This literature has developed largely independent of a second stream of research on structure on the meso level of analysis, which has investigated the nature of interdependent work structures and their effects on cognition and behavior. This research was most heavily influenced by the work of Deutsch (1949) on social interdependence. Reviewing these two streams of research will lay the ground for the discussion of the two subdimensions of team interdependence which I will focus on in this dissertation: horizontal interdependence and vertical interdependence.

Macrolevel Theories of Organizational Structure

Research in the field of organization theory has produced a wealth of different approaches to the topic of organizational structure. Not only is the sheer number of these approaches difficult to manage, it is also the diversity of these approaches which makes a concise summary of this literature practically impossible. Thus, the subsequent review of macrolevel research on organizational structure should not be viewed as an exhaustive summary of this literature. Instead, I will focus on selected research streams which are central to this study, organizing these approaches in three broad categories. These three categories will include rational systems theories, structuralist accounts, and dialectic approaches to the study of organizational structure.

Rational Systems Approaches

Early research in the emerging field of organization science has generally viewed organizational structure as a vehicle to maximizing organizational efficiency. For

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example, Fayol (1930) suggested that organizations could become more efficient by relying on organizational structures in which individuals with similar functional areas of expertise are grouped together in the same organizational units. This suggestion has influenced subsequent theorizing in organizational theory, for example the writings of Burns and Stalker (1961) on mechanistic organizational structures or Hollenbeck et al.'s (2002) discussion of functional structures on the group level of analysis.

Also in the tradition of rational systems theories, Weber (1946) developed a theory of organizational bureaucracy which outlined principles of an efficient organizational structure, including the principles of hierarchy of offices and fixed division of labor. According to Weber, bureaucratic organizational structures as the most efficient form of organizing have replaced more archaic work structures in which individual abilities, skills, and preferences defined work roles, that is, they have replaced work structures in which individual characteristics of employees were not separated from work roles.

Structuralist Approaches

According to rational systems theories, the consequences of organizational structures on individuals' perceptions of their group membership and their perceptions of interpersonal relationships with others are largely a by-product of the more important effects of organizational structure on organizational efficiency.

This changed with the emergence of structuralism as a popular theoretical framework in sociology (Levi-Strauss, 1958). At the most general level, structuralism refers to any approach which emphasizes the effect of structure on social life over an effect with the reversed causality. Thus, this approach places organizational structure

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center stage to describe how individuals construct meaning in organizational life. This represents a major shift in organizational theorizing, evidenced by the change in perspective from a rational systems approach with its eminent focus on organizational efficiency, to a theoretical perspective which attempted to understand the social psychological implications of organizational structure. I will review three theoretical approaches within structuralism in the following paragraphs in order to exemplify this change in perspective, namely the work of Davis (1949), Merton (1957), and Parsons (1960).

According to Davis (1949) and Scott (2002), structure has several layers. First, a normative structure contains values, norms, and role expectations for individuals. A second layer of structure consists of cultural-cognitive structures which comprise shared beliefs and understandings of central elements of organizational life. These schemas can help employees in their collective sensemaking process as organizational members. Finally, a behavioral component constitutes the third layer of structure.

Davis argued that the normative structure of organizations imposes important constraints on the two other structural layers such that the cognitive schemas and behavioral options available to employees are determined by the normative structure. According to this perspective, team structures (as elements of the normative structure) play an important role in the creation of meaning in organizational life by channeling individuals' cognition, and ultimately, their behavior.

Merton's work on social theory and social structure has provided us with another influential perspective in the structuralist tradition, investigating how structure can function as an antecedent of conflict and deviant behavior in organizations (Merton,

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1957). According to Merton, organizational conflict and deviance can best be understood by investigating the structure of relations between individuals and groups. Merton suggested that such a structuralist perspective should replace a more traditional understanding of organizations according to which conflict and deviance are the results of the actions of innately aggressive individuals. Thus, consistent with the general theme of structuralism, Merton viewed organizational structure as the primary predictor of important cognitive and behavioral patterns in organizations.

The third and final perspective of structuralism which I am going to introduce is Parsons' theory of structure functionalism (Parsons, 1960). In this grand theory, he developed a general analytic model which can be used to analyze the structure and ultimately the viability of collectives of all sizes. He proposed that all social systems have certain functions which have to be performed if the social system is to survive. These functions are adaptation, goal attainment, integration, and latency (also frequently referred to as AGIL paradigm). He continued to discuss the roles that individuals have to assume in order to perform these functions, arguing that these roles are predefined by accepted norms and standards in the respective collective. Thus, Parsons conceptualized individual behavior as a function of predefined roles which operate in the service of functional requirements to secure system survival.

Dialectic Approaches

Despite the important differences between rational systems approaches and structuralist approaches to organizations, both approaches share the emphasis on the pervasive influence of organizational structure on individuals. More recent approaches to structure, however, have advocated a more dynamic understanding of the relationship

between structure and individual cognition and behavior, suggesting a complex and reciprocal relationship between structure and meaning creation. In this section, I will discuss two prominent dialectic approaches, namely Berger and Luckmann's work on the social construction of reality (Berger & Luckmann, 1966) and Giddens's theory of structuration (Giddens, 1984).

Similar to research in the structuralist tradition, Berger and Luckmann emphasize the powerful influence of institutional structures on individuals' cognition and behavior. They define institutions as the result of reciprocal typifications of habitualized actions by at least two actors. Put differently, the repeated performance of certain behaviors teaches others how to interpret this behavior, that is, others are creating lasting expectations of a logical sequence of actions. As such, individuals are developing cognitive schemas with which they can make sense of their environments. Thus, institutions control human conduct by predefining patterns of conduct. These patterns channel human behavior and cognition in specific directions, limiting the flexibility of individuals operating in institutionalized environments.

Despite the apparent focus on the pervasive effects of institutionalized structures on human cognition and behavior, Berger and Luckmann's approach is also remarkably different from structuralist approaches. What sets their approach apart from structuralist approaches is the recognition that human behavior is just as much a product of institutionalized structures as these structures are a product of humans, or, as Berger and Luckmann put it, society should best be viewed as a human product just as much as human cognition and behavior should best be viewed as a product of institutionalized structures. By emphasizing the dialectic relationship between institutionalized structures

and human behavior, Berger and Luckmann break with structuralistic approaches which proposed a unidirectional effect of structure on behavior.

Further elaborating on the dialectic approach advocated by Berger and Luckmann, Giddens (1984) proposed a theory of structuration in which he noted that structural forces change social life into something more than random individual acts. Yet, at the same time, he maintained that social life is also not entirely determined by social forces. Put in different words, social life is not merely an outgrowth of micro-level activity, neither is it a phenomenon which should be studied by considering only macro-level, structural explanations.

Giddens argued that human agency assumes a critical role in the relationship between structure and behavior by allowing individuals to decide whether they want to continuously reproduce structural patterns, or break with them. By repetitively engaging in specific behaviors, individual agents continuously reproduce structure. According to Giddens, human agency itself, however, is also constrained by frames of meaning and interpretation which flow from macro-level structures. Put in the words of the French philosopher Foucault (1977), human agency occurs within a “prevailing web of power relations” (Clegg, Courpasson, & Phillips, 2006, p. 217) which is ultimately structurally determined. Thus, consistent with Berger and Luckmann, Giddens conceptualized the relationship between structure and behavior as a complex, reciprocal relationship.

Implications of Macrolevel Theories of Organizational Structure

Overall, macrolevel theories of organizational structure have important implications for this dissertation. First, as indicated by the early research of Fayol (1930) and Weber (1946), structure has an important role for effective organizational functioning

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and performance. This is consistent with my investigation of team structure as a predictor of team effectiveness.

Second, structuralist and dialectic approaches speak to the pervasive influence of structure on individual cognition and behavior. Therefore, it seems appropriate to investigate team structure as a predictor of cognitive processes on the individual level of analysis, especially as they relate to individuals' self construals in the context of work. This supports the primary objective of this study, namely to investigate how team structure influences individuals' self-construals, and how this effect mediates the relationship of team structure with team performance. In fact, my investigation of the effect of team structure on feelings of belongingness and distinctiveness can be viewed as a logical continuation of structuralist approaches to organizations, adopting the main arguments of structuralism to the mesolevel of analysis.

Third, more recent research on dialectic approaches to structure makes an important contribution to organization sciences by conceptualizing structure both as a determinant and as a consequence of behavioral patterns in organizations. This perspective points to a mutual dependence between higher-level phenomena (i.e., team level and organizational level structures and processes) and phenomena on a lower level of analysis (i.e., individual cognition and behavior). Weick (1979) referred to this mutual dependence between individual- and collective phenomena as "double interact", emphasizing how individual behaviors affect collective processes, which in turn influence individual processes and behavior (cf. the systems theory of motivated work teams of Chen and Kanfer, 2006, who use this insight to develop propositions on the interplay between individual and team motivation).

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Mesolevel Theories of Organizational Structure

Gestalt Psychology

Similar to the rich tradition of macrolevel research on organizational structure, research on the mesolevel of analysis on structure has a long history, dating back to the early beginnings of the discipline of psychology. Most of the early research on group structure and interdependence (Lewin, 1936; Deutsch, 1949) draws from gestalt psychology, an emerging school of thought established at the University of Berlin in the early 20th century. According to gestalt psychology, studying perception and behavior requires a focus on the “whole” or “gestalt” (Wertheimer, 1923). Applying this insight to the context of groups, Koffka proposed that groups should best be studied by adopting an integrated perspective which views groups as dynamic wholes, instead of viewing them as the summation of their parts (Koffka, 1922; 1935). Thus, focusing on the individual members of groups would only create an incomplete and oversimplified version of reality. Instead, Koffka argued, the emergent properties of the group as a whole and their effects on individuals have to be considered in order to understand the full complexity of behavior in group settings.

Gestalt psychology had far-reaching consequences for subsequent research on groups and group structure. Most notably, it established group properties as a viable topic of research in the emerging field of psychology. Second, by acknowledging the complex interplay of the whole (i.e., the group) with its parts (i.e., group members), gestalt psychology set the stage for subsequent research on the effects of group structure on individuals' cognition and interpersonal relationships. Specifically, gestalt psychology

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established the notion that individual cognition and behavior are not only a function of factors which originate from inside the person, but also influenced by external forces which derive from membership in social groups. As such, gestalt psychology was foundational for the discipline of social psychology and for subsequent research on team structure.

For example, Rusbult and Van Lange (2003) noted that “the essence of a social psychological approach to thinking frequently is described in terms of the power of the situation” (p. 352). As stipulated by gestalt psychology, this suggests that behavior is not only a function of the person, but also a function of external, situational influences. Kurt Lewin summarized this insight in his famous equation for behavior $B = f(P, E)$, according to which behavior is a function of personality and environmental influences (Lewin, 1936). Lewin was also the first researcher who used the insights of gestalt psychology to theorize on the effects of group structure on individual cognition and behavior. He argued that structural interdependence among group members is the essence of a group and as such the most important environmental influence on behavior and social interaction in groups (Lewin, 1936).

Deutsch's Social Interdependence Theory

In his social interdependence theory, Deutsch (1949) expanded on Lewin's work by investigating how the interdependence among goal structures in groups facilitates cooperative group behavior. Deutsch differentiated between situations which are positively and negatively interdependent, positive (negative) interdependence referring to situations in which the goal attainment of one individual correlates positively (negatively) with the goal attainment of one or more other individuals. As such, Deutsch

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conceptualized the relationship between individuals' goals as the central component of structure in group settings.

Moreover, Deutsch developed testable predictions on the effects of interdependent goal structures on group behavior, proposing that positive interdependence in goal structures would result in positive team processes and cooperative interpersonal behavior. Specifically, he proposed that positive goal interdependence would result in three critical psychological states: substitutability, cathexis, and inducibility. Substitutability refers to the extent to which individuals feel collectively accountable for the work of their group such that they can substitute for each other's work if necessary. Cathexis describes how individuals can become psychologically invested in their groups, and inducibility refers to the extent to which individuals are open to influence others and to be influenced by others in group settings. By outlining these three critical team processes, Deutsch provided an excellent example of how team structure impacts psychological processes in a group setting. This will also guide my theorizing on the influence of team structure on perceptions of belongingness and distinctiveness.

Structural Adaptation Theory

Social interdependence theory has been highly influential for subsequent research on group structure, evidenced by the more than 300 citations for the early formulations of social interdependence theory (Deutsch, 1949). In fact, this influence can still be felt today, with more recent approaches to team structure drawing heavily from social interdependence theory. For example, the formulation of structural adaptation theory (Johnson, Hollenbeck, Humphrey, Ilgen, Jundt, & Meyer, 2006) was influenced by the writings of Deutsch on cooperative and competitive reward structures.

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According to structural adaptation theory, social systems can be classified by their degree of complexity, as is common with physical systems. By drawing from the second law of thermodynamics, Johnson and colleagues argued that complex social systems require more energy in order to maintain their level of complexity than is the case with simple social systems. This is because complex systems tend to break down over time and develop into more simple and chaotic systems, thus requiring continuous investment to maintain their higher complexity and order.

Johnson et al. (2006) identified three structural dimensions along which the complexity of teams could be estimated. These three dimensions are reward structures (Deutsch, 1949), departmentation, and centralization (Burns & Stalker, 1961; Wagner, 2000). Consistent with social interdependence theory, cooperative reward structures induce individuals to engage in promotive interaction and mutually-supportive behavior. According to the second law of thermodynamics, this represents a move into a direction of decreasing entropy by creating more complex, interdependent work structures which inhibit individual self-serving behavior for the benefit of the group. Conversely, competitive reward structures promote contrient interaction and reduce the extent to which individuals are willing to share valuable information with each other.

Following a similar line of argument, functional work structures create high levels of interdependence among team members by creating narrow, specialized roles which are tightly coupled with each other such that the exchange of resources and information is regulated by official procedures which are binding for team members. As such, functional structures, too, promote interdependence in teams by increasing system complexity.

Divisional structures, on the other hand, equip team members with personal freedom and

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discretion over their work, creating loosely coupled team structures on a lower level of system complexity.

Finally, in centralized team structures leaders retain decision making authority. This creates high levels of interdependence between team members and their respective team leader such that individuals have little influence on decisions, but are affected to a large extent by those decisions. This tight form of vertical coupling reduces system entropy by raising the amount of order and complexity in teams. Thus, similar to cooperative reward structures and functional team structures, centralized team structures characterize social systems operating on a higher level of complexity and interdependence. The opposite effect can be observed in decentralized team structures, in which individual team members have extensive decision making autonomy regarding their work, thus representing a social system which operates on a high level of entropy.

Implications of Structural Adaptation Theory

Structural adaptation theory provides us with a theoretically-grounded framework of team structure which identifies centralization, departmentation, and reward structure as three conceptually-meaningful dimensions of team structure. Second, as discussed by Johnson et al. (2006), these three dimensions all represent continua which can be used to describe the level of social complexity of teams, ranging from social systems with high entropy and loose coupling between team members (i.e., decentralized, divisional structures with competitive rewards) to social systems characterized by a high degree of complexity and tight coupling (i.e., centralized, functional structures with cooperative rewards).

Team Structure

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In this dissertation, I have chosen to focus on departmentation (horizontal interdependence) and centralization (vertical interdependence) as the two most relevant dimensions of team structure. Both of these dimensions determine how tasks and responsibilities are allocated among team members, and thus have powerful effects on individuals' cognition and behavior in teams. Next, I will review research on these two central dimensions of team structure, starting with horizontal interdependence. This will be followed by a review of research on vertical interdependence. It is important to note that structural adaptation theory constitutes only one of many theoretical frameworks which have been used to approach the topic of team structure (or subdimensions thereof). Given the wealth of different approaches to the topic of team structure, it is not surprising to find that many of these approaches differ fundamentally in important aspects, for example in their definitions of core constructs and their respective operationalization.

Thus, the following sections of this dissertation have two primary goals. First, I attempt to highlight conceptual differences which exist between different approaches to the two dimensions of team structure which I address in my dissertation. Summarizing these differences is important because this discussion has important implications for the operationalization and measurement of the two dimensions of team structure. The second goal of the following literature review is to provide a concise summary of substantive research which is relevant for this study.

Horizontal Interdependence

Construct definition and operationalization. Over the past twenty-five years, numerous definitions and operationalizations of task/horizontal interdependence have been proposed (Hollenbeck et al., 2002; Morgeson & Humphrey, 2006; Kiggundu, 1983;

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Stewart & Barrick, 2000; Wageman, 1995; Wageman & Gordon, 2005). All of these definitions share the general notion that horizontal interdependence refers to the extent to which a task requires collective action in order to be completed successfully (Wageman, 1995). Interestingly, however, even though most of this research draws from the early research of Thompson (1967) on different types of task interdependence, different measures have been proposed which differ in central dimensions. Most notably, they differ in how they conceptualize functional specialization as a defining element of task/horizontal interdependence. Wageman and her colleagues (Wageman, 1995; Wageman & Gordon, 2005) argued that cross-training and simultaneous and interchangeable work on the task are a defining element of task interdependence. As such, they argued that high task interdependence would be associated with low levels of functional specialization since all team members will become more familiar with each other's work in highly interdependent work structures.

This operationalization, however, is in stark contrast to how other research has conceptualized task/horizontal interdependence. Hollenbeck et al. (2002), Kiggundu (1983), Morgeson and Humphrey (2006), and Van der Vegt, Van de Vliert, and Oosterhof (2003) all emphasize that high task interdependence is generally associated with high functional specialization in teams which create critical contingencies for other team members. This view is more consistent with the conceptual definition of reciprocal interdependence provided by Thompson (1967). It reflects the notion that individuals get tightly yoked to others as part of a complex social system of horizontal interdependence which forces individual team members to focus on aspects of the team task which they, and only they, can perform at a certain point of time. Thus, this definition is also more

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consistent with the way that structural adaptation theory has defined functional specialization as a tightly coupled form of departmentation.

Substantive research on horizontal interdependence. Research indicates that the tight coupling among individuals in horizontally interdependent structures generally emphasizes the importance of interpersonal processes. For example, a recent meta-analysis on teamwork processes by LePine, Piccolo, Jackson, Mathieu, and Saul (2008) found that team level processes play a more critical role in tasks characterized by high horizontal interdependence, such as in a functional structure. That is, the relationship between team level processes such as strategy formulation, coordination and conflict management were higher when horizontal interdependence was high relative to when teams were less tightly coupled. Similarly, Drach-Zahavy (2004) argued that decreased horizontal interdependence among individuals in teams will be associated with decreased team support as individuals no longer feel accountable for the team as a whole.

The flip side of this finding is that structures with high horizontal interdependence generally de-emphasize the role of individual differences. Indeed, Hollenbeck et al. (2002) found that individual differences predicted team performance in a higher scope, divisional task characterized by low horizontal interdependence, but not in a narrower functional task. They showed that team member cognitive ability was a strong predictor of team performance when the divisional structure is aligned with its environment, that is, in a dynamic task environment. In addition, team level emotional stability emerges as a critical factor in a divisional structure in a task environment which is not aligned with team structure.

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Other research indicates that there may also be a downside to employing functional structures. For example, Janz, Colquitt, and Noe (1997) argued that horizontal interdependence constrains the different ways in which individuals can perform their work such that the positive influence of autonomy on work motivation gets neutralized.

Overall, previous research on horizontal interdependence illustrates how tight yoking among individuals on a horizontal level enhances the impact of team level constructs on team outcomes, while at the same time weakening the influence of individual-level constructs on team outcomes. As such, horizontal interdependence strengthens the identity of the team as a gestalt. Moreover, the previously discussed findings illustrate how horizontal interdependence in teams makes the team particularly salient for team members' cognition and behavior, as evidenced by the findings of Drach-Zahavy (2004) and Gilson et al. (2005).

Vertical Interdependence

Construct definition and operationalization. Vertical interdependence refers to the extent to which team members depend on one formal leader who has unilateral authority to make decisions for the team (Hollenbeck et al., 1995; Bonnachio & Dalal 2006). Low vertical interdependence exists in situations in which self-managing teams resolve their own discrepancies via either consensus or, if this breaks down, voting procedures. Previous research has produced a remarkable diversity of operationalizations of vertical interdependence in teams (or related concepts such as team self-management, team empowerment, and team autonomy). Unfortunately, however, these approaches did not acknowledge that interdependence and autonomy can exist both on the individual and team level of analysis. As such, what is intended to reflect a team level construct often

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measures an individual-level phenomenon, and vice versa. For example, Uhl-Bien and Graen (1998) pointed out that “although studies of self-managing activities have addressed self-managing activities at both the individual and team level, the literature has not been clear about the distinction between the two” (p. 341). Similarly, Langfred (2000) noted that “the fact that autonomy can reside at both the individual and group level in a work group is often neglected in studies of self-management or group autonomy” (p. 564). Kirkman and Rosen’s (Kirkman & Rosen, 1997; 1999) work on team empowerment presents a notable exception to this general tendency, conceptualizing team empowerment as a dynamic motivational construct on the team level of analysis.

Moreover, research on vertical interdependence has mostly produced measures which contain normatively-laden descriptions of what constitutes effective team self-management. Partly, this is due to the fact that this research has generally attempted to document the positive consequences of vertical autonomy for group functioning and performance even before a valid measure of vertical interdependence had been developed. In doing so, this research has generally confounded the structural dimension of vertical interdependence/autonomy with its psychological consequences.

I provide two examples to illustrate this point: First, the self-management leader behaviors proposed by Manz and Sims (1987) all relate to leader activities which are expected to result in superior performance for teams characterized by high vertical autonomy, such as encouraging self-reinforcement, self-criticism, self-goal-setting, or self-evaluation. Similarly, the operationalization of team empowerment provided by Kirkman and Rosen (1997; 1999) contains normative descriptions of desirable team

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processes and emergent states. Kirkman, Rosen, Tesluk, and Gibson (2004) noted that team empowerment “increases task motivation that is due to team members’ collective, positive assessment of their organizational tasks” (p. 176), operationalizing team empowerment as perceived potency, meaningfulness, autonomy, and impact. Among those four dimensions, autonomy is the only dimension which describes a structural characteristic. As stated previously, this operationalization confounds the structural dimension of vertical interdependence with its psychological consequences.

Substantive research on vertical interdependence. Research indicates that low vertical interdependence (that is, team self-management or team empowerment) is generally beneficial for teams. Kirkman and Rosen (1999) reported that empowered teams were more productive and proactive than teams high on vertical interdependence. Similarly, they found that empowered teams were associated with better customer service, higher job satisfaction, and higher organizational and team commitment. At this point, however, it is important to reiterate that some of these effects may not necessarily be a function of structural independence, but rather a team motivational state brought upon by an external leader or the organizational culture. As such, we can only speculate over the true nature of the relationship between vertical interdependence as a structural characteristic and team outcomes.

Other research points to the critical challenges which self-managing teams face. Specifically, the fact that self-managing teams operate without a strong leader with decision making authority can potentially loosen the coupling of the team with the overall organization. For example, Tesluk and Mathieu (1999), Druskat and Wheeler (2003) and Mathieu, Gilson, and Ruddy (2006) all noted that self-managing teams rely on the

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boundary-spanning role of an external leader in order to be well-connected with the overall organization. In particular, what is needed is an external leader who can reduce resource dependencies, provide critical and timely information, and ensure that the team's goals are consistent with objectives of the larger business unit or the overall organization. Otherwise, a lack of effective external leader support can result in self-managing teams that feel 'abandoned' by their organization (Mathieu et al., 2006).

Implications of Previous Research on Team Structure

Teams could be tightly coupled or loosely coupled on both horizontal interdependence and vertical interdependence. On the one extreme, teams may be high on horizontal interdependence and high on vertical interdependence. This means that team members would have little freedom to decide on how to perform their work and they would have little impact on team decisions which will mainly be taken by a strong, hierarchical leader. It is easy to see how the tight yoking of individuals to one another in this example emphasizes the team as "figure", and "individuals" as ground. There are other teams, however, where individual team members have large discretion over their work and where team members have impact on the decision making process. In this example, individuals are loosely coupled – the individual assumes the role of "figure", and the team reverts to the "ground".

Thus, both tightly coupled team structures (i.e., structures with high horizontal and vertical interdependence) and decoupled team structures (i.e., structures with low horizontal and vertical interdependence) impose important freedoms and restrictions on individuals at the same time. Generally, decoupled structures allow individuals to maintain their personal identities to a larger extent, whereas tightly coupled structures

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emphasize and enforce a collective group identity. At the same time, however, tightly coupled structures give individuals the freedom to assume a more specialized role which emphasizes their individual preferences and abilities, whereas tightly coupled team structures force team members to assume a narrower role in which they easily lose track of the dynamics of the larger social system they are a part of.

This suggests that individuals will generally strive to operate in structural conditions with intermediate degrees of coupling. Compared to tightly coupled or decoupled team structures, loosely coupled structures allow individuals to enjoy an adequate degree of personal discretion and independence, while at the same time minimizing the constraints that generally come with decoupled structures or tightly coupled team structures. Thus, overall, individuals in teams constantly face the challenge of balancing the uniqueness and distinctiveness of their identity with the need to be similar to other group members and to be assimilated, and it is likely that intermediate degrees of coupling (or loose coupling) provide the best fit for most individuals.

This is also consistent with common practice in organizations. In fact, the evidence is clear that more organizations are turning to team-based structures, and indeed, there is broad consensus among practitioners and in the academic literature that totally decoupled, individually-based teams are not viable any longer (Van der Vegt, Emans, & Van de Vliert, 2001). At the same time, however, it is important to note that organizations have largely resisted the temptation of tightly coupled team structures, acknowledging that tightly coupled structures also come with their own unique set of freedoms and constraints. Thus, paying tribute to individuals' uniqueness, organizations

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generally find themselves converging to team structures with intermediate degrees of coupling, that is, loosely coupled team structures.

It follows that team structures have important consequences for individuals' self-construals, that is, for the extent to which individuals define themselves as being interrelated to others or independent of others. This corresponds to two basic human needs, the need to be similar to others and the need to be distinct from others (Brewer, 1991; Snyder & Fromkin, 1980; Deci & Ryan, 2000). The simultaneous need to be assimilated and similar to relevant others, yet at the same time be sufficiently distinct and unique has been discussed by Brewer in her optimal distinctiveness theory (1991), in which she posits that deviations from an optimal balance between distinctiveness and assimilation lead to negative effects for psychological well-being and for group functioning.

By relating the two facets of team interdependence to feelings of belongingness and distinctiveness, I can use optimal distinctiveness theory to derive theoretically-driven predictions on the relationship between team structure and meaningful individual and team level outcomes. Specifically, since an optimal balance between team members' perceptions of belongingness and uniqueness appear to be essential for group functioning and performance, I will investigate the mediating role of this balance in the relationship between team structure and team performance. Before doing so, however, I will review the basic tenets of optimal distinctiveness theory as the primary theoretical framework of this study.

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Literature Review of Optimal Distinctiveness Theory

Optimal distinctiveness theory is a social psychological theory which has its origins in research on self-categorization and social identity theory (Tajfel, 1981; Tajfel & Turner, 1986). Before discussing the main propositions of optimal distinctiveness theory, I will briefly review these influences.

Until recently, social psychology has conceptualized the individual as a largely independent entity, focusing mainly on individual differences, on internal attributes, and on human agency as drivers of human cognition and behavior (Brewer & Gardner, 1996; Singelis, 1994). More recent research on individuals' self-construals and on self-categorization theory has changed the predominant focus of psychology on the isolated individual by acknowledging that individuals can construe their identity both in terms of independent and interdependent self-construals (Markus & Kitayama, 1991; Singelis, 1994; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). This perspective acknowledges that cultural differences exist in the extent to which individuals define themselves as independent individuals or as interdependent members of social groups or collectives. Maybe even more important, this perspective also emphasizes the possibility that individuals in all societies define at least parts of their selves based on their membership in social groups and based on attributes which are central to this group membership (Turner et al. 1987; cp. Sherif, 1966).

According to this research, individuals can define their identity in two distinct ways. They can either define themselves as largely separate, unique, and autonomous individuals, or they can define themselves as connected and intertwined to others, that is, they can develop independent self-construals or interdependent self-construals (Markus

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& Kitayama, 1991). Offering a formal definition for individuals' self-construals, Singelis noted that self construals are a "constellation of thoughts, feelings, and actions concerning one's relationship to others and the self as distinct from others" (Singelis, 1994, p. 581). According to this definition, perceptions of individual connectedness and belongingness on the one hand and perceptions of individual uniqueness and distinctiveness on the other hand lie at the heart of individuals' self construals.

In their self-categorization theory, Turner and colleagues (1987) proposed two distinct self-construals, distinguishing between personal and collective identities. Brewer and Gardner (1996) elaborated on this typology, adding relational identities as a second form of collective self-representation. According to Brewer and Gardner, a personal identity orientation defines the self as a unique individual who derives his/her self-value primarily on the basis of self-other comparisons. In contrast to a personal identity orientation, a relational identity orientation emphasizes the self as a member of specific interpersonal relationships (sometimes termed the in-group), in which both self-interest and the interests of selected others motivate individual behavior. As such, relational identities emphasize the connectedness of individuals to a larger extent than is the case with personal identities. Finally, defining the self as a member of a social group where group goals take precedence over individual goals reflects a collective identity orientation. By subordinating personal interests for the better of the larger collective, collective identities represent the self-categorization with the strongest focus on connectedness and belongingness.

According to self-categorization theory, there exists a fundamental antagonism between identity orientations on different levels of inclusiveness. According to Turner et

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al., the activation of one specific identity orientation precludes the activation of other identity orientations. For example, the activation of a personal identity orientation precludes the same individual to experience a collective identity orientation at the same time, and vice versa. This perspective suggests that individuals define themselves either as independent or as interdependent human entities.

In optimal distinctiveness theory, Brewer presents compelling evidence against such a dichotomized version of self-categorization, arguing that the two needs for belongingness and distinctiveness are not mutually exclusive. Instead of reserving desires for belongingness to collective self-construals and desires for uniqueness to personal self-construals, Brewer (1991) proposed that the two opposing needs generally coincide in all humans. Previous research had provided ample support for the existence of these opposing needs, despite their seeming incommensurateness. For example, Baumeister and Leary (1995) described the human desire to be a valued member of social groups as a "fundamental human motivation" (Baumeister & Leary, 1995, p. 497). In fact, being excluded from social groups was perceived as a negative experience even when ostracism was financially lucrative for ostracized individuals (Van Beest & Williams, 2006). At the same time, however, humans also strive for uniqueness and distinctiveness, which were found to contribute to enhanced social status, self-esteem, and self-identity (Codol, 1984; Lynn & Snyder, 2005; Tesser, 1988). Instead of conceptualizing these two needs as being mutually exclusive and occurring at different points of time, optimal distinctiveness theory proposes that humans have to satisfy both needs of belongingness and distinctiveness simultaneously.

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In supporting her arguments, Brewer drew on two primary theoretical frameworks: opponent process theory and evolutionary psychology. The concept of opponent processes is common in many scientific disciplines, including disciplines as diverse as physiology, biology, or philosophy (Hurvich & Jameson, 1974). The basic proposition of opponent process theory is that dual and opposing processes emerge which push a system in opposite directions. Once one process has moved the system far away from its equilibrium, the other process (the opponent process) automatically gains in strength, pulling the system back to its equilibrium. The opponent process even moves the system beyond its equilibrium, creating a system imbalance on the other side of the equilibrium, which requires in turn a balancing influence from the original process which moved the system out of its equilibrium initially.

In the field of organization sciences, opponent process theory has largely been ignored, despite the work of Solomon on the opponent process theory of acquired motivation (Solomon, 1980). Solomon argued that repeated presentation of unconditional stimuli will generally be associated with a hedonic contrast such that initial pleasure is counterbalanced by subsequent pain or sadness, whereas traumatic and depressing experiences are generally restored through positive feelings of happiness and excitement. Applying this insight to the study of self-construals, Brewer posited that perceptions of belongingness and distinctiveness are two distinct motives, which, taken together, ensure that individuals will generally converge on an optimal level of distinctiveness. Put in different words, she argued that the desire to belong to social groups and the desire to be distinct from others help individuals to restore an optimal level of distinctiveness in their self-construals. At this point, however, it is important to note that this assumption is

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reminiscent of the early writings on optimal distinctiveness theory, whereas later research acknowledged that belongingness and distinctiveness should not be viewed as two opposing, mutually exclusive needs. Instead, the two needs have to be satisfied simultaneously so that individuals can function effectively.

Evolutionary psychology argued that the human species has learned to associate group membership with superior survivor value. Humans have ceased to exist as isolated individuals or pairs of individuals who were able to provide for themselves. Instead, the human species has grown to depend on mutual trust, cooperation and social support. Indeed, the reliance on others and the survival value attached to group membership are so central that the human desire to belong to social groups can best be described as “obligatory interdependence” (Brewer, 1997; Caporael, 1997). As such, the desire for belongingness is a hard-wired human need.

Despite their huge advantages, however, social group membership also contains several drawbacks. For example, if some group members engage in social loafing or if they violate important group norms regarding social exchanges and mutual trust, group membership may become costly for group members who are acting in good faith. Therefore, Brewer argued that social groups have to set boundaries to group membership which reduce the risks of social loafing and of deviant behavior. Restated, indiscriminate trust cannot be an ideal strategy for individuals who are members of social groups, nor can indiscriminate trust be a viable strategy for group survival. Instead, what is needed is a mechanism of social differentiation which establishes clear boundaries between valued in-group members and outsiders. By limiting group membership to valued in-group members, social groups can provide viable social exchanges between group members

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which depend on mutual trust, while at the same time reducing the risks for unreciprocated trust between group members. Combining the human need to be an accepted member of valued social groups with the necessity to demarcate group boundaries against unwanted free riders leads to the proposition of optimal distinctiveness theory that humans require a healthy balance between perceptions of intra-group belongingness and between-group distinctiveness.

Optimal distinctiveness theory does not only break with self-categorization theory in that it proposes a coexistence of independent and interdependent self-construals.

Optimal distinctiveness theory also posits that the fundamental tension between perceptions of belongingness and distinctiveness exists for identity orientations on all levels of inclusiveness. In their seminal article on collective identity and self-representations, Brewer and Gardner (1996) made the following statement:

One source of variation in self-representations within individuals is a widely recognized tension or opposition between needs and motives that promote individuation and differentiation of the self from others, and those that promote assimilation and unit formation. These opposing processes appear to play out at each level of self-categorization. At the level of the personal self, individuals seek similarity with significant others, but at the same time strive for a sense of uniqueness (Snyder & Fromkin, 1980). The relational self often is characterized in terms of the tension between intimacy and separation from others ... Finally, Brewer's (1991, 1993) theory of optimal distinctiveness holds that collective identities are constrained by the necessity of satisfying simultaneously individual needs for inclusion and distinctiveness (p. 91).

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According to this statement, the simultaneous desire for belongingness and distinctiveness represents a fundamental human need, irrespective of the identity orientation of individuals. Deviations from an optimal balance between perceptions of belongingness and distinctiveness have important consequences for individuals' well-being and for their ability to function effectively in group settings. According to Brewer, the intensity of one of the two needs for belongingness and distinctiveness increases with the satisfaction of the respective other need. For example, the satisfaction of the need for belongingness increases the need for differentiation. Thus, if individuals feel too much inclusion, they will look for ways which also allow them to emphasize the personal self to a stronger extent. This is not to say, however, that individuals can only satisfy one of the two needs at the same time. In fact, optimal distinctiveness theory asserts that individuals strive to satisfy both of these needs simultaneously.

More recently, research on self-construals has led to important refinements of optimal distinctiveness theory. Early formulations of optimal distinctiveness theory proposed that individuals generally satisfy their desire for optimal distinctiveness by striving for in-group assimilation and between-group distinctiveness. This proposition has been questioned over the course of the last ten years. A number of studies conducted both in the lab and in the field gathered compelling evidence suggesting that individuals can satisfy both desires for belongingness and distinctiveness within the same group, without experiencing between-group distinctiveness. For example, Hornsey and Jetten (2004) argued that personal distinctiveness in individual within-group comparisons can even reaffirm the positive value of belongingness. By emphasizing the unique talents,

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backgrounds, and contributions of each individual, individuals may be able to synthesize their desire for belongingness and uniqueness within the same group.

Providing support for this prediction, Bettencourt and Sheldon (2001) found a positive relationship between social group connectedness and autonomy, evidenced by a zero-order correlation of .50 between these two constructs. Moreover, both of these constructs had positive effects on subjective well-being and meaning in life. Similarly, Janssen and Huang (2008) reported in a field-study of 157 middle-management team members a zero-order correlation of .12 between individual differentiation and team identification. Overall, we can conclude that optimal distinctiveness can be realized even within the boundaries of one's own team, and that the needs for belongingness and distinctiveness can be satisfied simultaneously.

For my discussion of the effects of team structure on individuals' self-construals, it is also important to note that self-construals are inherently variable and as such subject to influences which can be traced back to changes in structural configurations of the team. Turner, Oakes, Haslam, and McGarty (1994) make this point eloquently by noting that self-construals "are social contextual definitions of the perceiver, definitions of the individual in terms of his or her contextual properties. The meaning and form of the self-category derive from the relationship of the perceiver to the social context. The perceiver gains identity from being placed in context." (Turner et al., 1994, p. 458).

According to Turner et al. (1994) and Gelfand, Major, Raver, Nishii, and O' Brien (2006), self-construals are a function of chronically accessible self-construals and of temporarily accessible self-construals. Chronically-accessible self-construals are formed through cultural values, societal expectations, or through socialization processes.

