

POWER AND STATUS IN GROUPS

by

JAMIE LYN PERRY

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## ABSTRACT OF THE DISSERTATION

### Power and Status in Workgroups

By: JAMIE LYN PERRY

Dissertation Director:  
Professor Nancy DiTomaso

Differences in power and status are the basis for social relations and interactions within workgroups. While a small body of research has investigated the consequences of power and status in groups, there is a general emphasis in the extant literature to consider power and status independently, even though they can be causally related and mutually reinforcing. Therefore, the purpose of this dissertation is to explicate the opposing consequences of power and status in groups and also investigate the joint influence of power and status on psychological safety, collective efficacy, and workgroup effectiveness. Distinguishing power and status in groups, and also investigating the joint effects, are important advances to the existing group research, which has often confounded power and status. Additionally, clearly understanding the distinct group processes and outcomes that emerge from each group structure may mitigate any possible harmful effects that may occur in task-focused workgroups.

Chapter 1 provides a brief overview of the central constructs and theory investigated in this dissertation. Chapter 2 provides conceptual and theoretical contexts for the exploration of the central constructs. Chapter 3 describes the hypothesized model. Whereas power differentiation is predicted to lead to higher psychological safety, collective efficacy, and group effectiveness, I predict that status differentiation will lead to lower levels of psychological safety, collective efficacy, and group effectiveness.

Furthermore, I predict that power differentiation will have a more positive influence on group emergent states (psychological safety and collective efficacy) and effectiveness when status differentiation is lower within groups.

Chapter 4 describes the research methods and results. Data were collected from two healthcare facilities, pilot study (18 workgroups) and main study (80 workgroups), to test the hypothesized model. As predicted, I found that power differentiation is negatively related to treatment errors. In addition, I found that status differentiation is negatively related to psychological safety and collective efficacy. Chapter 5 identifies implications for researchers and organizations and discusses additional points of interest for future research.

## Dedication

This dissertation is dedicated in loving memory of my father, Bud Lyn Perry, Jr. and my  
grandfather, Bud Lyn Perry, Sr.

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## Chapter 1

### INTRODUCTION and OVERVIEW

Given the heterogeneous nature of the workforce, organizations and researchers have increasingly focused on understanding the dynamics of diverse workgroups (Argote & McGrath, 1993; Earley & Mosakowski, 2000; Jackson, May, & Whitney, 1995; Jackson, Salas, & Associates, 1992). A *workgroup* is defined as a collection of employees, who are task interdependent (i.e. members interact and depend on one another to complete tasks; Campion, Medsker, & Higgs, 1993), share responsibility in work outcomes, and are considered by themselves and others to be a social unit (Bezrukova, Spell, & Perry, 2010). The literature on workgroups has recognized that group processes, and ultimately group performance and outcomes, are often linked to group compositional components (Harrison & Klein, 2007; Jehn, Northcraft, & Neale, 1999; Williams & O'Reilly, 1998). However, one of the shortcomings of past compositional group research is that it mainly focused on surface-level demographic factors, such as age, gender, ethnicity, tenure, and education, and deep-level compositional factors such as abilities and values (Christie & Barling, 2010). This perspective neglects prior sociological research that suggests that member interaction may be dictated by compositional factors more closely tied to salient work characteristics, such as social standing and resource possession (e.g. Berger, Cohen, & Zelditch, 1972; DiTomaso, Post, Parks-Yancy, 2007). Thus, the purpose of this dissertation is to examine how two types of differences based on social hierarchy influence group-level processes and outcomes.

First, *social hierarchy* is defined as a rank order of individuals within a group or on the dimensions that are valuable to the group (e.g. respect, reputation, and/or access to

resources) [Magee & Galinsky, 2008]. A *rank* order refers to a group structure in which at least one individual within the group possesses more of the valued dimension than other individuals within the group. This ranking process plays a pivotal role in social relations within groups and is used to assign order, coordination, and allocation of resources (Blader & Chen, 2012; Leavitt, 2003; Sapolsky, 2005). For example, social hierarchies inform group members on how to treat one another (Ridgeway, Berger, & Smith, 1985; Ridgeway & Bourg, 2004); they inform social interactions and behaviors (Ridgeway, Berger, & Smith, 1985; Kipnis, 1972; Kipnis & Vanderveer, 1972; Sapolsky, 2005), performance expectations (Ridgeway, Berger, & Smith, 1985), and cognitive and affective states (Keltner, Gruenfeld, & Anderson, 2003). This social system provides the impetus for group members with different possessions of the valued dimension to differentiate themselves and this differentiation may influence intragroup processes and outcomes.

Power and status, two forms of social hierarchies, have been identified as important sources of attributions within groups (Blau, 1964). *Power* is defined as the asymmetric control over valued resources in social relations (Galinsky, et al., 2012; Fast, et al., 2012; Fiske, 1993; Jordan, Sivanathan, & Galinsky, 2011), while *status* is an individual's prominence, influence, and respect based on the implicit, collective evaluation of the group (Anderson, John, Keltner, & Kring, 2001; Anderson & Kilduff, 2009a, Anderson & Kilduff, 2009b; Anderson, Willer, Kilduff, Brown, 2012; Blader & Chen, 2012; Bendersky & Shah 2012).

Past research has mainly focused on the effects of group level of power and status (Costarelli, 2007; Ellemers, Spears, & Doosje, 1997; Major, et al., 2002; Nadler & Halabi,

2006; Sachdev & Bourhis, 1985, 1991; Scheepers & Ellemers, 2005). In this dissertation, I take into account the variations in perceptions of power and status among group members. Although variations in the perceptions of power and status have been relatively ignored in past research (e.g. Greer & Van Kleef, 2010), this phenomena is critical to consider because variations in perceptions of power and status may emerge to affect important group-level processes and performance related outcomes. Additionally, investigation of this phenomenon is important as research suggests that variance among group members can also be a stronger predictor of group processes and task performance (e.g. Galinsky, et al., 2006; Guinote, Judd, & Brauer, 2002).

In this dissertation, I seek to provide an answer to whether power and status *differentiation* (i.e. variation of members' perceptions regarding power and status in the group; see Roberson, Sturman, & Simons, 2007) exert opposing influences on group *emergent states* (i.e. cognitive, motivational, and affective states that may vary as a function of group context, inputs, processes, and outcomes; Marks, Mathieu, & Zaccaro, 2001), *psychological safety* (i.e., the shared belief that group members can take interpersonal risks; Edmondson, 1999) and *collective efficacy* (i.e., the shared belief that a group can perform a task successfully; Bandura, 1997), and *workgroup effectiveness* (e.g. job performance, nursing errors, and turnover). Additionally, I seek to understand how power and status differentiation may combine to affect group emergent states and workgroup effectiveness.

To extend previous literature that examines power and status in groups, I examine differentiation at the group-level. There are at least three theory-based arguments that can be made for studying power and status differentiation in groups. First, power and status

differentiation are both multi-level phenomena, with the group-level being especially important (e.g. Kozlowski & Klein, 2000). Power and status not only reflect individual-level phenomena within the group (i.e. consequences of individuals' perceptions of their own sense of power and/or status and their experiences with one or more members of their group) and dyadic-level phenomena (i.e. consequences of power and/or status perceptions between individuals), but also a unit-level phenomena (i.e. consequences that arise due to variation of members' perceptions regarding power and status in the group). Second, a vast amount of research suggests that differences in perceptions among group members may lead to different experiences and outcomes at the group-level on task-related performance (e.g. Chatman & Spataro, 2005; Cronin & Weingart, 2007; Jehn, Rispens, & Thatcher, 2010; Tsui, Egan, & O'Reilly, 1992). Third, building on the arguments made above, focusing on group-level differentiation of power and status is particularly important for the theoretical model, which delineates how power and status in groups exert opposing influences on psychological safety and collective efficacy, two psychological and cognitive processes, that is argued to emanate from varying perceptions of power and status. Given that group-level differentiation may drive group-level psychological and cognitive responses, I believe that varying perceptions of power and status at the group-level may be the proximal predictor of a group's psychological and cognitive outcomes. The current perspective is in contrast to much of the prior research on power that examines perceptions of power at the individual level of analysis and its effects on individual outcomes, and much of the prior research on status that examines actual differences in status at the group level and its effects on group level outcomes.

My interest in investigating the opposing effects of power and status differentiation is inspired by the fact that group relations and interactions are based on social hierarchies (Berger, Cohen, & Zelditch, 1972; DiTomaso, Post, & Parks-Yancy, 2007; Ridgeway, Berger, & Smith, 1985; Ridgeway & Bourg, 2004). For example, research has found that social hierarchies influence social behaviors (e.g. discrimination, helping, generosity, advice-taking, objectification, trust, ingratiation, etc.) [Blader & Chen, 2012; Georgesen & Harris, 2000; Handgraaf, et al., 2008; Howard, Gardner, & Thompson, 2007; Gruenfeld et al., 2008; Keltner, Gruenfeld, & Anderson, 2003; Konig et al., 2011; Major et al., 2002; Nadler & Halabi, 2006; Norvell & Worchel, 1981; Schopler & Bateson, 1965; Tost, Gino, & Larrick, 2012; See et al., 2011; Umphress, et al., 2007], view of others (Keltner, Gruenfeld, & Anderson, 2003), proximity to others (Mead & Maner, 2008), and interpersonal insensitivity (Schmid Mast, Jonas, & Hall, 2009). Furthermore, given that power and status differentiation have different bases and characteristics (see Magee & Galinsky, 2008), we can argue that this will ultimately impact group-level processes and outcomes. For example, groups who perceive power differences, or asymmetric control over resources, may find that this facilitates a collaborative work environment with enhanced coordination, reduced conflict, and increased cooperation. Conversely, groups who perceive status differences, or dissimilar perceived competency levels, may find that this creates a hostile environment in which some members dominate the group task, while ignoring other group members.

Finally, the importance in investigating these phenomena in a hospital setting is increasingly vital. First, hospitals are a type of organization that focuses primarily on interdependent group tasks. For example, nurses within hospital departments and units

must coordinate their efforts to deliver informed and effective patient care. Second, because hospitals are organizations that require interdependent work, this component also lends itself to an increase in social interactions among group members. Given the vast amount of relational differences that may occur within each work unit, we could predict that perceptual differences in power and status may be a factor in group dynamics. Finally, hospitals measure performance at the unit-level. That is, hospitals use information provided by the nursing supervisors to ascertain whether a particular unit is successful, as a whole, in delivering patient care. In addition, rewards and resources are often tied to the assessment of unit-level performance.

### **Overview and Structure of the Dissertation**

Although most diversity studies focus on surface-level or deep-level compositional factors as the key explanation for workgroup effectiveness, very few studies investigate how social hierarchies, power and status, important social and contextual factors of workgroups, contribute to workgroup effectiveness. This dissertation aims to address the central research question: Do status and power have opposing effects on group emergent states (psychological safety and collective efficacy) and workgroup effectiveness? It will also answer the question: What are the consequences when status and power overlap?

Chapter 2 provides a conceptual and theoretical review of the existing literature on group status and power. I will begin by defining power and status, and power differentiation and status differentiation. In addition, I will briefly describe the existing literature, which has examined the consequences of power differentiation and status differentiation in groups. I will conclude this chapter by summarizing key theoretical

frameworks that may be used to explain the various consequences of power and status differentiation.

The goal of Chapter 3 is to provide a theory for the independent and joint effects of status and power differentiation on workgroup performance, and how psychological safety and collective efficacy may mediate the relationship between variables (see Figure 1). Specifically, I argue that power differentiation may lead to higher levels of psychological safety, collective efficacy, and workgroup effectiveness. The rationale for this proposal draws from functional theories of hierarchy, which proposes that power differentiation creates a cooperative and collaborative environment in which employees work together in order to accomplish joint goals. Next, I argue that status differentiation may lead to lower levels of psychological safety, collective efficacy, and workgroup effectiveness. Drawing on the expectation states theory (Berger, Cohen & Zelditch, 1972), I explain how strong status differentiation accentuates social distances between members, which may lead to task-domination by high-status members and to conformity, silence, suppression of creativity, and withdrawal by low ranked individuals (e.g. Bloom, 1999; Pfeffer & Langton, 1993; Siegel & Hambrick, 2005). This reaction to status differentiation is proposed to have an influence on resulting beliefs of psychological safety and collective efficacy, and as a result may negatively impact workgroup effectiveness. Furthermore, I propose that power differentiation will influence psychological safety, collective efficacy, and group effectiveness, when groups possess lower rather than higher levels of status differentiation. This chapter will attempt to show that there is merit in exploring status and power differentiation as distinct constructs, and in studying the joint effects of both constructs.



Chapter 4 will describe the research method, including sample, measures, and analyses to test the hypotheses. To evaluate the central research questions, I use a sample of 421 employees and 80 supervisors, in 80 workgroups. In addition to the five-section survey instrument completed by nursing workgroups, the data includes effectiveness ratings from supervisors on three dimensions: job performance, nursing errors, and turnover. Using the data, I examine how power differentiation and status differentiation are associated with psychological safety, collective efficacy, job performance, nursing errors, and turnover. I examine the influence of status differentiation on the relationship between power differentiation and group emergent states. Finally, I explore the mediation of the joint influence of power differentiation and status differentiation on group effectiveness through group emergent states (i.e. psychological safety and collective efficacy).

Finally, Chapter 5 will provide a summary of my findings with suggestions for future research. Overall, this dissertation expects to contribute to several literatures. First, this study seeks to contribute to the literature on group performance, by considering less explored group compositional factors, such as power and status. Next, this study seeks to contribute to social hierarchy literature by examining if, and if so, how differences in power and status affect group performance. Although the data collected focuses on the outcomes of nursing workgroups in the healthcare industry, I expect this study to benefit occupations and organizations that form around groups. Although my analysis is restricted to a sample of nurse workgroups in the healthcare industry, I would expect similar patterns of results for the service-oriented and hospitality industries, in which effectiveness focuses on consumer care/service. Additionally, on the national level, given

the recent shift in the availability of healthcare services, the findings of this study may be of interest to national healthcare advocate groups interested in improving healthcare inefficiencies.

## Chapter 2

### THEORETICAL BACKGROUND AND LITERATURE REVIEW

In this chapter, I seek to position power and status differentiation within the existing psychological and sociological literatures. I will begin by discussing the definitions of power and status. This discussion will also include a description of how power is different from status, more broadly. Then, I will define the constructs of this study, power and status differentiation, which will be adapted from previous conceptualizations of power and status. Next, I will review the existing literature on power and status differentiation. Then, I will discuss how the topics of power and status differentiation relate to a number of relevant theories and literatures, such as expectation states theory, equity theory, relative deprivation, etc.

#### Defining Power and Status

In the following section, I will discuss how power and status have been defined within the literature, and delineate how power and status are theoretically and empirically different. Finally, I will explore how confounding power and status, and not examining their interaction, has limited our understanding of group outcomes.

Power is defined as the asymmetric control over valued resources in social relations (Anderson & Brion, 2014; Galinsky, et al., 2012; Fast, et al., 2012; Fiske, 1993; Jordan, Sivanathan, & Galinsky, 2011; Magee & Galinsky, 2008). The description of power as an *asymmetry* in relations suggests a dependence between two or more individuals (Emerson, 1962). For example, in a social relationship, the lower power individual is expected to depend on the high power individual in order to obtain rewards

and avoid punishment, while the high power individual is less dependent on the low power individual.

This conceptualization of power draws from previous work, which describes power as a lack of dependence on others (Emerson, 1962, 1964; Schopler & Bateson, 1965; Handgraaf, Van Dijk, Vermunt, Wilke, & De Dreu, 2008; Molm, 1991). Next, power emanates from the possession of valued resources; the term *valued* is used to suggest that the resource must be important and consequential in order to engender a dependent relationship (Magee & Galinsky, 2008). The valued resources can have a positive or negative impact on others. Positively valued resources are considered rewards, while negatively valued resources are considered punishments (Magee & Galinsky, 2008). Thus, an individual may have power because they have the ability to administer or withhold valued resources and punishment.

Finally, this definition draws on past conceptualization of power bases, such as expert (i.e. power based on special knowledge), reward (i.e. power based on ability to dispense rewards), information (i.e. power based on resource of information), legitimate (i.e. power based upon a position) and coercive (i.e. power based on ability to administer punishments) [see French & Raven, 1959, Raven, 1993]. This conceptualization of power excludes French & Ravens (1959) referent power as it overlaps with the conceptualization of status. For instance, referent power refers to influence based on admiration and respect, which overlaps with the conceptualization of status.

On the one hand, I define status as “an individual’s prominence, respect, and influence in the eyes of others,” (Anderson & Kilduff, 2009b, pp. 295). Previous conceptualizations of status consider the extent to which an individual or group is

respected (Anderson et al., 2012; Keltner & Gruenfeld, & Anderson, 2003; Lount & Pettit, 2011; Lovaglia & Houser, 1996; Magee & Galinsky, 2008; Ridgeway & Correll, 2006), valued (Major, et al., 2002; Fragale, Rosen, Xu, & Merideth, 2009; Flynn & Amantullah, 2012), and/or honored (Conway, Pizzamiglio, & Mount, 1996; Lovaglia & Houser, 1996; DiTomaso, Post, & Parks-Yancy, 2007). Status has been explored as an intragroup and intergroup phenomenon (Magee & Galinsky, 2008). Intragroup literature refers to status as an individual's standing in a hierarchy within a group (Lovaglia & Houser, 1996; Conway, Pizzamiglio, & Mount, 1996; Fragale et al., 2009), whereas intergroup literature refers to status as the result of intergroup comparison, such that one group is afforded more of a valued social dimension (DiTomaso, Post, & Parks-Yancy, 2007; Major et al., 2002; Ellemers, et al., 1988; Scheepers & Ellemers, 2005; Jost & Burgess, 2000; Duguid, Loyd, Tolbert, 2012; Tajfel & Turner, 1986).

Given the research question, it is important to understand how status is assigned in task-oriented groups. Status is primarily *subjective*, unlike power, and is considered an estimate of social worth that is conferred to others, and as a result is more reliant on the evaluations of others (Blader & Chen, 2012; Magee & Galinsky, 2008). Status is assigned based upon subjective evaluations or judgment of an individual or group's perceived expertise and competence (Fisek & Ofshe, 1970; Ridgeway, 1991; Ridgeway & Bourg, 2004; Ridgeway, Berger, & Smith, 1985). Information about an individual's perceived expertise or competence can be gained through a variety of sources, such as direct or observed interpersonal interaction (Berger et al., 1977; Berger & Zelditch, 1985; Blau, 1964; Ridgeway, 1991; Ridgeway et al., 1998), or reputation (Anderson & Shirako, 2008; Gould, 2002). Status can change over time based upon individual or group

accomplishments and displays of competency (Anderson & Kilduff, 2009b; Magee & Galinsky, 2008). It is important to note here the emphasis on perceived competence, as scholars have noted that status holders not need to have actual competence to be conferred as a high status individual. In fact, Anderson & Kilduff (2009a) found that individuals who tend to display competence-related cues (e.g. dominant behaviors), independent of actual competence, were more likely to be conferred status because these cues positively influenced the perceptions of other members.

Though power and status are related, they are distinct constructs (DiTomaso, Post, Parks-Yancy, 2007; Keltner, Anderson, & Gruenfeld, 2008). Power and status are similar because they are both relational variables that are based upon differences in hierarchical ranking within a group, that is power and status can only be understood in relation to another person. Power and status are distinct because power is a property of the actor, while status is based upon subjective evaluations (Magee & Galinsky, 2008).

Research suggests that power and status can be causally related and mutually reinforcing (DiTomaso, Post, Parks-Yancy, 2007; Keltner, Anderson, & Gruenfeld, 2008). In other words, power can lead to status and status can lead to power. Power can lead to status, if status is conferred on the individual based upon their differential access to valuable resources. For example, an office manager, who has access to valuable resources (e.g. supply orders, budgetary requests, etc.), could become highly respected in the eyes of others based upon the manager's asymmetric access to resources. Finally, status can lead to power through the access to and accrual of resources (DiTomaso, Post, Parks-Yancy, 2007). First, individuals who are respected are often granted access to valued resources (Keltner, Anderson, & Gruenfeld, 2008; Magee & Galinsky, 2008). For

example, a highly competent accounting intern may be granted control over the departmental budget, which would lead to explicit access to resources. In addition, a high-status person can attain power through the accumulation of additional resources and the increase in value of resources that they have control over (DiTomaso, Post, Parks-Yancy, 2007; Thye, 2000).

Though power and status may occur together, they may also be mutually exclusive. For example, it is possible to have power without status, and status without power (DiTomaso, Post, Parks-Yancy, 2007; Keltner, Anderson, & Gruenfeld, 2008). For example, a readily identifiable religious leader may have relatively no power in line at the Department of Motor Vehicles (Keltner, Anderson, & Gruenfeld, 2008). While the religious leader may have high-status, his or her status is not accompanied with power (e.g. ability to cut-in line, expedited service, etc.). In addition, it is possible to have power without status. For example, a corrupt CEO of an accounting firm may have access to various resources; however, the CEO may not be respected as a function of his or her behavior.

Although previous research has confounded power and status, it is important to recognize the distinctions between the two constructs as they are posited to have differing outcomes, and thus may have differing processes. Recently, research has focused on distinguishing power from status. For example, in an experimental study of individual's enactment of distributive and procedural justice, Blader & Chen (2012) found that power is negatively related with justice towards others, while status is positively related to justice towards others. These findings suggest that the experience of power and status may affect individuals and group members differently, and therefore, should be further

investigated to explore how these constructs manifest themselves within groups. Additionally, Blader & Chen (2012) examined the interaction of power and status on individual's enactment of distributive and procedural justice. The researchers found that individuals were more concerned about justice towards others when status was high and power was low. This finding not only provides evidence for the differential effects of power and status, but it also suggests that outcomes can vary as a function of the interacting variables.