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Temporarily-accessible self-construals, on the other hand, will be determined by social group membership and by social influence processes which derive from group membership. By enacting roles which emanate from individuals' normative expectations of group membership, individuals are subconsciously creating their own self-construals in the context of their group.

In my previous discussion of the two central dimensions of team structure, I have reviewed research which shows how team structure can have far-reaching consequences for the way that individuals conceive of their group membership, their work roles, and their relationship with other group members. One of the main conclusions of my literature review was that individuals embedded in all types of team structures will constantly face the challenge of balancing the uniqueness and distinctiveness of their identity with their desire to be similar to others. Consistent with these arguments, and noting the support for context-dependent definitions of individuals' self-construals in work groups, I view an investigation into the effects of team structure on individuals' self-construals as an important, yet chronically understudied research topic.

HYPOTHESES DEVELOPMENT

Predicting Relationships between Team Structure and Optimal Distinctiveness

In my previous discussion of mesolevel theories of organizational structures, I concluded that team structures constantly impose a challenge upon team members to negotiate their need for social inclusion and group belongingness with their desire to be distinct from others and unique. Drawing from optimal distinctiveness theory, I argued that individuals have to satisfy their need for optimal distinctiveness, that is, their needs for belongingness and distinctiveness, in order to function effectively in team settings.

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This suggests an interaction between the two constructs belongingness and distinctiveness such that only the simultaneous satisfaction of both of these two needs results in optimal psychological functioning.

Construct Definitions

Before developing specific hypotheses on the influence of team structures on optimal distinctiveness and work outcomes, it is imperative to make my definition of the two core constructs of optimal distinctiveness theory explicit. Consistent with Brewer and Roccas (2001), I define the need for belongingness as a “need for inclusion, the desire to be a part of, embedded in, or assimilated to larger social collectives” (p. 220). Drawing from the work of Vignoles, Chryssochoou, and Breakwell (2002), I define distinctiveness as a human motive “pushing towards the establishment and maintenance of a sense of differentiation from others” (p. 761).

Vignoles and colleagues identified three sources of distinctiveness: position, difference, and separateness. Position refers to a distinct place within social relationships by occupying unique roles or network positions. Difference refers to personal qualities such as personality traits, abilities, personal beliefs, or physical characteristics that differentiate the individual from others. Separateness refers to the psychological distance between individuals, which reflects the extent to which individuals are isolated from others and socially excluded. According to Baumeister and Leary (1995) and Van Beest and Williams (2006), social exclusion is generally associated with negative psychological reactions, which makes separateness different from position and difference, both of which can also induce positive feelings of distinctiveness in individuals. Thus, consistent with my focus on optimal distinctiveness, I will focus on position and difference as

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sources of positive distinctiveness of the self. Also, consistent with more recent research on optimal distinctiveness (Bettencourt & Sheldon, 2001; Hornsey & Jetten, 2004; Janssen & Huang, 2008), I view distinctiveness as a within-team, between-person construct (and not the result of between-group comparisons as stipulated in the early formulations of optimal distinctiveness theory; cf. Brewer, 1991).

One of the central tenets of optimal distinctiveness theory is that the needs for belongingness and distinctiveness have to be satisfied simultaneously so that individuals can develop positive representations of their team membership. It follows that the two constructs belongingness and distinctiveness cannot be opposite ends of one continuum. Instead, they should be viewed as two related, yet distinct constructs. Empirical research supports the notion of the two constructs as being distinct (Janssen & Huang, 2008; Bettencourt & Sheldon, 2001).

*Using Social Interdependence Theory to Relate Team Structure to
Optimal Distinctiveness*

Deutsch's Three Critical Emergent States

In my previous discussion of mesolevel theories on organizational structure, I discussed Deutsch's (1949) social interdependence theory as an example of how early research on team structure developed testable predictions regarding the effects of team structure on team behavior and outcomes. Specifically, Deutsch argued that the structure of goals in groups predict the extent to which group members behave cooperatively or competitively. In developing his predictions, Deutsch linked goal structures to three emergent states in teams. These three emergent states are substitutability, cathexis, and inducibility. He then used these three emergent states as a theoretical rationale to predict

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the behavioral consequences of different goal structures on team behavior. Due to their significance for the following hypotheses, I will introduce these three critical processes in detail below.

Substitutability. Substitutability refers to the degree to which group members' actions can substitute for each other (Johnson, 2003). Or, in Deutsch's words, substitutability describes the following state in the relationship between individuals X and A: "Since X has locomoted towards his goal as a consequence of 'A's actions, there is no longer any necessity for 'X' to perform any action which is similar. Thus, A's actions will be substitutable for 'X's" (p. 138). Therefore, positive goal interdependence creates incentives for individuals to take ownership not only in one's own work, but also in the deliverables of other group members in order to facilitate group goal achievement. This phenomenon is, according to Deutsch, associated with higher substitutability in group members' actions and tasks.

Cathexis. Cathexis describes the degree to which individuals are willing to invest psychological energy in persons and objects outside the self (Johnson, 2003). Deutsch described cathexis as follows: "An entity will acquire positive valence or cathexis (become attractive) if that entity is seen to be promotively related to need satisfaction" (p. 138). This suggests that individuals are more inclined to become psychologically invested in other group members if they share the same goals.

Inducibility. Finally, inducibility refers to the extent to which individuals are open to influence others and to being influenced by others (Johnson, 2003). Quoting again the original work of Deutsch, "positive inducibility occurs when the inducing entity is seen to be promotive rather than contrient with respect to tension-reduction" (p. 139). Restated,

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individuals are being more open to influence others and to being influenced by others if they perceive that the actions of another person and one's own actions will facilitate mutual goal accomplishment. According to Deutsch, this is the case when goals are positively interdependent.

The Three Critical Emergent States and Optimal Distinctiveness

Deutsch's social interdependence theory has had important consequences for subsequent theorizing on team structure. One of the major contributions of Deutsch's social interdependence theory is the description of the mechanisms through which objective dimensions of structure (i.e., the degree of positive interdependence between goals) get translated into subjective perceptions of interdependence among team members. By discussing the three critical emergent states described above, Deutsch illustrated how positive interdependence between goals can shape how group members conceive of the significance of their group membership and how they construe their interpersonal relationships with other group members.

Using the three critical processes to support his predictions, Deutsch developed testable predictions on the effects of goal structures on cognition and behavior. Specifically, he predicted that positive goal interdependence would result in greater coordination of effort, functional specialization, structural stability, flexibility in times of change, group cohesiveness, group cooperativeness, and, ultimately, group performance. As such, Deutsch exemplified how the three critical emergent states can help in the development of predictions on the relationship between team structure and cognition and behavior.

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Even though the three critical emergent states were originally developed to support predictions regarding the relationships of team goals with team behaviors and team outcomes, they are also applicable to my investigation of optimal distinctiveness in teams. For my investigation of the effects of team structure on optimal distinctiveness, the three critical emergent states are a powerful theoretical framework to guide my hypothesis development. By differentiating between positively and negatively interdependent goal structures, Deutsch addressed the social dynamics which determine whether groups start to act as one unit, or whether they should better be perceived as an aggregation of competing individuals with no common interests.

If the identity of the team as a gestalt is emphasized, then it is likely that individuals will find it easier to satisfy their desire for belongingness. By contrast, if the team reverts to the ground and the independent identity of individuals is emphasized, then it is more likely that individuals will find it easier to satisfy their desire for distinctiveness and uniqueness. And indeed, Deutsch's three critical emergent states can also be linked to perceptions of belongingness and distinctiveness. Specifically, cathexis and inducibility refer to the extent to which individuals are willing and open to influence and to be influenced by their respective social environment. They reflect the social embeddedness of individuals. Conversely, substitutability reflects the extent to which individuals have unique characteristics that cannot be substituted by other team members, reflecting the distinctiveness of individuals. Therefore, Deutsch's three critical emergent states present an adequate, theoretically-grounded framework to support my hypothesis development on the relationship between team structure and optimal distinctiveness.

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Horizontal Interdependence and Optimal Distinctiveness

High horizontal interdependence generally emphasizes the team as a collective. For example, LePine et al. (2008) found that team processes have a stronger influence on team outcomes in horizontally interdependent structures. Similarly, Drach-Zahavy (2004) found that higher horizontal interdependence in teams is generally associated with higher levels of helping among team members and team support. These findings suggest that the higher levels of interpersonal contact among team members and the interdependent nature of the workflow make the identity of the team salient to team members, increasing their commitment to the team. Put in the words of social interdependence theory, high horizontal interdependence increases cathexis and inducibility among team members, that is, team members in horizontally interdependent structures are more open to become psychologically invested in their team, to influence others and to be influenced by others. This would suggest that horizontal interdependence should be associated with high perceptions of belongingness.

There are, however, also factors which indicate that an overemphasis on horizontal interdependence may have negative consequences as well. Bunderson and Sutcliff (2002) argued that high functional diversity in teams amplifies demands for team communication and coordination, making it difficult for teams to exploit the unique knowledge and background of all team members. This shows how high horizontal interdependence can also undermine the identity of the team. High horizontal interdependence implies high functional specialization, which reduces the shared knowledge that individuals have of others' work and functional backgrounds. This makes it increasingly difficult for individual team members to understand how their specific role

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fits into the larger context of the team. This will in turn reduce cathexis and inducibility among team members and the degree to which the individual views himself or herself as related to others in the team.

It follows that an intermediate degree of horizontal interdependence should maximize perceptions of belongingness by emphasizing the identity of the team, while at the same time minimizing the risk of functional overspecialization. Thus, I predict the following:

Hypothesis 1a: There will be an inverted U-shaped relationship between horizontal interdependence and perceptions of belongingness such that intermediate levels of horizontal interdependence will be associated with highest levels of belongingness.

High horizontal interdependence creates strong lateral ties between team members who all initiate and receive a number of critical interdependencies by providing and receiving information and resources to and from other team members (Kiggundu, 1981). Due to these critical interdependencies, individual team members generally have less freedom in their work. Indeed, high horizontal interdependence greatly reduces the autonomy which individual team members have in completing their tasks. When compared to team structures with low horizontal interdependence, high horizontal interdependence provides less freedom to individual team members to schedule their tasks, to choose the methods and tools to perform their tasks, and to choose the sequence of activities with which these tasks are to be completed.

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Indeed, results from a 3 year quasi-experimental field study by Parker (2003) show that high horizontal interdependence is generally associated with lower levels of individual autonomy. In her study, Parker investigated the effect of lean production practices on work perceptions and attitudes. Lean production practices can be characterized as implying high degrees of horizontal interdependence such that individual group member assume highly specialized roles. Parker demonstrated that the increased efficiency in work arrangements with high horizontal interdependence comes at a cost as they lead to declines in perceived work characteristics, such as job autonomy, skill utilization, and participation in decision making. The three constructs job autonomy, skill utilization, and participation in decision making all reflect the extent to which the self is capable of influencing his or her work environment. By doing so, the individual expresses himself/herself as a distinct member of a social group. As Parker's findings illustrate, however, this becomes more difficult when functional specialization and standardization of team processes is high. It follows that high horizontal interdependence generally decreases individual autonomy and opportunities for self-expressive work behaviors. This suggests that high horizontal interdependence should be associated with lower team member perceptions of distinctiveness.

At the same time, however, horizontal interdependence can also affirm the distinctiveness of the individual team member. Under high horizontal interdependence, team members all possess unique skills and backgrounds which they use to complete a well-defined component of the team task (Hollenbeck et al., 2002). Thus, with increasing horizontal interdependence and functional specialization among team members, it becomes more difficult for team members to complete each other's work. Restated, the

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substitutability of individual team member's work decreases with increasing horizontal interdependence. High horizontal interdependence also makes it more difficult for teams to deal with individual turnover and to integrate outsiders to the team (Staw, 1980). Not only do new team members have to learn a specialized role, they also have to learn how their role fits in with the workflow of the entire team. Therefore, once individuals have become an established part of a horizontally-interdependent team, it will be costly to replace them. Thus, functional specialization and problems associated with turnover in horizontally interdependent teams also affirm the distinctiveness and unique value of each team member.

The previous arguments are particularly salient when task scope is high. In such circumstances, it will be especially difficult for outsiders to learn a specific role. Similarly, it will become more challenging for team members to perform each others' tasks. Conversely, for individuals working on tasks which are standardized and easy to perform, substitutability of individuals' roles will be less emphasized, reducing perceptions of distinctiveness in individuals. But even for simple, repetitive, low-scope tasks, the fact that each individual performs a distinct and clearly demarcated role which has to be integrated with the contributions from other team members can satisfy perceptions of distinctiveness.

It follows that individuals will strive to operate in a team structure which allows them to enjoy high degrees of personal freedom and discretion, while at the same time enjoying the benefits of performing a highly specialized, interdependent task. This can only be realized in a team structure with intermediate degrees of horizontal interdependence. Consistent with these arguments, I predict the following:

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Hypothesis 1b: There will be an inverted U-shaped relationship between horizontal interdependence and perceptions of distinctiveness such that intermediate levels of horizontal interdependence will be associated with highest levels of distinctiveness.

Vertical Interdependence and Optimal Distinctiveness

Structures with low vertical interdependence change the nature and direction of information flows in teams. In traditional work structures with high vertical interdependence, information flows are generally directed from team members to their respective team leader, and vice versa. This is in stark contrast to structures with low vertical interdependence, which emphasize lateral information flows and comprehensive interconnectedness among team members (Burns & Stalker, 1961). By creating additional lateral ties between team members, low vertical interdependence increases inducibility in teams – individuals are more likely to influence others and to be influenced by others in their work. This emphasizes the identity of the team, which should in turn be related to perceptions of high belongingness.

Low vertical interdependence also comes with negative side effects, however, which make it difficult for organizations to settle on this structural arrangement. Specifically, teams with low vertical interdependence often struggle to settle disputes and to find decisions which are supported by all team members in the absence of one strong leader who makes such decisions binding for the entire team. And indeed, Langfred (2007) showed that conflict in self-managing teams reduces intrateam trust, individual autonomy, and ultimately the degree of interdependence between team members, all of

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which should be negatively associated with perceptions of belongingness in teams. In team structures with low vertical interdependence, team members have to reach consensus on a course of action, which makes the individual decision makers figure, while the identity of the team reverts to the ground. By putting the decision making control in the hands of all team members, it is more likely that divisions in the team become apparent, promoting faultlines or the existence of subgroups (Lau & Murnighan, 2005). This will reduce inducibility in teams – the extent to which individuals are able to influence other group members and to which they are open to being influenced by others.

Conversely, teams with high vertical interdependence will find it generally easier to act as one coherent unit. Using the figure-ground metaphor, high vertical interdependence makes the team the figure and the individuals the ground.

It follows that intermediate degrees of vertical interdependence should be associated with highest degrees of belongingness by capitalizing on the positive value of intensive lateral connections between team members while at the same time reducing the risk of unconstructive controversy in teams. Consistent with these arguments, I predict the following:

Hypothesis 2a: There will be an inverted U-shaped relationship between vertical interdependence and perceptions of belongingness such that intermediate levels of vertical interdependence will be associated with highest levels of belongingness.

High vertical interdependence generally implies that team members have less influence on decision making processes than under low vertical interdependence. High vertical interdependence imposes well-established roles on individuals, which leave little

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room for autonomy in exercising work (Cohen & Ledford, 1994). Indeed, Kirkman and Rosen (1999) found that high vertical interdependence is generally associated with less proactive work behavior in teams. Similarly, Spreitzer (1995) found that low vertical interdependence / a participative team climate conveys a feeling of personal control, meaningfulness, and self-determination to team members, whereas traditional team structures with high vertical interdependence reduce the perceived meaningfulness and impact of individuals' work. Feelings of personal control, meaningfulness, and self-determination are all psychological states which are conceptually related to perceptions of distinctiveness, that is, they are psychological states which affirm the positive and distinct character of the individual as a valued member of a group of individuals (Bettencourt & Sheldon, 2001). Expressed in the terminology of social interdependence theory, low vertical interdependence reduces the perceived substitutability of each individuals' work. Therefore, low vertical interdependence in teams should be associated with high distinctiveness, whereas high vertical interdependence should be associated with low distinctiveness.

Interestingly, however, most organizations have chosen not to rely on team structures with low vertical interdependence and have rather chosen to create team structures with intermediate degrees of vertical interdependence (Cohen, Chang, & Ledford, 1997; Tesluk & Mathieu, 1999). Indeed, there are a number of reasons which suggest that an overreliance on team structures with low vertical interdependence may not be ideal and not be associated with high distinctiveness. For example, Kirkman and Rosen (1997) posited that for self-managing teams to be effective, these teams require more than mere decision making authority. Kirkman and Rosen suggested that self-

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managing teams also have to experience feelings of collective efficacy, meaningfulness, and impact. Kirkman and Rosen continued to argue that these states can all be enhanced by a leader who generally affirms the value of team self-management, while at the same time setting important guidelines for team behavior and team performance.

In a study of 111 work teams in four organizations, Kirkman and Rosen (1999) found additional support for the important role which leaders can have for self-managing teams. They found that leaders can contribute to the effectiveness of self-managing work teams by emphasizing the distinct character of team members. This can be accomplished by soliciting team members' input for critical decisions, by encouraging teams to set goals and to monitor individual and team performance, and by demonstrating genuine trust in the team. Thus, leadership can still serve an important function for teams and help unleash the full potential of team empowerment. Conversely, "a lack of effective external leader support can result in teams that feel 'abandoned' by their organizations" (Mathieu et al., 2006; p. 100).

In sum, this suggests that intermediate degrees of vertical interdependence are most likely to lead to perceptions of distinctiveness in teams. In such structures, team members can enjoy larger degrees of personal freedom and feelings of empowerment, while at the same time receiving guidelines and leadership for their actions. Thus, I predict the following:

Hypothesis 2b: There will be an inverted U-shaped relationship between vertical interdependence and perceptions of distinctiveness such that intermediate levels of vertical interdependence will be associated with highest levels of distinctiveness.

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Predicting Relationships between Team Structure and Leader Optimal Distinctiveness

By definition, a leader occupies a different role in a team than other team members. Thus, it is important to investigate the consequences of different dimensions of team structure on leader self-construals separately. For example, the degree to which leaders retain decision making authority determines the centrality of their network position, which should have important consequences for their perceptions of belongingness and distinctiveness. Consistent with this idea, Griffin, Patterson, and West (2001) found that the impact of a leader in teams decreases with the extent to which coupling between team members increases. Specifically, they found that supervisory support had a stronger effect on follower job satisfaction in companies which de-emphasized team self-management relative to companies which emphasized teamwork and team self-management. This shows how team self-management can have positive psychological consequences for followers, but also reduce the impact of leaders and possibly also the quality of their self-construals. Thus, I will now develop separate predictions for the effects of horizontal interdependence and vertical interdependence on leader self-construals, starting with the effects of horizontal interdependence on leader self-construals.

Horizontal Interdependence and Leader Self-Construals

Horizontal interdependence emphasizes the identity of the team (LePine et al., 2008). As I proposed before, this can lead to higher team member perceptions of belongingness, as long as the dangers of functional overspecialization are avoided. A stronger team identity and commitment to the team among team members increases

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inducibility in teams, that is, the openness of team members to be influenced by other team members and by the leader. A more salient team identity and a higher openness among team members to be influenced by the leader will also increase the extent to which the leader is psychologically invested in the team and the extent to which the leader defines himself/herself through his/her team membership. In addition, high horizontal interdependence increases the need for communication and leadership so that the work of functionally specialized subunits can be integrated successfully (Hollenbeck et al., 2002). In fact, the need for coordination and leadership becomes even more salient when horizontal interdependence is high and when individual team members have only little understanding of how their role fits in with the roles of other team members. This suggests that high horizontal interdependence does not have the same negative consequences for leader perceptions of belongingness as it has for team member perceptions of belongingness. Instead, high levels of horizontal interdependence emphasize the salience of the leadership role, which will increase cathexis in leaders – it will increase the extent to which the team leader defines himself/herself through his group membership. Thus, I predict the following:

Hypothesis 3a: Horizontal interdependence will be positively related to leader perceptions of belongingness.

The more salient leadership role under high horizontal interdependence also creates a more central networking position for the leader, especially when team members have difficulty understanding how their role fits in with the roles of other team members. This reduces the substitutability of the leader, which should in turn be associated with higher perceptions of distinctiveness. Thus, consistent with Vignoles et al. (2002), I

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expect that high horizontal interdependence should be associated with higher leader perceptions of distinctiveness.

Hypothesis 3b: Horizontal interdependence will be positively related to leader perceptions of distinctiveness.

Vertical Interdependence and Leader Self-Construals

By emphasizing lateral connections and communication in teams and de-emphasizing top-down influence processes, low vertical interdependence reduces the influence of team leaders. Thus, the same structural arrangement which creates positive empowerment among followers (Kirkman & Rosen, 1997; 1999) can actually undermine the significance which leaders ascribe to their team membership. Expressed in the language of social interdependence theory, low vertical interdependence reduces cathexis in leaders, that is, it reduces the willingness of leaders to become psychologically invested in their teams. And indeed, Douglas and Gardner (2004) found that managers often struggle to hand over decision making power to teams in organizations which implemented teamwork and team self-management. Similarly, Druskat and Wheeler (2003) noted that leaders of self-managing teams experience role ambiguity in organizations which promote team self-management because they have to perform a leadership role without having the reward, coercive or legitimate power which leaders in traditional team structures have. In sum, this suggests that low vertical interdependence / team self-management reduces inducibility and cathexis in leaders, that is, it reduces the ability to influence team processes, decisions and outcomes and the willingness of leaders to become psychologically invested in the team.

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Conversely, high vertical interdependence endows leaders with the power to guide team decision making processes and communication and increases their ability to influence followers. This creates a paradoxical situation: High vertical interdependence leads to low perceptions of belongingness among team members, but affirms the role of a leader and the salience of the team in the leader's view. Thus, I predict the following:

Hypothesis 4a: Vertical interdependence will be positively related to leader perceptions of belongingness.

By removing traditional sources of power from leaders in self-managing teams, leaders also lose the unique position which they held in traditional team structures. According to Druskat and Wheeler (2003), leaders have to find other sources of power, such as expert power or referent power so that they can still exert influence on team processes and outcomes. These, however, are sources of power which are not necessarily tied to a leader role. Instead, they represent qualities which any team member can have or develop. Moreover, low vertical interdependence de-emphasizes the unique network position which leaders held in traditional team structures, again reducing the distinct position of the leader.

By contrast, traditional team structures with high vertical interdependence endow leaders with a central network position and with power which turn the leader into a qualitatively different team member. Thus, for leaders, high vertical interdependence does not have the same negative impact on perceptions of distinctiveness which it does for team members. Instead, it amplifies the distinct position which the leader holds. Consistent with these arguments, I predict the following:

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Hypothesis 4b: Vertical interdependence will be positively related to leader perceptions of distinctiveness.

The Case for Internal Fit – Selection of Moderator Variables

Structural contingency theory (Burns & Stalker, 1961) posits that there is no one best way to organize. Instead, the effectiveness of one particular structure depends on the environment in which the team operates. Testing this proposition on the team level of analysis, Hollenbeck et al. (2002) found that team performance is an interactive function of the team's structure and the team's task environment. Specifically, they found that teams performed better on a functional structure in predictable task environments (i.e., low task complexity). Conversely, teams in a divisional structure performed better in unpredictable task environments (i.e., high task complexity).

More recent research has widened this perspective by also investigating the internal fit of team structure with characteristics of individuals. Indeed, research on fit in organizations has documented the critical role of person-group, person-vocation, and person-organization fit (Kristof, 1996). In a quantitative review of this literature, Kristof-Brown, Zimmerman, and Johnson (2005) showed that these different fit dimensions predict a broad range of work outcomes, including job attitudes and job performance. Consistent with these findings, Hollenbeck et al. (2002) showed in their investigation of the effects of team structure on team performance that the effectiveness of a team structure is contingent upon team member characteristics. Specifically, they showed that cognitive ability was a predictor of team performance in a divisional structure, but not in a functional structure. Similarly, Moon et al. (2004) found that cognitive ability predicts

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how successfully teams will adapt to a change from a functional to a divisional structure. In sum, these results demonstrate that any investigation into the effects of team structure on outcomes would be incomplete without considering the fit between structure and team member characteristics.

Applied to the context of this research, this suggests that individuals exhibit differences in their reactions to different degrees of coupling in teams, which may have important consequences for how individuals satisfy their needs for belongingness and distinctiveness in different team structures. What varies between individuals is not the absolute strength of the needs for belongingness and distinctiveness, but rather the means through which these needs are satisfied (Brewer, 2003; Brewer & Gardner, 1996; Brewer & Roccas, 2001). Restated, individuals differ in their reactions to environmental stimuli such that one person may use a specific stimulus (i.e., a team structure) as a means to satisfy needs for belongingness and/or distinctiveness, whereas other individuals may experience the same stimulus as a hindrance in their efforts to satisfy one or both of these needs. Thus, consistent with structural contingency theory, I will select moderator variables which determine the nature and intensity of the reaction of individuals to team structures with different degrees of coupling.

Three criteria should be used for the selection of specific moderator variables, indicating the fit between team structures and team member characteristics in this research. First, individual difference constructs which determine the nature and the magnitude of psychological reactions to different degrees of coupling along the two structural dimensions horizontal and vertical interdependence qualify as potential moderators. Second, any potential moderator should flow logically from the predictions

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of optimal distinctiveness theory which constitutes the main theory driving this research. Third, the selection of moderator variables should be informed by structural contingency theory, which has identified a number of individual difference constructs as moderators of individuals' reactions to different dimensions of team structure. Thus, before developing specific predictions on the internal fit of team structure with individual difference constructs, I use these three criteria to develop a theoretically-guided rationale for the selection of the moderator variables which I will investigate in this research.

Drawing from optimal distinctiveness theory, constructs which relate to the extent to which individuals generally see themselves as connected to others or as independent of others qualify as potential moderators. This is because individuals who generally define themselves as connected to others and who enjoy others' company will demonstrate different reactions to situations in which the individual is tightly coupled, loosely coupled, or decoupled from other individuals. Consistent with this rationale, I identify collectivism and extraversion as moderators for the influence of team structure on self-construals. Similarly, constructs which influence the degree to which individuals affirm or oppose status differentials in teams will determine psychological reactions to different levels of vertical interdependence in teams. This leads to the selection of power distance as a moderator. In addition to these constructs, structural adaptation theory identifies emotional stability and cognitive ability as additional individual difference constructs which determine individual reactions to different dimensions of team structure. In sum, I select collectivism and power distance as culturally-based individual difference constructs, extraversion and emotional stability as personality variables, and cognitive ability.

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Internal Fit – The Moderating Role of Culturally-based Individual Differences
*Collectivism as Moderator of the Effect of Horizontal Interdependence on Self-
Construals*

For my investigation into the effects of horizontal interdependence on individuals' self-construals, individual difference constructs which describe the extent to which individuals conceive of themselves *in general* as being independent of others or interrelated with others are especially important. This is because individuals who generally describe themselves as being interrelated with others or independent of others are also likely to differ in how they respond to work arrangements which emphasize or de-emphasize lateral communication between team members, as is the case with horizontal interdependence. For example, Flynn (2005) proposed that individuals with a personal identity orientation (i.e., individuals with low collectivism) are largely self-interested, placing only little emphasis on interpersonal relationships at work. Conversely, individuals with a relational and collective identity orientation place a much greater emphasis on group accomplishment and group status when defining their self-value.

Traditionally, research has viewed constructs which describe a focus on the independent self or the interdependent self as culturally determined, with collectivistic societies adopting a more inclusive self-concept and individualistic societies adopting an independent self concept (Hofstede, 1980). More recently, however, research has recognized that individuals within the same culture can also differ in fundamental ways on cultural values (Triandis, 1995; 1997; Jackson, Colquitt, Wesson, & Zapata-Phelan, 2006). Specifically, Jackson and colleagues (2006) have developed a scale which conceptualizes collectivism as a culturally-based individual difference construct.

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Individuals with low collectivism generally emphasize the independent self, they focus on personal goals and achievement, and view the larger collective as a means to accomplishing personal success. Conversely, individuals with high collectivism define themselves as inseparable from relevant others, giving priority to group goals. It is important to note that both individuals with high and low collectivism strive to experience belongingness and distinctiveness (Brewer, 2003; Brewer & Gardner, 1996; Brewer & Roccas, 2001). What distinguishes them is not the desire to experience these two psychological states, but rather the means with which these needs are satisfied. This has important consequences for the nature of the relationships between team structure and perceptions of belongingness and distinctiveness.

Moderating the Effect of Horizontal Interdependence on Belongingness

Low horizontal interdependence reduces the salience of the team as a gestalt and emphasizes the identity of the individual team members. As horizontal interdependence increases, individuals will find it easier to satisfy their needs for belongingness in their groups. This applies to individuals with high and low collectivism, who can both satisfy their need for belongingness when horizontal interdependence increases. Thus, the positive slope representing the relationship between horizontal interdependence and perceptions of belongingness should apply to both individuals with high and low collectivism as we move from low to intermediate degrees of horizontal interdependence.

What sets individuals with high and low collectivism apart, however, is the psychological response which they show in response to different levels of horizontal interdependence. Given their predominant focus on the personal self, individuals with low collectivism will exhibit negative psychological reactions to high levels of horizontal

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interdependence which overemphasize the interdependence between team members. By contrast, the focus of individuals with high collectivism on the collective implies that they are more tolerant of higher levels of horizontal interdependence with stronger interpersonal connections with other team members, and that they can satisfy their desires for belongingness both in intermediate and high horizontal interdependence.

This has important consequences for the form of the relationship between horizontal interdependence and perceptions of belongingness. To reiterate, I previously predicted an inverted U-shaped relationship between horizontal interdependence and perceptions of belongingness, arguing that low and high levels of horizontal interdependence have negative effects on individuals' self-construals. For individuals with high collectivism, however, the negative effects of high horizontal interdependence will be offset by the strong lateral connections between team members – these lateral connections meet the desire of individuals with high collectivism for social embeddedness. It follows that individuals with high collectivism will also be able to satisfy their needs for belongingness when horizontal interdependence is high.

Conversely, for individuals with low collectivism, the curve will exhibit a sharp drop in perceptions of belongingness when horizontal interdependence is high because the tight lateral connections in this structural arrangement violate the independent self-concept of these individuals and their strong desire for personal autonomy. Consistent with these arguments, I predict that collectivism moderates the curvilinear relationship between horizontal interdependence and perceptions of belongingness in the following manner:

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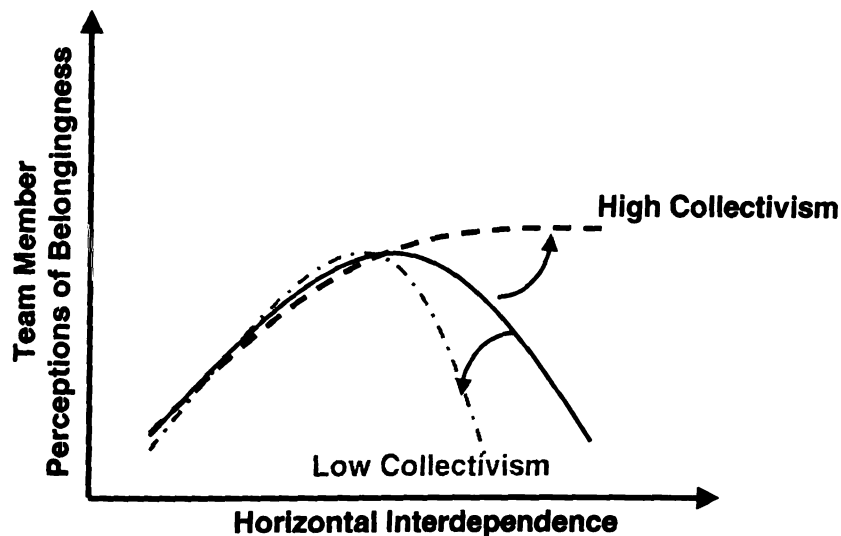
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Hypothesis 5: Collectivism moderates the curvilinear relationship between horizontal interdependence and perceptions of belongingness such that individuals with high collectivism will experience high belongingness at high levels of horizontal interdependence, whereas individuals with low collectivism will experience low belongingness when horizontal interdependence is high.

I have graphed the nature of this interactive effect in Figure 3, which also exemplifies the nature of the moderating effects of collectivism and power distance in hypotheses 6 – 8.

Figure 3. *Predicted Moderating Effect of Collectivism on the Relationship between Horizontal Interdependence and Team Member Perceptions of Belongingness*



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Moderating the Effect of Horizontal Interdependence on Distinctiveness

Both individuals with high collectivism and low collectivism also have to satisfy their need for distinctiveness so that they can function effectively (Brewer, 2003; Brewer & Gardner, 1996; Brewer & Roccas, 2001). Thus, consistent with my previous arguments, what sets them apart is not the strength of their needs for distinctiveness, but rather their psychological reactions to different levels of horizontal interdependence.

Specifically, individuals with high collectivism are more tolerant of team structures with high levels of horizontal interdependence because these structures generally constitute a good fit for collectivistic individuals with their emphasis on strong lateral ties between team members. In fact, the tight coupling between individuals in horizontally interdependent teams is consistent with the self-concept of individuals with high collectivism. Moreover, functional specialization in structures with high horizontal interdependence already provides enough differentiation from other team members to satisfy the need for distinctiveness of individuals with high collectivism. By contrast, individuals with low collectivism will perceive high levels of horizontal interdependence as an infringement of their autonomy and privacy. It follows that individuals with low collectivism will not be able to satisfy their need for distinctiveness when horizontal interdependence is high.

Thus, I predict that collectivism moderates the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness in the following manner:

Hypothesis 6: Collectivism moderates the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness such that individuals with high collectivism will experience high distinctiveness at high levels of horizontal

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Power Distance as Moderator of the Effect of Vertical Interdependence on Self-Construals

Individuals differ in the extent to which they affirm power distance in societies and organizations. Traditionally, power distance has been defined as a culturally determined variable (Hofstede, 1980). More recently, research has acknowledged that individuals within the same culture can also exhibit fundamental differences in their perception of power differences, similar to the within-culture variations which exist for collectivism and individualism. This has led to the development of a new scale of power distance as a culturally-based individual difference construct (Dorfman and Howell, 1988). For my investigation into the effects of vertical interdependence on self-construals, power distance is an important construct because it describes the extent to which individuals feel that equality or power differentials in teams affirm or violate their ideal representation of their role as team members. This should affect how team members will conceive of their group membership, with important consequences for perceptions of belongingness and distinctiveness.

Moderating the Effect of Vertical Interdependence on Belongingness

High vertical interdependence has the advantage of shortening decision making processes. This ensures that the team acts as one coherent unit, but often comes at the expense of employee participation. Compared to team structures with low vertical interdependence, high vertical interdependence emphasizes top-down communication channels and reduces the connectedness of team members with each other. For

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individuals with high power distance beliefs, the weak lateral ties with other teammates are not very problematic as they expect to focus on one strong leader. Thus, such a structural configuration does not prevent them from satisfying their needs for belongingness. Individuals with high power distance values will derive their belongingness from perceiving their team as one coherent unit, a feature that is more likely to happen when teams have a powerful leader. This suggests that individuals with high power distance can satisfy their desire for belongingness even in team structures with high vertical interdependence. Conversely, for individuals with low power distance values, the presence of a strong autocratic leader runs counter to their egalitarian self-concept. It follows that individuals with low power distance values will experience low levels of belongingness at high degrees of vertical interdependence.

Hypothesis 7: Power distance moderates the curvilinear relationship between vertical interdependence and perceptions of belongingness such that individuals with high power distance values will experience high belongingness at high levels of vertical interdependence, whereas individuals with low power distance values will experience low belongingness when vertical interdependence is high.

Moderating the Effect of Vertical Interdependence on Distinctiveness

I previously predicted that team structures with intermediate degrees of vertical interdependence will be associated with highest perceptions of distinctiveness by giving individuals a feeling of personal control and self-determination at work, while at the same time ensuring strategic alignment between the team's actions and the objectives of the organization. For individuals with high power distance beliefs, however, it is much less critical to experience personal control at work. In fact, these individuals may even prefer

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to be in a position in which a powerful leader has control over the team's decisions and actions. Thus, individuals with high power distance values will satisfy their needs for distinctiveness through different channels, for example through comparisons of the status of the group with the status of other groups (Brewer, 1991). It follows that individuals with high power distance values will be able to satisfy their needs for distinctiveness at both intermediate and high degrees of vertical interdependence.

For individuals with low power distance values, however, social differentiation in the form of a powerful leader figure undermines their egalitarian value system. This makes individuals with low power distance values much less tolerant of team structures with high vertical interdependence. Therefore, individuals with low power distance values will experience low distinctiveness when vertical interdependence is high.

Thus, I predict that power distance beliefs moderate the effect of vertical interdependence on perceptions of distinctiveness in the following manner:

Hypothesis 8: Power distance moderates the curvilinear relationship between vertical interdependence and perceptions of distinctiveness such that individuals with high power distance values will experience high distinctiveness at high levels of vertical interdependence, whereas individuals with low power distance values will experience low distinctiveness when vertical interdependence is high.

Internal Fit – The Moderating Role of Personality Variables and Cognitive Ability

Previous research indicates that the effect of team structure on team outcomes is contingent upon dispositional characteristics between team members. For example, LePine, Hollenbeck, Ilgen, and Hedlund (1997) showed that for hierarchical decision-

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making teams, cognitive ability and conscientiousness emerged as significant predictors of team performance. Similarly, Hollenbeck et al. (2002) showed that cognitive ability and emotional stability emerged as significant predictors of team performance in a higher scope, divisional task characterized by low horizontal interdependence, but not in narrower functional task (Hollenbeck et al., 2002; LePine et al., 1997).

Consistent with these findings, I will investigate the important moderating role of individual difference constructs in the relationships between team structure and perceptions of belongingness and distinctiveness. For the effects of horizontal interdependence on belongingness and distinctiveness, I will examine the moderating role of extraversion and cognitive ability. High levels of horizontal interdependence imply more regular and more intensive interpersonal contact between team members, which will elicit different reactions from extraverted and introverted individuals. Also, high horizontal interdependence creates relatively narrow roles which reduce the cognitive demands of a role, whereas low horizontal interdependence creates broad roles which depend on the speed and the accuracy with which an individual decision maker can process information, that is, on the cognitive ability of the individual team member.

For the effects of vertical interdependence on perceptions of belongingness and distinctiveness, I will investigate the moderating role of emotional stability and cognitive ability. Team structures with low vertical interdependence create flexible and fluid work structures in which team members have high personal discretion over their actions. Thus, the effectiveness of different degrees of vertical interdependence is contingent upon the emotional stability and cognitive ability of team members.

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Moderating the Effect of Horizontal Interdependence on Self-Construals

The Moderating Role of Extraversion

Extraverted individuals are social, assertive, and talkative and generally derive greater benefits from social contact with others than introverted individuals (Diener, Oishi, & Lucas, 2003). Moreover, extraverted individuals are sensation-seeking, which allows them to enjoy tense social interactions which may already be perceived as stressful by introverts. Thus, extraverted individuals can still enjoy levels of horizontal interdependence which would undermine introverts' perceptions of belongingness.

Moreover, Gardner and Cummings (1988) suggested that extraverted individuals require higher levels of external stimulation to reach ideal levels of self-activation, defined as the state of neural excitation in the reticular activating system of the central nervous system. When activation deviates from this characteristic level, individuals experience diminished central nervous system efficiency and decreased quality of motor responses and thought processes. This is likely to happen for introverted individuals when horizontal interdependence is high, where the intensive interpersonal contact between team members will push them beyond their characteristic levels of self-activation. This will elicit negative psychological reactions and lower commitment to the team.

In sum, this suggests that extraverted individuals are better equipped to deal with the requirements of high horizontal interdependence. Consistent with these arguments, I predict that extraversion moderates the relationship between horizontal interdependence and perceptions of belongingness in the following manner:

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Hypothesis 9: Extraversion moderates the curvilinear relationship between horizontal

interdependence and perceptions of belongingness such that extraverted individuals will experience high belongingness at high levels of horizontal interdependence, whereas introverted individuals will experience low belongingness when horizontal interdependence is high.

Similarly, because of their strong desire for interpersonal communication, extraverted individuals are also relatively immune against the negative effects of high horizontal interdependence on perceptions of distinctiveness. In fact, for extraverted individuals, tight horizontal coupling provides welcome opportunities for social interaction. For introverted individuals, however, the same levels of horizontal interdependence may be perceived as stressful and as an invasion into personal space which the introverted individual would like to fill with activities which are associated with lower levels of self-activation. Thus, I predict that extraversion will moderate the relationship between horizontal interdependence and perceptions of distinctiveness in the following manner:

Hypothesis 10: Extraversion moderates the curvilinear relationship between horizontal

interdependence and perceptions of distinctiveness such that extraverted individuals will experience high distinctiveness at high levels of horizontal interdependence, whereas introverted individuals will experience low distinctiveness when horizontal interdependence is high.

The Moderating Role of Cognitive Ability

A long tradition of research has established cognitive ability as a powerful predictor for a range of work outcomes (Lepine, Hollenbeck, Ilgen, & Hedlund, 1997),

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including individual training success (Ree & Earles, 1991) and job performance (Ree, Earles, & Teachout, 1994). This research also showed that cognitive ability becomes an especially powerful predictor in complex tasks (Hartigan & Wigdor, 1989). Moreover, the importance of cognitive ability increases with the breadth of an individual role. For example, Hollenbeck and colleagues (2002) showed that for divisional teams in which individuals held broad work roles, cognitive ability predicted team performance when the task environment was dynamic.

Team structures with low horizontal interdependence generally create broader work roles in which the individual has to process a large amount of information. This requires that individuals have sufficient cognitive ability to oversee and process the complexity of the information associated with their task. For individuals with low cognitive ability, this complexity may be overwhelming and lead to psychological detachment from the team. Therefore, individuals with high cognitive ability will be relatively immune against the negative effects of low horizontal interdependence on perceptions of belongingness, whereas this effect will be amplified for individuals with low cognitive ability.

Hypothesis 11: Cognitive ability moderates the curvilinear relationship between

horizontal interdependence and perceptions of belongingness such that individuals with high cognitive ability will experience high belongingness at low levels of horizontal interdependence, whereas individuals with low cognitive ability will experience low belongingness when horizontal interdependence is low.

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I previously argued that low levels of horizontal interdependence will be associated with low levels of personal distinctiveness by creating roles which are perceived as largely interchangeable. Again, individuals with high cognitive ability will be relatively immune against this effect. By mastering the complexity of the information which they face in their broad work roles, they are able to maintain a distinctive networking position. For example, in a divisional structure in which each team member is assigned primary responsibility for one specific geographical region, individuals with high cognitive ability are more likely to recognize the specific challenges which await in their specific region, and how these tie in with the challenges which other team members face. This suggests that their high cognitive ability allows them to create a distinctive role which matches the requirements of the environment and their personal skill set. Thus, I predict that cognitive ability will moderate the relationship between horizontal interdependence and perceptions of distinctiveness in the following manner:

Hypothesis 12: Cognitive ability moderates the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness such that individuals with high cognitive ability will experience high distinctiveness at low levels of horizontal interdependence, whereas individuals with low cognitive ability will experience low distinctiveness when horizontal interdependence is low.

Moderating the Effect of Vertical Interdependence on Self-Construals

The Moderating Role of Emotional Stability

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Neurotic individuals tend to experience negative emotions such as fear, sadness, embarrassment, anger, guilt, and disgust (Costa & McCrae, 1992). Consistent with this, Moon, Hollenbeck, Humphrey, & Maue (2003) argued that anxious individuals are especially sensitive to social pressures conveyed through group norms and rules of conduct. Eysenck (1992) further suggested that anxious individuals engage in more social scanning activities than emotionally stable individuals. Referred to as hypervigilance, these scanning activities focus on identifying ways in which other group members assess the character and the quality of the work of the self. Anxious individuals are highly sensitive to negative perceptions of themselves, which explains why they succumb to social expectations of others. In addition, emotionally unstable individuals underestimate their chances of success (Wener & Rehm, 1975) and tend to view the environment as out of their control. They generally exhibit low self-efficacy and do not believe that their actions will ultimately result in meaningful change (Abramson & Sackheim, 1977). These perceptions generally lead to feelings of helplessness and a negative outlook on life.

Team structures with low vertical interdependence require individuals who are comfortable and capable of filling an expanded role which endows them with personal discretion over their work. Emotionally stable individuals are much better equipped to fill this role adequately. It is easier for them to develop trust in their ability to fill the demands of an expanded role. Conversely, emotionally unstable individuals will be preoccupied with scanning activities, trying to ascertain that others perceive the self favorably, instead of exploring and fulfilling the demands of their expanded work role. In sum, this suggests that emotionally stable individuals are relatively immune against the

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negative effects of low degrees of vertical interdependence, whereas emotionally unstable individuals perform especially poorly under such structural arrangements. Thus, I predict the following:

Hypothesis 13: Emotional stability moderates the curvilinear relationship between

vertical interdependence and perceptions of belongingness such that individuals with high emotional stability will experience high belongingness at low levels of vertical interdependence, whereas individuals with low emotional stability will experience low belongingness when vertical interdependence is low.

Similarly, emotionally stable individuals will perceive the high autonomy and the enriched work role in a team structure with low vertical interdependence as an opportunity. This autonomy will reinforce how emotionally stable team members view themselves as positively distinctive team members in a team structure with low vertical interdependence. Conversely, individuals with low emotional stability will experience the autonomy of a team structure with low vertical interdependence as a burden. Therefore, they are not able to reap the psychological benefits of the autonomy and of the expanded role for their perceptions of personal distinctiveness. Consistent with these arguments, I predict the following:

Hypothesis 14: Emotional stability moderates the curvilinear relationship between

vertical interdependence and perceptions of distinctiveness such that individuals with high emotional stability will experience high distinctiveness at low levels of vertical interdependence, whereas individuals with low emotional stability will experience low distinctiveness when vertical interdependence is low.

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The Moderating Role of Cognitive Ability

Similar to team structures with low horizontal interdependence, team structures with low vertical interdependence imply greater demands for information processing and decision making. Because of that, cognitive ability becomes a critical factor in such structural arrangements. In fact, individuals with high cognitive ability are relatively immune against the negative effects of low vertical interdependence for perceptions of belongingness. I previously argued that individuals may easily feel abandoned by the organization if they are working in a team structure with low vertical interdependence in which they do not receive guidance from a leader. This is much less likely to happen when individuals are high on cognitive ability. Such individuals will be able to substitute leader guidance with self-directed coordination activities, which restore perceptions of belongingness. The opposite is true for individuals with low cognitive ability. Such individuals require directive leadership which provides guidance and which aligns the activities of the individual and the team with the larger organization. Thus, I predict the following:

Hypothesis 15: Cognitive ability moderates the curvilinear relationship between vertical interdependence and perceptions of belongingness such that individuals with high cognitive ability will experience high belongingness at low levels of vertical interdependence, whereas individuals with low cognitive ability will experience low belongingness when vertical interdependence is low.

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Individuals with high cognitive ability are better equipped to meet the challenges of a team structure with low vertical interdependence. They are able to fill the demands of autonomous work roles and to provide the coordination and learning that is necessary for self-directed teams to succeed. This provides them with a differentiated network position in which they assume a role similar to that of a formal leader. This provides individuals with high cognitive ability with a sense of positive distinctiveness.

Thus, I predict the following:

Hypothesis 16: Cognitive ability moderates the curvilinear relationship between vertical interdependence and perceptions of distinctiveness such that individuals with high cognitive ability will experience high distinctiveness at low levels of vertical interdependence, whereas individuals with low cognitive ability will experience low distinctiveness when vertical interdependence is low.

Internal Fit and Leadership

Culturally-Based Individual Differences and Leadership

Again, I develop separate predictions for the effects of horizontal interdependence and vertical interdependence on leader self-construals. This recognizes that leaders differ in important characteristics from team members. For example, Barrick and Mount (1991) and Kirkpatrick and Locke (1991) showed that leaders are generally more extraverted, conscientious, and open to new experiences than the average team member, and that this was true both in organizational and small-group settings. Consistent with these findings, I propose that my previous arguments on fit between team structure and team member characteristics do not necessarily have to generalize to leaders.

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*Collectivism as Moderator of the Effect of Horizontal Interdependence on Leader Self-
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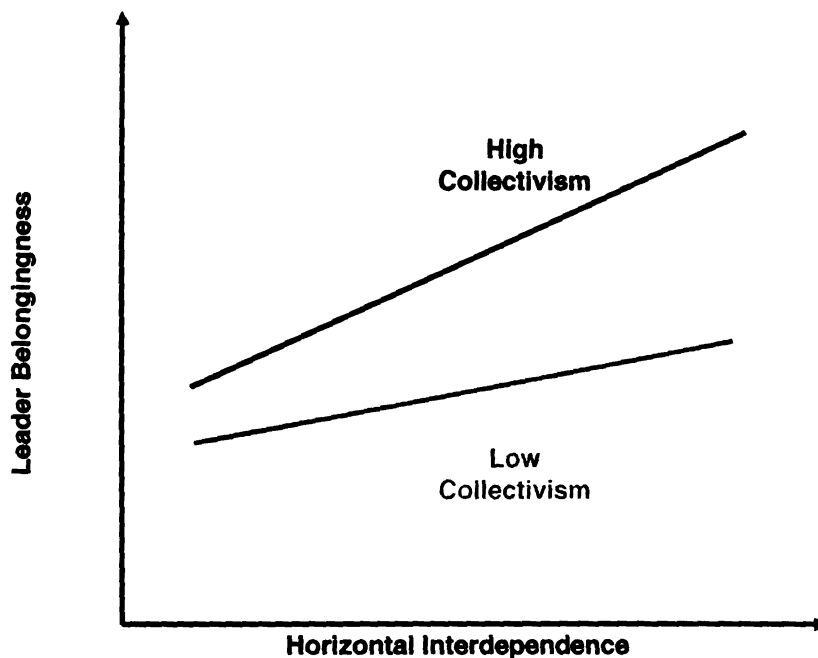
High horizontal interdependence does not only provide a good fit for collectivistic team members, it also enhances the ability of collectivistic team leaders to coordinate team activities effectively. Indeed, the focus of collectivistic individuals on relevant others and their inclusive self-concept allows them to develop positive relationships with team members (Triandis, 1995). Compared to individuals with low collectivism, individuals with high collectivism focus to a much larger extent on group goals than on individual goals, which is also consistent with the requirements of a team structure with high horizontal interdependence which emphasizes the overall identity of a team. In sum, this suggests that high horizontal interdependence allows collectivistic leaders to further increase their cathexis, that is, collectivistic leaders will become psychologically more invested in their team when horizontal interdependence is high. Conversely, individuals with low collectivism will struggle with the requirements of a horizontally interdependent structure. Their focus on personal goals and their competitive attitude (Flynn, 2005) becomes problematic and hampers their ability to develop positive relationships with team members, especially when the task structure demands these relationships. Figure 4 illustrates the nature of the predicted interaction effect.

Figure 4. Predictions of
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Figure 4. *Predicted Moderating Effect of Collectivism on the Relationship between Horizontal Interdependence and Leader Perceptions of Belongingness*



Hypothesis 17a: Collectivism will moderate the effect of horizontal interdependence on leader perceptions of belongingness such that it enhances the positive relationship between horizontal interdependence and leader perceptions of belongingness.

In teams with high horizontal interdependence, leaders adopt a more central networking position so that team activities can be coordinated effectively. I previously predicted that the central network position would be associated with higher leader perceptions of distinctiveness. This effect should be especially pronounced for individuals with low collectivism who derive their self-worth from self-other comparisons and who seek out interpersonal differentiation (Triandis, 1995). Conversely,

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individuals with high collectivism will adopt a more cooperative leadership style, even when the team structure emphasizes their leadership position.

Hypothesis 17b: Collectivism will moderate the effect of horizontal interdependence on leader perceptions of distinctiveness such that it neutralizes the positive relationship between horizontal interdependence and leader perceptions of distinctiveness.

Power Distance as Moderator of the Effect of Vertical Interdependence on Leader Self-Concepts

In a study of self-managing teams, Douglas and Gardner (2004) found that managers of self-managing teams often rely too heavily on hard influence tactics, such as coalition building, legitimating, and pressure, even though low vertical interdependence / team self-management require soft influence tactics such as inspirational appeal and ingratiation. It is likely that leaders with high power distance will be especially prone to making this mistake. By drawing clear boundaries between themselves as leaders and their followers, they struggle to demonstrate the types of soft influence tactics which are required in a team structure with low vertical interdependence. This should further reduce their ability to become psychologically invested in a self-managing team. Conversely, the focus of leaders with low power distance on other team members will serve as a buffer against the negative effect of low vertical interdependence on perceptions of belongingness. They will find it easier to deal with their role as “powerless leader”, instead of becoming psychologically detached from the team.

Hypothesis 18a: Power distance will moderate the effect of vertical interdependence on leader perceptions of belongingness such that low (high) power distance values

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Similar to leaders with low collectivism, leaders with high power distance values affirm the distinct social position and status which a team structure with high vertical interdependence creates for them. They are especially sensitive to the positive psychological consequences of occupying a distinct social network position and by having the ability to exert influence over their followers. Consistent with these arguments, I expect that leaders with high power distance values will develop an especially distinctive self-concept when vertical interdependence in teams is high.

Hypothesis 18b: Power distance will moderate the effect of vertical interdependence on leader perceptions of distinctiveness such that low (high) power distance values will neutralize (enhance) the positive relationship between vertical interdependence and leader perceptions of distinctiveness.

Personality Variables and Leadership

Extraversion as Moderator of the Effect of Horizontal Interdependence on Leader Self-Concepts

I previously argued that leaders assume a more critical networking position in team structures with high horizontal interdependence. I predicted that this central networking position of leaders in team structures with high horizontal interdependence would increase leader perceptions of belongingness and distinctiveness. This effect should be especially pronounced for extraverted individuals, who will be more successful in integrating the activities of specialized team members. By functioning as a communication hub, extraverted leaders will also become more psychologically invested

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in the team: leader belongingness will increase. Moreover, extraverted leaders are more assertive and dominant in team discussions than introverted leaders (Costa & McCrae, 1992). This further emphasizes the distinctive social position of an extraverted leader in teams, which should be associated with high leader perceptions of distinctiveness.

Consistent with these arguments, I predict the following:

Hypothesis 19a: Extraversion will moderate the effect of horizontal interdependence on leader perceptions of belongingness such that extraversion will enhance the positive relationship between horizontal interdependence and leader perceptions of belongingness.

Hypothesis 19b: Extraversion will moderate the effect of horizontal interdependence on leader perceptions of distinctiveness such that extraversion will enhance the positive relationship between horizontal interdependence and leader perceptions of distinctiveness.

Cognitive Ability as Moderator of the Effect of Vertical Interdependence on Leader Self-Construals

In team structures with high vertical interdependence, leaders retain the authority to make unilateral decisions which are binding for the team. Making decisions by himself/herself, however, requires that the leader is capable of bundling all relevant information which is needed to come to an informed decision. This imposes high demands on the cognitive ability of leaders in team structures with high vertical interdependence. In fact, they will only be able to perform their role successfully if they can consistently demonstrate to the team that their unilateral decision making style is superior to a more democratic decision making process. It follows that leaders with high

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cognitive ability should find it easier to perform a centralized leadership role and to remain committed to the team. Thus, I predict the following:

Hypothesis 20a: Cognitive ability will moderate the effect of vertical interdependence on leader perceptions of belongingness such that cognitive ability will enhance the positive relationship between vertical interdependence and leader perceptions of belongingness.

Similarly, leaders can only retain their unique network position in a team structure with high vertical interdependence if they are capable of bundling all relevant information which is needed to make informed decisions. If this were not the case, then team members would engage in behaviors which attempt to revert to a team structure which de-emphasizes the networking position of the leader, replacing it with lateral ties between team members. Put in different words, leaders with high cognitive ability are more capable of occupying a distinctive networking position than leaders with low cognitive ability. Consistent with these arguments, I predict the following:

Hypothesis 20b: Cognitive ability will moderate the effect of vertical interdependence on leader perceptions of distinctiveness such that cognitive ability will enhance the positive relationship between vertical interdependence and leader perceptions of distinctiveness.

Predicting Relationships between Optimal Distinctiveness and Criteria

Research has generally adopted two distinct approaches in studying the relationships between distinctiveness and belongingness with criteria. According to one approach, intermediate levels of distinctiveness and belongingness result in optimal

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human functioning. For example, Snyder and colleagues (Snyder & Fromkin, 1980; Lynn & Snyder, 2002) asserted in their uniqueness theory that people seek to establish and maintain a moderate sense of self-distinctiveness, which would in turn be associated with positive mood and higher subjective well-being. This research conceptualizes distinctiveness and belongingness as the opposite ends of one scale and relies on opponent process theories to argue that excessive distinctiveness or belongingness will automatically be corrected by the respective opponent process (excessive distinctiveness will be corrected by a desire for belongingness, and vice versa). This approach is especially reminiscent of earlier research on distinctiveness and belongingness.

A second approach recognizes that distinctiveness and belongingness are not two opposite ends of one continuum, but rather two distinct constructs, both of which represent fundamental human needs. According to this approach, individuals have to satisfy both needs of distinctiveness and belongingness in order to realize optimal human functioning. Put in different words, this approach argues for an interactive effect between distinctiveness and belongingness such that satisfaction of either belongingness or distinctiveness is not enough. Instead, it is the simultaneous satisfaction of both of these traits that results in optimal psychological functioning. Interestingly, this approach overlaps in large parts with Deci and Ryan's self-determination theory (Deci & Ryan, 2000), which argues that the three needs autonomy, competence, and relatedness have to be satisfied simultaneously for psychological well-being to occur. The constructs autonomy and relatedness in Deci and Ryan's self-determination theory correspond to the constructs distinctiveness and belongingness in optimal distinctiveness theory. Consistent with self-determination theory and more recent research on optimal distinctiveness

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(Bettencourt & Sheldon, 2001; Hornsey & Jetten, 2004; Janssen & Huang, 2008), I conceptualize distinctiveness and belongingness as two distinct constructs which have to be satisfied simultaneously.

It is important to note that the needs for belongingness and distinctiveness are universal needs which should be experienced by all humans. Thus, satisfaction of the needs should elicit similar psychological reactions in individuals, irrespective of whether they occupy leadership positions or whether they are lower-level team members. Thus, I will not develop separate predictions on the effects of optimal distinctiveness on criteria.

The selection of specific outcome variables in this research is again driven by optimal distinctiveness theory. According to optimal distinctiveness theory, the needs for belongingness and distinctiveness have evolutionary origins. The satisfaction of these needs signals to individuals that they achieve a positive social status which ensures social embeddedness and personal differentiation from others. Social embeddedness is necessary to avoid feelings of social exclusion and stigmatization, and differentiation from others is necessary for comparative appraisal and self-definition (Brewer, 2003). If one or both of these needs remain unsatisfied, the individual will have to dedicate psychological energy to identifying causes of this imbalance and to restoring a state of optimal distinctiveness. Optimal distinctiveness theory argues that individuals will generally feel uncomfortable and cognitively disadvantaged during this process, a state which is associated with lower levels of well-being and self-worth. On a more general level, it renders the individual unable to function effectively (Brewer, 2003). Conversely, satisfaction of these needs allows individuals to shift their psychological energy to more productive endeavors.

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Applied to the context of teams, this suggests that individuals who are unable to satisfy their needs for belongingness and/or distinctiveness will experience lower levels of subjective well-being and lower feelings of self-efficacy. Moreover, if one or both of the needs for belongingness and distinctiveness remain unsatisfied, individuals will have to shift psychological energy away from productive endeavors to restore feelings of optimal distinctiveness, which should reduce their ability to perform well on their task. Finally, I will investigate voice behaviors as an additional outcome. Due to the origins of optimal distinctiveness theory in social psychology, voice has not yet been considered as an outcome of optimal distinctiveness. Nevertheless, it constitutes a prime example of how the satisfaction of both needs for belongingness and distinctiveness increase individuals' ability to function effectively at team members. Specifically, by satisfying both needs for belongingness and distinctiveness, individuals experience field independence AND a strong commitment to the team, both of which are important prerequisites for such challenging discretionary work behaviors (Van Dyne, Cummings, & McLean Parks, 1995).

Predicting Subjective Well-Being

Subjective well-being encompasses affective states and evaluative judgments about the self in the context of the situation, that is, situational assessment of self-evaluative well-being. In general, responses to questions about attitudes and judgments are influenced by working memory (Hastie & Park, 1986). Thus, even evaluations that are assumed to be relatively stable can fluctuate over time. For example, empirical research on daily variations in marital satisfaction (e.g., Heller & Watson, 2005) and job satisfaction (e.g., Ilies & Judge, 2002) demonstrates that constructs formerly thought to

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be relatively stable do indeed fluctuate over time. Moreover, research on fluctuations in well-being states (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan, & Reis, 1996) shows that affective and physiological well-being vary across and within days as a function of the fulfillment of needs for competence, relatedness, and autonomy. This suggests that it can be appropriate to examine fluctuations in attitudes, affects, and well-being states even over relatively short periods of time.

Humans have a fundamental need to experience belongingness and to be a valued member of social groups (Baumeister & Leary, 1995). Brewer (2003) argued that this need derives from our history as a social species where group living has become a superior survival strategy. As such, humans lost their instincts that make isolated living and reproduction possible or desirable. Consistent with this idea, Case and Williams (2004) asserted that ostracism is a metaphor for death which undermines individuals' sense of existence and recognition, and Eisenberger and Lieberman (2005) argued that the human brain recognizes even subtle signals which threaten our social standing. A number of empirical studies demonstrated the pervasive negative effect of ostracism on individuals' well-being. For example, Eisenberger, Lieberman, and Williams (2003) showed that ostracism activated the same brain areas which signal physical pain, and ostracism even had negative consequences on individuals' well-being when ostracized individuals knew that the other individuals were forced to ostracize them (Eisenberger & Liebman, 2005), when the ostracizing entity was a computer (Zadro, Williams, & Richardson, 2004), or when ostracism was financially lucrative for ostracized individuals (Van Beest & Williams, 2006). It follows that satisfaction of the need to belong is essential for subjective well-being.

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Optimal distinctiveness theory argues, however, that the need to belong is a necessary, but not sufficient condition for optimal psychological functioning. Brewer (2003) adequately pointed out that the need to belong in and by itself does not guarantee superior survival value. Indeed, people who believe that their personal characteristics overlap in all dimensions with personal characteristics of other group members generally react with anxiety and a strong desire to increase interpersonal distance (cf. Lynn & Snyder, 2002). Brewer suggested that, over the course of evolution, individuals have learnt to balance the costs of being a valued group member with the benefits that are associated with it. Specifically, actions which promote the social standing of the self, such as sharing of information, helping behaviors, or the development of interpersonal relationships, depend on trust and can only provide net benefits to the individual if all group members cooperate. This is a constellation which is rather the exception than the norm, especially in large groups (Latané, Williams, & Harkins, 1979). It follows that indiscriminate trust cannot be an adequate survival strategy. Instead, the individual has to develop mechanisms which protect the self from others with whom enduring relationships are not desirable. Thus, optimal distinctiveness theory proposes that individuals complement a need for belongingness with a need for distinctiveness to maximize the benefits of interpersonal relationships and group membership.

In addition, by demonstrating uniqueness in a valued social group, individuals signal their unique value to the group, which increases their status and ultimately their self-esteem (Codol, 1984). By maintaining a distinct self, individuals are also able to act in accordance with their personal convictions. Overall, I conclude that the simultaneous

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satisfaction of the needs for belongingness and distinctiveness should lead to optimal levels of subjective well-being.

The prediction that high levels of belongingness and high levels of distinctiveness are associated with optimal levels of subjective well-being is intuitively appealing in the sense that the simultaneous satisfaction of two needs should be associated with superior psychological outcomes. What may be less intuitive is that the satisfaction of only one of the two needs may actually have more negative psychological consequences than the satisfaction of none of the two needs. According to optimal distinctiveness theory, individuals' desire to satisfy the need for belongingness or distinctiveness increases with the extent to which the other need is satisfied. For example, if an individual experiences high levels of assimilation and belongingness in a team, then this individual also experiences a strong desire to satisfy the need for distinctiveness to protect a positively distinct self-concept. Thus, if simultaneous satisfaction of both needs is not possible, individuals' subjective well-being will suffer.

Conversely, if the individual does not feel psychologically committed to the team and experiences only weak perceptions of belongingness, then the individual also experiences a relatively weak desire to increase the distinctiveness of the self as a group member. Restated, group membership has little relevance to the individual if perceptions of belongingness are low, which is why the individual also sees little value in affirming the distinctiveness of the self as a group member. Brewer summarizes this very well: "The optimal level of category distinctiveness or inclusiveness is a function of the relative strength (steepness) of the opposing drives for assimilation and differentiation" (Brewer, 1991, p. 478). Consistent with these arguments, I predict a crossed interaction

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Hypothesis 21a: The effects of perceptions of distinctiveness on positive affect, negative affect, and self-evaluative well-being are moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with highest levels of positive affect and self-evaluative well-being and with lowest levels of negative affect.

Hypothesis 21b: The effects of perceptions of distinctiveness on positive affect, negative affect, and self-evaluative well-being are moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with lowest levels of positive affect and self-evaluative well-being and highest levels of negative affect.

Predicting Individual Self-Efficacy

According to social cognitive theory (Bandura, 2001), efficacy beliefs refer to individuals' beliefs in their capability to exercise control over their lives and their environments. Bandura further noted that efficacy beliefs are the foundation of human agency. Specifically, efficacy beliefs are neither solely determined by social-influence processes, nor should they be viewed as products of physiological brain processes. Instead, by emphasizing the role of human agency, Bandura asserted that the human mind is capable of intentionality, forethought, self-reactiveness, and self-reflectiveness. By emphasizing human agency and the capacity to exercise personal control, social cognitive

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Despite its strong focus on the generative and proactive character of the human mind, social cognitive theory also recognizes that the human mind does not operate in a social vacuum. In fact, the theory argues that human agency and social structure depend on each other:

Personal agency and social structure operate interdependently. Social structures are created by human activity, and sociostructural practices, in turn, impose constraints and provide enabling resources and opportunity structures for personal development and functioning (Bandura, 2001, p. 15).

This would suggest that perceptions of distinctiveness are a necessary, but again not sufficient condition for the development of self-efficacy beliefs. In addition to being distinct and unique, individuals need to feel connected to others and experience belongingness so that they can utilize the nutrients that their social environments provide for the development of their self-efficacy. Indeed, there is evidence that individuals find it easier to develop self-efficacy beliefs if they feel connected to and supported by their social environment. Bandura (1977) found that people can develop self-efficacy beliefs through past accomplishments, observation of others, verbal persuasion, or logical verification. The latter three of these four sources of self-efficacy beliefs depend on the influence of others or can at least be greatly facilitated by others. Only the first source of self-efficacy (past accomplishments) originates purely from inside the person. Thus, individuals who are well-embedded in their social networks should find it easier to use their peers as sources of self-efficacy beliefs. Specifically, by

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being connected to others and by experiencing high belongingness, individuals are more likely to seek out and to receive the kind of support that precedes development of self-efficacy beliefs. Thus, I predict that the simultaneous satisfaction of the needs for distinctiveness and belongingness is associated with highest levels of self-efficacy.

By contrast, without a socially supportive environment, the individual lacks the nutrients necessary to develop self-efficacy beliefs. In fact, consistent with my previous prediction of a crossed interaction effect of perceptions of belongingness and distinctiveness on well-being, satisfaction of only one of the two needs may even prove counterproductive. Feeling distinct will even intensify the negative psychological consequences for individuals who do not experience belongingness because it makes the interpersonal distance between the self and the team even more salient. This adds to the perception of being ostracized, a psychological state which is related to lower levels of self-efficacy (Gerber & Wheeler, 2009).

Hypothesis 22a: The effect of perceptions of distinctiveness on self-efficacy beliefs is moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with the highest levels of self-efficacy beliefs.

Hypothesis 22b: The effect of perceptions of distinctiveness on self-efficacy beliefs is moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with lowest levels of self-efficacy beliefs.

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Predicting Voice

Research on discretionary work behaviors has traditionally assumed that these types of behaviors represent a form of social exchanges. According to this research, individuals engage in discretionary work behaviors in order to reciprocate positive treatment of the organization, their supervisor, or their work group (Blau, 1964; Organ, 1988). This suggests that an intact psychological contract between the individual and the collective is a prerequisite for discretionary work behaviors to occur (Rhoades & Eisenberger, 2002). Otherwise, employees would not invest the time, energy, and resources which are required to engage in these types of behaviors. Expressed in the language of optimal distinctiveness theory, research on discretionary work behaviors generally assumes that perceptions of belongingness at the workplace are necessary for individuals to go above and beyond the formal call of duty. Consistent with this prediction, research found that intact psychological contracts, high identification with the work group, a strong relationship orientation, empathic concern, and field dependence are generally predictive of organizational citizenship behaviors and prosocial work behaviors (Van Dyne, Cummings, & Parks, 1995; Organ, Podsakoff, & MacKenzie, 2006).

More recent research, however, indicates that social exchange theory by itself presents an incomplete framework to explain why individuals engage in discretionary work behaviors (Penner, Midgley, & Kegelmeyer, 1997; Rioux & Penner, 2001). In particular, what has been missing in extant research on discretionary work behaviors is an explanation for discretionary work behaviors which challenge the current status quo in an organization (Van Dyne et al., 1995), such as voice. Van Dyne and colleagues argued that challenging discretionary work behaviors such as voice are most likely to occur if

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individuals feel committed to their respective work group, yet at the same time independent enough so that they can identify areas of improvement and so that they have the courage to step forward to address these issues in public (Van Dyne and colleagues refer to this as “field independence”). Again, translated into the language of optimal distinctiveness theory, this suggests that belongingness is a necessary, but not sufficient condition for individuals to engage in voice behaviors. Thus, I predict that individuals are most likely to engage in voice behaviors if they experience both belongingness and distinctiveness at work.

Again, satisfying only one of the two needs may prove counterproductive. Specifically, if an individual experiences high levels of belongingness, but no distinctiveness, chances are that this person will be discouraged from voicing divergent and controversial opinions and suggestions. In extreme cases, this could lead to conformity and groupthink (Janis, 1972), instead of promoting voice.

Hypothesis 23a: The effect of perceptions of distinctiveness on voice behaviors is moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with the highest levels of voice behaviors.

Hypothesis 23b: The effect of perceptions of distinctiveness on voice behaviors is moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with lowest levels of voice behaviors.

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Predicting Learning

Argote, Gruenfeld, and Naquin (1999) defined learning as an interactive process in which individuals acquire, share, and combine knowledge. According to this definition, learning is a function of the team's combined knowledge stock and of the way this knowledge is put to use. Thus, the larger the combined knowledge stock of the team, the more opportunities for the individual to learn. Not only does a large knowledge stock provide an absolute amount of knowledge that an individual may draw from when addressing critical problems, it also creates a larger number of unique combinations of individual pieces of knowledge to devise creative solutions to problems. As I argued before, team members with distinct educational backgrounds, functional areas of specialization, and professional experience should expand the knowledge pool that a team can draw from, and thus also contribute to learning.

Distinctiveness by itself, however, will not be sufficient to induce learning. Argote and colleagues (1999) aptly pointed out that learning is also an interactive process in which the team has to find novel ways of putting this knowledge to work. Similarly, Edmondson (1999) defined learning as an "ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of action" (p. 353). This definition emphasizes that learning is a process which depends on the quality of interpersonal processes and information exchanges.

According to Edmondson, learning can only occur if team members feel incentivized to engage in activities which are associated with team learning, such as soliciting help or information. This, however, will only occur if team members feel that

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these actions will not be perceived as a sign of incompetence and if they do not lead to public embarrassment. Staw, Sandelands, and Dutton (1981) showed that the threat of public embarrassment can in fact reduce behavioral flexibility and responsiveness, a phenomenon they termed threat rigidity. Thus, learning requires a team atmosphere in which individuals feel comfortable being themselves, while at the same enjoying feelings of interpersonal trust and mutual respect. Similarly, Schein and Bennis (1965) found that individuals need to feel secure in order to be able to change and learn, a state which Edmondson referred to as team psychological safety, that is, the shared belief that the team is safe for interpersonal risk taking. Conceptually, psychological safety is related to perceptions of belongingness, both of which describe the extent to which individuals value their interpersonal relationships with others. Translated into the language of optimal distinctiveness theory, this suggests that an individual's ability to learn is enhanced in a climate of psychological safety, that is, when perceptions of belongingness are high.

In sum, this suggests that learning requires high distinctiveness in teams and high belongingness so that learning can occur. High distinctiveness is needed so that a sufficiently large knowledge stock can be developed that individuals can draw from. High belongingness is required so that team members feel the psychological safety to engage in activities which will lead to helping behaviors. Thus, I predict that the simultaneous satisfaction of the needs for belongingness and distinctiveness will be associated with optimal levels of learning.

Consistent with my previous predictions, the satisfaction of either distinctiveness or belongingness alone will be detrimental for learning. High perceptions of

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distinctiveness without psychological commitment to the team and shared perceptions of belongingness will prevent the individual from utilizing the knowledge stock that the team offers and lead to low levels of learning.

Hypothesis 24a: The effect of distinctiveness on learning is moderated by belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with optimal levels of learning.

Hypothesis 24b: The effect of distinctiveness on learning is moderated by belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with low learning.

Predicting Job Performance

Brewer (2003) argued that individuals are highly sensitive to deviations of a state of optimal distinctiveness and that the ability of individuals to experience a state of optimal distinctiveness is associated with superior survival value. This is because a state of optimal distinctiveness signals to the self and relevant others that the individual is a loyal, yet at the same time unique and indispensable group member. According to this perspective, the need to experience perceptions of belongingness and distinctiveness derives from our evolutionary history as a social species. Restated, humans are hard-wired to strive for optimal distinctiveness and to initiate actions which seek to repair violations of optimal distinctiveness promptly. Any such activity, however, detracts psychological energy and time from productive endeavors and reduces the performance potential of the individual. And indeed, previous research by Ferris and colleagues found that ostracized individuals invested more time in impression management activities than

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individuals who experienced high belongingness in their respective group (Ferris, Brown, Berry, & Lian, 2008). This supports the notion that individuals shift their focus away from productive endeavors to attempts which seek to restore a state of optimal distinctiveness, a shift in focus which should be associated with a decline in job performance.