### **Defining Power and Status Differentiation**

Differentiation is the dispersion, or variation, of members' attributes or characteristics within a group. The dispersion, or differentiation, perspective suggests that variability among individual responses or contributions to the group may influence group processes and outcomes in task-focused groups (Colquitt, Noe, & Jackson, 2002; Jehn, Rispens, & Thatcher, 2010; Roberson, Sturman, & Simons, 2007; Roberson & Williamson, 2012). Though previous literature has examined differentiation from an actual possession standpoint, recent literature has examined differentiation from a perceptual point of view (e.g. Jehn, Rispens, & Thatcher, 2010), with the understanding that individuals within a group may attach different interpretations to the same situation, have different responses to their surroundings, and thus this may interact at the group-level to inform group task performance. Given that this dissertation explores the group-level psychological and cognitive processes as a result of variation, it is fitting to examine how a psychologically-based perception of power and status influences these processes.

For the purposes of this dissertation, power differentiation will be defined as the variation of members' perceptions regarding control over valued resources among group



members (cf. Roberson, Sturman, & Simons, 2007). Additionally, I will define status differentiation as the variation of members' perceptions regarding prominence, respect, and influence among group members (cf. Roberson, Sturman, & Simons, 2007). In contrast to the mean level of a group (or aggregation), differentiation accounts for variation in perceptions among group members.

Differentiation can be defined in accordance to its strength (c.f. Roberson, Sturman, & Simons, 2007). Higher differentiation may occur when one or more individuals within the group perceive different levels of power or status. For example, two group members may perceive that members have varying levels of power, while the other group members may perceive that there is no or a very low level of power differences among members. In contrast, when group differentiation is at its lowest, a great number of group members perceive the same levels of power or status differences within the group. For example, group members may perceive that all members possess the same amount of status or they may perceive that all group members possess differing levels of status. With these conceptualizations in place, I now advance to a more comprehensive literature review on status and power differentiation.

## **Literature Review**

### *Power Differentiation*

Prior theorizing and research have yielded contrasting perspectives on the benefits and detriments of power differentiation. First, power differentiation has been found to facilitate group functioning and performance processes, such as assisting conflict resolution, creating order and enabling coordination, and aiding group interactions (De Cremer, 2003; Keltner, Van Kleef, Chen, & Kraus, 2008; Magee & Galinsky, 2008;

Sondak & Bazerman, 1991; Tiedens & Fragale, 2003). For example, the findings of a study examining negotiations found that unequal power between negotiators was more likely to lead to integrative agreements than equal power between negotiators (Sondak & Bazerman, 1991). The authors reasoned that when negotiators had equal power (e.g. equally attractive alternatives to the present negotiation), they were less likely to reach an agreement. However, when negotiators had unequal power (e.g. only one negotiator had attractive alternatives), then the disadvantaged party will be more likely to search for a solution that would be more integrative. Similarly, Keltner et al., (2008) reasoned that power differentiation serves as a social interaction heuristic that gives priority to the goals and actions of high power individuals in shaping interdependent actions, which facilitate group coordination and cooperation.

On the other hand, power differentiation has been associated with negative group functioning processes (Mannix, 1993; McAlister, Bazerman, & Fader, 1986; Wolfe & McGinn, 2005). For example, in a study examining the effects of power balance on coalition formation in small groups, Mannix (1993) found that greater power differentiation led to coalition formation and difficulty reaching allocation agreements. Additionally, Mannix (1993) found that greater power differentiation led to unequal distribution of resources by members of the group, lower individual and group outcomes, and the decrease of the resource pool across game rounds. Finally, an experimental study investigating power in negotiations found that small power differences lead to greater integrative agreements than greater power differences (McAlister, Bazerman, & Fader, 1986).

### *Status Differentiation*

The literature examining the consequences of status differentiation has presented mixed results. First, status differentiation has been linked to positive outcomes, such as increase in the quality of decision-making and productivity (Iranzo, Schivardi, & Tosetti, 1999; Kirchler & Davis, 1986). For example, the findings of a study examining the relationship between workers' skill dispersion and firm productivity found greater skill differences were related to an increase in firm performance (Iranzo, Schivardi, & Tosetti, 1999). Moreover, in a study of perceptions of fairness in allocating resources, Hysom & Fisek (2011) found that strong status differentiation led allocators to give more weight to equality than equity in distributing resources among group members in a task-focused group.

Research has also documented the negative results of status differentiation (e.g. Bridges, Doyle, & Mahan, 1968; Chattopadhyay, 1999; Christie & Barling, 2010; Miller & Komorita, 1995; Peretti & Negro, 2006). For example, in a study of National Basketball Association teams, Christie & Barling (2010) found that greater status differences led to lower performance and health in teams. Conversely, the findings of a study examining the consequences of hierarchical differentiation found that status differentiation led to decreases in group productivity, efficiency, and risk taking behavior (Bridges, Doyle, & Mahan, 1968). Finally, Silver, Cohen, & Crutchfield (1994) examine the effects of status differentiation on idea generation and found that status differentiated groups generated significantly less ideas than status-undifferentiated groups.

### **Theoretical Frameworks**

In addition to the existing work on power and status differentiation, a number of theories and literatures are relevant to this discussion. In this section, I will briefly review

these and discuss how they have been explored in the context of power differentiation and status differentiation.

### *Expectation States Theory*

Berger and colleagues (1972) developed the expectation state theory to explain how observable power and prestige differences emerge within a task-oriented group. The theory proposes that when a task-oriented group is differentiated based on an external status characteristic; the status characteristic differences are used to differentiate the social standing of individuals within the group. In a differentiated group, members form expectation states, which are evaluations about the perceived quality of another member's future performance on the task at hand (Foschi & Lapointe, 2002; Ridgeway, Berger & Smith, 1985). Once formed, expectations about one's performance guide interactions within a team. High-status individuals, who are expected to perform well in relation to other individuals, are given more chances to perform, participate, and offer suggestions in the group. In addition, individuals who are expected to perform well will be positively evaluated and less likely to concede to other influences during group disagreements. Conversely, low-status individuals, who are expected to perform poorly in relation to other individuals, have fewer chances to perform, participate, and their suggestions will often be ignored (Belliveau, O'Reilly, & Wade, 1996; Correll & Ridgeway, 2003; Driskell & Mullen, 1990; Ridgeway & Bourg, 2004; Weisband, Schneider, & Connolly, 1995). This theory has been used to explain social interactions within status differentiated groups (Berger, Fisek, Norman, & Zelditch, 1977; Christie & Barling, 2010; Kirchler & Davis, 1986). For example, Bridges and colleagues (1968) found that status differentiated groups were less productive than status undifferentiated groups. The

author rationalized that members in status differentiated groups may be reluctant to criticize the ideas and opinions of high-status individuals given their social standing within the group. Given this, members are less likely to challenge or correct errors made by higher-status individuals, which greatly affects group productivity.

### *Equity Theory*

Equity theory (Adams, 1965) attempts to explain job satisfaction based upon perceptions of fair or unfair distributions of resources among members within a group. The general assumptions of this theory posit that individuals value fair treatment, and thus individuals seek to maintain equity between their own inputs (e.g. skills, education, effort, etc.) and outputs (pay, promotion, job status, etc.) received from their work in comparison to the inputs and outputs of other group members. If individuals consider themselves to be in an inequitable situation, they will seek to reduce the inequity. Reduction techniques can include cognitive distortion of inputs and/or outputs, altering inputs and/or outputs, or quitting the organization (Carrell & Dittrich, 1978). Empirical work has examined the consequences of differentiation from an equity perspective (Debrock, Hendricks, & Koenker, 2004; Hysom & Fisek, 2011; Jane, 2010; Jane San, Ou, 2009; Pfeffer & Davis-Blake, 1992; San & Jane, 2008). For example, in the wage dispersion literature (Shaw, 2014), it is argued that workers compare their own input/output ratio to the input/output ratio of their co-workers, if these ratios are not similar then problems may result (Debrock, Hendricks, & Koenker, 2004). In support of this theory, several studies on wage dispersion have found that greater wage dispersion may positively influence performance outcomes, if the outcomes match commensurate input levels (Shaw, 2010; Trevor et al., 2012) or negatively influence performance

outcomes, if the outcomes are perceived to be unfair (Bloom, 1999; Lazear, 2000; Pfeffer & Langton, 1993).

### *Functionalism*

Functionalism theories of hierarchy posit that group-level differentiation facilitates group functioning and performance, and that the hierarchical differences actually have functional value (Galinsky et al, 2012; Gruenfeld & Tiedens, 2010; Halevy, Chou, & Galinsky, 2011; Ronay et al., 2012). Functionalism argues that while the effects of having versus lacking power at the individual level are contradictory (e.g. power leads to action and optimism, and creative and independent thinking, while lacking power leads to risk aversion, Galinsky, Gruenfeld, & Magee, 2003; Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008; Keltner, Gruenfeld, & Anderson, 2003; Magee, Galinsky, & Gruenfeld, 2007), they are complementary at the group-level. Halevy and colleagues (2011) posit that variance within groups in the levels of power leads to variance in group members' thinking and behavior, as well. Specially, the authors state that those who have power mainly focus on the big picture, initiation, and leading, whereas those who lack power attend to details, conform, and follow, which leads to complementary problem solving. Empirical work has examined the consequences of differentiation from a functionalist perspective (Ronay, et al., 2012). For example, in a study of the consequences for productivity and conflict within small groups, Ronay and colleagues (2012) found that power differentiated groups performed better on procedurally interdependent tasks than groups composed of either all high-power or low-power individuals. The authors reasoned that though power differentiation leads to role differentiation, that hierarchy can integrate differentiated roles into a coordinated and

productive whole. Unlike groups composed of all high performing individuals, which can lead to conflict (Bendersky & Hays, 2012; Groysberg, Polzer, & Elfenbein, in press), differentiated groups can lead to enhanced coordination, reduced conflict, and increased cooperation given the role differentiation and task interdependence of group members.

### *Relative deprivation*

Relative deprivation theory (Crosby, 1976; Davis, 1959, 1966) argues that feelings of resentment, anger, and unrest may arise when a person (a) does not have an object that they desire, (b) knows another person that has the object, (c) wants to have the object, and (d) believes that obtaining the object is realistic. Runciman (1966) distinguishes between two types of relative deprivations: egoistic and fraternalistic. Egoistic relative deprivation occurs when an individual compares themselves to other members within his or her own group, whereas fraternalistic relative deprivation occurs when an individual compares his or her ingroup to another group. Both egoistic and fraternalistic relative deprivation incite competition for relative standing (Crosby, 1976; Dambrun, et al., 2006; Halevy, et al., 2010; Mummendey, et al., 1999).

Several works have examined power differentiation for a relative deprivation perspective (Franck & Nuesch, 2011; Henderson & Fredrickson, 2001). For example, in a study of top management team (TMT) and CEO pay dispersion, Henderson & Fredrickson (2001) found that smaller wage dispersion was associated with higher performance when coordination needs among CEO and TMT were greater. These results support the relative deprivation theory, which suggests that cooperation is more likely and sabotage less likely when wage dispersion is weak.

### *Social comparison theory*

Festinger (1954) proposed the social comparison theory in order to describe the desire to obtain accurate self-evaluations. This theory proposes that, in absence of objective criteria, individuals will compare their own beliefs, opinions, and skills to comparable others. Additionally, social comparison theory posits that individuals will seek to reduce any discrepancies in skills and abilities between themselves and the referent individual or group, and that this will lead to a unidirectional drive upward and can also lead to competition among peers. Festinger's theory can be a basis for competition among status and power differences—such that, competition is a direct result of perceived differences in status and power among group members. Several works on differentiation cite Festinger's social comparison theory (1954) in order to explain how individuals use social referents to anchor judgments about rewards and the distribution of rewards among team members (Franck & Nuesch, 2011; Pfeffer & Davis-Blake, 1992; Pfeffer & Langton, 1993; Wolfe & McGinn, 2005). For example, in a study of wage dispersion among college and university faculty, Pfeffer & Langton (1993) found that greater wage dispersion led to lower satisfaction, productivity, and collaboration among faculty. Similarly, Siegel & Hambrick (2005) found that pay disparities lead to decreased collaboration and performance. In line with the social comparison theory, the authors argued that individuals will make a series of social comparisons in order to make sense of the rewards they are receiving for their performance. This process may lead to feelings of lower satisfaction among individuals who feel that they are receiving different rewards than their counterparts (Siegel & Hambrick, 2005).

*Social exchange theory*



Social exchange theory (Emerson, 1976; Homans, 1958) states that social relationships are a result of an exchange process, in which the goal is to maximize one's benefits and minimize one's costs. According to this theory, individuals consider the potential benefits and costs before engaging in a relationship with another person or group. If the costs outweigh the benefits, then the relationship will be terminated or abandoned. Several works have considered the consequences of differentiation using the social exchange theory (Mannix, 1993; Perretti & Negro, 2006; Wolfe & McGinn, 2005). For example, in a study of coalition formation in small groups, Mannix (1993) found that unequal power balanced groups were more likely to form coalitions and distribute resources to a subset of the group (instead of the whole group). In addition, the authors found that unequal power balanced groups experience lower individual and group performance than power balanced groups. In line with social exchange theory, the authors reasoned that in unequal power groups, group members sought to maximize their own benefits at the cost of the group. As a result, group members engaged in competitive stance in order to protect their own interests, and focus more on distribution of resources more than efficient use of resources.

*Social value orientation theory*

Messick and McClintock (1968) proposed a rational self-interest theory that suggests individuals consider not only their own outcomes, but also the outcomes of others, and how their own outcomes will compare to others. For example, if an individual distributes something of value between themselves and others, social value orientation theory proposes that the individual will weigh the outcomes to self and the other differently and then distribute the resources accordingly (Eek & Garling, 2008). Social

value orientation proposes three categories of outcome preferences for the self and others: (a) cooperation (e.g. maximizing outcomes for self and others), (b) competition (e.g. maximizing outcomes for self over others), (c) individualism (e.g. maximizing outcomes for self and disregarding the outcomes of others) [Messick & McClintock, 1968]. While literature has not examined the consequences of differentiation employing the social value orientation theory, all three of these categories are relevant to status and power differentiation as they may explain how members of a group interpret status and/or power differences. For example, weak status or power differentiation may influence group members to take on a more cooperative orientation, which will focus more on the maximizing the outcomes of oneself and the group. Similarly, strong status and power differentiation may influence group members to take on a more competitive or individualistic orientation that may focus more on increase one's own resources in comparison to another.

### *Tournament theory*

Tournament theory (Lazear & Rosen, 1981) was developed to explain behavior that occurs due to large gaps in compensation between employees based on rank order rather than absolute individual performance. This theory posits that pay dispersion engenders competition between employees in order to receive higher pay, and in order to receive higher pay, employees will devote more time to organizational interests and goals and will devote less time to shirking responsibilities. This theory has several implications for behavioral responses in differentiated groups and has been employed in studies investigating the consequences of status and power differentiation (e.g. Becker & Huselid, 1992; Bloom, 1999; Christie & Barling, 2010; Henderson & Fredrickson, 2001; Iranzo,

Schivardi, & Tosetti, 2008; Jane, 2010; Jane, San & Ou, 2009; San & Jane 2008; Siegel & Hambrick, 2005). For example, in a field study of auto racing performance, Becker & Huselid (1992) found that pay differentials had incentivizing effects on individual performance and driver safety, such that greater pay differentials lead to higher performance levels as higher pay motivated racers to focus more on winning.

### **Conclusion**

In conclusion, this dissertation investigates the impact of power and status differentiation on group processes and effectiveness. In this research, I investigate the nature by which power differentiation and status differentiation, independently and jointly, impact group performance, errors, and turnover. In order to do so, I draw from expectation states and functionalism theory to explicate the hypotheses. While previous differentiation work has cited equity, relative deprivation, social comparison, social exchange, social value orientation, and tournament theories in explaining the antecedents and consequences of hierarchical differentiation, the previous theories may not be sufficient in explaining the hypotheses.

First, equity, relative deprivation, social value orientation, social exchange, and tournament theories have underpinnings that lie in perceptions of fairness. As such, the theories have mainly focused on employee reactions to differences in rewards. While these theories are important to consider when investigating actual differences in treatment and rewards in independent-task focused groups, the theories cannot fully predict how perceived differences in social standings impact group dynamics in interdependent-task focused groups. Thus, I employ expectation states and functionalism theories, which

both have roots in interdependent-task focused groups and performance expectations, to make predictions about how power and status function within groups.

### Chapter 3

#### THE EFFECTS OF POWER AND STATUS IN WORKGROUPS

As discussed in Chapter 2, power differentiation is defined as the variation of members' perceptions regarding control over valued resources among group members, while status differentiation is defined as the variation of members' perceptions regarding prominence, respect, and influence among group members, and thus may have a range of consequences for group-level processes and performance. In this chapter, I investigate how power and status differentiation independently and jointly influence group emergent states (psychological state and collective efficacy) and effectiveness (job performance, nursing errors, and turnover)[See Figure 1].

First, emergent states are referred to as cognitive, motivational, and affective states of teams that are dynamic and may vary as a function of the team context, inputs, processes, and outcomes (Marks, Mathieu, & Zaccaro, 2001). This dissertation considers two types of emergent states, *psychological safety* (i.e., the shared belief that group members can take interpersonal risks, Edmondson, 1999) and *collective efficacy* (i.e., the shared belief that a group can perform a task successfully; Bandura, 1997). These two concepts were chosen based upon previous research that suggests the following: (a) group composition influences psychological safety and collective efficacy (Lau & Murnighan, 2005; Earley & Mosakowski, 2000), (b) psychological safety and collective efficacy influence group effectiveness (Mathieu, Maynard, Rapp, & Gilson, 2008; Srivastava, Bartol, & Locke, 2006; Durham, Knight, & Locke, 1997; Goncalo, Polman, Maslach, 2010; Gully, Incalcaterra, Joshi, & Beaubien, 2002; Knight, Durham, & Locke, 2001;

Mulvey & Klein, 1998; Stajkovic, Lee, & Nyberg, 2009; Edmondson, 1999; Chen, Thomas, & Wallace, 2005).

Next, the literature on groups has recognized that group effectiveness may be a function of group inputs (e.g. individual group member characteristics, group-level factors, and contextual factors) and group processes (e.g. group emergent states; see Mathieu et al., 2008). In particular, group-level stimuli, such as group composition and other group processes, may exert influences on group members' behavior, which in turn may contribute to group effectiveness (Kozlowski & Bell, 2003; Mathieu, et al., 2008). Among these is the quantity and quality of the group activity results, termed *job performance* (e.g., Mathieu et al., 2007), and mistakes, or unintended event(s) in health care services that may or may not result in patient injury or harm, termed *nursing errors* (e.g., Benner et al., 2002). Furthermore, *turnover*, occurs when employees leave an organization (Bluedorn, 1978), is important as it helps groups stay viable and function well over time (Hackman, 1987).

Finally, I will review the existing literature on power and status differentiation, and effectiveness, and then propose my main hypotheses. I predict that power differentiation will lead to an increase in psychological safety, collective efficacy, and workgroup effectiveness, whereas status differentiation will lead to a decrease in psychological safety, collective efficacy, and workgroup effectiveness. I also predict that power differentiation will influence group emergent states (psychological safety and collective efficacy) and effectiveness more positively when the group has lower rather than higher levels of status differentiation. I investigate this hypothesis with a field study

of nursing workgroups, and conclude by discussing the results and limitations of this study.

### **Differentiation**

I have conceptualized power differentiation and status differentiation as group-level variables, which represent dissimilar perceptions of the possession of power and status among group members (cf. Roberson, Sturman, & Simons, 2007), respectively. Power differentiation originates from differing properties of the actors within a group; whereas status differentiation originates from differing subjective evaluations of the actors within a group (c.f. Magee & Galinsky, 2008). While prior research has conceptualized and operationalized power and status as similar constructs, given that both of the constructs determine an individual's relational standing within a group (c.f. Chen et al., 2012), recent research has provided empirical evidence that these constructs are different, given differing origins and antecedents, and thus have differing consequences (see Blader & Chen, 2011).

#### *Power Differentiation*

To understand the consequences of power differentiation in groups, researchers have focused on pay dispersion as a proxy of power differences reasoning that differences in possession of rewards (e.g. reward-based power) is analogous to pay dispersion. The pay dispersion literature has yielded mixed results for group performance. For example, in a study of professional baseball teams, Jane and colleagues (2009) found that teams with greater pay dispersion experienced higher performance. And on the other hand, a number of studies have also reported that pay dispersion is associated with lower group performance outcomes (Depken, 2000; Jane, 2010; Mannix, 1993; Siegel &

Hambrick, 2005; San & Jane, 2008; Sha, 2014; Wolfe & McGinn, 2005). For instance, Depken (2000) found that pay disparity resulted in a reduction in team performance. Although the specific processes through which pay dispersion leads to increased or decreased performance were not examined in these studies, a shared conclusion is that pay dispersion engenders a competitive environment in which players exert more effort in hopes to receiving higher pay (e.g. rewards). Such research has been primarily grounded in tournament theory (Lazear & Rosen, 1981), according to which people associate differences in pay with performance, and thus will be motivated to work hard (i.e. increase performance), in order to receive greater rewards (Bloom, 1999; Siegel & Hambrick, 2005). Following this logic, research on tournament theory has drawn attention to the spread in pay differentials that may influence increased performance (e.g. Becker & Huselid, 1992). Also in keeping with the tenets of tournament theory, such research suggests that increases in the difference between the winning prize and losing prize are particularly influential on member behaviors, as increases in reward differentials increases exerted effort, thus resulting in improved performance.