Moreover, optimal distinctiveness theory predicts that individuals achieve optimal psychological functioning when they experience both belongingness and distinctiveness. Consistent with this notion, I suggested in the previous hypotheses that optimal distinctiveness will be associated with high levels of subjective well-being, self-efficacy, and voice behaviors. Previous research has consistently identified those constructs as predictors of job performance (Judge & Bono, 2001; LePine & Van Dyne, 2001; Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Wright & Cropanzano, 2000), which is why I expect that optimal distinctiveness should also be predictive of job performance.

Thus, I predict the following:

Hypothesis 25a: The effect of perceptions of distinctiveness on job performance is moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with the highest levels of job performance.

Hypothesis 25b: The effect of perceptions of distinctiveness on job performance is moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with lowest levels of job performance.

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Predicting Team Identification

One of the central predictions of optimal distinctiveness theory is that the simultaneous satisfaction of the needs for belongingness and distinctiveness will result in higher identification with the group. This prediction has been supported by experimental social psychological research on optimal distinctiveness (Brewer, 2003). Similarly, research in organizational psychology and organizational behavior also points to the positive consequences of optimal distinctiveness for team identification.

Emphasizing the positive role of distinctiveness, Earley & Mosakowski (2000) found that group diversity was associated with improved communication, and Schippers, Den Hartoog, Koopman, and Wienk (2003) showed that diversity was associated with higher reflexivity, that is, with more intensive and successful consideration and discussion of team functioning. In sum, these findings support the notion that team diversity and team distinctiveness are associated with improved information processing in teams.

Other research, however, cautions that distinctiveness by itself, does not lead to high identification with the team. According to the social categorization perspective, diversity in teams can lead to stereotypical perceptions of dissimilar others and subgroup formation, which should also result in lower identification with the team (Van Knippenberg & Schippers, 2007). For example, Chattopadhyay (1999) found that individual dissimilarity was associated with lower trust between individuals and lower organizational citizenship behaviors, and Chatman and Flynn (2001) reported that demographic diversity was associated with lower cooperativeness. Also, Li and

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Hambrick (2005) showed that diversity faultlines in teams were associated with less behavioral integration.

This emphasizes the need to combine high distinctiveness in teams with high belongingness such that team members can experience high identification with their teams. And indeed, Van Knippenberg (1999) argued that groups should try to develop a positive sense of team distinctiveness, an attitude which promotes the value of diverse team membership, while recognizing the identity of the team and the interrelatedness of all team members.

This suggests that the potential of distinctiveness can only be realized if it is combined with the perception that the individual is positively connected with other team members. Expressed in the terminology of optimal distinctiveness, distinctiveness will only lead to higher team identification if it is combined with high belongingness. Thus, I predict that optimal distinctiveness will be associated with highest levels of team identification.

Hypothesis 26a: The effect of perceptions of distinctiveness on team identification is moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness are associated with the highest levels of team identification.

Hypothesis 26b: The effect of perceptions of distinctiveness on team identification is moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness is associated with lowest levels of team identification.

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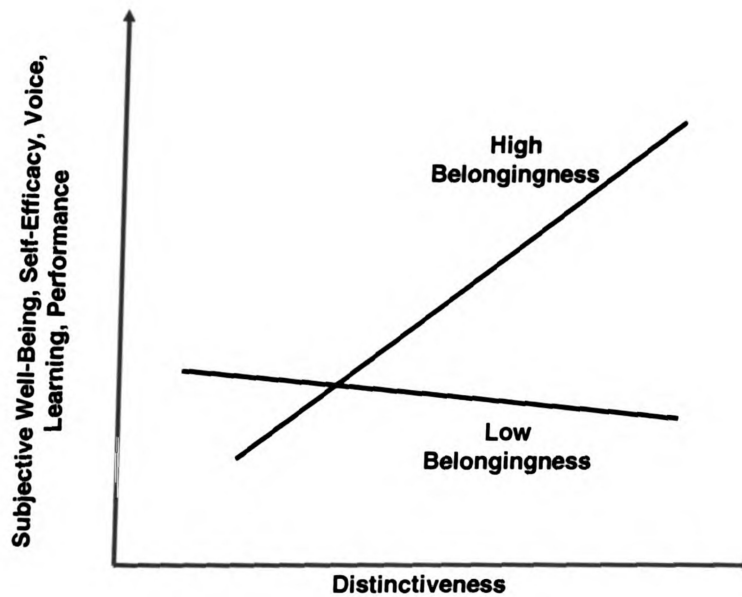
Figure 5. *Prevalence of Distinctiveness, Subjective Well-being, and Identification*

Subjective Well-being, Self-Efficacy, and Voice

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The nature of the hypothesized interaction effects are illustrated in Figure 5.

Figure 5. *Predicted Moderating Influence of Belongingness on the Relationships Between Distinctiveness and Outcomes*
(Subjective Well-Being, Self-Efficacy Beliefs, Voice, Learning, Performance, and Team Identification)



Mediation Hypotheses

To reiterate, the main goal of this dissertation is to identify an optimal degree of coupling in teams on the two structural dimensions horizontal and vertical interdependence which is associated with a state of optimal distinctiveness, that is, a state which allows individuals to satisfy their desires for belongingness and distinctiveness simultaneously. I predicted that loosely coupled team structures will allow team members to experience this state of optimal distinctiveness, which will lead to a broad range of outcomes, including subjective well-being, self-efficacy, voice behaviors, learning, and

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job performance. Underlying these predictions is the notion that self-construals can illuminate the black box between team structure and its consequences, providing a social psychological explanation for the common use of loosely coupled teams in organization. Restated, I am predicting that the effect of the two dimensions of team structure on relevant outcomes is mediated by self-construals. Specifically, drawing from optimal distinctiveness theory, I argue that a state of optimal distinctiveness, that is, the simultaneous satisfaction of the needs for belongingness and distinctiveness would predict subjective well-being, self-efficacy, learning, voice, and performance. Consistent with these arguments, I predict the following:

Hypothesis 27: The effect of horizontal interdependence on a) subjective well-being, b) self-efficacy, c) voice behaviors, d) learning, e) job performance and f) team identification is mediated by the psychological state of optimal distinctiveness, which represents the degree to which individuals can satisfy the needs for belongingness and distinctiveness simultaneously.

Hypothesis 28: The effect of vertical interdependence on a) subjective well-being, b) self-efficacy, c) voice behaviors, d) learning, e) job performance and f) team identification is mediated by the psychological state of optimal distinctiveness, which represents the degree to which individuals can satisfy the needs for belongingness and distinctiveness simultaneously.

METHOD

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A laboratory setting was used to test the hypotheses developed in the previous chapter. I decided to choose a laboratory setting for three main reasons. First, the laboratory allows an efficient research design in which variance on the independent variables can be maximized (Kerlinger, 1986). This is a noticeable advantage for the specific study. In fact, previous research indicates that organizations often tend to employ loosely coupled team structures, that is, structures with moderate degrees of interdependence (Hollenbeck & Spitzmuller, in press), thus reducing the range of different team structures represented in field studies on team structure. As a result, field research on team structure is severely limited in its ability to detect significant relationships between team structure and important individual and team-level outcomes. In addition, the laboratory offers the opportunity to randomly assign participants to experimental conditions, minimizing error variance and eliminating the risk of confounds and contaminants in the data.

Second, a laboratory design creates the opportunity to experimentally manipulate the different dimensions of team structure. This allows the investigation of causal relationships between team structure and individual and team-level outcomes, something that would not be possible in the field. In fact, there are numerous possible explanations for an effect with the reversed causality between team structure and individuals' self-construals. For example, it is possible that individuals with interdependent self-construals self-select into team settings characterized by high horizontal interdependence and low vertical interdependence (Schneider, 1987).

Third, previous research on optimal distinctiveness theory has mostly taken place in the laboratory (Aron, Aron & Smollan, 1992; Bettencourt & Sheldon & 2001;

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Holmvall & Bobocel, 2008; Jetten, Spears, & Manstead, 1998; Pickett & Brewer, 2001; Pickett, Silver, & Brewer, 2002). This research demonstrates that perceptions of belongingness and distinctiveness are malleable constructs which are responsive to experimental manipulations in a laboratory setting taking place over a relatively short period of time. As such, perceptions of personal belongingness and distinctiveness are fundamentally different from more stable identity orientations such as personal or collective identity orientations where it would indeed be difficult to find sufficient within-individual variation in a laboratory context.

Participants

I performed a power analysis to determine the number of teams which are needed to find my hypothesized effects. As I will outline in the section on my analysis strategy, I tested the curvilinear effects by creating dummy codes for the structural conditions, using the condition for intermediate horizontal interdependence as the comparison group for the low and high horizontal interdependence condition, and the moderate vertical interdependence condition as the comparison group for the low and high vertical interdependence conditions. Statistical power is generally a function of the alpha level, the number of predictors, the anticipated effect size, and the desired statistical power. Thus, using two predictors (i.e., low and high horizontal interdependence), assuming that one dimension of team structure can account for ten percent of variance in the dependent variables, and using an alpha level of .05 and a power of .80 leads to a required sample size of 89 individuals. Many of my hypotheses argue that the effect of team structure on self-construals is contingent upon individual difference constructs, such as collectivism, power distance, cognitive ability, extraversion, or emotional stability. Assuming that the

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interaction effect can account for an additional four to five percent of variance, and using again an alpha level of .05 and a power of .80 leads to a required sample size of 147 – 187 individuals.

The laboratory sessions for this study were conducted at Michigan State University during the first half of the summer term. Participants were recruited through the subject pool in the Management Department at Michigan State University. Also, I recruited participants through other summer classes, including classes such as Marketing, Supply Chain Management, Information Systems, Retailing, Social Psychology, Introductory Psychology, and Personality Psychology. Overall, 225 students participated in the study in 45 5-person teams. Two of the 225 individuals could not complete survey measures during the experiment because their respective computers could not connect to the internet at the time of the experiment, which reduced the total sample size of the study to 223. Of the participants, 54% were female. The average of the participants was 21.42 years. Participants had an average 1.12 years of full-time work experience. 49.8% of the participants identified themselves as Caucasians, 25.1% identified themselves as Asians, 13.9% identified themselves as African-American, 3.6% identified themselves as Hispanic, 0.9% identified themselves as Pacific Islanders, and 6.7% identified themselves as another ethnicity which was not among the predefined choices.

Task

Overview

This study utilized a simulation which was developed by researchers in the Management Department at Michigan State University. The simulator was developed with the purpose of enabling team research in general, including research that allows an

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objective manipulation of subdimensions of team structure. This simulator, called the Leadership Development Simulator (LDX), was designed to engage teams with varying sizes in the common task of discovering and interacting with targets in a defined environment. The simulation is structured such that teams can only perform well if they integrate multiple sources of information in the process of finding and engaging enemy targets. Team members are encouraged to talk with each other throughout the simulation. The team is structured such that four staff members make recommendations on where to place the assets which are assigned to their specific roles, which are subsequently reviewed by a mission commander, who can approve, modify, or delete the recommendations made by staff members. Each team member has a defined role with clear responsibilities. The specifics of the roles of the staff members depend on which structure is used. I will discuss this in detail when describing how I manipulated the different subdimensions of team structure.

This simulation was designed to be a complex task in which teams must decide on how to best utilize a large number of resources (48 assets in each round) in a relatively short amount of time. A big advantage of the simulation over commonly used team decision making simulations is that it provides objective data on numerous individual and team behaviors which can be used to test some of the hypotheses in this dissertation.

Team Objectives

Teams have the objective of maximizing their score, which is a function of four events: teams gain points by destroying opportunities or threats, but they can also lose points if their assets are destroyed by a threat or if their bases are attacked by a threat. Specifically, teams lose 8 points for each asset destroyed by a threat. Teams lost 8 points

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each turn for each threat that is adjacent to a base. Teams score 4 points for capitalizing on a small opportunity and 16 points for capitalizing on a large opportunity. Teams score 2 points for destroying a small threat and 4 points for destroying a large threat.

Team Member Roles

Consistent with previous research on team structure (Moon et al., 2004), the LDX has two primary horizontal role structures: functional and divisional. This can be complemented by a third horizontal structure, a hybrid structure, which essentially provides a blend of the functional and divisional structure. In the functional structure, staff members have narrowly defined specialized roles, and are responsible for fulfilling their roles throughout the entire environment. For example, one staff member assumes a specialized intelligence role (see below) whose task it is to gather information on the location of enemy targets. Conversely, in a divisional structure, the task is structured such that staff members assume primary responsibility for one specific geographical region in which they command both intelligence and operations assets.

In the LDX, staff members are responsible for two primary actions: gathering information and engaging enemy targets. Staff members who primarily gather information about the location of enemy targets are labeled as “Intelligence” team members, staff members who primarily engage enemy targets or in activities which support the engagement of enemy targets are labeled as “Operations’ team members. Each Intelligence team member has 16 assets to work with. There are four different types of assets: Visual, Communications, Human, and Allied. Each intelligence asset is deployed to a single location, and gathers probabilistic information regarding that area of the environment. In the functional structure, each Intel player has 16 assets of 2 types

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(e.g., the Signal Intelligence player controls 8 Visual Intelligence assets and 8 Communication Intelligence assets). Each intelligence asset is effective in a different region of the environment. Thus, one of the key challenges of is to determine in which geographical region their assets are accurate. This is a difficult problem solving task which can best be solved if the team develops a coherent strategy on how to engage in systematic search patterns which allow the identification of the sweet spots of intelligence assets. This can be accomplished by sending two different intelligence assets to the same square (referred to as double-sourcing). Another strategy to accomplish this is to send intelligence assets to the same square as operations assets since operations assets will always reveal information on enemy targets with 100% accuracy (this strategy is referred to as cross-validation of intelligence assets). A final characteristic of Intelligence assets is that they only observe the environment, and thus are never lost when deployed to the environment. In other words, Visual assets deployed for gathering information will not be destroyed by environmental entities.

In contrast to Intelligence assets, Operations assets directly engage enemy targets. They can gain points by destroying enemy targets, but they can also be shot down, which will result in a loss of points. As I indicated before, information gathered by Operations assets is always accurate and not probabilistic. Operations assets team members have four different types of assets: Strike, Escort, Refuel, and Info. Strike assets can engage opportunities. Escort can destroy threats and protect other operations assets against threats. Refuel assets enable other assets to reach distant portions of the environment. Info assets gather information about the location of enemy targets, similar to what the intelligence assets do, but with the noticeable difference that they will always reveal

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Simulation Environment

The environment in the LDX consists of a 16 x 16 game grid, totaling 256 squares. Hidden throughout the grid are threats and opportunities, which can be either small or large and either fixed or mobile. Also, targets can be mobile or fixed, with mobile targets moving about the grid throughout the simulation.

Teams engage the simulation in a round-based fashion, much like the game of battleship. At the beginning of each round, team members deploy their assets, after which the commander reviews staff members' recommendations. This will be followed by an execution phase in which team members see the results of their asset deployments. Teams can obtain feedback from a maximum of 48 different assets if the team decides to send out all intelligence and operations assets in one turn. Due to the large amount of information that the team receives, it is critical that the team finds an effective way to coordinate the information exchange between players and to integrate subsequent actions. Accordingly, no single team member can acquire and process all of the team's information.

Research Design

The design of the study is a 3 x 3 factorial design, with three levels of horizontal interdependence (divisional=low, hybrid=medium, and functional=high) and three levels of vertical interdependence (low, medium, and high). The conditions were fully crossed, creating a total of 9 experimental conditions.

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Manipulations

Team Structure – Horizontal Interdependence

Horizontal interdependence was manipulated by assigning teams to a functional, hybrid or divisional structure. In a functional structure, individuals command only one specific type of asset, that is, they only command offensive operations assets, support operations assets, signal intelligence assets, or human intelligence assets. The functional specialization of staff members in a functional structure emphasizes the interdependence between staff members and the need for coordination. Indeed, the task is structured such that it requires collective action on the part of all individuals so that the team can function effectively. For example, offensive operations cannot conduct any missions in the Northern part of the game grid, unless they receive support from support operations, who has to refuel all assets who conduct missions in the Northern part of the game grid. Similarly, operations players depend on intelligence information so that they can develop and execute a coherent strategy on which targets to attack at what time in the game.

Conversely, interdependency requirements in a divisional structure are low. Here, staff members are assigned primary and exclusive responsibility for one specific geographical region. In a divisional structure, players command both intelligence and operations players, which reduces the dependency on cross-functional communication between intelligence and operations.

Finally, in a hybrid structure, individuals assume primary responsibility for a geographical region (the entire West region), in which they command a larger variety of functional assets, that is, they are not restricted to dealing with only one specific functional asset, but deal with two different types of functional assets.

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Team Structure – Vertical Interdependence

Vertical interdependence was manipulated by assigning teams to experimental conditions which vary in the extent to which they confer decision making authority and voice to staff members. Specifically, vertical interdependence was manipulated through two sets of instructions which teams will receive and through variations in the game setup. First, after the initial training and before the start of the actual experiment, participants were asked to engage in a strategy development session in which they reflected on a strategy which the team wanted to pursue during the game. In order to facilitate the discussion, teams were given information on a number of critical strategic aspects of the game which they then subsequently discussed. This included the decision on the frequency with which integrated missions are to be conducted (combining operations and intelligence missions in one round), the extent to which teams are risk-seeking or risk-avoiding (the number of single- or unescorted missions that the team is conducting), and the percentage of double-sourced intelligence missions (sending two intelligence assets to the same square). Instructions for the strategy development session can be found in Appendix A.

In a condition with low vertical interdependence, all team members received the information on the different strategic aspects of the game on a sheet of paper. Participants were instructed to decide on a strategy by reaching consensus, and, if not agreement can be reached, then the leader should poll all team members regarding their preferences so that a decision can be reached. In a condition with high vertical interdependence, only the leader received the information on the strategic aspects of the game, and the instructions emphasized that the leader would unilaterally decide on the team strategy. The leader

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then communicated this strategy to the team, and team members were instructed to view this strategy as binding for the entire team. In a condition with intermediate degrees of vertical interdependence, all team members received the information on team strategy. The team was advised that it is the leader's job to decide on the team's strategy, but that the team can make constructive suggestions to the leader which can help him/her come to an informed decision.

Second, right before the beginning of the simulation, participants received additional oral instructions on the nature of communication and decision-making processes in their team. In a low vertical interdependence condition, the instructions emphasized that the task is very complex, which is why the team members should work together collaboratively to address the contingencies of this complex task. In addition, participants in the low vertical interdependence condition were instructed to involve all team members in decision making processes. Conversely, in a high vertical interdependence condition, participants received instructions which emphasized that the task is very complex, which is why it requires one commander who bundles all information. Thus, the team members should direct their communication at their commander. Also, the instructions emphasized that it is the commander who is supposed to take important decisions, and that the staff members should then do their best to implement those decisions. In a team structure with intermediate degrees of vertical interdependence, participants received instructions which emphasized that the task is very complex, which is why there may be situations where it is in the best interest of the team if the leader makes important decisions, whereas other situations require that all team members become involved in the decision making processes.

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Third, I varied the time which the team members and the team leader have available for their actions. In a condition with high vertical interdependence, the commander planning phase was expanded to 3:30 minutes, whereas the staff planning phase was shortened to 1:30 minutes. By contrast, in the low vertical interdependence condition, the commander planning phase was restricted to 1:30 minute and the staff planning phase was expanded to 3:30 minutes. For the intermediate vertical interdependence condition, the commander planning phase lasted 2:30 minutes and the staff planning phase lasted 2:30 minutes.

Fourth, I varied the impact that the leader has on team decisions. In a condition with high vertical interdependence, the commander had the authority to change, delete or add all decisions/moves that staff members made during the staff planning phase. In the low vertical interdependence condition, the leader was not authorized to make any changes at all to the moves that the team had decided on before. Instead, the leader was encouraged to use the time during the commander planning phase to moderate discussions on the team's overall strategy. For the intermediate vertical interdependence condition, the leader was authorized to make changes to staff members' decisions, but was instructed to do so only after consulting the staff member whose decision is to be overruled.

Procedure

Aside from the manipulations, the procedure was the same in all conditions. First, all participants were randomly assigned to one of two or three five-person teams which participated in the experiment at the same time. After the random assignment, individuals entered their respective room. After that, participants completed survey measures on

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personality variables, stable identity orientations, and baseline levels of personal well-being and self-efficacy. Participants then watched a 20 minute video training which explained the basic concept of the simulation, which was followed by a 20 minute hands-on training of the simulation. Prior to the actual game, all participants completed a goal-setting exercise and a strategy planning session. After completing the first half of the simulation, participants provided ratings of their self-construals (that is, perceptions of belongingness and distinctiveness experienced during the first half of the game). After conclusion of the game, participants completed another set of surveys, measuring their personal well-being, self-efficacy, voice behaviors, learning behaviors, performance, and team identification.

Measures

Horizontal Interdependence

After completion of the simulation game, manipulation checks were performed. Specifically, horizontal interdependence was measured with three items adapted from Kiggundu's measure of task interdependence. The three items were selected based upon their relevance for the specific experimental setting. The items read as follows: "The tasks of the other team members depended on the performance of my task", "I depended on information provided by other people so that I could perform my task", and "My task could not have been performed unless other team members complete their tasks." Responses to the items were given by the participant on a scale from 1 = *not at all*, to 7 = *to a very great extent*. I performed an ANOVA analysis to test whether participants perceived the three horizontal interdependence conditions as significantly different from each other. Results indicated significant between-group variation ($F = 5.70, p < .01$). I

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also compared the mean values of the three horizontal interdependence conditions to check whether each of the three conditions also differed significantly from each of the other two experimental conditions. Mean values for the low, moderate, and high experimental conditions were 5.49, 5.94, and 6.03, respectively. Results indicate that the low horizontal interdependence condition was perceived as different from the moderate and high horizontal interdependence conditions ($t = 2.77$ and $t = 3.01$, respectively). Results further indicate, however, that participants did not perceive a significant difference between the moderate and high horizontal interdependence condition ($t = .46$). Thus, the manipulation for horizontal interdependence was only partially successful because the intermediate and high horizontal interdependence conditions were being perceived as very similar. Mean values for perceived horizontal interdependence across all experimental conditions are presented in Table 1. I will discuss the implications of this finding in the discussion of limitations of this study.

Vertical Interdependence

A manipulation check for vertical interdependence was performed using a 3-item measure. This measure draws from existing measures of team self-management and team empowerment. These items were adapted from the self-determination scale of Spreitzer's measure of empowerment (1995) and Kirkman and Rosen's (1999) measure. In selecting these items, I excluded items which confound structural aspects of vertical interdependence with its psychological consequences, i.e., with the psychological state of being empowered, and selected the three items which focused to the largest extent on structural aspects of vertical interdependence AND which were relevant for the specific simulation used for this study. The following three items were selected: "We made our

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own choices without being told by our commander”, “we had considerable opportunity for independence and freedom in how we performed on the simulation”, and “we had significant autonomy in determining how we completed our tasks.” Responses to the items were given by the participant on a scale from *1 = not at all*, to *7 = to a very great extent*. I performed an ANOVA analysis to test whether participants perceived the three vertical interdependence conditions as significantly different from each other. Results indicated significant between-group variation ($F = 6.79, p < .01$). I also compared the mean values of the three vertical interdependence conditions to check whether each of the three conditions also differed significantly from each of the other two experimental conditions. Mean values for the low, moderate, and high experimental conditions were 5.71, 5.34, and 4.99, respectively. Results indicate that the low vertical interdependence condition was perceived as different from the moderate and high vertical interdependence conditions ($t = -2.04$ and $t = -3.56$, respectively). Results further indicate that participants perceived a significant difference between the moderate and high vertical interdependence condition ($t = -2.16$). Thus, the manipulation for vertical interdependence was successful. Mean values for perceived vertical interdependence across all experimental conditions are presented in Table 1.

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Table 1. *Manipulation Checks for Horizontal Interdependence and Vertical Interdependence*

	High Horizontal Interdependence	Moderate Horizontal Interdependence	Low Horizontal Interdependence
High Vertical Interdependence	Condition 1 Mean Value HI: 5.98 Mean Value VI: 4.98	Condition 2 Mean Value HI: 5.85 Mean Value VI: 5.31	Condition 3 Mean Value HI: 5.62 Mean Value VI: 4.74
Moderate Vertical Interdependence	Condition 4 Mean Value HI: 6.13 Mean Value VI: 5.75	Condition 5 Mean Value HI: 6.12 Mean Value VI: 5.26	Condition 6 Mean Value HI: 5.43 Mean Value VI: 4.98
Low Vertical Interdependence	Condition 7 Mean Value HI: 5.93 Mean Value VI: 5.47	Condition 8 Mean Value HI: 5.85 Mean Value VI: 5.82	Condition 9 Mean Value HI: 5.40 Mean Value VI: 5.78

Note. High values for vertical interdependence indicate high team self-management.

Belongingness

I note that belongingness is conceptually related to team cohesiveness in the sense that both constructs measure the extent to which individuals feel related, attracted, and committed to their team (Man & Lam, 2003). What differentiates the constructs, however, is their unit of analysis. Team cohesiveness constitutes a property of an entire team, whereas belongingness refers to an individual psychological state. Belongingness was measured with two measures, including a 3-item relatedness measure adapted from Reis et al. (2000) and the ‘inclusion of the other in the self’ scale by Aron et al. (1992). I used the Reis et al. measure because it is a frequently used measure in research investigating

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fulfillment of relatedness needs (Sheldon, Elliott, Kim, & Kasser, 2000). Also, previous research indicates that it is a consistent predictor of individual well-being. The stem read “During this experiment, I...” and was followed by items such as “felt close and connected with my team.” The entire list of items is given in the appendix. Responses to the items were given by the participant on a scale from 1 = *not at all*, to 7 = *extremely*. The inclusion of the other in the self scale (IOS) by Aron is a single-item pictorial measure which is intended to capture people’s sense of interpersonal interconnectedness in a specific context. Specifically, participants selected a picture that best describes their relationships with others in a given context from a set of Venn-like diagrams where the two circles representing the self and others overlap in varying degrees. The IOS scale was found to predict relatedness across cultural settings and is most consistent with the social psychological notion of closeness as overlapping selves. For example, McAdams (1988) argued that most definitions of relatedness and intimacy “converge on the central idea of sharing that which is inmost with others” (p. 18). Similarly, Wegner (1980) asserted that empathy may “stem in part from a basic confusion between ourselves and others” (p. 133). The belongingness measure demonstrated good internal consistency with $\alpha = .92$.

Distinctiveness

Distinctiveness was measured with 9 items adapted from two existing measure developed by Janssen and Huang (2008) and by Vignoles et al. (2002). The Vignoles et al. measure was selected because the items of the measure capture important dimensions of distinctiveness, such as a distinct networking position in a team and difference in terms of background characteristics/personality. The measure was developed in a sample of Anglican parish priests to reflect the extent to which priests felt sufficiently distinct

within a parish and clergy comparative context. The Vignoles et al. measure demonstrated adequate internal consistency in previous research. Participants were asked to use the rating scale to describe their relationship with their team on items such as “to what extent did you feel that you have a distinctive position in your team”. Responses to the items were given by the participant on a scale from *1 = not at all*, to *7 = extremely*.

In addition to the Vignoles et al. measure, I chose to add the measure of individual differentiation by Janssen and Huang (2008). Compared to the Vignoles et al. measure, this measure was specifically developed for a team setting. The measure showed good internal consistency in previous research ($\alpha = .90$). For the Janssen and Huang measure, I excluded items which were not applicable to the specific task in the laboratory context, such as “I fulfill my role in a very personal manner”. The stem read “To what extent did you feel different from the members of your team during this experiment” and was followed by items such as “owing to your remarkable skills and abilities.” The entire list of items is given in the appendix. Responses to the items were given by the participants on a scale from *1 = not at all*, to *7 = extremely*. The two distinctiveness measures demonstrated good internal consistency, with $\alpha = .78$ for the Vignoles et al. measure and $\alpha = .94$ for the Janssen and Huang measure.

Results indicate low convergent validity for the two measures of distinctiveness (see the subsequent discussion of the results of the confirmatory factor analysis). Based on these results, I have not aggregated the 9 distinctiveness items into one measure, but rather treated the two measures as separate constructs of distinctiveness.

For the substantive analysis, I chose to rely on the Janssen and Huang measure because of two reasons. First, a noteworthy advantage of the Janssen and Huang measure

is that it has been validated in a team setting, whereas the Vignoles et al. measure has been validated in a sample of Anglican parish priests. Second, a closer look at the pattern of relationships of the two measures with other study constructs reveals that the Janssen and Huang measure produces research findings which are more consistent with previous research. Most notably, the Janssen and Huang measure is more strongly correlated with perceptions of belongingness ($r = .49, p < .01$, compared to $r = .24, p < .01$ for the Vignoles et al. measure). This is consistent with previous research which argued that the two constructs belongingness and distinctiveness should be moderately strong to strongly positively correlated with each other (Bettencourt & Sheldon, 2001). Moreover, the Janssen and Huang measure was significantly correlated with power distance ($r = .20, p < .01$), which is consistent with the notion that individuals who affirm status differentials are also more likely to seek and acquire central networking positions in teams which guarantee higher distinctiveness. This significant association was not observed for the Vignoles et al. measure ($r = .05, p > .10$).

Collectivism

Collectivism was measured with Jackson et al.'s (2006) scale. This measure consists of 15 items which capture five subdimensions of collectivism. These are preference, reliance, concern, norm acceptance, and goal priority. This measure was used because it captures collectivism as an individual difference construct, acknowledging the large amount of within-cultural variation in collectivism. Given that my research will take place in only one cultural setting (the United States) in which participants from a variety of different backgrounds will take place, this measure allowed me to capture the rich nuances in within-cultural variation in collectivism. The instructions for the measure

read as follows: “Think about the work groups to which you currently belong (excluding the team in this experiment) and have belonged to in the past. The items below ask about your relationship with, and thoughts about, those particular groups. Respond to the following questions, as honestly as possible, using the response scales provided.” An exemplary item is “Working in those groups was better than working alone.” The entire list of items is provided in the Appendix. Responses to the items were given on a scale ranging from *1 = strongly disagree* to *7 = strongly agree*, and the scale demonstrated good internal consistency with $\alpha = .90$.

Power Distance

Power distance was measured with three items adapted from Dorfman and Howell (1988). Similar to the Jackson’s measure of collectivism, this measure captures power distance as a culturally-based individual difference construct. This is consistent with my conceptualization of power distance for this research and the setting of the experiment. Instructions for the items read as follows: Please indicate the extent to which you agree with the following statements. An exemplary item is “When my supervisor at work makes a decision with which I disagree, I prefer to accept it rather than question it.” The entire list of items is provided in the Appendix. Responses to the items were given on a scale ranging from *1 = strongly disagree* to *7 = strongly agree*, and the scale demonstrated good internal consistency with $\alpha = .82$.

Extraversion and Emotional Stability

Big Five personality traits were assessed using 4-item scales from the 20-item Mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006), which were created based on items from the International Personality Item Pool (IPIP) (Goldberg, 1999; Goldberg et

al., 2006; IPIP, 2007). These scales demonstrated good internal consistency in previous research and are well-accepted measures of the Big Five personality traits. Instructions read as follows: Listed below are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then indicate your response to each statement by choosing your answer in the right column. An exemplary item for extraversion is "I don't talk a lot". An exemplary item for emotional stability is "I have frequent mood swings". Responses to the items were given on a scale ranging from *1 = very inaccurate* to *5 = very accurate*. The constructs extraversion and emotional stability had reliabilities of $\alpha = .81$ and $\alpha = .63$, respectively. A full list of the items is provided in the Appendix.

Cognitive Ability

Cognitive ability was measured with the Wonderlic Personnel Test, which is a commonly used test of cognitive ability. The test consists of 50 questions which increase in difficulty, and participants had 12 minutes to answer as many questions as they can.

Personal Well-Being

Consistent with previous research on the nature of personal well-being (Watson, 2000), I assessed personal well-being with three constructs: positive affect, negative affect, and self-evaluative well-being. Positive and negative affect were measured with the Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1994), with

instructions referring to the extent to which the respondent had experienced each of the adjectives during the duration of the experiment. Specifically, participants indicated the extent to which 20 adjective descriptors of affect described their affective state during the experiment. The PANAS is a widely used measure of affective experiences and usually exhibits high internal consistency. Adjectives for the positive scale include “interested,” “enthusiastic,” and “excited,” and adjectives for the negative scale include “upset,” “irritable,” and “distressed.” Responses were given on a scale from 1 = *slightly or not at all*, to 7 = *very much*. Reliabilities for the measures of positive and negative affect were $\alpha = .91$ and $\alpha = .88$, respectively. The entire list of items is provided in the Appendix.

Each participant also provided an evaluation of his or her self-evaluative well-being after the experiment with instructions indicating the extent to which five statements (e.g., making useful contributions and able to face up to my responsibilities) applied to how they felt during the duration of the experiment. Those five items were taken from the General Health Questionnaire (GHQ, Goldberg & Williams, 1988). Instructions for the measure of self-evaluative well-being told participants to focus on the task at hand. Accordingly, participant responses are based upon the time period just elapsed (i.e., the time of the experiment) and reflect their well-being state over that period of time. Instructions read as follows: Please indicate the extent to which you are feeling right now, that is, in the present moment. An exemplary item is “I am able to concentrate on whatever I have been doing”. Responses will be given on a scale from 1 = *slightly or not at all*, to 7 = *very much*, and the reliability for the measure was $\alpha = .90$. The entire list of items is provided in the Appendix.

Self-Efficacy

I developed a measure for self-efficacy as a task-specific evaluation of participants' self-efficacy based on the method recommended by Bandura (1986) and Gist and Mitchell (1992), which asks participants to judge their confidence in achieving a possible range of performance outcomes. Specifically, participants were asked three questions related to their confidence in achieving an easy, moderate, and difficult performance score. These benchmarks were taken from the distribution of scores on the same simulation in the same setting in a previous study. Participants then responded to each of the three questions on an 11-point scale ranked from 0 (=not at all) to 10 (extremely confident). The average of these three responses was used as the participant's self-efficacy score.

Voice

Voice was assessed with a six items measure adapted from the voice scale developed by Van Dyne and LePine (1998). The items were adapted to reflect the specific laboratory setting. Also, the item "I spoke up in this group with ideas for new projects and changes in procedures" was dropped from the original 7-item scale because it is not applicable to the laboratory setting. Participants were instructed to indicate the extent to which they engaged in a series of behaviors during the experiment. An exemplary item is "I communicated my opinions about important aspects of our team behavior even if my opinion was different and others in the team disagreed with me." Responses were given on a scale from 1 = *not at all*, to 7 = *to a very great extent*. The reliability of the measure was $\alpha = .93$. The entire list of items is provided in the Appendix.

Individual Learning

Individual learning was assessed by having each participant evaluate the learning behaviors of each other participant. For this purpose, I adapted four items from the learning measure by Edmundson (1999) to fit the specific laboratory context. Participants were instructed to rate the extent to which they agreed with the statements which describe the behavior of their team members during the simulation, rating each team member's behavior individually. An exemplary item is "This team member actively reviewed his/her own progress and performance". The entire list of items is provided in the Appendix. Responses to the items were given on a scale ranging from *1 = strongly disagree* to *7 = strongly agree*. Since I used the average observer ratings for each team member, I computed the interrater and group-mean reliability of learning ratings to assess whether there was adequate agreement in team members' perceptions of individuals' learning behavior. Results indicate significant interrater reliability ($ICC1 = .19, p < .01$). Also, group-mean reliability was acceptable ($ICC2 = .49$).

Individual Performance

Individual performance was assessed by having each participant evaluate the performance of each other participant. For this purpose, I adapted the four-item measure of task performance developed by Liden, Wayne, & Stilwell (1993). Participants were instructed to rate the extent to which they agree with the statements which describe the behavior of a specific team member during the simulation. An exemplary item is "The overall level of performance that I have observed for this team member is outstanding." Reliability for the measure was $\alpha = .90$. The entire list of items is provided in the Appendix. Responses to the items were given on a scale ranging from *1 = strongly*

disagree to 7 = strongly agree. Since I used the average observer ratings for each team member, I computed the interrater and group-mean reliability of performance ratings to assess whether there was adequate agreement in team members' perceptions of individuals' learning behavior. Results indicate significant interrater reliability ($ICC1 = .21, p < .01$). Also, group-mean reliability was acceptable ($ICC2 = .52$).

Team Identification

Team identification was assessed with a four-item measure adapted from Allen and Meyer's (1990) affective commitment scale. Ellemers, Kortekaas and Ouwerkerk (1999) and Van der Vegt and Bunderson (2005) suggested that the affective commitment scale of Allen and Meyer captures the emotional component of social identification and thus represents an adequate measure for the purpose of this study. Participants were instructed to rate the extent to which they agree with four statements which describe the extent to which the individual team member identifies with the team. An exemplary item is "I feel emotionally attached to this team". The entire list of items is provided in the Appendix. Responses to the items were given on a scale ranging from *1 = not at all* to *7 = to a very great extent*. Reliability for the measure was $\alpha = .93$.

ANALYSES AND RESULTS

Confirmatory Factor Analysis

For this study, I drew exclusively on measures which were previously validated. Nevertheless, before performing substantive analyses, I ensured that the individual items load on the appropriate construct and that cross-loadings are low by performing a series of confirmatory factor analyses (CFAs). Because I measured constructs at three different times, I performed three different CFAs. The first CFA included self-rated measures at

time 1, which includes the culturally-based individual differences, extraversion, neuroticism, and baseline measures of well-being and self-efficacy. These items were meant to represent eight different constructs, including collectivism, power distance, extraversion, emotional stability, positive affect, negative affect, self-evaluative well-being and self-efficacy. Therefore, I ran a one-factor model with all items loading on one common factor, and an eight-factor model, with items loading on their respective hypothesized constructs. In addition, I ran a six-factor model in which the items for the constructs positive affect, negative affect, and self-evaluative well-being all load on one factor, and a seven-factor model where the items for collectivism and power distance all load on one factor. This is because previous research found that collectivism and power distance are generally moderately strong correlated, just as the correlations among the three constructs positive affect, negative affect, and self-evaluative well-being are generally of a moderate nature. I evaluated the comparative fit indices (CFI), root mean-squared error of approximation (RMSEA), and the χ^2 values for the various models, which allowed me to determine whether the hypothesized measurement model fits the data adequately. An analysis of the three fit statistics for the various models indicates that the eight-factor model fit the data best such that each construct loaded on its own factor. This is evidenced by the lowest χ^2 (4072.86, 1456 *df*) and RMSEA values (.09) and the highest CFI values (.83). In addition, the eight-factor model fit the data significantly better than the seven-factor model ($\Delta\chi^2 = 81.69$, 7 *df*, $p < .01$).

The second CFA includes the self-rated perceptions of belongingness and distinctiveness, provided after completion of the first half of the simulation. Here, I ran a one-factor model, a two-factor model, and a three-factor model. I ran the three factor

model to test whether the items for my distinctiveness measure which represent two different measures for distinctiveness loaded on one construct, or whether the two distinctiveness measures actually capture two different distinctiveness constructs. Fit indices of these three different models suggest that a three factor-model created the best fit with the data, evidenced by the lowest χ^2 (245.40, 51 *df*) and RMSEA values (.14), and the highest CFI value (.93). Moreover, a three-factor model fit the data significantly better than a two-factor model ($\Delta\chi^2 = 133.36$, 2 *df*, $p < .01$). Based on these findings, I did not aggregate the items from the two different distinctiveness measures. Instead, I chose to compute two different distinctiveness constructs. Additional analysis revealed that the items from the Vignoles et al. (2002) distinctiveness measure exhibits relatively poor psychometric properties, evidenced by low factor loadings of the individual items such that I only relied on the distinctiveness measure developed by Janssen and Huang (2008) for the substantive analysis.

The third CFA includes the self-rated measures of positive affect, negative affect, self-evaluative well-being, self-efficacy, voice, and team identification, provided after the end of the simulation. Responses were subjected to a CFA with one-factor and six-factor models. In addition, I ran a four-factor model in which all items for the constructs positive affect, negative affect, and self-evaluative well-being load on the same factor. Examination of the comparative fit indices (CFI), root mean-squared error of approximation (RMSEA), and the χ^2 values for the three models revealed that the six factor model fit the best, evidenced by the lowest χ^2 (1323.27, 650 *df*) and RMSEA values (.07) and the highest CFI value (.96). In addition, the six-factor model fit the data

significantly better than the four-factor model ($\Delta\chi^2 = 1676.73, 9 df, p < .01$). The results of the confirmatory factor analyses are summarized in Table 2.

Table 2. *Confirmatory Factor Analysis*

Model	df	χ^2	CFI	RMSEA
Measures: T1 (Before Simulation)				
One-factor model	1484	8235.56	.53	.17
Six-factor model	1469	5261.68	.75	.13
Seven-factor model	1463	4154.55	.82	.10
Eight-factor model	1456	4072.86	.83	.09
Measures: T2 (After completion of first half of the simulation)				
One-factor model	54	684.09	.78	.24
Two-factor model	53	378.76	.88	.17
Three-factor model	51	245.40	.93	.14
Measures: T3 (After Simulation)				
One-factor model	665	8297.31	.79	.23
Four-factor model	659	3000.82	.88	.18
Six-factor model	650	1323.27	.96	.07

Notes. N = 223.

CFI = comparative fit index; RMSEA = root mean squared error of approximation;

Correlations between Study Variables

Table 3 provides an overview of descriptive statistics and intercorrelations between the study variables for team members (below the diagonal) and for leaders (above the diagonal). Examining the correlation matrix reveals that the two constructs

belongingness and distinctiveness are positively related to each other. The relationships between the two constructs is moderate in nature for team members ($r = .34, p < .01$) and strong for leaders ($r = .63, p < .01$). This is consistent with previous research which finds that the two constructs belongingness and distinctiveness are not opposite ends of one continuum, but moderately to strongly related to each other (Bettencourt & Sheldon, 2001).

In a next step, I investigated the correlations between belongingness and distinctiveness and the criteria of this study. Even though I did not advance formal hypotheses on the relationships between belongingness and distinctiveness with study outcomes, the magnitude of these relationships will be important for the subsequent discussion of my study findings and their implications for optimal distinctiveness theory. Team member perceptions of belongingness have a relationship of small to moderate magnitude with team member perceptions of self-efficacy ($r = .24, p < .01$) and learning ($r = .18, p < .05$), a moderate to strong relationship with positive affect ($r = .41, p < .01$), self-evaluative well-being ($r = .37, p < .01$), and voice ($r = .44, p < .01$), and the relationship between team member perceptions of belongingness and team identification is strong ($r = .62, p < .01$). Similarly, leader perceptions of belongingness are significantly correlated with leader voice behaviors ($r = .39, p < .01$) and team identification ($r = .50, p < .01$).

Table 3. *Descriptive Statistics and Correlations*

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Low Horizontal Interdependence	.35	.48	–	-.53**	.01	-.00	-.16	-.06	-.14	.04	-.17	-.16	.19	-.36*
2. High Horizontal Interdependence	.34	.47	-.53**	–	-.07	.03	.04	-.18	-.03	-.04	-.06	.05	-.16	.05
3. Low Vertical Interdependence	.25	.43	.01	-.08	–	-.44**	-.17	-.04	.11	-.05	-.13	.10	.11	.06
4. High Vertical Interdependence	.37	.48	-.01	.04	-.44**	–	-.15	-.21	-.07	.26	.07	.09	-.28	.06
5. Belongingness	5.19	1.13	-.11	.00	-.08	-.06	–	.63**	.40**	.15	.12	.02	.11	.11
6. Distinctiveness	4.61	1.12	-.02	-.02	-.02	.04	.34**	–	.32*	.32*	.04	-.13	.01	.22
7. Collectivism	5.16	.73	.07	.05	-.02	.07	.26**	.04	–	.27	.06	.06	-.04	.24
8. Power Distance	4.63	1.26	.04	-.04	-.02	.03	.14	.07	.11	–	.01	-.08	-.17	.14
9. Extraversion	3.49	.76	.04	-.13	.03	-.06	.13	-.00	.05	-.11	–	.18	.20	.12
10. Emotional Stab.	3.45	.68	-.05	.13	-.06	-.03	.19*	.09	.12	.01	.00	–	.16	.09
11. Cognitive ability	23.2	5.50	.00	.07	.11	-.15*	-.15*	-.06	-.10	-.06	.07	.11	–	.12
12. Positive Affect	2.90	.84	.01	-.08	-.02	-.03	.41**	.13	.19*	.07	.14	.20	.20**	–
13. Negative Affect	1.50	.58	.12	-.10	.05	.07	.01	-.02	-.01	.10	-.09	-.26**	-.26**	-.32**
14. Well-Being	3.60	.78	-.08	.09	-.01	-.06	.37**	.09	.24**	-.03	.23	.37**	.27**	.51**
15. Self-efficacy	7.00	1.79	-.08	-.00	.08	-.05	.24**	.17*	.06	-.01	.15	.12	-.07	.33**
16. Voice	3.50	.89	-.05	.15*	-.02	-.03	.44**	.33**	.19*	.07	.19**	.17*	.07	.21**
17. Learning	4.86	.63	-.14	.29**	.01	-.20**	.18*	-.01	-.09	.01	.02	.09	.16*	.03
18. Performance	4.74	.88	-.08	.09	.04	-.09	.02	.06	-.10	.02	.19*	.24**	.27**	.10
19. Identification	4.22	1.45	.03	-.10	.00	-.06	.62**	.22**	.25**	.15*	.03	-.02	-.15*	.36**

Note. Correlations for team members are below the diagonal $N = 178$; correlations for leaders are above the diagonal $N = 45$. Means and standard deviations for the entire sample $N = 223$.

* $p < .05$, ** $p < .01$.

Table 3 continued. *Descriptive Statistics and Correlations*

Variable	13	14	15	16	17	18	19
1. Low Horizontal Interdependence	.14	-.25	-.25	.05	-.12	.03	.00
2. High Horizontal Interdependence	-.19	.10	.05	-.31*	.16	-.27	-.10
3. Low Vertical Interdependence	-.12	.07	-.04	.00	.18	.06	-.06
4. High Vertical Interdependence	-.04	.02	-.08	-.12	-.06	-.09	-.21
5. Belongingness	-.16	.04	.27	.39**	.06	.14	.50**
6. Distinctiveness	-.19	.19	.31*	.41**	-.09	-.06	.42**
7. Collectivism	-.22	.20	.23	.31*	-.15	-.04	.35*
8. Power Distance	.04	.19	.08	.20	-.29*	-.19	.20
9. Extraversion	-.25	-.07	.01	.50**	.12	.24	.25
10. Emotional Stab.	-.39**	.34*	.04	.03	.23	.35*	-.20
11. Cognitive ability	-.41**	.07	-.22	.30*	.16	.47**	-.01
12. Positive Affect	-.02	.53**	.45**	.25	.17	.16	.24
13. Negative Affect	—	-.25	.01	-.04	-.26	-.26	.21
14. Well-Being	-.10	—	.54**	.25	.17	.17	.16
15. Self-efficacy	.02	.32**	—	.26	-.22	-.13	.39**
16. Voice	-.11	.36**	.35**	—	-.13	.27	.56**
17. Learning	-.07	.07	.00	.19*	—	.46**	.07
18. Performance	-.22*	.25**	.13	.21**	.38**	—	-.15
19. Identification	.10	.26**	.15*	.28**	.01	-.12	—

Note. Correlations for team members are below the diagonal $N = 178$; correlations for leaders are above the diagonal $N = 45$. Means and standard deviations for the entire sample $N = 223$.

* $p < .05$, ** $p < .01$.

Team member perceptions of distinctiveness are significantly correlated with three of the study outcomes and the relationships are small to moderate in nature ($r = .17$, $p < .05$ for self-efficacy; $r = .22$, $p < .01$ for team identification; $r = .33$, $p < .01$ for voice behaviors). A similar pattern emerges for leader perceptions of distinctiveness, which also shares significant relationships with the same three study outcomes ($r = .31$, $p < .01$ for self-efficacy; $r = .41$, $p < .01$ for voice behaviors, and $r = .42$, $p < .01$ for team identification), albeit somewhat stronger in magnitude.

Next, I examined the relationships among the criteria of this study, starting with team member positive affect, negative affect and self-evaluative well-being. The correlation of positive affect with self-evaluative well-being was positive and strong in nature ($r = .51$, $p < .01$) for team members, whereas the relationship of positive affect with negative affect was negative and only of moderate strength for team members ($r = -.32$, $p < .01$). This is consistent with previous research which finds that positive and negative affect are independent constructs which fluctuate relatively independent of each other (Watson, 2000). The relationship between negative affect and self-evaluative well-being was not statistically significant for team members. A similar pattern of relationships emerges for leaders. Again, positive affect exhibits a strong and positive relationship with self-evaluative well-being ($r = .53$, $p < .01$). For leaders, positive affect was not significantly related to negative affect ($r = -.02$, $p < .01$).

The relationships of the three components of subjective well-being with other study outcomes were also similar for team members and for team leaders. For example, positive affect and self-evaluative well-being exhibited correlations of moderate strength with voice behaviors for both team members ($r = .21$, $p < .01$ for positive affect; $r = .36$,

$p < .01$ for self-evaluative well-being) and for leaders ($r = .25, p < .01$ for positive affect, and $r = .25, p < .01$ for self-evaluative well-being). Similarly, effect sizes for correlations among study outcomes not related to subjective well-being are generally small or not significant for both team members and for leaders. An exception is the magnitude of the relationships between leader identification and other leader outcomes. For example, leader identification has a moderately strong to strong relationship with constructs such as self-efficacy and voice ($r = .39, p < .01$ and $r = .56, p < .01$, respectively). The effect sizes for the relationships of team member identification with self-efficacy and voice are of a lower magnitude for team members ($r = .15, p < .05$ and $r = .28, p < .01$, respectively).

Effects of Team Structure on Self-Construals for Team Members

To reiterate, I developed differential predictions for the four team members and their respective team leader. In this section, I will discuss the data analysis strategy and the results for the effects of the two dimensions of team structure on team member perceptions of belongingness and distinctiveness. Hypothesis 1 predicted that horizontal interdependence would exhibit an inverted U-shaped relationship with a) team member perceptions of belongingness and b) team member perceptions of distinctiveness such that intermediate degrees of horizontal interdependence would be associated with highest levels of team member belongingness and distinctiveness. Hypotheses 2 predicted that vertical interdependence would also exhibit an inverted U-shaped relationship a) with team member perceptions of belongingness and b) team member perceptions of distinctiveness such that intermediate degrees of vertical interdependence would be associated with highest levels of belongingness and distinctiveness.

In order to test these hypotheses, I used ordinary least square regression. I dummy coded the dimensions of team structure, using the conditions with intermediate degrees of horizontal and vertical interdependence as the comparison groups for the two experimental manipulations, respectively. Essentially, the regression coefficients for the dummy codes and their significant tests are a comparison of the mean of this experimental condition (i.e., low horizontal interdependence) with the reference group (i.e., moderate horizontal interdependence). For example, the regression coefficient for the dummy-coded low horizontal interdependence condition indicates the strength of the relationship between low horizontal interdependence and the outcome (i.e., perceptions of belongingness) relative to the strength of the relationship between moderate horizontal interdependence and the outcome. If there is indeed a curvilinear relationship between horizontal interdependence (vertical interdependence) and self-construals as predicted, then both the low and high conditions for horizontal interdependence (vertical interdependence) should be associated with lower levels of self-construals relative to the condition with intermediate degrees of horizontal interdependence (vertical interdependence).

Results of the regression analysis indicate that the contrast low-intermediate horizontal interdependence had a marginally significant effect on team member perceptions of belongingness ($\beta = -.15, p < .10$) such that low horizontal interdependence is associated with lower levels of belongingness than intermediate degrees of horizontal interdependence. The effect of the contrast high-intermediate horizontal interdependence on team member perceptions of belongingness was not statistically significant ($\beta = -.08, p > .10$). Also, the overall F value for the effects of the contrasts low-intermediate and

high-intermediate horizontal interdependence on team member perceptions of belongingness was not significant ($F = 1.46$; $p > .10$). Thus, hypothesis 1a was not supported.

Results of the regression analysis further indicate that low and high horizontal interdependence were not associated with lower levels of team member distinctiveness when compared to intermediate degrees of horizontal interdependence. This is evidenced by the non-significant regression coefficients obtained for the effects of the contrasts low-intermediate and high-intermediate horizontal interdependence on team member perceptions of distinctiveness ($\beta = -.04$, $p > .10$ for both the effects of the contrasts low-intermediate and high-intermediate horizontal interdependence on team member perceptions of distinctiveness). Thus, hypothesis 1b was not supported.

A similar pattern emerges for the effects of vertical interdependence on team member perceptions of belongingness. Here, the effect of the contrast low-intermediate vertical interdependence on team member perceptions of belongingness was marginally significant ($\beta = -.14$, $p < .10$), whereas the effect of the contrast high-intermediate vertical interdependence on team member perceptions of belongingness was not statistically significant ($\beta = -.12$, $p > .10$). Both the effects of the contrasts low-intermediate and high-intermediate vertical interdependence on team member perceptions of distinctiveness were not statistically significant ($\beta = -.00$, $p > .10$ for the contrast low-intermediate vertical interdependence; $\beta = .04$, $p > .10$ for the contrast high-intermediate vertical interdependence). Thus, hypotheses 2a and 2b were not supported. See Tables 4, 5, 6, and 7 for additional details regarding these results.

Effects of Team Structure on Self-Construals for Leaders

Contrary to the curvilinear relationships developed in hypotheses 1 and 2, the hypotheses related to the effects of team structure on leader perceptions of belongingness and distinctiveness were of a linear nature. Hypothesis 3 predicted linear and positive relationships between horizontal interdependence and leader perceptions of belongingness and distinctiveness, and hypothesis 4 predicted a linear and positive relationship between vertical interdependence and leader perceptions of belongingness and distinctiveness.

Similar to the analysis for hypotheses 1-2, I entered the dummy coded main effects in a regression analysis, using intermediate levels of horizontal interdependence and vertical interdependence again as the comparison groups. Support for the hypotheses would be obtained if the contrast low-intermediate horizontal interdependence (vertical interdependence) was negatively associated with leader self-construals and the contrast high-intermediate horizontal interdependence (vertical interdependence) was positively associated with leader self-construals.

Results of the regression analysis indicate that the contrasts low-intermediate and high-intermediate horizontal interdependence were not significantly related to leader perceptions of belongingness ($\beta = -.19, p > .10$ for the contrast low-intermediate horizontal interdependence; $\beta = -.06, p > .10$ for the contrast high-intermediate horizontal interdependence). Thus, hypothesis 3a was not supported. Also, the contrast low-intermediate horizontal interdependence was not related to leader perceptions of distinctiveness ($\beta = -.21, p > .10$), and there was a marginally significant relationship between the contrast high-intermediate horizontal interdependence and leader perceptions of distinctiveness ($\beta = -.29, p < .10$). I note that the negative sign of the regression

coefficient for the effect of the contrast high-intermediate horizontal interdependence on leader perceptions of distinctiveness runs counter to the predicted linear and positive relationship between horizontal interdependence and leader perceptions of distinctiveness. I further note, however, that the F-value for the regression analysis was not significant ($F = 1.48, p > .10$). In sum, I conclude that hypotheses 3b was not supported.

Next, I examine the relationship between vertical interdependence and leader perceptions of belongingness and distinctiveness, as proposed in hypotheses 4a and 4b. Results of the regression analysis show a marginally significant effect of the contrast low-intermediate vertical interdependence on leader member perceptions of belongingness ($\beta = -.30, p < .10$), and a marginally significant effect of the contrast high-intermediate vertical interdependence on leader perceptions of belongingness ($\beta = -.28, p < .10$). Again, the F-value for the regression analysis was not significant ($F = 2.16, p > .10$). Consistent with the findings obtained for hypothesis 3b, I note that the pattern of this finding runs counter to the predicted linear and positive relationship between vertical interdependence and leader perceptions of belongingness. Instead, it seems as if the nature of the relationship between vertical interdependence and leader perceptions of belongingness would adhere to the nature of the predicted effects for team members as both regression coefficients for the effects of the contrasts low-intermediate and high-intermediate vertical interdependence are negative. In sum, I conclude that hypothesis 4a is not supported.

Results of the regression analysis further indicate that the contrast low-intermediate vertical interdependence was not related to leader perceptions of distinctiveness ($\beta = -.16, p > .10$) and that the relationship between the contrast high-

intermediate vertical interdependence and leader perceptions of distinctiveness was marginally significant ($\beta = -.29, p < .10$). Again, the overall F-value for the regression analysis was not significant ($F = 1.51, p > .10$). Interestingly, both regression coefficients were negative again, despite not reaching commonly accepted levels of statistical significance. I conclude that hypothesis 4b was not supported. See Tables 8, 9, 10, and 11 for details regarding these results.

Internal Fit Hypotheses for Team Members

I further predicted that the internal fit between team structure and culturally-based individual difference constructs (hypotheses 5-8; collectivism, power distance) and the fit between team structure and other individual difference constructs (hypotheses 9-16; extraversion, cognitive ability, emotional stability) would moderate the curvilinear relationship between the two dimensions of team structure and team member perceptions of belongingness and distinctiveness. To test these hypotheses, I used hierarchical regression analysis in which I entered the dummy codes for the low horizontal interdependence condition (low vertical interdependence) and high horizontal interdependence condition (high vertical interdependence) in step 1. In step 2, I entered the main effects of the individual difference constructs, followed by the interaction effects for the structural conditions with the moderating variable in step 3. For example, hypothesis 5 predicts that collectivism moderates the curvilinear relationship between horizontal interdependence and perceptions of belongingness. Thus, to test this prediction, I entered the dummy codes for the low horizontal interdependence condition and the high horizontal interdependence condition in step 1 of the hierarchical regression analysis. In step 2, I then entered the main effect for collectivism, which was followed by the two

interaction effects representing the moderating influence of collectivism on the relationship between horizontal interdependence and perceptions of belongingness.

I created the two interaction terms by multiplying the dummy coded structural variables low and high horizontal interdependence by collectivism. I followed Cohen, Cohen, West, and Aiken's (2003) recommendation to center the predictors around their mean before computing the interaction term. Again following recommendations by Cohen et al. (2003), I examined the regression of belongingness on horizontal interdependence at one of three different levels of collectivism – low (one standard deviation below the mean of collectivism), moderate (mean of collectivism), and high (one standard deviation above the mean of collectivism).

Hypothesis 5 predicted that collectivism would moderate the curvilinear relationship between horizontal interdependence and team member perceptions of belongingness such that team members with high collectivism would experience high belongingness at high levels of horizontal interdependence, whereas team members with low collectivism would experience low belongingness at high levels of horizontal interdependence. Results indicate that the interaction effects of the two dummy codes (representing the contrast between the low and intermediate horizontal interdependence condition and the contrast between the high and intermediate horizontal interdependence condition) and collectivism were not significantly related to perceptions of belongingness ($\beta = -.01, p > .10$ for the interaction term for low horizontal interdependence and collectivism, and $\beta = .04, p > .10$ for the interaction term for high horizontal interdependence and collectivism). Thus, hypothesis 5 was not supported (see Table 4).

Table 4. *Results of Regression Analysis for Relationship between Horizontal Interdependence and Perceptions of Belongingness – Team Member (excl. Team Leader)*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal Interdependence	-.15 [†]	-.17*	-.19*
High Horizontal Interdependence	-.08	-.08	-.08
<i>Step 2: Moderators</i>			
Collectivism		.26**	.27**
Extraversion		.13 [†]	.11
Cognitive Ability		-.13 [†]	-.14 [†]
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			-.01
High Horizontal Interdependence X Collectivism			.04
Low Horizontal Interdependence X Extraversion			.11
High Horizontal Interdependence X Extraversion			.21*
Low Horizontal Interdependence X Cog. Ability			.13
High Horizontal Interdependence X Cog. Ability			.03
R^2	.02	.12	.16
F	1.46	4.86**	3.00**

Note. N = 178.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 6 predicted that collectivism would moderate the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness such that team members with high collectivism would experience high distinctiveness at high levels of horizontal interdependence, whereas team members with low collectivism would experience low distinctiveness when horizontal interdependence is high. Results indicate that the interaction effects of the two dummy codes and collectivism were not significantly related to perceptions of distinctiveness ($\beta = .03$, $p > .10$ for the interaction term for low horizontal interdependence and collectivism, and $\beta = .06$, $p > .10$ for the

interaction term for high horizontal interdependence and collectivism). Thus, hypothesis 6 was not supported (see Table 5).

Table 5. Results of Regression Analysis for Relationship between Horizontal Interdependence and Perceptions of Distinctiveness – Team Member (excl. Team Leader)

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal Interdependence	-.04	-.04	-.03
High Horizontal Interdependence	-.04	-.04	-.03
<i>Step 2: Moderators</i>			
Collectivism		.04	.03
Extraversion		.00	.01
Cognitive Ability		-.05	-.07
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			.03
High Horizontal Interdependence X Collectivism			.06
Low Horizontal Interdependence X Extraversion			.04
High Horizontal Interdependence X Extraversion			-.01
Low Horizontal Interdependence X Cog. Ability			.01
High Horizontal Interdependence X Cog. Ability			.08
R^2	.00	.01	.01
F	.09	.18	.19

Note. N = 178.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 7 predicted that power distance would moderate the curvilinear relationship between vertical interdependence and perceptions of belongingness such that team members with high power distance values would experience high belongingness at high levels of vertical interdependence, whereas team members with low power distance values would experience low belongingness when vertical interdependence is high. Results indicate that the interaction effects of the two dummy codes and power distance

values were not significantly related to perceptions of belongingness ($\beta = .07, p > .10$ for the interaction term for low vertical interdependence and power distance values, and $\beta = -.11, p > .10$ for the interaction term for high vertical interdependence and power distance values). Thus, hypothesis 7 was not supported (see Table 6).

Table 6. *Results of Regression Analysis for Relationship between Vertical Interdependence and Perceptions of Belongingness – Team Members (excl. Team Leader)*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.14 [†]	-.11	-.10
High Vertical interdependence	-.12	-.13 [†]	-.13
<i>Step 2: Moderators</i>			
Power Distance		.13 [†]	.14 [†]
Emotional Stability		.19**	.22**
Cognitive Ability		-.17*	-.18*
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Dist.			.07
High Vertical Interdependence X Power Dist.			-.11
Low Vertical Interdependence X Emot. Stab.			-.12
High Vertical Interdependence X Emot. Stab.			-.03
Low Vertical Interdependence X Cog. Ability			-.07
High Vertical Interdependence X Cog. Ability			-.07
R^2	.02	.10	.14
F	1.64	3.66**	2.49**

Note. N = 178.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 8 predicted power distance would moderate the curvilinear relationship between vertical interdependence and perceptions of distinctiveness such that team members with high power distance values would experience high distinctiveness at high levels of vertical interdependence, whereas team members with low power distance

values would experience low distinctiveness when vertical interdependence is high.

Results indicate that the interaction effects of the two dummy codes and power distance values were not significantly related to perceptions of distinctiveness ($\beta = .04, p > .10$ for the interaction term for low vertical interdependence and power distance values, and $\beta = -.08, p > .10$ for the interaction term for high vertical interdependence and power distance values). Thus, hypothesis 8 was not supported (see Table 7).

Table 7. Results of Regression Analysis for Relationship between Vertical Interdependence and Perceptions of Distinctiveness – Team Members (excl. Team Leader)

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.00	.01	.04
High Vertical interdependence	.04	.04	.05
<i>Step 2: Moderators</i>			
Power Distance		.07	.06
Emotional Stability		.09	.12
Cognitive Ability		-.06	-.05
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Dist.			.04
High Vertical Interdependence X Power Dist.			-.08
Low Vertical Interdependence X Emot. Stab.			-.10
High Vertical Interdependence X Emot. Stab.			-.05
Low Vertical Interdependence X Cog. Ability			-.22*
High Vertical Interdependence X Cog. Ability			-.15 [†]
R^2	.00	.02	.08
F	.159	.60	1.30

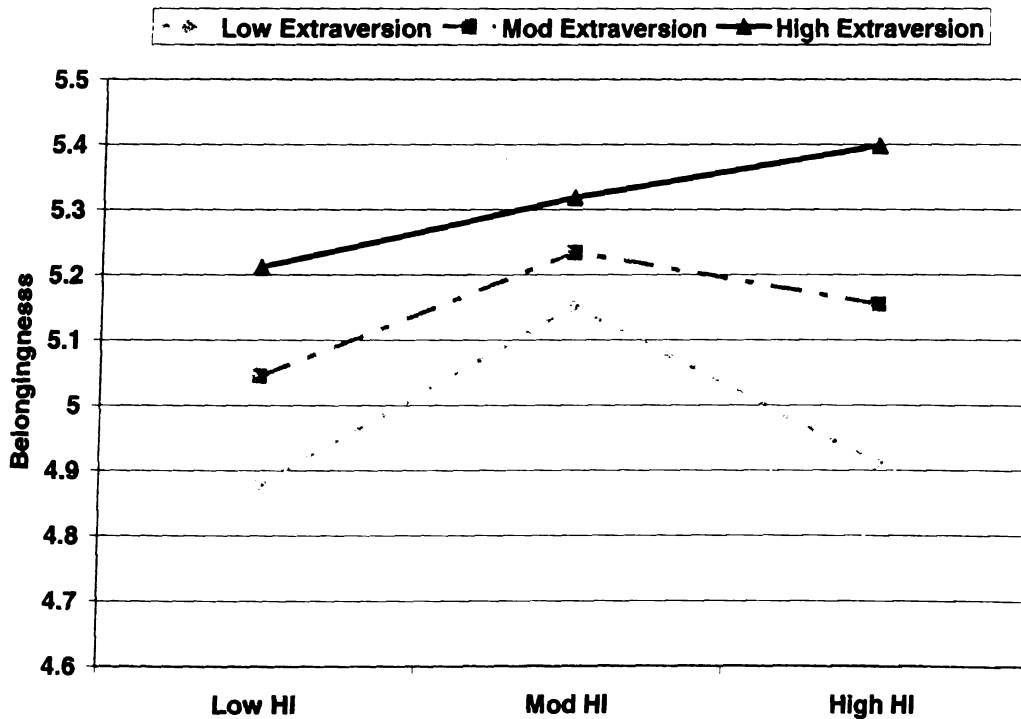
Note. N = 178.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 9 predicted that extraversion would moderate the curvilinear relationship between horizontal interdependence and perceptions of belongingness such

that extraverted team members will experience high belongingness at high levels of horizontal interdependence, whereas introverted team members will experience low belongingness when horizontal interdependence is high. Results indicate that the interaction effect of the dummy code for the high horizontal interdependence condition and extraversion were significantly related to perceptions of belongingness ($\beta = .21, p < .05$; the interaction term for low horizontal interdependence and extraversion was not significant, $\beta = .11, p > .10$). Thus, hypothesis 9 was supported (see Table 4). Figure 6 illustrates the pattern of the interaction effect in support of hypothesis 9.

Figure 6. *Moderating Effect of Team Member Extraversion on Relationship between Horizontal Interdependence and Team Member Perceptions of Belongingness*



Hypothesis 10 predicted that extraversion would moderate the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness such that extraverted team members would experience high distinctiveness at high levels of

horizontal interdependence, whereas introverted team members would experience low distinctiveness when horizontal interdependence is high. Results indicate that the interaction effects of the two dummy codes and extraversion were not significantly related to perceptions of distinctiveness ($\beta = .04, p > .10$ for the interaction term for low horizontal interdependence and extraversion, and $\beta = -.01, p > .10$ for the interaction term for high horizontal interdependence and extraversion). Thus, hypothesis 10 was not supported (see Table 5).

Hypothesis 11 predicted that cognitive ability would moderate the curvilinear relationship between horizontal interdependence and perceptions of belongingness such that team members with high cognitive ability would experience high belongingness at low levels of horizontal interdependence, whereas individuals with low cognitive ability would experience low belongingness when horizontal interdependence is low. Results indicate that the interaction effects of the two dummy codes and cognitive ability were not significantly related to perceptions of belongingness ($\beta = .13, p > .10$ for the interaction term for low horizontal interdependence and cognitive ability, and $\beta = .03, p > .10$ for the interaction term for high horizontal interdependence and cognitive ability). Thus, hypothesis 11 was not supported (see Table 4).

Hypothesis 12 predicted that cognitive ability would moderate the curvilinear relationship between horizontal interdependence and perceptions of distinctiveness such that team members with high cognitive ability would experience high distinctiveness at low levels of horizontal interdependence, whereas team members with low cognitive ability would experience low distinctiveness when horizontal interdependence is low. Results indicate that the interaction effects of the two dummy codes and cognitive ability

were not significantly related to perceptions of distinctiveness ($\beta = .01, p > .10$ for the interaction term for low horizontal interdependence and cognitive ability, and $\beta = .08, p > .10$ for the interaction term for high horizontal interdependence and cognitive ability). Thus, hypothesis 12 was not supported (see Table 5).

Hypothesis 13 predicted that emotional stability would moderate the curvilinear relationship between vertical interdependence and perceptions of belongingness such that team members with high emotional stability would experience high belongingness at low levels of vertical interdependence, whereas team members with low emotional stability would experience low belongingness when vertical interdependence is low. Results indicate that the interaction effects of the two dummy codes and emotional stability were not significantly related to perceptions of belongingness ($\beta = -.12, p > .10$ for the interaction term for low vertical interdependence and emotional stability, and $\beta = -.03, p > .10$ for the interaction term for high vertical interdependence and emotional stability). Thus, hypothesis 13 was not supported (see Table 6).

Hypothesis 14 predicted that emotional stability would moderate the curvilinear relationship between vertical interdependence and perceptions of distinctiveness such that team members with high emotional stability would experience high distinctiveness at low levels of vertical interdependence, whereas team members with low emotional stability would experience low distinctiveness when vertical interdependence is low. Results indicate that the interaction effects of the two dummy codes and emotional stability were not significantly related to perceptions of distinctiveness ($\beta = -.10, p > .10$ for the interaction term for low vertical interdependence and emotional stability, and $\beta = -.05, p$

> .10 for the interaction term for high vertical interdependence and emotional stability).

Thus, hypothesis 14 was not supported (see Table 7).

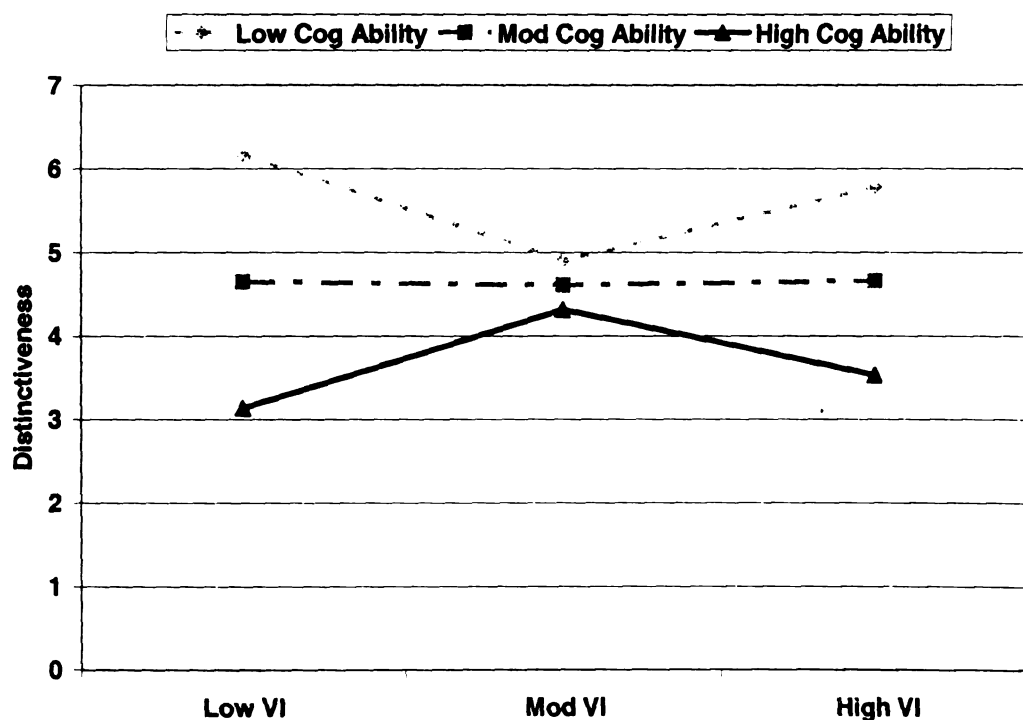
Hypothesis 15 predicted that cognitive ability would moderate the curvilinear relationship between vertical interdependence and perceptions of belongingness such that team members with high cognitive ability would experience high belongingness at low levels of vertical interdependence, whereas team members with low cognitive ability would experience low belongingness when vertical interdependence is low. Results indicate that the interaction effects of the two dummy codes and cognitive ability were not significantly related to perceptions of belongingness ($\beta = -.07$, $p > .10$ for the interaction term for low vertical interdependence and cognitive ability, and $\beta = -.07$, $p > .10$ for the interaction term for high vertical interdependence and cognitive ability).

Thus, hypothesis 15 was not supported (see Table 6).

Hypothesis 16 predicted that cognitive ability would moderate the curvilinear relationship between vertical interdependence and perceptions of distinctiveness such that team members with high cognitive ability would experience high distinctiveness at low levels of vertical interdependence, whereas team members with low cognitive ability would experience low distinctiveness when vertical interdependence is low. Results indicate that the interaction effects of the two dummy codes and cognitive ability were significantly or marginally significantly related to perceptions of distinctiveness ($\beta = -.22$, $p < .05$ for the interaction term for low vertical interdependence and cognitive ability, and $\beta = -.15$, $p < .10$ for the interaction term for high vertical interdependence and cognitive ability). Figure 7 illustrates the pattern of the interaction effect. Contrary to the hypothesized effect, team members with low cognitive ability experience high

distinctiveness when vertical interdependence is low, whereas team members with high cognitive ability experience low distinctiveness when vertical interdependence is low. Thus, hypothesis 16 was not supported (see Table 7). The nature of the significant interaction effect is illustrated in Figure 7.

Figure 7. *Moderating Effect of Team Member Cognitive Ability on Relationship between Vertical Interdependence and Team Member Perceptions of Distinctiveness*



Internal Fit Hypotheses for Leaders

As previously noted, hypotheses 3 and 4, which predicted positive and linear effects of horizontal interdependence and vertical interdependence on leader perceptions of belongingness and distinctiveness, were not supported. Instead, it appears as if the effects of horizontal interdependence and vertical interdependence on leader perceptions of belongingness and distinctiveness exhibit a pattern which is similar to the pattern of the hypothesized effects for team members such that low and high levels of horizontal

and vertical interdependence are associated with lower levels of belongingness and distinctiveness. In fact, all regression coefficients for the main effects of low and high horizontal interdependence and low and high vertical interdependence on leader perceptions of belongingness and distinctiveness were negative, albeit only four out of eight reached statistical significance ($p < .05$) or marginal statistical significance ($p < .10$).