Although a tournament theory perspective may be useful for explaining the consequences of reward-based power in independently working groups, it may not fully capture the consequences of power in interdependently working groups. Unlike independent teams, interdependent teams are tasked with working together to complete an assignment. Thus, this requires cooperation and collaboration (Siegel & Hambrick, 2005; Trevor, Reilly, & Gerhart, 2012). From a functionalist perspective, power differentiation facilitates a complementary and collaborative environment in interdependent groups (Galinsky, et al., 2012; Ronay, et al., 2012). According to Halevy



and colleagues (2011), differentiation creates a psychologically rewarding environment (i.e. hierarchies fulfill fundamental psychological needs), functions as an incentive system (i.e. rewards are based upon actions that benefit the organization), promotes complementary psychological processes (i.e. high power and low power characteristics are complementary), increases coordination, and reduces conflict and enhances cooperation. For example, Ronay and colleagues (2012) found that power differentiation in interdependent tasks reduced group conflict and increased group effectiveness.

### *Status Differentiation*

On the other hand, to understand the outcomes attributed to status differentiation, researchers have examined a number of effectiveness related consequences to status differences within groups (Bridges, Doyle, & Mahan, 1968; Doyle, 1970; Edge & Remus, 1984; Harshberger, 1971; Peretti & Negro, 2006; Silver, Cohen, & Crutchfield, 1994). For example in a study of exploration versus exploitation in teams, Perretti & Negro (2006) found that status differentiation was more likely to limit exploration processes within the group. Using the social exchange theory, the authors argued that although low status individuals benefit in the social relationship with a higher status individual, high status individuals do not benefit from this relationship and tend to avoid low status individuals. This creates a group environment wherein only similar status individuals interact with one another, this severely impacts the possible interactions that may occur within the group.

Although a social exchange perspective may be useful for explaining the emergence of status-based homophily within groups, it does not completely capture how interaction among group members influence group outcomes. From an expectation states

perspective (Berger, Cohen, & Zelditch, 1972), researchers argue differentiation provides opportunity for high status members to participate, share their ideas, and perform, while low status members are not given the opportunity to participate, share their ideas, and are more likely to defer to higher status members (Correll & Ridgeway, 2003; Foddy & Smithson, 1996; Ridgeway & Bourg, 2004; Silver, Cohen, & Crutchfield, 1994). For instance, Silver, Cohen, & Crutchfield (1994) found that high-status members were shown to dominate interactions and bias information exchange, which led to performance loss in task-focused groups. In addition, Doyle (1970) found that increased status differentiation lead to a decrease in group productivity, as fewer ideas were generated by low status participants, and ideas generated by high status individuals were not rigorously examined for faulty logic.

### **Relationships with moderating and intervening variables**

Although the work described above has increased our understanding of the relationships between power differentiation and performance, and status differentiation and performance, potentially critical compositional factors and intervening processes have gone largely unexplored. For example, prior research has considered power differentiation and status differentiation as mutually exclusive, however, as discussed earlier these two constructs may be casually related and mutually reinforcing. In line with my arguments from Chapter 2, it seems likely that people's responses to differentiation may vary greatly depending upon the presence of both constructs. In a majority of the studies reviewed above, data is collected on power differentiation and status differentiation, without controlling for the presence of the other. In other words, it may be that the results of power differentiation are being influenced by the presence of status

differentiation in groups, and vice versa. Thus, it is important to isolate the effects of power and status differentiation in order to determine the consequences of each construct. Additionally, it is equally important to consider how these constructs interact as the joint effects may exacerbate beneficial or detrimental group outcomes.

Additionally, little empirical research has considered the intervening variables in the relationship between differentiation and performance outcomes. In line with my arguments from Chapter 2, it seems likely that given the different antecedents to power differentiated groups (control over resources) and status differentiated (evaluation of (in) competence), these groups may experience different psychological processes, and that these differential processes may impact group outcomes. Like much of this existing work, member perceptions of differentiation inform social interactions and behaviors within a group. Indeed, as discussed in Chapter 2, social comparisons are often followed by methods to reduce differences. Thus, to truly understand the nature of differentiated groups---and how it influences workgroup effectiveness---it is necessary to consider the intervening group process variables that emerge from the different contexts. To that end, in this chapter I examine how power differentiation and status differentiation affect psychological safety, collective efficacy, and workgroup effectiveness, in addition, I also examine the joint effects of power differentiation and status differentiation.

### **The consequences of power differentiation on emergent states and effectiveness**

In accordance with functionalist perspective of hierarchy (Galinsky et al, 2012; Gruenfeld & Tiedens, 2010; Halevy et al., 2011; Ronay et al., 2012), I propose that the complementary perspectives that emerge from resource differences may have positive effects on psychological safety, collective efficacy, and workgroup effectiveness. Like

status differentiation, the differences that make up power differentiated groups may have direct implications for work, and play an important role in anticipating the behavior or members of a group. In groups with power differences, members within the group have different access to and control over resources, which according to functionalist perspective, may introduce variance in thinking and behavior (Halevy et al., 2011). Additionally, according to Halevy and colleagues (2012) differentiation creates an environment that breeds and enforces complementary behaviors and thought processes which are vital in the effectiveness of groups. For example, Ronay and colleagues (2012) found that power differentiation led to greater effectiveness as it enhanced coordination among group members, reduced conflict, and increased cooperation.

Next, I propose that power differentiation will be positively related to psychological safety. According to functionalist perspective, differentiation creates a psychologically rewarding environment by which psychological needs are better met than in an egalitarian environment (Gruenfeld & Tiedens, 2010). Not only is differentiation psychologically rewarding because it validates individual beliefs in meritocracy and mobility (Halevy et al., 2011), but it also provides motivation for individuals to take risks and expend effort in order to advance within the organization.

Finally, I propose that power differentiation will be positively related to collective efficacy. According to social comparison theory (Festinger, 1954), individuals engage in a comparison process with referent others to determine if their input/outputs are similar or different from their group members. When differentiation is strong, access to and control over resources is widely dispersed and less equal among members. Given that members tend to compare themselves in an upward direction and that differences in

power may reflect differences in contribution and performance, group members may believe that greater differences reflect higher relative worth and efficacy over less differentiations, wherein the control and access to valuable resources are less dispersed and spread equally across individuals.

*Hypothesis 1: Power differentiation positively influences group (a) psychological safety, (b) collective efficacy, and (c) workgroup effectiveness, such that strong differentiation will be related to higher levels of psychological safety, collective efficacy, and workgroup effectiveness.*

### **The consequences of status differentiation on emergent states and effectiveness**

Status differentiation creates distance in social standing between members in a group. This distance marks a member's relative advantage and prestige over another member, and becomes the structure for social interactions and relationships among group members (e.g. Laumann & Guttman, 1966). Strong status differentiations, or social distance between members, engenders feelings of detachment and distance from others, particularly in regards to status, which is tied to one's self-worth and social esteem (Berdahl, 2007; Christie & Barling, 2010; Scheepers & Ellemers, 2005). Dissimilarity among group members, and especially dissimilarity based upon positions of disadvantage, undermine feelings of solidarity, which can be detrimental to group processes and performance (Christie & Barling, 2010).

I suggest that status differentiation will be negatively related to psychological safety, collective efficacy, and workgroup effectiveness. First, I propose that high status differentiation will be negatively related to psychological safety. Prior research on status differentiation suggests that while high-status individuals are given the opportunity to

share their ideas and participate in decision-making, low-status individuals are not afforded the same opportunity (Belliveau, O'Reilly, & Wade, 1996; Driskell & Mullen, 1990; Weisband, Schneider, & Connolly, 1995). In status differentiated groups, low-status members are more likely to defer to the choices made by higher-status (Moore, 1968; Fisek & Ofshe, 1970), and are less likely to criticize or find faults with the suggestions and ideas of higher-status members. One reason for the lack of interpersonal risk taking by low-status individuals in a highly differentiated group may be because support is disproportionately distributed among group members, with high-status group members receiving the majority of social support (Bridges, Doyle, & Mahan, 1968). Given the amount of social support given to high-status members, displays of ingroup favoritism and outgroup hostility, and the risk of backlash for behaving in a counter-stereotypical way (Bridges, Doyle, & Mahan, 1968; Rudman, 1998; Tajfel & Turner, 1986), low-status members may feel very little incentive to compete for respect and engage in interpersonal risk-taking. Thus, as a whole, status differentiated groups are less likely to take interpersonal risks than groups with equal status.

Next, I propose that high status differentiation will be negatively related to collective efficacy. According to the functionalist perspective, status is based upon a group's collective evaluative judgments about the ranking of group members (Berger, Cohen, & Zelditch, 1972). Like status, collective efficacy is a construct that emerges as a result of previous performance (Berger, Cohen, & Zelditch, 1972; Goncalo, Polman, & Maslach, 2010; Tasa, Taggar, & Seijts, 2007). In a strongly differentiated group, I propose that group members will feel a lower sense of collective efficacy as group

members possess varying levels of competency, wherein only a few members possess the specific valuable skills and competency to perform well.

Finally, while there is some empirical evidence that suggests that status differentiation leads to increased organizational performance (Iranzo, Schivardi, & Tosetti, 1999), group-level research suggests that status differentiation may lead to decreased group performance outcomes (Bridges, Doyle, & Mahan, 1968; Doyle, 1970; Edge & Remus, 1984; Harshberger, 1971; Peretti & Negro, 2006; Silver, Cohen, & Crutchfield, 1994). In line with the current research, I propose that status differentiation will lead to lower group effectiveness. Expectation states theory suggests that status is given to individuals who are expected to perform well; thus, high-status individuals are given more chances to perform, participate, and offer suggestions to the group. In addition, individuals who are expected to perform well will be positively evaluated and less likely to concede to other influences during group disagreements. Conversely, individuals who are low status are expected to have lower performance expectations will have fewer chances to perform, participate, and their suggestions will be ignored (Correll & Ridgeway, 2003; Ridgeway & Bourg, 2004).

To that extent when status differentiation is strong, the distinction between positions is accentuated, and the opportunities to participate and make decisions are often given to high-status individuals. For example, Kirchler & Davis (1968) found that groups with greater status differentiation were more likely to employ a power-wins approach (e.g. high-status individuals control decision outcomes) to decision making, while lower status differentiated groups made decisions on the basis of quality of input irrespective of status. As a result low-status individuals should have less opportunity to participate and

contribute to the group, which may negatively impact the group effectiveness. Similarly, Silver, Cohen, & Crutchfield (1994) found that in a task-focused groups, high-status members dominate group social interactions, and thus bias information exchange, which results in process and performance loss. Moreover, research has shown that low status members in groups will be more likely to defer to the judgment of higher status members (Foddy & Smithson, 1996). Sherif, White & Harvey (1965) found that group members were more likely to overestimate the performance of high status members and understate the performance of low status members. From an information processing perspective, groups possessing members with varying levels of knowledge, skills, and abilities, will have more access to a variety of task-relevant skill that may enhance group decision making and performance.