This also calls into question the nature of the hypothesized interaction effects in hypotheses 17-20, which build on the predictions of hypotheses 3 and 4. Specifically, hypotheses 17-20 predicted that cultural variables or personality characteristics will neutralize or enhance the linear and positive relationship between the two dimensions of team structure and perceptions of belongingness and distinctiveness. Based on the empirical results for hypothesis 3 and 4 it is important to now also consider the possibility of a curvilinear relationship between horizontal and vertical interdependence and leader perceptions of belongingness and distinctiveness when testing whether cultural variables or other individual difference constructs moderate the relationship between team structure and leader self-construals.

Hypothesis 17a predicted that collectivism would moderate the effect of horizontal interdependence on leader perceptions of belongingness such that it would enhance the positive relationship between horizontal interdependence and leader perceptions of belongingness. Results indicate that the interaction effects of the two dummy codes and collectivism were not significantly related to leader perceptions of belongingness ($\beta = .04, p > .10$ for the interaction term for low horizontal interdependence and collectivism, and $\beta = -.17, p > .10$ for the interaction term for high

horizontal interdependence and collectivism). Thus, hypothesis 17a was not supported (see Table 8).

Table 8. Results of Regression Analysis for Relationship between Horizontal Interdependence and Leader Perceptions of Belongingness

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal interdependence	-.19	-.09	-.08
High Horizontal interdependence	-.06	.01	.06
<i>Step 2: Moderators</i>			
Leader Collectivism		.39*	.40*
Leader Extraversion		.09	.08
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			.04
High Horizontal Interdependence X Collectivism			-.17
Low Horizontal Interdependence X Extraversion			.06
High Horizontal Interdependence X Extraversion			.16
R^2	.03	.18	.23
F	.62	2.20	1.35

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 17b predicted that collectivism would moderate the effect of horizontal interdependence on leader perceptions of distinctiveness such that it would enhance the positive relationship between horizontal interdependence and leader perceptions of distinctiveness. Results indicate that the interaction effect of low horizontal interdependence and collectivism was not significantly related to leader perceptions of distinctiveness ($\beta = .05$, $p > .10$). Results further indicate that the interaction term between high horizontal interdependence and collectivism is not

significantly related to leader perceptions of distinctiveness ($\beta = -.18, p > .10$). Thus, hypothesis 17b is not supported (see Table 9).

Table 9. *Results of Regression Analysis for Relationship between Horizontal Interdependence and Leader Perceptions of Distinctiveness*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal interdependence	-.21	-.15	-.20
High Horizontal interdependence	-.29 [†]	-.26	-.20
<i>Step 2: Moderators</i>			
Leader Collectivism		.29 [†]	.30*
Leader Extraversion		-.02	-.06
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			.05
High Horizontal Interdependence X Collectivism			-.18
Low Horizontal Interdependence X Extraversion			.09
High Horizontal Interdependence X Extraversion			.39*
R^2	.07	.15	.29
F	1.48	1.76	1.87 [†]

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 18a predicted that power distance would moderate the effect of vertical interdependence on leader perceptions of belongingness such that low (high) power distance values would neutralize (enhance) the negative relationship between vertical interdependence and leader perceptions of belongingness. Results indicate that the interaction effects of the two dummy codes and power distance were not significantly related to leader perceptions of belongingness ($\beta = -.05, p > .10$ for the interaction term for low vertical interdependence and power distance, and $\beta = -.12, p > .10$ for the

interaction term for high vertical interdependence and power distance). Thus, hypothesis 18a was not supported (see Table 10).

Table 10. *Results of Regression Analysis for Relationship between Vertical Interdependence and Leader Perceptions of Belongingness*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.30 [†]	-.32 [†]	-.30 [†]
High Vertical interdependence	-.28 [†]	-.33 [†]	-.22
<i>Step 2: Moderators</i>			
Leader Cognitive Ability		.09	.19
Leader Power Distance		.24	.26
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Distance			-.05
High Vertical Interdependence X Power Distance			-.12
Low Vertical Interdependence X Cog. Ability			-.22
High Vertical Interdependence X Cog. Ability			.21
R^2	.09	.15	.29
F	2.16	1.75	1.87 [†]

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 18b predicted that power distance would moderate the effect of vertical interdependence on leader perceptions of distinctiveness such that low (high) power distance values would neutralize (enhance) the positive relationship between vertical interdependence and leader perceptions of distinctiveness. Results indicate that the interaction effects of the two dummy codes and power distance were not significantly related to leader perceptions of distinctiveness ($\beta = -.02$, $p > .10$ for the interaction term for low vertical interdependence and power distance, and $\beta = .00$, $p > .10$ for the

interaction term for high vertical interdependence and power distance). Thus, hypothesis 18b was not supported (see Table 11).

Table 11. *Results of Regression Analysis for Relationship between Vertical Interdependence and Leader Perceptions of Distinctiveness*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.16	-.20	-.17
High Vertical interdependence	-.29 [†]	-.42*	-.36*
<i>Step 2: Moderators</i>			
Leader Cognitive Ability		-.02	.06
Leader Power Distance		.41*	.43*
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Distance			-.02
High Vertical Interdependence X Power Distance			.00
Low Vertical Interdependence X Cog. Ability			-.25
High Vertical Interdependence X Cog. Ability			.03
R^2	.07	.23	.29
F	1.51	2.91	1.83

Note. N = 45.

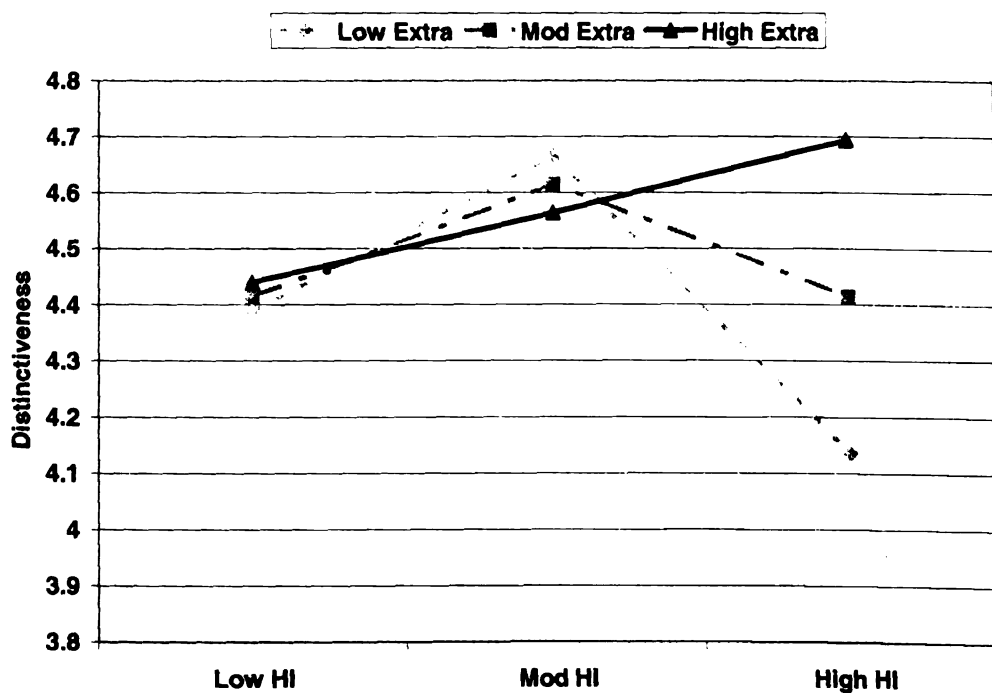
[†] $p < .10$, * $p < .05$, ** $p < .01$.

Hypothesis 19a predicted that extraversion would moderate the effect of horizontal interdependence on leader perceptions of belongingness such that extraversion would enhance the positive relationship between horizontal interdependence and leader perceptions of belongingness. Results indicate that the interaction effects of the two dummy codes and extraversion were not significantly related to leader perceptions of belongingness ($\beta = .06$, $p > .10$ for the interaction term for low horizontal interdependence and extraversion, and $\beta = .16$, $p > .10$ for the interaction term for high

horizontal interdependence and extraversion). Thus, hypothesis 19a was not supported (see Table 8 for details).

Hypothesis 19b predicted that extraversion would moderate the effect of horizontal interdependence on leader perceptions of distinctiveness such that extraversion would enhance the positive relationship between horizontal interdependence and leader perceptions of distinctiveness. Results indicate that the interaction effect of low horizontal interdependence and extraversion were not significantly related to leader perceptions of distinctiveness ($\beta = .09, p > .10$). Results further indicate that the interaction effect of high horizontal interdependence and extraversion were significantly related to leader perceptions of distinctiveness ($\beta = .39, p < .05$). Figure 8 illustrates the pattern of this interaction effect, which is not consistent with the nature of the predicted interaction effect.

Figure 8. *Moderating Effect of Leader Extraversion on Relationship between Horizontal Interdependence and Leader Perceptions of Distinctiveness*



Thus, hypothesis 19b was not supported (see Table 9 for details). As discussed before, this is because there is no linear and positive effect of horizontal interdependence on leader perceptions of distinctiveness, as I had predicted. Nevertheless, Figure 8 shows that extraverted leaders experience high distinctiveness when horizontal interdependence is high, whereas introverted leaders experience low distinctiveness when horizontal interdependence is high. This is exactly the effect which I had predicted for team members in hypothesis 10.

Hypothesis 20a predicted that cognitive ability would moderate the effect of vertical interdependence on leader perceptions of belongingness such that cognitive ability would enhance the positive relationship between vertical interdependence and leader perceptions of belongingness. Results indicate that the interaction effects of the two dummy codes and cognitive ability were not significantly related to leader perceptions of belongingness ($\beta = -.22, p > .10$ for the interaction term for low vertical interdependence and cognitive ability, and $\beta = .21, p > .10$ for the interaction term for high vertical interdependence and cognitive ability). Thus, hypothesis 20a was not supported (see Table 10 for details).

Hypothesis 20b predicted that cognitive ability would moderate the effect of vertical interdependence on leader perceptions of distinctiveness such that cognitive ability would enhance the positive relationship between vertical interdependence and leader perceptions of distinctiveness. Results indicate that the interaction effects of the two dummy codes and cognitive ability were not significantly related to leader perceptions of distinctiveness ($\beta = -.25, p > .10$ for the interaction term for low vertical

interdependence and cognitive ability, and $\beta = .03$, $p > .10$ for the interaction term for high vertical interdependence and cognitive ability). Thus, hypothesis 20b was also not supported (see Table 11 for details)

Hypotheses between Optimal Distinctiveness and Criteria

I note that the following hypotheses draw again on the entire sample of participants such that they do not differentiate between team members and team leaders. Hypothesis 21 predicted an interaction effect between perceptions of distinctiveness and belongingness and three components of subjective well-being, positive affect, self-evaluative well-being, and negative affect. Specifically, hypothesis 21a predicted that the effects of perceptions of distinctiveness on positive affect, negative affect, and self-evaluative well-being would be moderated by perceptions of belongingness such that high levels of distinctiveness in combination with high levels of belongingness would be associated with highest levels of positive affect and self-evaluative well-being and with lowest levels of negative affect. Hypothesis 21b predicted that the effects of perceptions of distinctiveness on positive affect, negative affect, and self-evaluative well-being would be moderated by perceptions of belongingness such that the combination of high (low) levels of distinctiveness with low (high) levels of belongingness would be associated with lowest levels of positive affect and self-evaluative well-being and highest levels of negative affect. Results indicate that the interaction effect of perceptions of belongingness and distinctiveness were significantly related to positive affect ($\beta = .17$, $p < .01$), but not significantly related to self-evaluative well-being ($\beta = .02$, $p > .10$) and negative affect ($\beta = .10$, $p > .10$). Details of these results are summarized in Table 12.

Table 12. Regression Results Testing the Interactive Effects of Belongingness and Distinctiveness on Positive, Negative Affect and Self-Evaluative Well-Being

Predictors	Positive Affect		Negative Affect		Self-Evaluative Well-Being	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Constant	2.88**	2.83**	1.51**	1.49**	3.56**	3.55**
<u>Main Effects</u>						
Belongingness	.33**	.36**	.04	.06	.27**	.28**
Distinctiveness	.03	-.02	-.04	-.07	.12 [†]	.11
<u>Moderated Effects</u>						
Belongingness x Distinctiveness		.17**		.10		.02
R ²	.11	.14	.00	.01	.12	.12
ΔR ²		.03		.01		.00
F	13.88**	11.66**	.20	.75	14.20**	9.45**

Note. Values represent standardized regression coefficients.

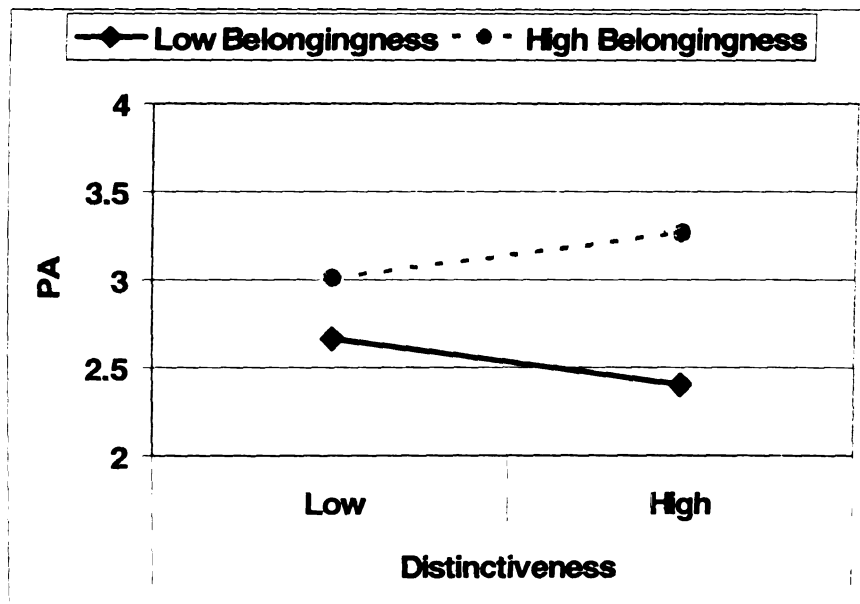
N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Figure 12 illustrates the pattern of the significant interaction effect with positive affect. In addition to graphing the interaction effects, I also tested for the significance of the slopes of the two regression lines in Figure 9, using Preacher, Curran, and Bauer's (2006) publically available software for testing two-way interactions in multiple linear regression analysis. As predicted in hypothesis 21a, high levels of distinctiveness in combination with high levels of belongingness were associated with highest levels of positive affect, evidenced by a positive slope for the regression line between positive affect and perceptions of distinctiveness when levels for belongingness were fixed at one standard deviation above the mean ($t = 1.96$, $p < .05$). Also, results indicate a negative slope for the regression line between positive affect and distinctiveness for low values of

belongingness, that is, when belongingness values were fixed at one standard deviation below the mean ($t = -2.55, p < .05$). This supports hypothesis 21b, in which I predicted that the combination of high levels of distinctiveness with low levels of belongingness was associated with even lower levels of positive affect than the combination of low levels of distinctiveness with low levels of belongingness.

Figure 9. *Moderating Effect of Belongingness on Relationship between Distinctiveness and Positive Affect (Team Members and Leaders)*



The same interaction effect was predicted in hypotheses 22-26 for the outcomes self-efficacy, voice, learning, performance, and team identification such that the combination of high belongingness and high distinctiveness would be associated with highest levels of self-efficacy, voice, learning, performance, and team identification, whereas the combination of high (low) levels of distinctiveness with low (high) levels of belongingness would be associated with lowest levels of self-efficacy, voice, learning, performance, and team identification.

Results indicate that the interaction effect of perceptions of belongingness and distinctiveness were significantly related to self-efficacy ($\beta = .18, p < .01$). Figure 10 illustrates the pattern of this interaction effect; Table 13 provides details of the results.

Figure 10. *Moderating Effect of Belongingness on Relationship between Distinctiveness and Self-Efficacy (Team Members and Leaders)*

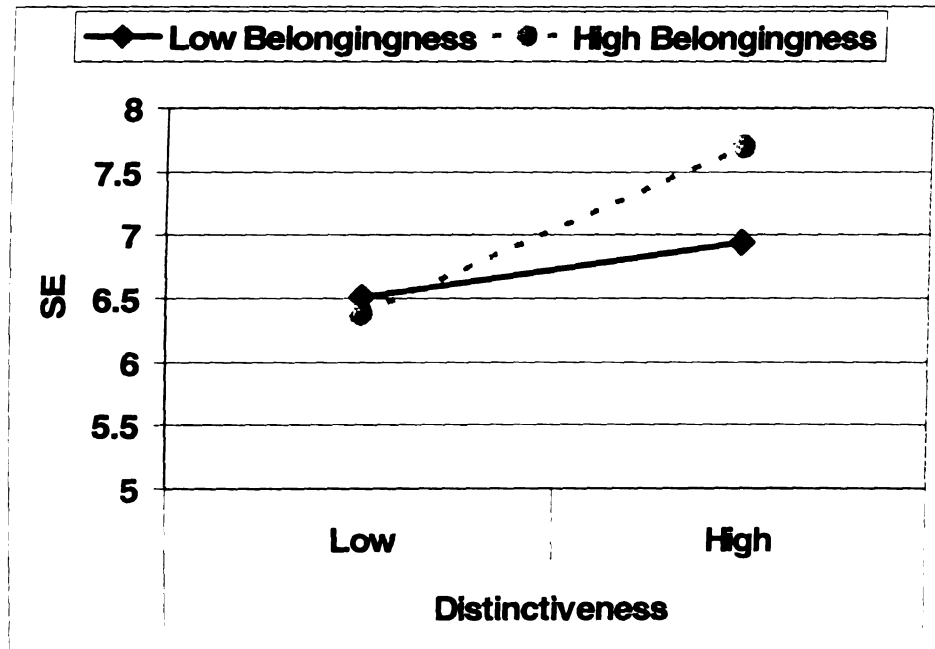


Table 13. *Regression Results Testing the Interactive Effects of Belongingness and Distinctiveness on Self-Efficacy, Voice, and Team Identification*

Predictors	Self-Efficacy		Voice		Team Identification	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Constant	6.99**	6.88**	3.49**	3.54**	4.21**	4.20**
<u>Main Effects</u>						
Belongingness	.04	.09	.29**	.26**	.56**	.56**
Distinctiveness	.24**	.23**	.25**	.30**	.02	.01
<u>Moderated Effects</u>						
Belongingness x Distinctiveness		.18**		-.16**		.02
R ²	.07	.10	.21	.23	.32	.32
ΔR ²		.03		.03		.00
F	7.89**	7.72**	27.90**	21.41**	50.90**	33.84**

Note. Values represent standardized regression coefficients.

N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Results further indicate that the slope for the regression line between self-efficacy and distinctiveness at low levels of belongingness (one standard deviation below the mean) was not statistically significant ($t = .04$, $p > .10$), whereas the slope for the regression line between self-efficacy and distinctiveness at high levels of belongingness (one standard deviation above the mean) was statistically significant ($t = 2.73$, $p < .01$). These results support hypothesis 22a, which predicted that the combination of high levels of belongingness and high levels of distinctiveness was going to be associated with highest levels of self-efficacy. Results do not support hypothesis 22b, however, which predicted that the combination of high levels of distinctiveness in combination with low

levels of belongingness would be associated with lower levels of self-efficacy than the combination of low levels of distinctiveness with low levels of belongingness.

Results indicate that the interaction effect of perceptions of belongingness and distinctiveness was also significantly related to voice ($\beta = -.16, p < .01$).

Figure 11. *Moderating Effect of Belongingness on Relationship between Distinctiveness and Voice (Team Members and Leaders)*

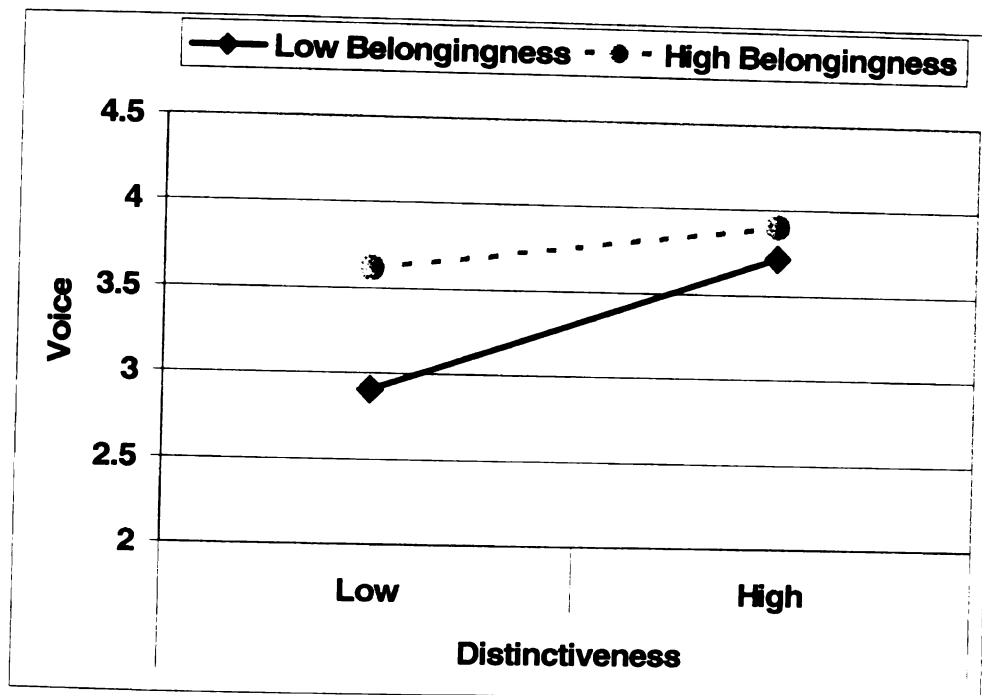


Figure 11 illustrates the pattern of the interaction effects, Table 13 provides details of the results. Results further indicate that the slopes for the regression lines between voice and distinctiveness are significant and positive at both low (one standard deviation below the mean) and high levels (one standard deviation above the mean) of belongingness ($t = 5.44, p < .01$, and $t = 2.37, p < .01$, respectively). These results are consistent with hypothesis 23a, which predicted that the combination of high distinctiveness with high belongingness was going to be associated with highest levels of

voice. The results do not support hypothesis 23b, however, which predicted that the combination of high distinctiveness with low belongingness was going to be associated with lower values of voice than the combination of low distinctiveness with low belongingness.

Results further indicate that the interaction effects of perceptions of belongingness and distinctiveness were not significantly related to learning ($\beta = .03, p > .10$), performance ($\beta = -.03, p > .10$), and team identification ($\beta = .02, p > .10$). Thus, hypotheses 24-26 were not supported (see Tables 13 and 14 for details).

Table 14. *Regression Results Testing the Interactive Effects of Belongingness and Distinctiveness on Performance and Learning*

Predictors	Performance		Learning	
	Step 1	Step 2	Step 1	Step 2
Constant	4.72**	4.73**	4.86**	4.85**
<u>Main Effects</u>				
Belongingness	.05	.04	.19**	.20**
Distinctiveness	.05	.06	-.10	-.11
<u>Moderated Effects</u>				
Belongingness x Distinctiveness		-.03		.03
R ²	.00	.01	.03	.03
ΔR^2		.00		.00
F	.85	.63	3.63*	2.48 [†]

Note. Values represent standardized regression coefficients.

N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Mediation Hypotheses

Finally, in hypotheses 27 and 28, I predicted that the psychological state of optimal distinctiveness, that is, the interaction of belongingness and distinctiveness, mediates the effect of the two dimensions of team structure on subjective well-being, self-efficacy, voice, learning, and job performance. I recognize that my model conforms to what Edwards and Lambert (2007) refer to as a second stage moderation model. To test for mediation, I followed a series of steps: I first regressed the criteria of my model (positive affect, negative affect, self-evaluative well-being, self-efficacy, voice, learning, job performance, and team identification) on the dummy-coded variables for each structural dimension, testing for both a linear and curvilinear relationship between team structure and job performance. This first step establishes whether there is a main effect of the structural dimension on the criterion.

Horizontal interdependence was only significantly related to two criteria: self-efficacy and learning. Specifically, the association between the contrast low-intermediate horizontal interdependence and self-efficacy was marginally significant and negative ($\beta = -.14, p < .10$). The association between the contrast high-intermediate horizontal interdependence and learning was significant and positive ($\beta = .26, p < .01$). Positive affect ($\beta = -.11, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = -.11, p > .10$ for the contrast high-intermediate horizontal interdependence), negative affect ($\beta = .09, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = -.06, p > .10$ for the contrast high-intermediate horizontal interdependence), self-evaluative well-being ($\beta = -.09, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = .04, p > .10$ for the contrast high-intermediate horizontal

interdependence), voice ($\beta = .01, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = .06, p > .10$ for the contrast high-intermediate horizontal interdependence), performance ($\beta = -.07, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = -.03, p > .10$ for the contrast high-intermediate horizontal interdependence), and team identification ($\beta = -.03, p > .10$ for the contrast low-intermediate horizontal interdependence and $\beta = -.11, p > .10$ for the contrast high-intermediate horizontal interdependence) were all not significantly related to the two dummy-coded horizontal interdependence conditions, even though effect sizes were close to reaching conventionally accepted levels of statistical significance for positive affect, ($\beta = -.11, p = .14$ for the contrast low-intermediate horizontal interdependence and $\beta = -.11, p = .15$ for the contrast high-intermediate horizontal interdependence). I conclude that there can only be mediation for the effects of horizontal interdependence on learning and self-efficacy.

Similarly, learning was the only criterion which was marginally significantly related to the dummy-coded vertical interdependence conditions ($\beta = -.13, p < .10$ for the contrast low-intermediate vertical interdependence, and $\beta = -.22, p < .01$ for the contrast high-intermediate vertical interdependence). Positive affect ($\beta = -.01, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = -.01, p > .10$ for the contrast high-intermediate vertical interdependence), negative affect ($\beta = .04, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = .07, p > .10$ for the contrast high-intermediate vertical interdependence), self-evaluative well-being ($\beta = -.02, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = -.05, p > .10$ for the contrast high-intermediate vertical interdependence), self-efficacy ($\beta = .04, p > .10$ for the

contrast low-intermediate vertical interdependence and $\beta = -.04, p > .10$ for the contrast high-intermediate vertical interdependence), voice ($\beta = -.05, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = -.07, p > .10$ for the contrast high-intermediate vertical interdependence), performance ($\beta = .00, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = -.09, p > .10$ for the contrast high-intermediate vertical interdependence), and team identification ($\beta = -.06, p > .10$ for the contrast low-intermediate vertical interdependence and $\beta = -.11, p > .10$ for the contrast high-intermediate vertical interdependence) were all not significantly related to the two dummy-coded horizontal interdependence conditions.

Next, I determined whether there is a significant relationship between the structural dimensions and perceptions of belongingness and distinctiveness. The contrast low-intermediate horizontal interdependence was significantly and negatively related to individuals' perceptions of belongingness ($\beta = -.16, p < .05$), but the contrast high-intermediate horizontal interdependence was not significantly related to individuals' perceptions of belongingness ($\beta = -.08, p > .10$). I also note that the overall F-value for the regression analysis is not significant. The two dummy coded horizontal interdependence conditions were also not significantly related to individuals' perceptions of distinctiveness ($\beta = -.07, p > .10$ for the contrast low-intermediate horizontal interdependence, and $\beta = -.09, p > .10$ for the contrast high-intermediate horizontal interdependence). Results for vertical interdependence indicate that the two dummy coded vertical interdependence conditions were significantly related to individuals' perceptions of belongingness ($\beta = -.16, p < .05$ for the contrast low-intermediate vertical interdependence, and $\beta = -.15, p < .05$ for the contrast high-intermediate vertical

interdependence). The two dummy coded vertical interdependence conditions were not significantly related to individuals' perceptions of distinctiveness ($\beta = -.03, p > .10$ for the contrast low-intermediate vertical interdependence; $\beta = -.02, p > .10$ for the contrast high-intermediate vertical interdependence). In sum, since neither horizontal interdependence nor vertical interdependence is significantly associated with individuals' perceptions of distinctiveness, there can also be no mediation. Restated, the two dimensions of team structure only relate to one of two elements of optimal distinctiveness. Given that I predicted that the interaction of belongingness and distinctiveness would mediate the effect of team structure on the criteria, the lack of a significant association between the two dimensions of team structure and perceptions of distinctiveness also renders a test of mediation meaningless.

This also renders steps 3 and 4 of the formal test for mediation meaningless. Step three would have used the results of hypotheses 21-26 to document whether there was a significant relationship between the interaction effect of belongingness and distinctiveness and the outcomes. Step 4 of the formal test for mediation would have regressed each outcome for which a significant effect could be observed in step 3 on the two dimensions of team structure after controlling for the interaction between belongingness and distinctiveness. The decrease in the strength of the relationship between horizontal interdependence and job performance would have indicated the amount of variance that is mediated by the psychological state of optimal distinctiveness. A Sobel test would then be used to assess the statistical significance of the mediation; if the relationship was fully mediated, the relationship between horizontal interdependence

and job performance would become nonsignificant when including the product term for belongingness and distinctiveness as mediator.

At this point, it is important to emphasize the possibility of a Type I error in these analyses. Cohen and colleagues (2003) pointed out the danger of committing Type I errors specifically for hierarchical multiple regressions which rely on a large pool of potential independent variables. Specifically, Cohen and colleagues noted the following: “Because the significance tests of each IV’s contribution to R^2 and associated confidence intervals proceed in ignorance of the large number of other competing IVs, there can be very serious capitalization on chance and underestimation of confidence intervals” (p. 161). Given the relatively large pool of variables entered in the previously discussed analysis, I acknowledge that results which were in support of predicted relationships (i.e. hypothesis 9) may actually be the product of chance.

Supplemental Analyses

Aggregating Data for Leaders and Team Members

Overall, the results showed that the differential predictions for the effects of horizontal and vertical interdependence on team member self-construals and leader self-construals were not supported. Instead, the empirical results suggest that the effects of team structure on belongingness and distinctiveness may be similar for team members and leaders, evidenced by the negative correlation coefficients obtained for the effects of low and high horizontal and vertical interdependence on leader self-construals. Based on these findings, I chose to perform supplemental analyses in which I aggregated responses for team members and leaders, essentially testing the predictions of hypotheses 1-2 and 5-16 with the entire sample of research participants. Results will be summarized below,

following the same analysis strategy which I used to test hypotheses 1-2 and 5-16 (see Tables 15-18 for details).

Table 15. *Results for Supplemental Regression Analysis for Relationship between Horizontal Interdependence and Perceptions of Belongingness All Team Members (incl. Team Leader)*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal Interdependence	-.16*	-.16*	-.18*
High Horizontal Interdependence	-.08	-.07	-.08
<i>Step 2: Moderators</i>			
Collectivism		.28**	.29**
Extraversion		.12 [†]	.10
Cognitive Ability		-.09	-.08
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			-.01
High Horizontal Interdependence X Collectivism			.00
Low Horizontal Interdependence X Extraversion			.10
High Horizontal Interdependence X Extraversion			.19*
Low Horizontal Interdependence X Cog. Ability			.05
High Horizontal Interdependence X Cog. Ability			-.02
R^2	.02	.12	.15
F	2.03	6.04**	3.36**

Note. N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 16. Results for Supplemental Regression Analysis for Relationship between Horizontal Interdependence and Perceptions of Distinctiveness All Team Members (incl. Team Leader)

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Horizontal Interdependence	-.07	-.08	-.08
High Horizontal Interdependence	-.09	-.09	-.10
<i>Step 2: Moderators</i>			
Collectivism			
Extraversion		.09	.10
Cognitive Ability		-.01	-.02
		-.03	-.05
<i>Step 3: Interactive effects</i>			
Low Horizontal Interdependence X Collectivism			-.02
High Horizontal Interdependence X Collectivism			-.02
Low Horizontal Interdependence X Extraversion			.05
High Horizontal Interdependence X Extraversion			.08
Low Horizontal Interdependence X Cog. Ability			.00
High Horizontal Interdependence X Cog. Ability			.08
R^2	.00	.02	.03
F	.67	.71	.55

Note. N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 17. Results for Supplemental Regression Analysis for Relationship between Vertical Interdependence and Perceptions of Belongingness All Team Members (incl. Team Leader)

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.16*	-.15*	-.14*
High Vertical interdependence	-.15*	-.18*	-.17*
<i>Step 2: Moderators</i>			
Power Distance		.14*	.16*
Emotional Stability		.17*	.18*
Cognitive Ability		-.13*	-.13*
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Dist.			.04
High Vertical Interdependence X Power Dist.			-.12 [†]
Low Vertical Interdependence X Emot. Stab.			-.07
High Vertical Interdependence X Emot. Stab.			-.03
Low Vertical Interdependence X Cog. Ability			-.09
High Vertical Interdependence X Cog. Ability			-.01
R^2	.03	.09	.12
F	3.12*	4.16**	2.64**

Note. N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 18. *Results for Supplemental Regression Analysis for Relationship between Vertical Interdependence and Perceptions of Distinctiveness All Team Members (incl. Team Leader)*

Variables	Step 1 β	Step 2 β	Step 3 β
<i>Step 1: Independent</i>			
Low Vertical interdependence	-.03	-.03	.01
High Vertical interdependence	-.02	-.04	-.03
<i>Step 2: Moderators</i>			
Power Distance		.12 [†]	.13 [†]
Emotional Stability		.05	.06
Cognitive Ability		-.04	-.03
<i>Step 3: Interactive effects</i>			
Low Vertical Interdependence X Power Dist.			.03
High Vertical Interdependence X Power Dist.			-.08
Low Vertical Interdependence X Emot. Stab.			.00
High Vertical Interdependence X Emot. Stab.			-.05
Low Vertical Interdependence X Cog. Ability			-.22*
High Vertical Interdependence X Cog. Ability			-.10
R^2	.00	.02	.07
F	.11	.91	1.44

Note. N = 223.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

The main effects of the two dimensions of team structure on individuals' self-construals was already reported above as step 2 of the formal test for mediation. Results indicated that the contrast low-intermediate horizontal interdependence is significantly and negatively related to individuals' perceptions of belongingness ($\beta = -.16$, $p < .05$). Results further indicate that the contrast high-intermediate horizontal interdependence was not significantly related to individuals' perceptions of belongingness ($\beta = -.08$, $p > .10$). I also note that the overall F-value for the regression analysis is not significant. In

sum, this provides only weak support for the effects proposed in hypotheses 1a when using the entire sample of research participants. The two dummy coded horizontal interdependence conditions were also not significantly related to individuals' perceptions of distinctiveness ($\beta = -.07, p > .10$ for the contrast low-intermediate horizontal interdependence, and $\beta = -.09, p > .10$ for the contrast high-intermediate horizontal interdependence). Details of the results for the association between horizontal interdependence and individuals' perceptions of belongingness and distinctiveness are summarized in Tables 15 and 16.

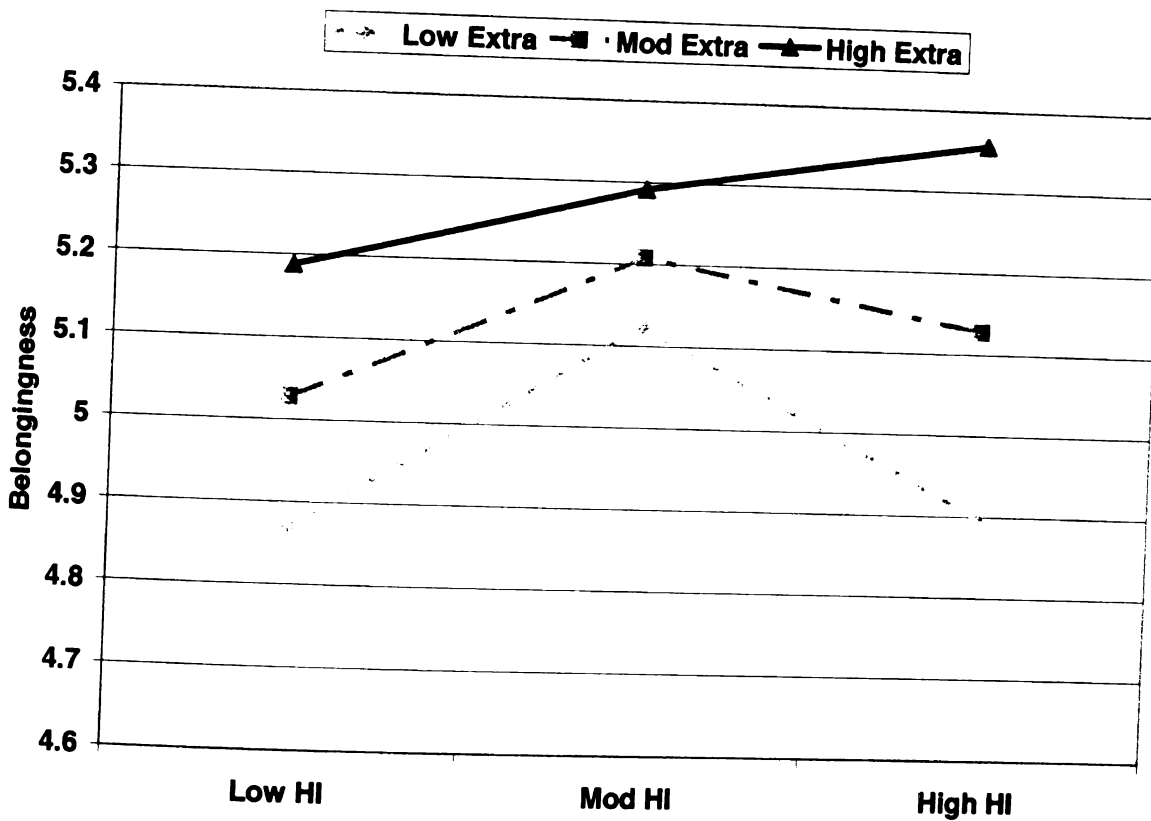
Results for vertical interdependence indicate that the two dummy coded vertical interdependence conditions were significantly related to individuals' perceptions of belongingness ($\beta = -.16, p < .05$ for the contrast low-intermediate vertical interdependence, and $\beta = -.15, p < .05$ for the contrast high-intermediate vertical interdependence). This is consistent with the hypothesized effect in hypothesis 2a according to which low and high vertical interdependence would be associated with lower levels of belongingness than intermediate degrees of vertical interdependence. The two dummy coded vertical interdependence conditions were not significantly related to individuals' perceptions of distinctiveness ($\beta = -.03, p > .10$ for the contrast low-intermediate vertical interdependence; $\beta = -.02, p > .10$ for the contrast high-intermediate vertical interdependence). Details of the results for the association between vertical interdependence and individuals' perceptions of belongingness and distinctiveness are summarized in Tables 17 and 18.