*Hypothesis 2: Status differentiation negatively influences group (a) psychological safety, (b) collective efficacy, and (c) workgroup effectiveness, such that strong differentiation will be related to lower levels of psychological safety, collective efficacy, and workgroup effectiveness.*

### **The joint effect of power and status differentiation on emergent states**

Although, I have theorized that power differentiation and status differentiation exert opposing influences on group emergent states and effectiveness, these constructs are highly related (see DiTomaso, Post, Parks-Yancy, 2007). On the one hand, power differentiation may lead to the creation of status differences among group members as power may become tied to reputation and admiration. On the other hand, power differentiated groups may be motivated enough to thwart against any negative group interactional processes that may result from status differentiation. Of course, another



possibility is that different power differentiated groups may react differently to the same level of status differentiation in their groups (e.g. some groups may give in to the social ranks, whereas others may focus more on positive group interactions). Thus, while I argue that power and status reflect independent constructs, I propose that the two compositional factors may interact to affect group emergent states.

As stated previously, power differentiation creates a complementary group environment, wherein group members cooperate and coordinate their efforts, which is likely to lead to productive interactions among group members. Extending the functionalist perspective, I propose that stronger power differentiation is less likely to exert positive influences on emergent states in the presence of higher, relative to lower, levels of status differentiation because the social distance influence of status differentiation are likely to interfere with the cooperative influences of power differentiation. In order for groups to be successful on interdependent tasks, group members need to cooperate and work collaboratively with one another, and such an environment is likely to lend to low status differences, rather than high. In contrast to groups with low status differences, groups with high status differences are less likely to work in a cohesive and collegial manner. As such, the collaborative environment present in a power differentiated group is less likely to occur in a group experiencing high status differentiation.

*Hypothesis 3: Strong power differentiation influences (a) psychological safety and (b) team efficacy more positively when the team has lower, rather than higher status differentiation.*

### **The Mediating Roles of Psychological Safety and Collective Efficacy**

By extending the functionalist perspective of hierarchy (Galinsky et al, 2012; Gruenfeld & Tiedens, 2010; Halevy et al., 2011; Ronay et al., 2012) and expectation states theory (Berger, Zelditch, & Cohen, 1972), we can infer that group emergent states, such as psychological safety and team efficacy may capture proximal influences on members' work engagement and contribution, which may serve to mediate the relationship between differentiation and team effectiveness. Prior research has found that psychological safety is related to group composition and team effectiveness (Lau & Murnighan, 2005; Mathieu, Maynard, Rapp, & Gilson, 2008). Studies have found that individuals who feel a sense of safety—that is, more psychologically safe—are more likely to engage in voicing their opinions, exchange information, and propose alternative viewpoints (Edmondson, 1999; Pearsall & Ellis, 2001), which may promote workgroup effectiveness, while reducing turnover intentions. Similarly, research has found that collective efficacy is related to group composition and effectiveness (Earley & Mosakowski, 2000; Srivastava, Bartol, & Locke, 2006; Durham, Knight, & Locke, 1997; Goncalo, Polman, Maslach, 2010; Gully, Incalcaterra, Joshi, & Beaubien, 2002; Knight, Durham, & Locke, 2001; Mulvey & Klein, 1998; Stajkovic, Lee, & Nyberg, 2009; Edmondson, 1999; Chen, Thomas, & Wallace, 2005). Furthermore, collective efficacy has been shown to influence work effort, performance, and intention to stay (Gully, et al., 2002; Tasa, Sears, & Schat, 2011; Tasa, Taggar, & Seijts, 2007). While research has not investigated the meditational effects of psychological safety and team efficacy on team behavior, performance, and turnover intentions, prior research may provide support for this investigation.

Although no empirical study to date has examined the proposed joint influence of power differentiation and status differentiation on group effectiveness, as mediated by psychological safety and team efficacy, I expect that functionalist perspective and expectation states theory would support these hypotheses. By integrating and extending previous hierarchical differentiation models, I hypothesize that the joint influence of power differentiation and status differentiation may explain variance in the positive and negative team emergent states and outcomes.

*Hypothesis 4: The joint influences of status and power differentiation on (a) teamwork behaviors, (b) team performance, and (c) turnover intentions will be mediated by psychological safety.*

*Hypothesis 5: The joint influences of status and power differentiation on (a) teamwork behaviors, (b) team performance, and (c) turnover intentions will be mediated by collective efficacy.*

## **Chapter 4**

### **METHODOLOGY and RESULTS**

The purpose of this chapter is to provide a description of the methods and procedures, measures, analyses, and results. First, I will briefly describe the hypotheses that I will be testing. Then, I will detail the pilot study and main study employed to test my hypotheses.

#### **Integrative Model and Summary of Hypotheses**

Figure 1 summarizes the hypothesized relationships of my proposed research model. First, I propose that power and status will have opposing outcomes. Specifically, I predict that power differentiation will lead to higher group performance, and lower nursing errors and turnover. In contrast, I predict that status differentiation will lead to higher nursing errors and turnover, and lower group performance. I also propose that power differentiation and status differentiation will influence workgroup effectiveness (i.e. performance, errors, and turnover) through two mechanisms: psychological safety and collective efficacy. Finally, I predict that status differentiation will weaken the positive relationship between power differentiation and group emergent states (psychological safety and collective efficacy).

I tested my hypotheses using two studies. First, I conducted a pilot study to test Hypothesis 1 and 2, whether power differentiation and status differentiation were associated with psychological safety, collective efficacy, and group effectiveness. In addition, a pilot study was given in order to ascertain the clarity and internal consistency of the items. Next, I conducted a field study to test the effects of my full hypothesized model.

## **Pilot Study**

### **Method**

**Procedure.** I collected survey data from 25 clinical offices located in the Southeast region of the United States. I received permission from the office managers from each clinic to conduct the survey with the nursing staff. Paper surveys were distributed to nurses and supervisors (doctors or office managers), and the participants were instructed to place completed surveys in a sealed envelope to assure anonymity. Each group was given a week to complete the survey. Surveys were collected from each staff member at the end of a week. Altogether, 125 surveys were distributed and 105 surveys were collected; hence the response rate was 84%. The surveys were checked for any cases where it appeared that participants selected the same response for each question (e.g. all 6s). The final sample included 18 groups (105 individuals).

From the employee sample, 92% of the respondents were female between the ages of 31 and 40 (29.9%). In terms of race/ethnicity, 42.5% were Hispanic; 33.3% were White; 18.4% were African American; and 2.3% were Asian. A majority of the participants attended some college (e.g. no degree attained) [31%], had an Associate's degree (26.4%), or had an undergraduate degree (18.4%). A large number of respondents majored in Nursing (32.2%). Respondents had worked in a healthcare setting on average of 17.75 years and worked as a member of their group an average of 6.59 years. A majority of the healthcare groups represented in the sample were gastroenterology (29.9%), other (mostly fertility) [28.7%], radiology (14.9%), and maternity (9.2%).

From the supervisor sample, 82.4% of the respondents were female between the ages of 51 and 60 (52.9%). In terms of race/ethnicity, 94.1% were White; and 5.9% were

Hispanic. Master's degree or higher was the highest level of education attained for 29.4% of respondents, with 29.4% having an Associate's degree, 23.5% having an undergraduate degree, and 17.6% having attended some college (e.g. no degree attained). Respondents had worked in healthcare setting an average of 32.88 years and worked as a supervisor of their group an average of 14.99 years.

**Measures.** The survey asked members of a nursing workgroup to rate their group's power (Anderson & Galinsky, 2006; See et al., 2011)[Cronbach's alpha=0.42, 0.80, respectively), status (Anderson et al., 2006; Flynn et al., 2006) [Cronbach's alpha=0.39, 0.72, respectively], psychological safety (Edmondson, 1999) [Cronbach's alpha=0.81], and collective efficacy (Riggs & Knight, 1994)[Cronbach's alpha=0.85]. Additionally, I asked nursing supervisors to rate their groups on job performance (Fox et al., 1993) [Cronbach's alpha=0.85], nursing errors (Benner et al., 2002)[Cronbach's alpha=0.82], and turnover. The order of all survey items were randomized. The response scales for all items, except job performance and nursing errors, ranged from 1 (Strongly disagree) to 7 (Strongly agree). Job performance was rated on a scale from 1(Poor) to 5(Excellent), while nursing errors was rated on a scale from 1(Never) and 7(Every time). Five control variables were included in the analyses: group size, social category heterogeneity (race), informational heterogeneity (education), power level, and status level. The heterogeneity variables were computed using Blau's (1977) heterogeneity index.

#### *Data transformations*

All constructs in Figure 1 were conceptualized at the group-level. Psychological safety and collective efficacy are based on referent-shift composition (Chan, 1998),

which assumes within group agreement and group consensus in order to justify aggregating individual perceptions of the group to the group-level. Given, that psychological safety and collective efficacy are conceptualized as a shared group level construct, group members' ratings will be aggregated to the group-level.

In order to justify the aggregation of the group-level variables, I calculated the  $r_{wg}$ , ICC(1), and ICC(2).  $R_{wg}$  is “calculated by comparing an observed group variance to an expected random variance” (Bliese, 2000: 351).  $R_{wg}$  scores are considered significant if the score is greater than .70, which suggests that the scale can be aggregated at the group-level (James, Demaree, & Wolf, 1984). The average  $r_{wg}$  indices for psychological safety and collective efficacy were 0.87 and 0.84, respectively, which are above the acceptable value of .70.

ICC (1) score indicates the proportion of variance in ratings due to group membership, whereas ICC (2) estimates the group mean reliability (Bliese, 2000). ICC(1) has an acceptable range of .05 to .30, while the cutoff score for ICC(2) is .60, respectively (Bliese, 2000). ICC(1) for psychological safety and collective efficacy were 0.12 and 0.15, respectively. Next, I calculated ICC(2), which is the estimate of the reliability of the group means. The ICC (2) for psychological safety and collective efficacy were 0.57 and 0.41, respectively. Based on the results of both  $r_{wg}$  and ICC, I concluded that aggregation was justified and created group level variables for psychological safety and collective efficacy.

## **Results and discussion**

Table 1 contains the means, standard deviations, and correlations of all variables<sup>1</sup>.

A regression analysis was performed to ascertain whether power differentiation and status differentiation exerts opposing effects on psychological safety, collective efficacy, and group effectiveness. Table 2 and 3 display the results of the regression analysis. Hypothesis 1(H1) predicted that power differentiation would be positively associated with psychological safety (1a), collective efficacy (1b), job performance (1c), and negatively related to nursing errors (1c) and turnover (1c). In support of Hypotheses 1c, power differentiation was found to have a significant negative relationship with nursing errors ( $B = -.50, p < .05$ ). However, the relationship between power differentiation and psychological safety ( $B = .14, n.s.$ ), collective efficacy, ( $B = .00, n.s.$ ), job performance ( $B = .51, n.s.$ ) and turnover ( $B = -.14, n.s.$ ) failed to be significant.

Hypothesis 2 (H2) predicted that status differentiation would be negatively associated with psychological safety (H2a), collective efficacy (H2b), job performance (H2c), and positively associated with nursing errors (H2c) and turnover (H2c). In support of Hypotheses 2a-2b, status differentiation was found to have a significant negative relationship with psychological safety ( $B = -.57, p < .05$ .) and collective efficacy ( $B = -.54, p < .05$ .)). However, the relationship between status differentiation and job performance ( $B = .29, n.s.$ ), nursing errors ( $B = .14, n.s.$ ), and turnover ( $B = .37, n.s.$ ) failed to be significant.

In summary, I employed a pilot study in order to investigate the main hypotheses (e.g. whether power differentiation and status differentiation were associated with

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<sup>1</sup> A confirmatory factor analysis (CFA) was conducted to explore whether psychological safety and collective efficacy were two different constructs. Although, the CFA failed to support these variables as separate constructs, I reported the findings for each separately because they are previously validated measures for two different constructs.



psychological safety, collective efficacy, and group effectiveness) and in order to test the clarity and internal consistency of the adapted power and status measures. The pilot test found that power differentiation was negatively and significantly related to nursing errors. Additionally, status differentiation was found to be negatively and significantly related to psychological safety and collective efficacy. The results of the Pilot Study provide preliminary support for the hypotheses that power differentiation and status differentiation may exert opposing influences on group processes and outcomes.

The Pilot Study also has some noteworthy limitations. First, the power for the pilot study was low. While the directions of the relationships were in the predicted direction, the relationships were non-significant, which may be attributed to a low sample size. Next, the response rate for turnover rate was considerably low. Given, the low quitting rate and stability of jobs within this healthcare facility, it was difficult to calculate turnover. Therefore, the results cannot tell us definitely whether power and status differences influence turnover. While, turnover did not produce much variance in this study, I will replicate this measure in Study 1 as this result may be specific to this particular facility.

Finally, I tested the clarity and internal consistency of both power differentiation measures (Appendix C & Appendix D) and status differentiation measures (Appendix E & Appendix F) by examining the Cronbach's coefficient alpha for each measure. Given that both See et al.'s (2006) power scale [Appendix D] and Flynn et al.'s (2011) status scale [Appendix F] yielded Cronbach's alpha's above the cut-off score of 0.70 (e.g. 0.80 and 0.72, respectively), I can conclude that the measures used in the study are internally consistent among each group of items that form a scale. Given that both Anderson &

Galinsky's (2006) power scale [Appendix D] and Galinsky et al.'s (2006) status scale [Appendix F], yielded Cronbach's coefficient alphas below the cut-off score of 0.70 (e.g. 0.42 and 0.39, respectively), I concluded that the measures used in the study were not internally consistent.

## **Study 1**

### **Method**

**Participants and Procedures.** I collected survey data in a format similar to the pilot study. I recruited nursing workgroups from a hospital located in the Southeast region of the United States. I received permission from the hospital's Director of Nursing Research to administer surveys to 80 nursing workgroups. The Director and Principal Investigator recruited participants by facilitating a nurses' in-service in each unit, wherein the details of the study were described to potential participants. Subjects were asked to participate in an anonymous study on workgroup dynamics and effectiveness. In exchange for their participation, subjects were told that they would be able to receive points to their career ladder. Paper surveys were then distributed to nurses and nurse directors (or managers, if directors were unavailable). Members of each nursing workgroup were administered an employee workgroup specific survey and supervisors of each respective workgroup were administered a supervisor specific survey. Each nursing work group member received a survey with an information sheet (see Appendix A), which described the study, and a workgroup survey (see Appendix C, E, G, H for measures). Additionally, each nursing workgroup supervisor received an information sheet (see Appendix B) and a supervisor survey (see Appendix I & J for measures). I matched nursing workgroups and director responses by assigning each group

an identification number. The nursing workgroups and directors were instructed to deposit the completed surveys in a sealed envelope and locked box to assure anonymity. Each group was given a week to complete the survey. At the end of the week, the Principal Investigator collected all surveys from the participants. Altogether 500 surveys were distributed and 446 surveys were returned. The response rate was 89%. The completed surveys were checked for any cases where it appeared that participants selected the same response for each question (e.g. all 6s) and for large sections of missing data. In total, 25 surveys were excluded that contained these issues. The final sample included 80 groups (421 individuals).

An average of 5 nurses per workgroup responded to the survey. The nursing workgroups are responsible for the care of an average of 104 patients per week, ranging from 12 patients to 500 patients. From the nursing workgroup sample, 83.7 % of the respondents were female with an average age of 40.11, ranging from 22 to 70 years of age (SD=12.63). In terms of race/ethnicity, 35.3% were White; 23.0% were Asian, 13.1% were Black; and 7.9 % were Hispanic. A majority of the participants received an undergraduate degree (61.1%) or had a Master's degree (11.1%). Of the respondents, 79.8% majored in Nursing. Respondents had worked in a healthcare setting an average of 13.34 years and worked as a member of their group an average of 5.59 years. A majority of the healthcare groups represented in the sample were cardiology (14.3%), internal medicine (10.7%), surgery (10.3%), and pediatrics (9.5%).

From the nursing director sample, 84.1% of the respondents were female with an average age of 44.85, ranging from 26 to 70 years of age (standard deviation= 10.64). In terms of race/ethnicity, 49.0% were White; and 32.7% were Black. Master's degree was

the highest level of education attained for 57.1% of respondents, with 28.6% having an undergraduate degree, and 8.2% having a Ph.D or M.D. degree. Eighty one percent of the nursing supervisors received their highest degree earned in Nursing. Respondents had worked in a healthcare setting an average of 21.18 years (SD=12.08) and worked as a supervisor of their group an average of 4.48 years (SD=5.64).

### **Measures**

Employees completed a survey containing items to assess power, status, psychological safety, and collective efficacy, whereas supervisors completed a survey containing items to assess workgroup turnover, performance, and treatment errors. I used an adapted version of Anderson & Galinsky's (2006) measure of power (Appendix C). Responses for all items were made on a 7-point scale seven-point scale, ranging from 1= "Strongly disagree" and 7="Strongly agree." Eight items were used to measure power (e.g. "Group members have the ability to get people to listen to what they say," and "Group members' wishes carry the same amount of weight"). Three items were reverse coded so that a higher number indicated perceived differences in power versus similarity. By averaging each item across each group, and then calculating the coefficient alpha, power produced an aggregated Cronbach's coefficient alpha of 0.75.

Status was assessed with adapted versions of Anderson, Srivastava, Beer, Spataro, & Chatman (2006) [Appendix E]. Responses for all items were made on a 7-point Likert scale, ranging from 1= "Strongly disagree" and 7="Strongly agree." Respondents were asked to rate the extent to which they agreed with six statements about perceived status differences within their workgroup (Cronbach's  $\alpha=0.69$ ). Sample items include: "Group members receive differing amounts of respect," and "Group members make the same

valuable contributions.” Three items were reverse coded so that a higher number indicated perceived differences in status versus similarity in perceived status.

***Power differentiation.*** Power differentiation is defined as the variation in group members’ power perceptions (cf. Roberson, Sturman, & Simon, 2007). I measured power differentiation in accordance with Roberson, et al.’s (2007) model of dispersion. Power differentiation was calculated for each group by computing the standard deviation of members’ power perceptions. Higher scores indicated greater differences between group members and thus, higher levels of power differentiation. Group power differentiation ranged between 0.54 and 2.49 for power differentiation ( $M=1.42$ ,  $SD=.35$ ). Power differentiation is high when members of groups disagree more on the perception of powers within the group. Conversely, power differentiation is low when members of groups agree more on the perception of power within the group.

***Status differentiation.*** Status differentiation is defined as the variation in perception of status among group members (cf. Roberson, et al.’s, 2007). In line with Roberson, et al.’s (2007) model of dispersion, I measured status differentiation for each group by computing the standard deviation of members’ status perceptions. Higher scores indicated greater disagreement between group members and thus, higher levels of status differentiation. Group status differentiation ranged between 0.68 and 2.26 for status differentiation ( $M=1.36$ ,  $SD=.29$ ). Status differentiation is high when members of groups disagree more on the perception of status within the group. Conversely, status differentiation is low when members of groups agree more on the perception of status within the group.

***Psychological Safety.*** Consistent with past research (e.g. Bradley et al., 2012;

Pearsall & Ellis, 2011; Schaubroeck, Lam, & Peng, 2011; Tangirala, et al., 2013), I measured psychological safety using Edmondson's (1999) scale (Appendix G). Each item was rated on a scale from 1 (Strongly disagree) to 7 (Strongly Agree). Respondents were presented with 7 items. Sample items include: "If you make a mistake in this group, it is often held against you," "Members of this group are able to bring up problems and tough issues," and "People in this group sometimes reject others for being different." Three of the items were reverse coded so that a higher number indicated decreased psychological safety. The aggregated Cronbach's coefficient alpha is 0.74, and the values ranged from 4.19 to 6.52. Before aggregating the individual scores, I calculated  $r_{wg}$ , ICC(1), and ICC(2). The ICC (1) and ICC (2) were 0.18 and 0.41, respectively. In addition, I calculated the mean level of within-group agreement ( $r_{wg} = 0.86$ ). The values of the intraclass coefficients and within group agreement justified aggregation to the group level (Bliese, 2000).

***Collective efficacy.*** Consistent with past research (e.g. Kark, Shamir, & Chen, 2003; Liao & Chuang, 2007; Porter, 2005), I measured collective efficacy using a six item scale adapted from Riggs & Knight (1994) [See Appendix H]. Sample items include: "The group I work with has above average ability," and "The members of this group have excellent job skills." Items were rated using a 7-point Likert scale, ranging from 1 (Strongly disagree) and 7 (Strongly agree). Four of the items were reverse coded so that a higher number indicated decreased collective efficacy. The Cronbach's coefficient alpha was 0.77. The ICC(1), ICC(2), and  $r_{wg}$  scores were 0.17, 0.24, and 0.82, respectively, which suggests that the individual scores may be aggregated to the group level.

***Workgroup effectiveness.*** Job performance (adapted from Fox, Dwyer, & Ganster, 1993; Phillips & Bedeian, 1994), nursing errors (adapted from Benner et al., 2002; Johnstone & Kanitsaki, 2006; Leape et al., 1993), and turnover were measured to assess types of workgroup effectiveness. Supervisors rated job performance using nine items from Fox et al.'s (1993) and Phillips & Bedeian's (1993) measure of performance (see Appendix I). Supervisors rated all items on a 5- point Likert scale, ranging from 1= "Poor" and 5="Excellent." Sample items include: patient assessment, planning, and developing patient care plans. The Cronbach's coefficient alpha is 0.90.

Nursing errors were measured using adapted versions of nursing error scales (adapted from Benner et al., 2002; Leape et al., 1993) [see Appendix J]. Supervisors were asked to rate the frequency to which the nursing errors occurred within the last six months, using a 7- point Likert scale, ranging 1= "Never" and 7="Every time." Sample items include: lack of patient attentiveness or surveillance, inappropriate judgment, and medication errors. The Cronbach's coefficient alpha is 0.93.