In sum, the results based on the entire sample of research participants provide partial support for the predictions of hypotheses 1 and 2 which predicted a curvilinear

relationship between the two dimensions of team structure and individuals' perceptions of belongingness and distinctiveness.

Results for the moderator analysis for the entire sample of research participants follow a similar pattern as the results discussed for the sample of team members, excluding team leaders. Consistent with the previously reported results, the interaction effect of the high horizontal interdependence condition and extraversion was significantly related to individuals' perceptions of belongingness ($\beta = .19, p < .05$). Figure 12 illustrates the pattern of this interaction effects.

Figure 12. *Moderating Effect of Extraversion on Relationship between Horizontal Interdependence and Perceptions of Belongingness (Team Members and Leaders)*

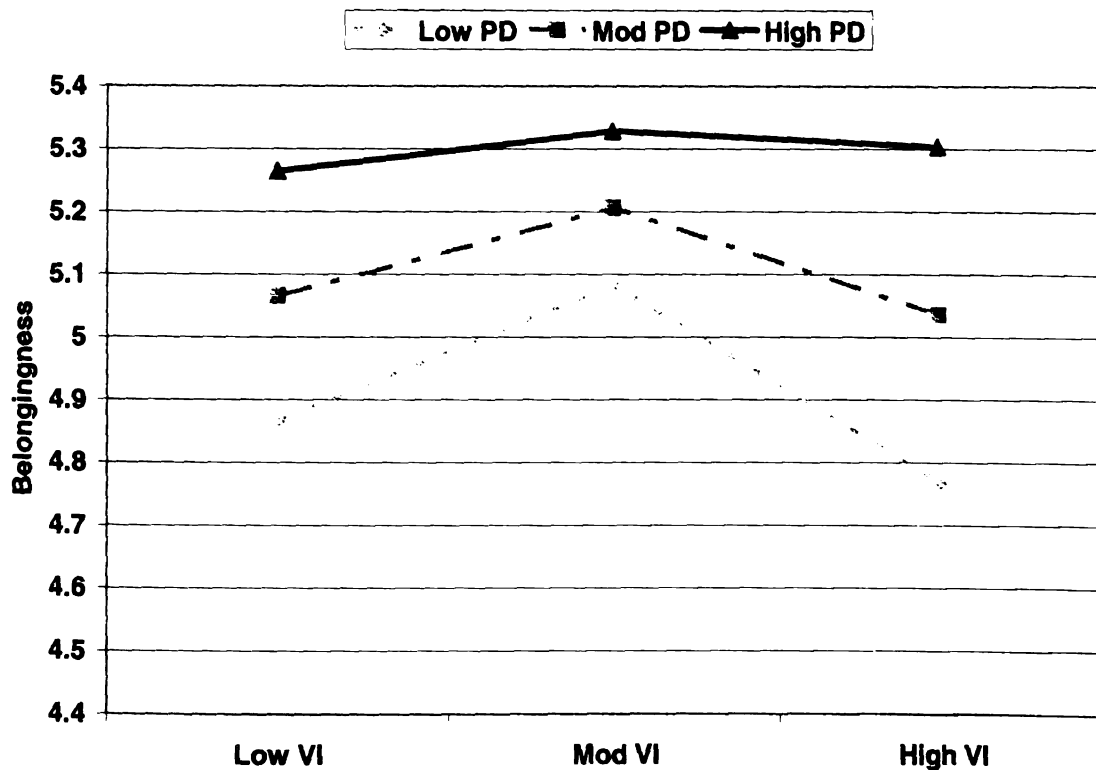


The other interaction effects for the low and high horizontal interdependence conditions and collectivism, extraversion, and cognitive ability were not significantly

related to individuals' perceptions of belongingness ($p > .10$). None of the interaction effects for the low and high horizontal interdependence conditions and collectivism, extraversion, and cognitive ability were significantly related to individuals' perceptions of distinctiveness ($p > .10$), which is consistent with the previously reported results for team members.

The interaction effect for high vertical interdependence and power distance was marginally significantly related to individuals' perceptions of belongingness ($\beta = -.12, p < .10$). Figure 13 illustrates the pattern of this interaction effect.

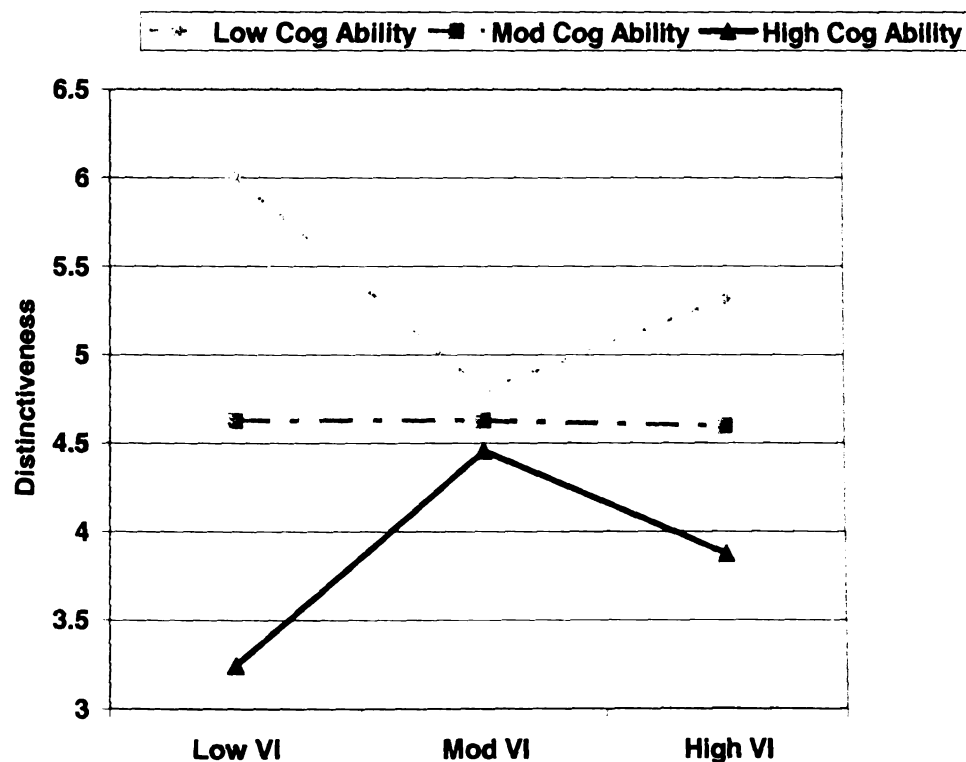
Figure 13. *Moderating Effect of Power Distance on Relationship between Vertical Interdependence and Perceptions of Belongingness (Team Members and Leaders)*



None of the other interaction effects for the dummy coded vertical interdependence conditions and power distance, emotional stability, and cognitive ability

were significantly related to individuals' perceptions of belongingness ($p > .10$). Results further indicate that the interaction effect of low vertical interdependence and cognitive ability was significantly related to individuals' perceptions of distinctiveness ($\beta = -.22, p < .05$). Figure 14 illustrates the pattern of this interaction effect. Consistent with the previously reported results for team members, none of the other interaction effects of the dummy coded vertical interdependence conditions and power distance, emotional stability, and cognitive ability were significantly related to individuals' perceptions of distinctiveness ($p > .10$).

Figure 14. *Moderating Effect of Cognitive Ability on Relationship between Vertical Interdependence and Perceptions of Distinctiveness (Team Members and Leaders)*



Team-Level Analyses

All hypotheses of this study use criteria on the individual level of analyses. This is consistent with the predictions of optimal distinctiveness theory, which argues that individuals need to satisfy both perceptions of belongingness and distinctiveness so that they can experience high levels of well-being and function effectively at work. Because of the focus of optimal distinctiveness theory on the individual as the level of analysis, it is not surprising that the predictions of optimal distinctiveness theory have not been tested on the team level of analysis. Even though I did not advance formal hypotheses on the effects of belongingness and distinctiveness on team-level criteria, I sought to explain these relationships in an exploratory manner.

Specifically, I was interested in the following relationships. First, the analyses on the individual level of analyses demonstrated significant main effects of belongingness and distinctiveness on some of the individual-level criteria of the study, such as self-efficacy, voice, and team identification. Based on these significant main effects on the individual level of analysis, I investigated the main effects of the two needs belongingness and distinctiveness on three objective criteria which are provided by the simulation: team overall performance, team gains, and team losses. Team gains represent the extent to which the team succeeds in promotion-oriented activities (Higgisn, 1997), that is, in the engagement of opportunities and threats which increase the offensive score of the team. Team losses represent the extent to which the team succeeds in prevention-oriented activities (Higgins, 1997), that is, the extent to which the team avoids assets losses or base attacks, which reduce the defensive score of the team. Taken together, team gains and team losses represent the score for overall team performance. As can be

expected, team gains and team losses are strongly correlated with overall team performance ($r = .75, p < .01$ for team gains and $r = .61, p < .01$ for team losses). Team gains and team losses are not significantly correlated with each other ($r = .05, p > .10$).

Second, I was interested in the effects of team variance in the two constructs belongingness and distinctiveness on overall team performance, team gains, and team losses. Recent research indicates that the distribution of individuals' perceptions of need satisfaction and team and leadership processes can have important consequences for team processes and team outcomes (Van Knippenberg & Schippers, 2007; Spitzmuller & Ilies, 2010). Third, I examined the interaction effects of variance in belongingness and distinctiveness with their respective main effects. This seeks to answer the question whether the main effects of belongingness and distinctiveness are contingent upon team variance in these constructs. I expected that teams which experience high levels of belongingness and/or distinctiveness should be better able to deal with high variance in these constructs, whereas teams who are characterized by low belongingness and/or distinctiveness should experience negative effects of high variance in these constructs. This is because teams which allow individuals to satisfy their basic needs for belongingness and distinctiveness may provide enough psychological nutrients to team members so that they can deal effectively with individuals who diverge from the overall high levels of belongingness and/or distinctiveness. Restated, I expect that team members will be relatively immune against individuals who experience low levels of belongingness and distinctiveness when overall levels of belongingness and distinctiveness are high.

Fourth, consistent with optimal distinctiveness theory, I investigated the interactive effects of belongingness and distinctiveness on overall team performance, team gains, and team losses. This seeks to answer the question whether a state of optimal distinctiveness also translates into superior performance on the team level of analyses.

Before presenting the results of the analyses, I note that the relatively small sample size on the team level of analysis ($N = 45$ teams) introduces the possibility of a Type II error when investigating these relationships. Thus, the following analyses should best be viewed as a first step in a program of research which investigates the role of belongingness and distinctiveness for team processes and team performance. I conducted these analyses using hierarchical linear regression, entering the main effects of belongingness and distinctiveness in step 1, followed by the main effect of the variance of these two constructs in step 2. In step 3, I entered the interaction effect of the main effects and their respective variances, which was followed by the interaction terms for belongingness and distinctiveness in step 4. Detailed results of these analyses are presented in Tables 19-21.

Table 19. Results for Supplemental Regression Analysis for Overall Team Performance

Variables	Step 1 β	Step 2 β	Step 3 β	Step 4 B
<i>Step 1: Main effects</i>				
Belongingness	.30 [†]	.33 [†]	-.10	.14
Distinctiveness	-.12	-.17	-.09	.13
<i>Step 2: Variances</i>				
Variance Belongingness		.04	-2.40 [†]	-2.29
Variance Distinctiveness		-.25	.10	.22
<i>Step 3: Interactive effects – Main effects and variances</i>				
Belongingness X Variance Belongingness			2.45*	2.33
Distinctiveness X Variance Distinctiveness			-.33	-.43
<i>Step 4: Interactive effects – Belongingness and Distinctiveness</i>				
Belongingness X Distinctiveness				-.37
R^2	.07	.12	.20	.20
F	1.58	1.40	1.60	1.34

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 20. *Results for Supplemental Regression Analysis for Team Gains*

Variables	Step 1 β	Step 2 β	Step 3 β	Step 4 B
<i>Step 1: Main effects</i>				
Belongingness	.39*	.43*	.34	1.61
Distinctiveness	-.28 [†]	-.34*	-.43	.78
<i>Step 2: Variances</i>				
Variance Belongingness		.03	-.39	.16
Variance Distinctiveness		-.28	-.91	-.30
<i>Step 3: Interactive effects – Main effects and variances</i>				
Belongingness X Variance Belongingness			.42	-.17
Distinctiveness X Variance Distinctiveness			.63	.09
<i>Step 4: Interactive effects – Belongingness and Distinctiveness</i>				
Belongingness X Distinctiveness				-1.95
R^2	.13	.20	.20	.22
F	3.13	2.42	1.59	1.47

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Table 21. *Results for Supplemental Regression Analysis for Team Losses*

Variables	Step 1 β	Step 2 β	Step 3 β	Step 4 B
<i>Step 1: Main effects</i>				
Belongingness	-.03	-.01	-.58*	-1.60
Distinctiveness	.13	.11	.27	-.70
<i>Step 2: Variances</i>				
Variance Belongingness		.02	-3.25*	-3.69*
Variance Distinctiveness		-.10	.74	.25
<i>Step 3: Interactive effects – Main effects and variances</i>				
Belongingness X Variance Belongingness			3.28*	3.75*
Distinctiveness X Variance Distinctiveness			-.81	-.37
<i>Step 4: Interactive effects – Belongingness and Distinctiveness</i>				
Belongingness X Distinctiveness				1.57
R^2	.02	.02	.18	.19
F	.33	.23	1.36	1.22

Note. N = 45.

[†] $p < .10$, * $p < .05$, ** $p < .01$.

Results indicate that belongingness was significantly related to overall team performance ($\beta = .30$, $p < .10$) and to team gains ($\beta = .39$, $p < .05$), but the effect on overall team performance was only marginally significant. The effect of belongingness on team losses was not statistically significant ($p > .10$). The effect of distinctiveness on team gains was marginally significant and negative ($\beta = -.28$, $p < .10$), whereas the effects of distinctiveness on team overall performance and team losses were not significant ($p > .10$).

Results further indicate that variance in belongingness and distinctiveness was not significantly related to any of the three criteria ($p > .10$). Interestingly, however, the interaction of belongingness with variance on belongingness significantly predicted overall team performance ($\beta = 2.45, p < .05$) and team losses ($\beta = 3.28, p < .05$). The nature of this interaction effect is illustrated in Figures 15 and 16. I note, however, that the overall F-value for these regression analyses was not significant, despite the significant effects of the interaction terms ($p > .10$), which suggests that the two interaction effects should be interpreted with caution.

Figure 15. *Moderating Effect of Team Variance in Belongingness on the Relationship between Belongingness and Overall Team Performance*

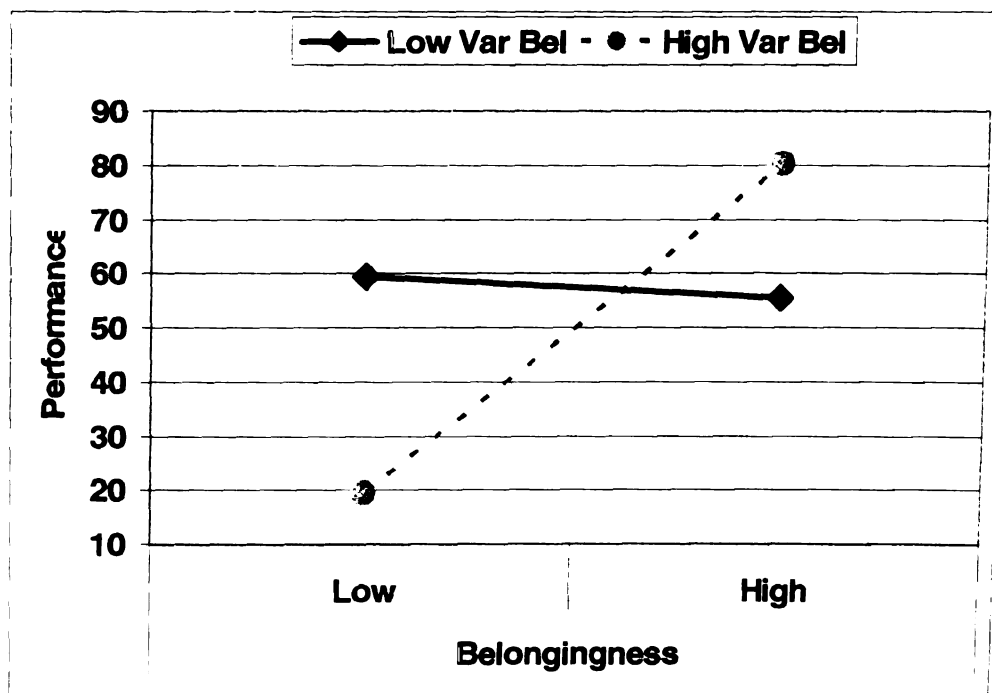
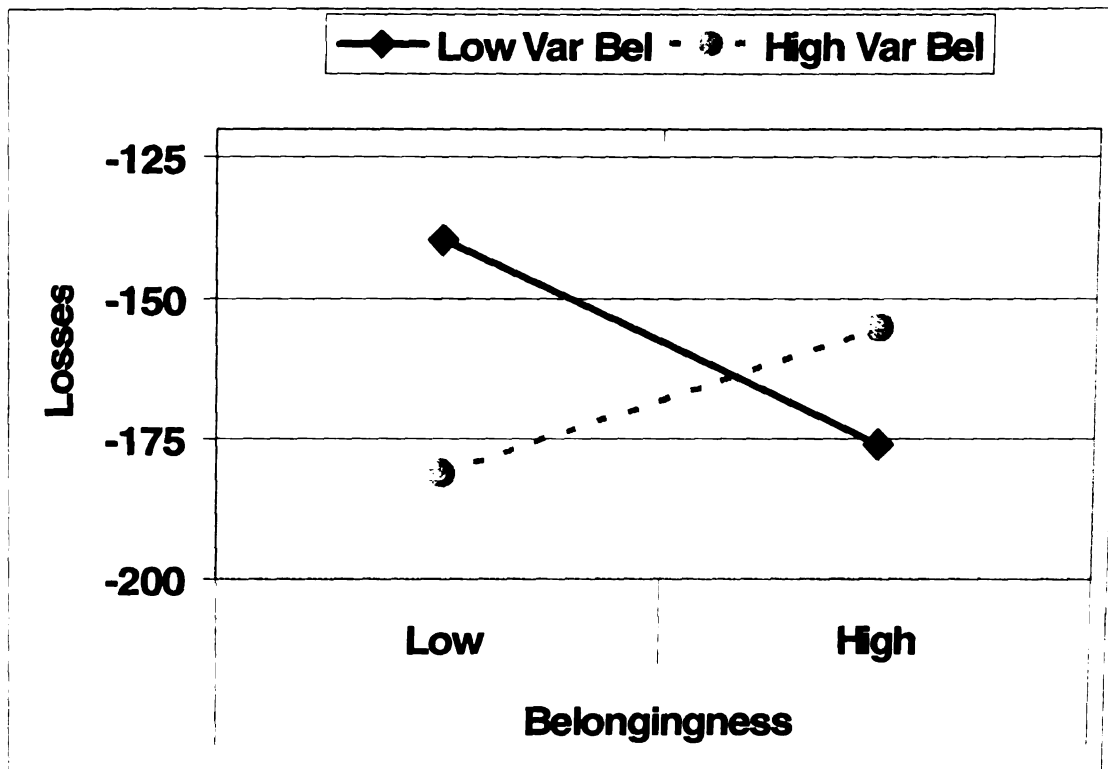


Figure 16. *Moderating Effect of Team Variance in Belongingness on the Relationship between Belongingness and Team Losses*



The interaction of distinctiveness with variance on distinctiveness was not significantly related to any of the three team outcomes. Finally, results indicate that the interaction effect of belongingness and distinctiveness did not significantly predict any of the three team outcomes ($p > .10$).

DISCUSSION

This study examined the social psychological consequences of team structures with varying degrees of coupling between team members, differentiating between tightly coupled, loosely coupled, and decoupled teams. Specifically, by drawing on optimal distinctiveness theory, the study investigated whether loosely coupled team structures create the best fit for individuals by allowing them to satisfy basic human needs for

belongingness and distinctiveness. To accomplish this, I developed and tested a series of predictions which relate two dimensions of team structure – horizontal and vertical interdependence – to individuals’ perceptions of belongingness and distinctiveness. I further hypothesized that the simultaneous satisfaction of individuals’ desires for belongingness and distinctiveness would be associated with a broad range of positive outcomes, such as subjective well-being, self-efficacy, voice behaviors, performance, learning, and team identification. Moreover, drawing from structural contingency theory, I predicted that the effects of team structure on self-construals would be contingent upon the internal fit of team structures with individuals’ cultural and personality characteristics and their cognitive ability. I tested these predictions in a laboratory study using the leadership development simulator (LDX). Participants provided self-ratings of self-construals after the end of the first half of the simulation. Data for the criteria were obtained at the end of the simulation via self- or observer ratings.

First, results provided only very weak support for the predictions relating the two dimensions of team structure to team members’ and to leaders’ self-construals. Specifically, there was only a marginally significant and negative association between the contrast low-intermediate horizontal interdependence and team member perceptions of belongingness and between the contrast low-intermediate vertical interdependence and team member perceptions of belongingness. Also, there was a marginally significant and negative association between the contrast high-intermediate horizontal interdependence and leader perceptions of distinctiveness, between the contrast low-intermediate vertical interdependence and leader perceptions of belongingness, and between the contrast high-intermediate vertical interdependence and leader perceptions of belongingness. Finally,

there was a marginally significant and negative association between the contrast high-intermediate vertical interdependence and leader perceptions of distinctiveness.

Second, results do not support the differential predictions for team members and for leaders. According to my hypotheses, horizontal interdependence and vertical interdependence should exhibit a curvilinear relationship with team member perceptions of belongingness and distinctiveness such that intermediate degrees of horizontal and vertical interdependence would be associated with highest levels of belongingness and distinctiveness. Conversely, I predicted a linear and positive relationship between horizontal and vertical interdependence and leader perceptions of belongingness and distinctiveness. Results provide only weak support for the team member predictions, and they provide no support for the predicted linear and positive relationship between intensity of coupling and leaders' self-construals. Contrary to my predictions, results indicate that leaders and team members may actually exhibit similar social psychological reactions to horizontal and vertical interdependence.

Specifically, the four regression coefficients representing the marginally significant relationships between the dummy-coded dimensions of team structure and leader self-construals were negative. The negative regression coefficient representing the relationship between the contrast low-intermediate vertical interdependence and leader perceptions of belongingness is still consistent with the predicted linear and positive relationship between vertical interdependence and leader perceptions of belongingness, indicating that low vertical interdependence is associated with lower belongingness than intermediate degrees of vertical interdependence. More importantly, however, the three marginally significant relationships between the contrast high-intermediate horizontal

interdependence and leader perceptions of distinctiveness, between the contrast high-intermediate vertical interdependence and leader perceptions of belongingness, and between the contrast high-intermediate vertical interdependence and leader perceptions of distinctiveness were also negative. This supports the notion of an inverted U-shaped relationship between the two dimensions of team structure and leader perceptions of belongingness and distinctiveness. In sum, I conclude that there is no support for the differential predictions for leaders and team members and that it is possible that leaders and team members may exhibit similar social psychological reactions to different degrees of coupling in teams.

Third, based on these findings, I aggregated data for team members and leaders to test the relationships of horizontal and vertical interdependence with individuals' perceptions of belongingness and distinctiveness for the entire sample of research participants. And indeed, findings provide some support for the predicted curvilinear relationships of the two dimensions of team structure with individuals' perceptions of belongingness. The contrast low-intermediate horizontal interdependence was negatively associated with individuals' perceptions of belongingness, and the contrasts low-intermediate and high-intermediate vertical interdependence were both negatively associated with individuals' perceptions of belongingness.

No support was obtained for the predictions for individuals' distinctiveness, even after aggregating team member and leader data. This finding is problematic for the discussion of the interactive effect of belongingness and distinctiveness on work outcomes. In fact, since the two dimensions of team structure are not related to individuals' perceptions of distinctiveness, a state of optimal distinctiveness (that is, the

simultaneous satisfaction of the needs of belongingness and distinctiveness) can also not assume the role of a mediator in the relationships between team structure and work outcomes. Nevertheless, I will discuss the support for the interaction hypotheses, that is, the predictions derived from optimal distinctiveness theory according to which the simultaneous satisfaction of the needs for belongingness and distinctiveness is associated with optimal psychological functioning and work outcomes. Based on the disappointing finding that team structure and individuals' perceptions of distinctiveness were not related, any variation in individuals' perceptions of distinctiveness should better be attributed to individual differences in chronically accessible self-construals and to situational variables which affect individuals' perceptions of distinctiveness, even though they were not part of the design of this study.

Fourth, results provide some support for the internal fit predictions of this study according to which the effects of team structure on perceptions of belongingness and distinctiveness are contingent upon cultural characteristics, personality characteristics, and cognitive ability. Specifically, for team members (excluding team leaders) data were supportive of a moderating effect of extraversion in the relationship between horizontal interdependence and belongingness and of a moderating effect of cognitive ability in the relationship between vertical interdependence and distinctiveness. For leaders, extraversion moderated the relationship between horizontal interdependence and leader perceptions of distinctiveness. Supplemental analysis for all individuals (aggregating team member and leader data) also showed a moderating effect of extraversion in the relationship between horizontal interdependence and individuals' perceptions of belongingness. Moreover, the moderating effect of power distance in the relationship

between vertical interdependence and individuals' perceptions of belongingness was marginally significant in a sample of all research participants, and cognitive ability moderated the relationship between vertical interdependence and individuals' perceptions of distinctiveness.

For extraversion, the nature of the interaction effects was consistent with my predictions such that high horizontal interdependence was associated with high levels of belongingness for extraverted individuals, whereas introverted individuals experienced a sharp decline in their perceptions of belongingness when horizontal interdependence was high. Similarly, individuals with high power distance values enjoyed high levels of belongingness when horizontal interdependence was high, whereas individuals with low power distance values experienced low belongingness when horizontal interdependence was high. Contrary to my expectations, however, individuals with high cognitive ability did not experience higher levels of distinctiveness when vertical interdependence was low. In fact, the nature of the results were exactly the opposite of what I had predicted such that individuals with low cognitive ability were able to enjoy high levels of distinctiveness when vertical interdependence was low, whereas individuals with high cognitive ability experienced low levels of distinctiveness when vertical interdependence was low. One potential explanation for this finding is that individuals with high cognitive ability find it easier to discern the strategic vacuum that exists in teams with low vertical interdependence. Thus, even though individuals with high cognitive ability are best-equipped to deal with the requirements of low vertical interdependence, they are also best-equipped to understand the problems and risks associated with low vertical interdependence. In extreme cases, low vertical interdependence can create teams which

operate without strategic guidance and leadership. Understanding these risks can undermine the positive value which team members ascribe to their status as autonomous and empowered group member in teams with low vertical interdependence, leading to lower perceptions of distinctiveness.

Fifth, results provide some support for the predicted interaction effect between perceptions of belongingness and distinctiveness. To reiterate, drawing from optimal distinctiveness theory, I predicted that the simultaneous satisfaction of belongingness and distinctiveness (a state of optimal distinctiveness) would be associated with a broad range of outcomes, such as subjective well-being, self-efficacy, voice, job performance, learning, and team identification. And indeed, the data support the notion that the effects of distinctiveness on study outcomes are contingent upon the degree to which belongingness is satisfied. The nature of the interaction effects, however, varies from criterion to criterion and deserves special attention. As predicted by optimal distinctiveness theory, positive affect is highest when both needs for belongingness and distinctiveness are satisfied. Moreover, positive affect was lowest when perceptions of belongingness were low and perceptions of distinctiveness were high. In fact, this combination was associated with a level of positive affect which was even lower than the positive affect associated with low belongingness and low distinctiveness.

For self-efficacy, the simultaneous satisfaction of the needs for distinctiveness and belongingness was again associated with highest levels of self-efficacy, which is consistent with optimal distinctiveness theory and with the findings obtained for the interaction effect of belongingness and distinctiveness on positive affect. Interestingly, however, the combination of low distinctiveness and low belongingness is associated

with a level of self-efficacy which is equivalent to the level of self-efficacy associated with low distinctiveness and high belongingness. Thus, for self-efficacy, belongingness assumes the role of an enhancer in the relationship between distinctiveness and belongingness. This is different from the moderating effect of belongingness in the relationship between distinctiveness and positive affect, where the nature of the relationship changes depending on the level of belongingness (the relationship is positive when belongingness is high but negative when belongingness is low).

For voice, high levels of belongingness and distinctiveness are associated with highest levels of voice behaviors, which is again consistent with the predictions of optimal distinctiveness theory. Interestingly, however, the slope of the regression line between voice and distinctiveness is higher when belongingness is low, which is different from the pattern of results obtained for self-efficacy, where the slope was higher when belongingness was high. The pattern of the interaction effect in Figure 14 suggests that voice behaviors can also be high when distinctiveness is high and belongingness is low, and when distinctiveness is high and belongingness is low. Restated, for voice behaviors, it is not only the simultaneous satisfaction of the needs for belongingness and distinctiveness which is associated with high levels of voice behaviors. Instead, belongingness and distinctiveness can substitute for each other such that the satisfaction of one of the two needs is enough to produce high levels of voice behaviors, even though the level of voice behaviors associated with these combinations of distinctiveness and belongingness is slightly lower than the level of voice behaviors associated with high levels of belongingness and distinctiveness.

In sum, these findings suggest that the relationships between self-construals and outcomes may be more complicated than previously assumed by optimal distinctiveness theory according to which only the simultaneous satisfaction of the needs for belongingness and distinctiveness leads to optimal psychological functioning and work outcomes. Also, the finding that the combination of high levels of distinctiveness with low levels of belongingness was associated with higher levels of voice behaviors than the combination of low levels of distinctiveness with low levels of belongingness cannot be explained based on the predictions of optimal distinctiveness theory.

Sixth, the data are not supportive of a mediating role of optimal distinctiveness – that is, the simultaneous satisfaction of the needs of belongingness and distinctiveness – in the relationship between the two dimensions of team structure and the study outcomes. This is because there is no significant relationship between the two dimensions of team structure and individuals' perceptions of distinctiveness, which would have been a necessary requirement for mediation to exist in the model. Thus, this study cannot fully explain the mechanisms through which different dimensions of team structure affect a broad range of affective, cognitive, and behavioral outcomes, all of which relate to individuals' ability to function effectively at work. Put in different words, the study provides only a first step in a program of research which is targeted at illuminating the black box between different degrees of coupling in teams and relevant criteria.

Implications for Research

This study is one of the first empirical studies to investigate the social consequences of team structures on individuals. As such, this study has at least five implications for research on team structures and optimal distinctiveness. First, by

applying optimal distinctiveness theory to research on team structure, the study provides a theoretical extension of team research. The notion that individuals can simultaneously satisfy their needs for belongingness and distinctiveness in social settings constitutes an important extension of previous team research. Indeed, previous research advocated the use of either decoupled or tightly coupled team structures, emphasizing either individuals' distinct selves, or the identity of the entire team and the social embeddedness of the individual team member. For example, the research of Wageman and Gordon (Wageman, 1995; Wageman & Gordon, 2005) found that increasing task interdependence strengthens lateral ties in teams and is associated with superior team outcomes. Similarly, Deutsch's social interdependence theory argued that the identity of teams should be strengthened by creating team goals which eliminate competitive individual behavior. What these two approaches have in common is that they advocate the use of tightly coupled team structures in which the identity of the team should be strengthened at the expense of the independent individual. Other research, however, concluded that team structures should be decoupled in order to allow individuals to experience high personal autonomy and to express their true selves. Spreitzer's (1995) research on empowerment in teams is a prominent example of this line of thinking.

The important theoretical contribution of optimal distinctiveness theory is that team structures do not have to emphasize either the related self OR the independent self. Instead, optimal distinctiveness theory suggests that team structures can create a set of role relationships and connections between team members which allow individuals to satisfy their needs for belongingness and distinctiveness simultaneously. Most notably,

the positive relationship between the constructs belongingness and distinctiveness in this study provide additional evidence in support of this conclusion.

Conclusions drawn from optimal distinctiveness theory should not be viewed as negating previous research on team structure which has advanced our understanding of tightly coupled and decoupled team structures. However, applying optimal distinctiveness theory to research on team structure broadens our understanding of teams and provides us with a theoretical framework with which we can study the positive and negative social psychological implications of each team structure simultaneously.

Focusing exclusively on the positive effects of task interdependence for the intensity of lateral connections between team members ignores the possibly de-individuating influence of tightly coupled team structures. Similarly, focusing exclusively on the liberating influence of team empowerment ignores the potentially negative consequences of loosely coupled team structures for individuals' perceptions of belongingness and relatedness. In fact, the focus of previous research on the positive effects of either tightly coupled or decoupled team structures also explains why there has been a scarcity of research on loosely coupled team structures which can capitalize on the strengths of tightly coupled and decoupled team structures, while at the same time keeping their potential risks in check.

Second, this study also contributes to our understanding of team structures by providing one of the first empirical investigations of loosely coupled teams (cf. Ellis et al., 2003; Stewart & Barrick, 2000). Results for the entire sample of research participants indicate that loosely coupled vertical structures are associated with higher perceptions of belongingness than decoupled or tightly coupled vertical structures, supporting the notion

that loosely coupled vertical team structures can maintain the identity of the team, while ensuring that the de-individuating effects of high vertical interdependence do not undermine individuals' commitment to the team.

Similarly, even though the results for horizontal interdependence were not as clear-cut as they were for vertical interdependence, results from this study suggest that loosely coupled horizontal structures may be associated with highest levels of belongingness among team members and leaders. Consistent with my theorizing on the advantages of loosely coupled team structures, this finding suggests that loosely coupled horizontal team structures can capitalize on the advantages of intensive lateral connections between team members, while at the same time reducing the downsides of tightly coupled horizontal structures, such as the higher risk for conflict between team members.

Third, in spite of providing some empirical support for the use of loosely coupled team structures, the results of this study also suggest that the mechanisms through which team structures affect team members' thoughts, feelings, and actions are manifold and more complicated than anticipated. Most notably, with the exception of self-efficacy and learning for horizontal interdependence and learning for vertical interdependence, none of the criteria of this study were significantly related to the dummy-coded dimensions of team structure. Most importantly, this finding points to the many contingencies which can determine the effectiveness of different dimensions of team structure. Previous research on structural contingency theory and structural adaptation theory (Hollenbeck et al., 2002; Johnson et al., 2006) showed that the effectiveness of any team structure depends

on the external fit of the team structure with its environment and on the internal fit of the team structure with team member characteristics.

And indeed, findings from this study provide some support for structural contingency theory: Given the dominant influence of team structure for team member's cognition and behavior (Blau, 1978), the lack of a significant association between the dummy-coded dimensions of team structure and study outcomes strongly suggests that a number of critical contingencies exist for the effects of team structure on criteria. Moreover, I found some support for the internal fit hypotheses according to which the effect of team structure on self-construals is moderated by individual difference constructs.

Results indicate that extraversion, power distance, and cognitive ability moderated the effect of horizontal interdependence or vertical interdependence on individuals' perceptions of belongingness. For example, extraversion moderated the relationship between horizontal interdependence and perceptions of belongingness such that extraverted individuals experienced high levels of belongingness when horizontal interdependence was high, whereas moderately extraverted individuals experienced moderate levels of belongingness, and introverted individuals experienced low levels of belongingness when horizontal interdependence was high. This result directly demonstrates how the moderating influence of extraversion masks the important role which horizontal interdependence has for different individuals.

Fourth, the results from this study also have important implications for optimal distinctiveness theory itself. First, the study provides some support for optimal distinctiveness theory. Most notably, the finding that high levels of belongingness and

distinctiveness were also associated with maximum levels of positive affect, self-efficacy, and voice behaviors supports the notion that a state of optimal distinctiveness is associated with important outcomes. At the same time, however, it is also important to point out that the interactive effect of belongingness and distinctiveness did not predict the other criteria of the study, i.e., negative affect, self-evaluative well-being, learning, performance, and team identification.

Moreover, the pattern of the interaction effects for the different criteria is more complicated than previously assumed by optimal distinctiveness theory: Results from this study support the notion that the simultaneous satisfaction of the needs for belongingness and distinctiveness results in positive outcomes, but the results cast doubts on other predictions of optimal distinctiveness theory. For positive affect, the combination of low belongingness and high distinctiveness was associated with lowest levels of positive affect. Restated, for positive affect, individuals' perceptions of belongingness determined the nature of the relationship between distinctiveness and positive affect which was positive when belongingness was high and negative when belongingness was low. This is consistent with the predictions of optimal distinctiveness theory which argues that the strength of one need (i.e., belongingness) increases with the extent to which the opposing need (i.e., distinctiveness) is satisfied (Brewer, 1991). Thus, the satisfaction of the need for distinctiveness in combination with an unsatisfied need for belongingness should indeed be especially detrimental for individuals and be associated with lowest levels of well-being, as is the case for low levels of positive affect.

The pattern of the interaction effects for self-efficacy and voice, however, is strikingly different. For example, low levels of belongingness and low levels of

distinctiveness are associated with lowest levels of voice, even though optimal distinctiveness theory would predict that the combination of high levels of distinctiveness and low levels of belongingness would be associated with lowest levels of voice behaviors. Moreover, instead of changing the nature of the relationship between distinctiveness and the outcomes, belongingness functions as an enhancer (for self-efficacy) or substitute (for voice) in the relationship between distinctiveness and the criteria. In sum, this suggests optimal distinctiveness theory cannot capture the complexity of the interactive effects between belongingness and distinctiveness for different criteria.

One potential explanation for this finding is that social psychological research has generally placed a stronger focus on well-being related outcomes (cf. Brewer, 2003; Brewer & Roccas, 2001) and less of a focus on criteria which attract the interest of scholars in the field of Organizational Behavior, such as voice or self-efficacy. Thus, the inconsistent findings for the pattern of the interaction effects for voice and self-efficacy may simply be due to an extension of the criterion space for optimal distinctiveness theory which has originally been developed as a theory to explain how individuals experience high levels of collective identification and well-being as members of a group or collective. In sum, what is needed is more theoretical and empirical research on the mechanisms through which the interactive effect of belongingness and distinctiveness affects different criteria. I will return to this point when discussing an agenda for future research based on the findings of this study.

Moreover, optimal distinctiveness theory cannot explain the strong size of the main effects between the individual needs of belongingness and distinctiveness with

some of the criteria. In fact, most of these relationships are stronger than the interactive effects of belongingness and distinctiveness on these criteria. For example, the correlation coefficients for the relationships between team member (excl. leader) perceptions of belongingness and team member positive affect, self-evaluative well-being, self-efficacy, and team identification are .41, .37, .24, and .62, respectively, and the correlation coefficients for the relationships between team member (excl. leader) perceptions of distinctiveness and self-efficacy, voice, and team identification are .17, .33, and .22, respectively. This finding receives additional support from the supplemental analyses which I conducted on the team level of analyses, which showed a significant main effect of belongingness on overall team performance and team gains, whereas the interaction effect of belongingness and distinctiveness was not related to any of the three team outcomes.

These results cannot be explained by optimal distinctiveness theory, which proposes that only the simultaneous satisfaction of the needs for belongingness and distinctiveness allows individuals to experience high subjective well-being and to function effectively at work. Instead, the strong nature of these main effects suggest that the satisfaction of only one of the needs for belongingness and distinctiveness can already provide important psychological nutrition to the self which can already lead to a number of positive outcomes.

What surprises most is the large magnitude of the relationship between perceptions of belongingness and team identification, evidenced by the correlation coefficient of .62. One of the central predictions of optimal distinctiveness theory is that individuals will experience highest levels of identification with a collective when both the

needs for belongingness and distinctiveness are satisfied (Brewer, 1991). The results from this study, however, suggest that perceptions of belongingness may already be sufficient to activate high levels of team identification, a proposition which receives additional support when considering the non-significant nature of the moderating effect of perceptions of distinctiveness in the relationship between belongingness and team identification. In sum, findings from this study suggest that a state of optimal distinctiveness is only one of several mechanisms which translate the effects of different degrees of coupling in teams to the criteria investigated in this study.

Fifth, supplemental analyses on the team level of analysis provide some evidence that the two constructs belongingness and distinctiveness also have important implications for team outcomes. Due to the relatively small sample size on the team level of analysis, this result has to be interpreted with caution. Nevertheless, findings from this study indicate a significant association of belongingness with overall team performance and team gains and of distinctiveness with team gains. In addition, results suggest that the effects of belongingness on team outcomes may also be contingent upon team variance in belongingness: Teams with high levels of belongingness realize higher overall performance scores and lower team losses when team variance in belongingness is high, whereas teams with low levels of belongingness realize lower overall performance and higher team losses when team variance in belongingness is high.

Implications for Practice

There are at least three important implications for practice. First, the association of loosely coupled vertical interdependence with highest perceptions of belongingness

supports the use of loosely coupled vertical team structures in organizations as a means to satisfying individuals' needs for belongingness and distinctiveness. Similarly, even though the results were not as clear-cut for horizontal interdependence, the results suggest the possibility that loosely coupled horizontal structures are also associated with highest levels of belongingness.

This coincides with recent developments in organizations which have started to converge on loosely coupled team structures. Not only do loosely coupled team structures allow individuals to experience a psychological state of optimal distinctiveness, they are also viable solutions to conflicting environmental demands which today's organizations face.

Structural contingency theory argues that organizational structures should be tightly coupled when efficiency requirements are high, and decoupled when requirements for adaptation and flexibility are high (Hollenbeck et al., 2002). Given that organizations today are operating in a dynamic environment in which efficiency has become a key factor to determine the competitive position of an organization, it has become increasingly difficult to structure organizations around decoupled individuals, and there are only very few organizations who still advocate the use of decoupled organizational structures. Instead, organizations have turned to team-based structures which emphasize the interdependence between individuals and which seek to capitalize on the different backgrounds and knowledge bases of team members.

At the same time, however, organizations also have to compete in a dynamic market environment in which the performance metrics for industries and organizations change continuously. Based on structural contingency theory, this would argue for the

use of flexible, decoupled organizational structures which can adjust very effectively to changing demands of the market environment. And indeed, organizations have endowed individuals with greater autonomy in their work to be better prepared for the demands of a dynamic environment. In sum, this suggests that organizations have to balance the needs for efficiency with the need to remain flexible and adaptive – a balance of conflict which has made loosely coupled team structures the structure of choice for many organizations.

Second, even though loosely coupled teams have become the most commonly employed team structure in organizations, it is important to note that there are situations in which tightly coupled team structures or decoupled team structures may still be necessary. In such situations, organizations should ensure that individuals can maintain high levels of distinctiveness when the requirements of a task or environment demand tightly coupled team structures, just as organizations should ensure that individuals can still experience high levels of belongingness when decoupled teams have to be created in organizations. By doing so, organizations can reap the benefits that the simultaneous satisfaction of the needs for belongingness and distinctiveness provides for individuals' positive affect, self-efficacy, and voice behaviors.

For example, the structure of teams who are performing a routine set of tasks in a relatively stable environment should lean towards tight coupling so that the superior efficiency of tightly coupled team structures can be utilized. In order for such teams to perform successfully over extended periods of time, however, it is necessary that organizations provide vehicles for individuals to express their unique selves and to emphasize their personal identity. For example, recognition of outstanding individual

contributions to team success affirms the distinctive identity of the individual. Similarly, by creating functionally specialized roles which match individuals' preferences and backgrounds, individuals will find it easier to express their uniqueness.

Conversely, if organizations see themselves forced to employ decoupled team structures, organizations have to ensure that individuals experience enough belongingness and connectedness with other team members so that individuals remain psychologically invested in their team and organization. Managers can accomplish this by emphasizing the value of face-to-face communications and the value of interpersonal relationships in decoupled team structures. Also, organizations can enhance perceptions of belongingness in teams through the use of teambuilding exercises and through reward structures which emphasize common goals.

Third, findings from this study call for a match of team members' personality, cultural values, and cognitive ability with a team's structure. At the very least, hiring decisions should match individuals' extraversion with the degree to which the team structure is loosely or tightly coupled. Findings from this study indicate that organizations should select extraverted individuals to teams with high horizontal interdependence because extraverts are better equipped to deal with the high communication requirements of such structures and because of extraverts' higher characteristic levels of activation. At the same time, however, this suggestion has to be balanced with recent research which suggests that teams are most effective when they balance the number of extraverted and introverted team members (Humphrey, Hollenbeck, Meyer, & Ilgen, 2007).

Despite the significant moderating effect of cognitive ability in the relationship between vertical interdependence and individuals' perceptions of distinctiveness, it is questionable whether organizations should really consider selecting individuals with lower cognitive ability when vertical interdependence is low or high. Cognitive ability has consistently been identified as a powerful predictor of job performance in a wide variety of settings (Ree et al., 1994), which makes it difficult to argue that the selection of individuals with lower cognitive ability could be desirable for organizations. At the same time, however, the finding that individuals with high cognitive ability experience low distinctiveness when vertical interdependence is low or high calls for programs which emphasize the positive distinctiveness of team members in decoupled or tightly coupled vertical team structures. Otherwise, organizations run the risk of losing their most talented employees who appear to be especially sensitive to the negative effects that low and high levels of vertical interdependence can have.

Finally, results on the internal fit hypotheses from this study should not be interpreted in isolation. Instead, organizations should interpret them together with recent research on structural contingency theory and structural adaptation theory, which already identified a number of important individual difference constructs as predictors of individuals' ability to function effectively in different team structures. For example, Hollenbeck et al. (2002) reported that emotional stability is associated with performance when horizontal interdependence is low, but not in team structures which are more tightly coupled.

Limitations and Future Research

Despite the positive features of this study, the study also has several limitations which are worth noting.

First, the study takes place in a laboratory context in which team members have no common history of working together as a team. This could potentially limit the generalizability of the results to a field setting. In addition, the laboratory context may reduce the salience that individuals ascribe to their team membership, and it may attenuate the strength of the psychological reactions which individuals experience in response to different types of team structures. For example, individuals may become less involved and committed to their team in a laboratory context than they would in an organizational context, and as a result develop lower levels of belongingness. Similarly, even though teams were eligible to win cash prizes for above average performances on the simulation, performance consequences in the study were less severe than they are for teams in an organizational context, where the level of variable compensation, salary increases, or promotions are contingent upon performance.

Despite these limitations, the laboratory design allowed me to study the social psychological implications of different dimensions of team structure in a controlled setting. Given that this was one of the first empirical investigations of different degrees of coupling on individuals' self-construals, the high internal validity of the laboratory design offers a noteworthy advantage. Moreover, the laboratory setting allowed me to maximize the variance on the independent variables, that is, on the manipulations of the two dimensions of team structure. This presents an important advantage of the laboratory design over a field study in which the variance on different degrees of coupling in team structures would be severely limited, given that most organizations have converged on

loosely coupled organizational structures. Finally, given that the salience of team membership is lower in a laboratory context than in a field setting, it is likely that this study actually provides conservative estimates of the actual strength of the relationships between different degrees of coupling in teams and self-construals. In sum, future research should replicate results from this study in a field setting to document the generalizability of the study findings. Some of the previously mentioned aspects of field settings which increase the salience of group membership, such as compensation designs, opportunities for salary increases or promotions, could be incorporated into study designs as potential moderators of the effects of different dimensions of team structure on self-construals.

Second, the manipulation checks for horizontal interdependence and to a lesser degree for vertical interdependence indicate that the experimental manipulations were not able to pull apart the different experimental conditions as much as anticipated. This is evidenced by the lack of a significant difference in the manipulation check for the moderate and high horizontal interdependence conditions. Also, the overall range in mean values across the three horizontal interdependence conditions was limited, ranging from 5.49 to 6.03 (on a 7-point scale). Similarly, even though the manipulation checks for the vertical interdependence conditions indicated significant differences between these conditions, results also indicate that there is not as much variation in individuals' perceptions of vertical interdependence across the three experimental conditions as expected. In fact, the range of mean values for the three vertical interdependence conditions also only ranges between 4.99 and 5.71 (on a 7-point scale), indicating that the manipulation was not able to cover the full spectrum of vertical interdependence in teams.

The lack of variation between experimental conditions has implications for the interpretation of the study findings. The fact that the experimental design was not able to capture the full spectrum of different degrees of coupling in horizontal and vertical interdependence implies that results of this study have to be interpreted with some caution. It is possible that other relationships between the two dimensions of team structure and self-construals would become statistically significant if the differences between the experimental conditions were more salient to research participants. Similarly, it is possible that the nature of some of the significant relationships in this study (i.e., the significant effect of vertical interdependence on belongingness) would change at very low levels of horizontal and vertical interdependence which are not represented in this study.

Moreover, the experimental design rested on the assumption that the low, moderate, and high experimental conditions were equidistant. Manipulation checks revealed that this was indeed the case for vertical interdependence, but that this was not the case for horizontal interdependence, where participants could not differentiate between the high and moderate horizontal interdependence condition. Because of that, results for the relationship between horizontal interdependence and perceptions of belongingness and distinctiveness also have to be interpreted with caution. Specifically, the non-significant effect of the contrast high-moderate horizontal interdependence on perceptions of belongingness may very well be the result of the non-significant differences between the moderate and high horizontal interdependence conditions. To reiterate, the effect of the contrast high-moderate horizontal interdependence on belongingness was the only non-significant effect between the two dimensions of team

structure and individuals' perceptions of belongingness after aggregating team member and leader data. Restated, with sufficient variation between these two experimental conditions, it is possible that the contrast between these two experimental conditions would have been associated with significant differences in team member perceptions of belongingness.

Third, the manipulation for vertical interdependence consisted of four sets of instructions and features of the simulation. This complex manipulation was used in an attempt to maximize the variance between the experimental conditions. To reiterate, I manipulated vertical interdependence first by varying the extent to which the strategy discussion was dominated by the leader or whether the strategy discussion was conducted in a participative manner. This included a manipulation of decision making rules related to a goal-setting exercise in which teams engaged as part of the strategy discussion.

Second, I varied instructions on communication rules given to teams right before the start of the session. Third, I varied the time that leaders or other team members had available for their moves during the simulation, and fourth, I manipulated the extent to which leaders were capable of overriding actions of team members during the simulation. Given the relatively low variability between experimental conditions, the use of such a strong and complex manipulation appears justified. At the same time, however, the study is not able to discern which of the four manipulations drives perceptions of vertical interdependence most strongly. Thus, future research should investigate the effectiveness of the different components of the manipulation of vertical interdependence used in this study.

Fourth, given that the predictions regarding the relationships between the dimensions of team structure and distinctiveness were not supported for team members and for the entire sample of research participants, the question arises as to whether this is due to a lack of conceptual support for these hypotheses, or whether these non-significant relationships are due to the research design of the study. First, it is possible that the timing of measurements for the relationships led to the non-significant findings between team structure and perceptions of distinctiveness. According to Vignoles et al. (2002), positive distinctiveness results from distinct networking positions which individuals occupy in teams and from differences in traits, abilities, and attitudes between team members. It is possible that it takes a longer time period to develop distinct networking positions in teams and to discern differences in traits and abilities than the laboratory context allowed. This would mean that the present study underestimates the actual strength of the relationship between team structure and perceptions of distinctiveness.

Also, the question arises as to whether the operationalization of distinctiveness was appropriate to test the hypothesized relationships. Due to the poor psychometric properties of the Vignoles et al. (2002) measure, I was forced to only rely on the distinctiveness measure by Janssen and Huang (2008). This measure demonstrated adequate psychometric properties, but the measure by itself may be a deficient measure to capture the relevant subdimensions of distinctiveness. Most notably, the Janssen and Huang (2008) measure of distinctiveness does not capture network positions as one possible source of distinctiveness in teams. Instead, it focuses solely on the perceived uniqueness of team members with respect to differences in opinions, traits, abilities, or performance contributions.

What is needed is a better operationalization of the distinctiveness construct which matches the conceptual definition provided by optimal distinctiveness theory. Two aspects are important here: First, such a measure should not be deficient in the sense that it has to capture the different aspects of distinctiveness, such as differences in traits, abilities, and attitudes, as well as distinct networking positions which individuals can occupy in teams. Second, a measure of distinctiveness should not be contaminated, that is, research on distinctiveness has to establish clear construct boundaries with related constructs, such as autonomy or volition, which are frequently discussed in research on individuals' self-construals (i.e., Bettencourt & Sheldon, 2001), even though they are not consistent with the way that optimal distinctiveness theory defined distinctiveness (Brewer, 1991).

Fifth, the lack of support for the differential predictions for leaders and team members raises the question as to whether future research on self-construals should still develop differential predictions for individuals on different hierarchical levels in an organization. The present study supports the notion that the two dimensions of team structure exhibit curvilinear relationships with team members' and leaders' self-construals such that intermediate degrees of coupling in teams are associated with highest levels of belongingness and distinctiveness. The present study cannot, however, provide an answer to the question whether some relationships between team structure and self-construals are more salient for leaders than they are for team members. For example, results for leaders indicate a marginally significant relationship between high horizontal interdependence and leader perceptions of distinctiveness and between high vertical interdependence and leader perceptions of distinctiveness, whereas the relationships

between the two dummy-coded dimensions of team structure and perceptions of distinctiveness are not significant for team members and for the entire sample of research participants. As I mentioned before, the lack of significant relationships of team structure with distinctiveness in this study may in part stem from the fact that one of the two measures of distinctiveness suffers from poor psychometric properties. Nevertheless, the marginally significant relationships with distinctiveness for leaders also raise the question as to whether the effects of team structure on distinctiveness are more pronounced for leaders.

A closer look at the correlation table also provides some support to the notion that differential predictions for team members and team leaders may be warranted. Most notably, the strength of the association between belongingness and distinctiveness differs markedly between leaders and team members, evidenced by the moderately strong relationship between the constructs for team members ($r = .34$) and the strong relationship between the construct for leaders ($r = .63$). The difference in these two correlation coefficients suggests the possibility of a moderator in the relationship between the two constructs belongingness and distinctiveness. For example, for individuals who occupy distinct networking positions in teams (i.e., leaders), high distinctiveness may be a stronger reinforcer of perceptions of belongingness than is the case for individuals who occupy less central networking positions in teams. In sum, what is needed is additional research which investigates the possibility of differential predictions for leaders and team members.

Sixth, the present study presents different patterns of the interaction effects of belongingness and distinctiveness on positive affect, self-efficacy, and voice behaviors.

Specifically, the nature of the interaction effects predicting self-efficacy and voice are not consistent with the predictions of optimal distinctiveness theory. It is possible that the divergent nature of these interaction effects is due to a more broadly defined criterion space – the present study extends predictions of optimal distinctiveness theory to constructs which have traditionally received little to no interest in social psychology. But ultimately, the different nature of the interaction effects cannot be fully explained solely based on the findings of this study. What is needed is additional research which replicates the findings presented in this study. Moreover, future research should address the mechanisms through which the interaction effects influence these criteria.

Seventh, this study operationalized tightly coupled, loosely coupled, and decoupled team structures with two dimensions of team structure – horizontal interdependence and vertical interdependence. These two dimensions of team structure have received the most research attention in the past, but at the same time, it is important to note that horizontal and vertical interdependence are only two of a number of different dimensions of team structure along which teams could be tightly coupled, loosely coupled, or decoupled. Thus, future research should investigate the social psychological consequences of other dimensions of team structure.

Team structures can vary the extent to which individuals work towards the same goals and to which they receive the same rewards, also referred to as outcome interdependence (Schippers et al., 2003). In tightly coupled teams, all individuals would be working towards the same goals and share the same rewards, whereas decoupled team structures would emphasize individual goals and rewards. Moreover, team structures differ in the extent to which they facilitate direct, frequent and rich face-to-face

communication between team members, also referred to as communication interdependence. Tightly coupled teams would be collocated and interacting with each other frequently and face-to-face, whereas individuals in decoupled teams would be operating from different locations, interacting with each other only sporadically and via electronic means of communication.

Similar to my predictions on the effects of horizontal and vertical interdependence on self-construals, future research should investigate how outcome and communication interdependence influence individuals' self-construals, and how these effects influence individuals' ability to function effectively at work. In addition to investigating the isolating effects of outcome and communication interdependence on self-construals, future research could also investigate how the configuration of different dimensions of team structure affect individuals' self-construals and behavior. Specifically, a promising avenue for future research is to investigate how the alignment of different dimensions of team structure affects individuals' self-construals and behavior. Such a program of research could answer the question whether the combination of a decoupled horizontal team structure and a tightly coupled vertical structure is associated with the same consequences for individuals' self-construals as a team structure which is loosely coupled on both horizontal and vertical interdependence.

Eighth, this study investigated only some individual difference constructs as potential moderators of the effects of team structure on self-construals and found some support for a moderating role of extraversion, power distance, and cognitive ability. Based on these results and consistent with the predictions of structural contingency theory, future research should investigate additional potential moderators of the effects of

team structure on self-construals. Promising candidates for additional moderators are narcissism and masculinity. Both of these constructs influence how individuals approach social situations and how they emphasize the distinct self in interpersonal relationships, which makes them relevant for the discussion of the effects of team structure on self-construals.

In addition to these individual difference constructs, future research should also investigate characteristics of the external environment as potential moderators of the effects of team structure on self-construals. Recent research on structural contingency theory found that tightly coupled team structures are more effective when the task environment is stable and predictable, whereas decoupled team structures are more effective when task environments are dynamic and complex (Hollenbeck et al., 2002). The fit of the team structure with the external environment should also have implications for the way that individuals conceive of their group membership and for individuals' perceptions of themselves such that a good fit should facilitate the development of high belongingness and distinctiveness, whereas a bad fit will probably lead to greater conflict in teams and lower levels of perceived belongingness and distinctiveness.

Another aspect of the external environment which may moderate the relationship between team structure and self-construals is the perceived similarity of the team with other teams of the organization. For example, if individuals perceive strong differences between their own team and other teams in the organization, then it is likely that individuals may also respond more positively to tightly coupled team structures which emphasize the identity of the entire team over the identity of the individual group members. This is because individuals perceive a stronger need for group membership and

social inclusion when other groups appear as a potential threat to the interests of the self and relevant others (Brewer, 2003).

Ninth, following the example of Detert and Burris (2007), I relied on self-reported voice behaviors in this study. Previous research indicates that the frequency with which individuals engage in voice behaviors is relatively low and that self-reports of voice behaviors may overrepresent the frequency with which voice behaviors are actually performed. Future research should attempt to replicate the interaction effect of belongingness and distinctiveness on voice behaviors, relying on peer-reported voice.

Tenth, a number of constructs in this study were self-rated, such as perceptions of belongingness and distinctiveness, levels of well-being, voice behaviors, self-efficacy, or team identification. This introduces the possibility of common-method variance as an alternative explanation for some of the study findings. A number of arguments speak against this possibility, however. First, perceptions of belongingness and distinctiveness and study outcomes were collected at different times. Specifically, perceptions of belongingness and distinctiveness were collected after the end of the first half of the simulation, whereas data on study outcomes were created at the end of the simulation. Second, I hypothesized that only the simultaneous satisfaction of belongingness, that is, the interaction of the two constructs, would predict study outcomes. Evans demonstrated in an extensive Monte Carlo study that interaction effects are much less prone to common method variance than main effects (Evans, 1985). In sum, the lagged study design and the hypothesized interaction effects severely reduce the possibility of common method variance as a driver of significant findings in this study.

Eleventh, supplemental analyses suggest the possibility that the two constructs belongingness and distinctiveness also have important implications for team outcomes. Due to the relatively small sample size on the team level of analysis, however, these results have to be interpreted with caution. Future research should replicate the results reported in the supplemental analyses of this study. Any such effort should investigate the main effects of belongingness and distinctiveness on team outcomes and how these effects may be contingent upon the level of team variance in these constructs. Moreover, future research should investigate whether the simultaneous satisfaction of belongingness and distinctiveness is also associated with positive team outcomes, as would be expected based on optimal distinctiveness theory. The current study found no support for such an interactive effect, but this could also be due to the small sample size on the team level of analysis.

CONCLUSION

Organizations have started to converge on loosely coupled structures. The majority of available research on team structures, however, has advocated the use of decoupled or tightly coupled team structures. The current research provides one of the first empirical investigations of the social psychological implications of team structures with varying degrees of coupling in an attempt to explain why loosely coupled team structures may provide the best fit for individuals. Examining how individuals define themselves as members of collectives and how group membership influences perceptions of the self and others represent fundamental questions that have occupied organizational scholars since research on organizational issues has begun. Although the current study adds to this research, clearly much more needs to be done.

APPENDICES

Appendix A: Strategy Development Session

Strategic Decision #1 - Operations Missions: Risk versus Reward

Operational missions in LDX can emphasize high risk/reward strategies or low risk/reward strategies. One way to capture this is in how often you conduct unescorted operation missions to unknown spaces. Any time a UAV moves into a space blind, it runs a risk of being destroyed if it is not escorted or double escorted. Only a few missions can be escorted, however. The list below show several levels of risk/reward trade-offs, where the first option reflects the least amount of risk, but the least potential reward, and the last option reflects the most amount of risk, but the most potential reward. Thus, a critical decision in LDX is how you should balance risk/reward. Circle the best decision option:

Double Escort Every Blind Mission	= 2 Blind Missions/Round	Cautious
Double Escort 1, Single Escort 2	= 3 Blind Missions/Round	-
Single Escort Every Blind Mission	= 4 Blind Missions/Round	-
Single Escort 4, Run 4 Unescorted	= 8 Blind Missions/Round	-
Single Escort 4, Run 8 Unescorted	= 12 Blind Missions/Round	-
No Escort, Run 12 Unescorted	= 16 Blind Missions/Round	Risky

Decision #2 - Intelligence Missions: Breadth versus Depth

Intelligence missions in LDX can be single-sourced (one asset to the space) or double-sourced (two assets to the space). In the initial rounds, when you do not know where each asset is best, double-sourcing intelligence missions increases accuracy because the pair is as accurate as the best source. However, double-sourcing decreases the amount of space that can be uncovered in any one round, and also makes it more difficult to learn where each asset works best. Thus, a critical decision in LDX is what percentage of time to you should double-source versus single source intelligence assets. Circle the best decision option:

Double Source 100% of Intel Missions	= 16 Missions/Round	Depth
Double Source 75% of Intel Missions	= 20 Missions/Round	-
Double Source 50% of Intel Missions	= 24 Missions/Round	-
Double Source 25% of Intel Missions	= 28 Missions/Round	-
Double Source 0% of Intel Missions	= 32 Missions/Round	Breadth

Decision #3 - Integrated Missions: Exploratory versus Confirmatory

Intelligence assets and operational assets can go to the same spaces. Exploratory strategies send the Intel assets to the space first, followed by the Operational assets in later rounds. Since Intel assets cannot be destroyed, they can explore the space and make sure it is safe for future operations. However, since the accuracy of Intel is less than

100%, this exploration is not always perfect. Alternatively, Operations and Intel can go in the space at the same time – we call this an integrated mission. Integrated missions allow Intel to confirm the accuracy of their sources and quickly learn where they are most accurate. However, integrated missions to blind spaces are risky. Integrated missions also reduce the breadth of coverage. Thus, a critical decision in LDX is what percentage of Intel Operations should be Exploratory or Confirmatory. Circle your decision:

- 75% of Intelligence Missions Should be Confirmatory
- 50% of Intelligence Missions Should be Confirmatory
- 25% of Intelligence Missions Should be Confirmatory
- 00% of Intelligence Missions Should be Confirmatory

Appendix B: High Vertical Interdependence Instructions

In this simulation, there is a lot of information that needs to be coordinated. There is so much information that your team members can only coordinate their actions toward the same goals by following guidance from the commander. It is important that every team member keeps in mind the overall team strategy. Though your commander cannot review every bit of information, he/she is in the best position to integrate the actions of your team members. We expect that you respect his/her decisions and that you follow the instructions which you get from your commander. The commander is authorized to modify all of the decisions taken by staff members during the commander planning phase, where he/she can delete or modify staff members' decisions which were entered during the staff planning phase.

Appendix C: Low Vertical Interdependence Instructions

In this simulation, there is a very large amount of information that must be processed. There is so much information processing involved that no one person can successfully conduct the simulation alone. It is important that every team member fills the duties of their role. Though your commander has the ability to modify staff member orders, he/she does not have the time to review all of the information required to re-examine every single order. We expect that you will be proactive team members and that you will show initiative in your actions. If there is disagreement between team members, your commander should poll all team members regarding their preferences on how to proceed. Discussions of the team's strategy should best take place during the commander planning phase and be moderated by the mission commander.

Appendix D: Moderate Vertical Interdependence Instructions

In this simulation, there is a very large amount of information that must be processed. There is so much information processing involved that it is important that both your commander and every team member work together to stay on top of this complexity. It is important that every team member fills the duties of their role. There are times when your commander will have to make decisions by himself/herself without consulting your team. By contrast, there are also situations when your commander should involve all team members and poll each team member regarding their preferences when decisions have to be made. We expect that you will be sensitive to the different demands of these situations. Also, note that the commander is authorized to modify decisions taken by staff members during the commander planning phase, where he/she can delete or modify staff members' decisions which were entered during the staff planning phase. When making changes, however, the commander should consult first with the staff member whose decision is to be overruled.

Appendix E: Measures Used in Laboratory Study

Horizontal interdependence

Please indicate the extent to which you agree with the following statements about your team

1 = not at all, 7 = to a very great extent

The tasks of the other team members depended on the performance of my task.
I depended on information provided by other people so that I could perform my task.
My task could not have been performed unless other team members complete their tasks.

Vertical interdependence – Self-rated

Please indicate the extent to which you agree with the following statements which describe your team. In this case, the term “team” refers to the four staff members, **excluding** the commander.

1 = not at all, 7 = to a very great extent

We made our own choices without being told by our commander.
We had significant autonomy in determining how we completed our tasks.
We had considerable opportunity for independence and freedom in how we performed on the simulation.

Vertical interdependence – Commander-rated

Please indicate the extent to which you agree with the following statements which describe your team. In this case, the term “team” refers to the four staff members, **excluding** you as a commander.

1 = not at all, 7 = to a very great extent

The team could make their own choices without being told by me as their commander.
The team had significant autonomy in determining how they completed their tasks.
The team had considerable opportunity for independence and freedom in how they performed on the simulation.

Perceptions of belongingness

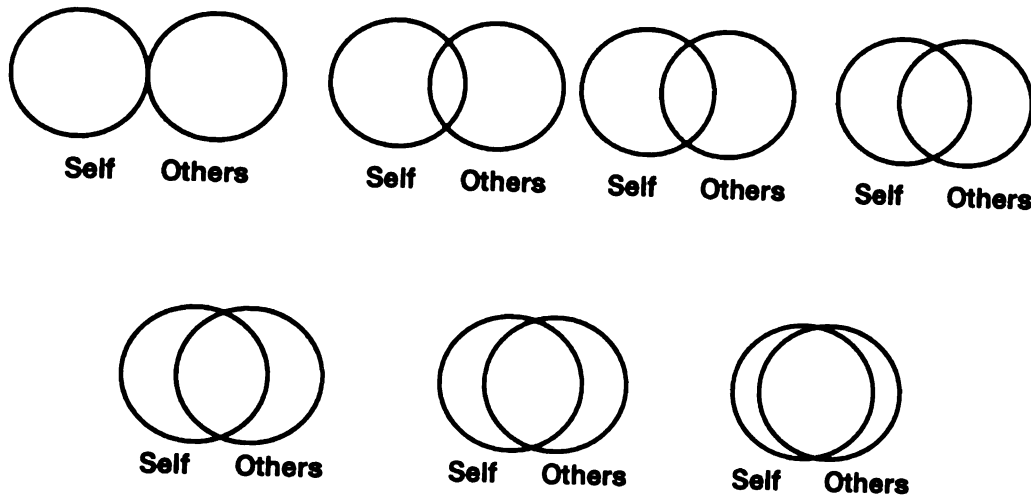
Think of how you felt in relation to the other members of your team during this experiment,

1 = not at all, 7 = extremely

During this experiment, I...
felt close and connected with my team.
felt understood and appreciated by my team.

felt a sense of relatedness with my team.

Please circle the picture below which best describes your relationship with the other teammates



Perceptions of distinctiveness

To what extent did you feel different from the members of your team during this experiment,

1 = not at all, 7 = extremely

Owing to your remarkable skills and abilities

Owing to your unique say in the matter

Owing to your unique view on problems

Because you think, feel, and behave in different ways

Owing to your vigorously individual contribution

Please use the rating scale below to describe your relationship with your team?

1 = not at all, 7 = extremely

To what extent did you feel unique among your team members?

To what extent did you feel that you have a distinctive position in your team?

To what extent did you feel that you have a different personality from the other team

members?

To what extent do you see yourself as separate from the other members of the team?

Collectivism

Think about the work groups to which you currently belong (excluding the team in this experiment) and have belonged to in the past. The items below ask about your relationship with, and thoughts about, those particular groups. Respond to the following questions, as honestly as possible, using the response scales provided.

1 = strongly disagree, 7 = strongly agree

I preferred to work in those groups rather than working alone.

Working in those groups was better than working alone.

I wanted to work with those groups as opposed to working alone.

I felt comfortable counting on team members to do their part.

I was not bothered by the need to rely on group members.

I felt comfortable trusting group members to handle their tasks.

The health of those groups was important to me.

I cared about the well-being of those groups.

I was concerned about the needs of those groups.

I followed the norms of these groups.

I followed the procedures of these groups.

I accepted the rules of those groups.

I cared more about the goals of those groups than about my own goals.

I emphasized the goals of those groups more than my individual goals.

Group goals were more important to me than individual goals.

Power distance

Please indicate the extent to which you agree with the following statements

1 = slightly or not at all, to 7 = very much

It is better not to disagree with management decisions.

When my supervisor at work makes a decision with which I disagree, I prefer to accept it rather than question it.

I believe that it is not right to disagree with my boss.

Extraversion and Emotional Stability

Listed below are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then indicate your response to each statement by choosing your answer in the right column.

1=very inaccurate to 5 = very accurate

Items for Extraversion:

I am the life of the party.

I don't talk a lot. (R)

I talk to a lot of different people at parties.

I keep in the background. (R)

Items for Emotional Stability:

I have frequent mood swings. (R)

I am relaxed most of the time.

I get upset easily. (R)

I seldom feel blue.

Positive affect/Negative affect

Please indicate the extent to which you are feeling right now, that is, in the present moment.

1 = slightly or not at all, to 7 = very much

Active

Afraid

Alert

Ashamed

Attentive

Determined

Distressed

Enthusiastic

Excited

Guilty

Hostile

Inspired

Interested

Irritable

Jittery

Nervous

Proud

Scared

Strong

Upset

Self-evaluative well-being,

Please indicate the extent to which you are feeling right now, that is, in the present moment.

1 = slightly or not at all, to 7 = very much

Able to concentrate on whatever I have been doing

Feeling reasonably happy

Making useful contributions

Capable of making decisions
Able to face up to my responsibilities

Self-efficacy

Please indicate the extent to which you feel confident that you will be able to achieve a score which is higher than the lowest 10% of scores for participants who have played the exact same role as you will play.

0 =not at all, to 10 extremely confident

Please indicate the extent to which you feel confident that you will be able to achieve a score which is higher than the average of scores for participants who have played the exact same role as you will play.

0 =not at all, to 10 extremely confident

Please indicate the extent to which you feel confident that you will be able to achieve a score which is higher than the scores for 90% of participants who have played the exact same role as you will play.

0 =not at all, to 10 extremely confident

Voice

Please describe the extent to which you engaged in the following behaviors during this experiment

1 = not at all, 7 = to a very great extent

I developed and made recommendations concerning issues that affected this team.

I spoke up and encouraged others in the group to get involved in issues that affected the team.

I communicated my opinions about important aspects of our team behavior even if my opinion was different and others in the team disagreed with me.

I kept well informed about issues where my opinion could have been useful for this team.

I got involved in issues that affected the quality of team processes.

I spoke up with ideas for changes in procedures.

Job Performance – Peer-rated

Please indicate the extent to which you agree with the following statements for team member A (B, C, D, E) which describe this person's behavior during the simulation.

1 = not at all, 7 = to a very great extent

This team member is superior to other team members.

The overall level of performance that I have observed for this team member is outstanding.

My personal opinion of this team member is that he/she is very effective.

Overall, I feel that this team member has been effectively fulfilling his or her roles and responsibilities.

Learning Behaviors – Peer-rated

Please indicate the extent to which you agree with the following statements for team member A (B, C, D, E) which describe this person's behavior during the simulation.

1 = not at all, 7 = to a very great extent

This team member actively reviewed his/her progress and performance.

This team member performed on the simulation without stopping to consider all the information that other team members have. (R)

This team member ignored feedback from others in the team. (R)

This team member asked for help from others in the team when something came up that he/she did not know how to handle.

Team Identification – Self-rated

Please describe the extent to which you engaged in the following behaviors during this experiment

1 = not at all, 7 = to a very great extent

I feel emotionally attached to this team

I feel a strong sense of belonging to this team

I feel as if the team's problems are my own

I feel like part of the family in this team

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