Turnover was assessed with two items: "Number of job terminations in the past six months" and "Number of voluntary resignations in the past six months"

***Controls.*** In selecting control variables, I focused on variables that have been empirically shown to influence group performance outcomes and that could be viewed as alternative explanations for performance effects. First, I controlled for group size as it has been shown to be an important factor in group processes and outcomes (Goodman, Ravlin, & Argote, 1986). Next, I controlled for power and status level of the group, as levels has been shown to influence the effects of dispersion (Greer & Van Kleef, 2010). Also, I controlled for diversity effects using Blau's (1977) heterogeneity index to

measure group heterogeneity for categorical variables (e.g. race and education). These demographic categorical variables were chosen as previous research suggests that these demographic characteristics may influence interactional patterns (Chatman & Flynn, 2001; Williams & O'Reilly, 1998).

#### *Common Method Variance*

A number of the subjective measures used in this dissertation were collected from the same source (employees working as part of a group) at one point in time, which may have introduced the issue of common method variance as a possible explanation for the findings of the study. While there are several ways to address common method variance, a commonly used method is for the researcher to include a scale that is theoretically unrelated to one or more scales within the survey (Lindell & Whitney, 2001). Siemsen, Roth, & Oliveira (2010) found that including uncorrelated measures with correlated measures within a survey may significantly reduce common method bias. By employing this method, one can effectively control for common method biases in reported regressions. To test common method variance, I included five theoretically unrelated questions about the use of multivitamins among group members (See Appendix K). These questions were not found to be correlated with the other study variables, and thus I made the assessment that this study does not suffer from common method bias.

#### *Estimated Power Analysis*

According to Cohen (1992), researchers need to know the sample size necessary to obtain the desired power for the hypothesized effect size. In order to calculate the appropriate sample size needed to conduct a regression analysis of my hypothesized model, I first estimated acceptable statistical power in line with the methods outlined by



Cohen (1992). Given a power of .80 (an acceptable and minimum power range), Cohen's power table indicates that I needed to collect 76 groups in order to yield a moderate effect size of .15. For this study, I collected data from 80 workgroups which suggests that I have the appropriate sample size to test my hypotheses.

### **Analysis strategy**

In order to test my hypotheses, I employed three steps. First, I examined a simple hierarchical test (Hypotheses 1 and 2). Next, I integrated the proposed moderator variable into the model (Hypotheses 3), and then I empirically tested the overall moderated mediation (Hypotheses 4 & 5). Prior to the analyses, I grand-mean centered all the predictor variables (Aiken & West, 1991).

#### *Tests of moderation*

Hypothesis 3 proposes as moderation effect, whereby the relationship between power differentiation and the emergent states is strengthened or weakened due to status differentiation. I tested the moderation hypotheses using an application provided by Hayes (2012). Briefly, Hayes developed a SPSS macro called PROCESS that uses ordinary least squares and logistic regression based path analytical frameworks combined with bootstrapping in order to test indirect and direct effects in mediator and moderator models. Bootstrap methods are implemented in order to make inferences about the modeled effects.

*Tests of mediated moderation.* Hypotheses 4 & 5 predicts that group emergent states (e.g. psychological safety and collective efficacy) mediates the relationship between the Power X Status differentiation interaction term and workgroup effectiveness. Assuming that this moderation hypothesis receives support, it may be plausible that

psychological safety and collective efficacy mediate the relationship between the interaction term and outcome variables, also known as a *conditional indirect effect* (Preacher, Rucker, & Hayes, 2007). I tested Hypotheses 4 & 5 using the SPSS macro PROCESS designed by Hayes (2012), which facilitated the implementation of the recommended bootstrapping methods and was able to probe significant effects at different moderator values.

## Results

Table 4 presents the means, standard deviations, and correlations among the study constructs at the group level of analysis<sup>2</sup>.

### Hypotheses Tests

Table 5 and 6 shows the results of the hierarchical regression analysis testing the hypotheses. Previous research has demonstrated a relationship between group size, demography, and hierarchical level with the study variables, therefore, I considered the effects of group size, racial diversity, educational diversity, power level, and status level on the relationship between group emergent states and effectiveness as controls.

Hypothesis 1(H1) predicted that power differentiation would be positively associated with psychological safety (1a), collective efficacy (1b), job performance (1c), and negatively related to nursing errors (1c) and turnover (1c). In support of Hypotheses 1c, power differentiation was found to have a significant negative relationship with nursing errors ( $B = -.42, p < .05$ ; Model 4, Table 5). However, power differentiation did not significantly predict psychological safety ( $B = .17, n.s.$ ; Model 1), collective efficacy, (B

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<sup>2</sup> A confirmatory factor analysis (CFA) was conducted to explore whether psychological safety and collective efficacy were two different constructs. Although, the CFA failed to support these variables as separate constructs, I reported the findings for each separately because they are previously validated measures for two different constructs.

=.28, *n.s.*; Model 2), performance ( $B = .30$ , *n.s.*; Model 3) and turnover ( $B = -.04$ , *n.s.*; Model 5).

Hypothesis 2 (H2) predicted that status differentiation would be negatively associated with psychological safety (H2a), collective efficacy (H2b), job performance (H2c), and positively associated with nursing errors (H2c) and turnover (H2c). In support of Hypotheses 2b, status differentiation was found to have a significant negative relationship with collective efficacy, ( $B = -.47$ ,  $p < .05$ ; Model 2, Table 6). In contrast, status differentiation did not significantly predict psychological safety ( $B = -.22$ , *n.s.*; Model 1), performance ( $B = -.10$ , *n.s.* Model 3), nursing errors ( $B = .34$ , *n.s.* Model 4), or turnover ( $B = .32$ , *n.s.*; Model 5).

#### *Tests of Moderation*

Hypothesis 3 predicted that power differentiation and status differentiation would interact to affect psychological safety (Hypothesis 3a) and collective efficacy (Hypothesis 3b). The influence of power differentiation and status differentiation interaction on psychological safety ( $B = .55$ , *n.s.*; Table 7) and collective efficacy were not significant ( $B = 1.17$ , *n.s.*; Table 7).

#### *Tests of Mediated Moderation*

I used Hayes' (2012) PROCESS macro (Model 8) for SPSS to estimate the conditional indirect effects using 95% bias-corrected bootstrapped confidence intervals (5,000 bootstrap samples). The results of the Hypothesis 4 tests are reported in Table 8, while the results of the Hypothesis 5 tests are reported in Table 9. The conditional indirect effects of psychological safety on power differentiation and performance were non-significant when status differentiation was high (+1SD), average, or low (-1SD).

Additionally, treatment errors and turnover were not found to be significant in this model. Further, the conditional indirect effects of collective efficacy on power differentiation and performance were also non-significant when status differentiation was high (+1SD), average, or low (-1SD). These findings held true for the dependent variables of treatment errors and turnover.

### **Study 1- Discussion and Limitations**

In this study, I have sought to answer three specific research questions pertaining to group composition. First, I sought to uncover whether power and status in workgroups differentially impacted group process and outcomes. Second, I investigated the joint influence of power and status in groups on emergent states. Third, I explored whether power and status differentiation interacted to influence group outcomes through emergent states. In this field study, I found marginal support for the prediction that power and status would have opposing effects on group emergent states and workgroup effectiveness. However, I did not find evidence that status differentiation influences the relationship between power differentiation and emergent states. Finally, I did not find support for any of the mediated moderation hypotheses.

Although the studies presented here provide support for many of the hypotheses, it is important to acknowledge its limitations. First, the study design does not allow us to draw causal inferences regarding the direction of the relationships identified. Because power, status, and emergent states were measured at the same time, we cannot definitively state that power and status led to differences in emergent states. It may be that feelings of psychological safety or collective efficacy lead to the perception of power and status differences within groups. Second, although functionalist perspective posits

that power differentiation creates a collaborative environment, that then increases performance, I did not measure collaboration in the current study and therefore cannot test this mechanism. Similarly, expectation states theory posits that expectations of performance leads to differences in interactions that then affect performance. Likewise, I did not measure expectations in this study and therefore cannot test this mechanism. Third, the participants were members of healthcare workgroups, composed primarily of women, thus these findings may not generalize to a more diverse population.

### **Conclusion**

In conclusion, the present research takes a significant step toward providing a greater understanding of the dynamics that occur in work groups that may positively versus negatively influence group outcomes. In doing so, I have contributed to the social hierarchy, small groups, and group performance literatures by considering the independent and joint effects of power and status on group emergent states and effectiveness. Hopefully, these findings will prompt more academics to examine the joint effects of power and status in groups, as well as mediating mechanisms that can describe how groups respond to these different compositional factors.

## **Chapter 5**

### **CONCLUSION**

#### **Summary of Findings**

In this dissertation, I conducted an investigation into the study of status and power differences within groups. Building upon existing conceptual and theoretical work (see DiTomaso, Post, Parks-Yancy, 2007 for a review), I examined the consequences of power differentiation and status differentiation, and also sought to empirically distinguish the terms from one another. In doing so, I employed a field survey of 80 nursing workgroups and 80 supervisors. Briefly, my findings suggest that differentiation (both power and status) can significantly affect group processes and outcomes, both in positive and negative ways. On one hand, power differentiation appears to lead to higher workgroup effectiveness (i.e. reduces performance errors). On the other hand, status differentiation may lead to lower psychological safety (pilot study) and collective efficacy.

Theoretically, this work makes three broad contributions. First, it suggests that although power differentiation and status differentiation may be causally related and mutually reinforcing, power and status engender opposing group processes, which in turn, may influence group effectiveness. Consequently, conceptualizations of status and power that overlap, or confound the variables, are likely to miss out on the group outcomes that make each social hierarchy unique. Second, this research represents the first exploration of both power differentiation and status differentiation as group compositional phenomena. Consistent with the previous conceptual and theoretical literature, the results suggest that power differentiation and status differentiation may be drivers of important

behavioral and group outcomes, which are topics worthy for further exploration. Beyond, these three broad contributions, the results presented here not only extend the literature on power and status, but also the small groups and teams literature.

This work also has practical significance. Social hierarchies are the basic fundamental structures of any workgroup; furthermore, power and status is common within organizations, given the differences in organizational roles and performance. The presence of differentiated groups could exist within groups ranging from front line workers all the way up to top management teams. A better understanding of the differential outcomes of status and power in groups and how it influences group outcomes, therefore, should be of great interest to practitioners.

### **Theoretical Implications**

The present findings contribute to existing theory in three ways. First, this research extends prior theoretical models of power and status in groups by delineating the processes through which group compositional factors, specifically differentiation, may exert both positive and negative influences on group effectiveness. To date, very little research has examined power differentiation in groups (e.g. Greer & Van Kleef, 2010), and although very little research has considered status differentiation in groups (e.g. Bridges, Doyle, & Mahan, 1968; Christie & Barling, 2010), most of this work has focused on either one or the other. Extending prior work, a key contribution of this dissertation involves finding that (a) power differentiation leads to higher workgroup effectiveness and (b) status differentiation leads to lower psychological safety and collective efficacy. I can, then, conclude from these findings that greater power

differentiation is more likely to promote group effectiveness, while greater status differentiation hinders group processes.

Second, further extending DiTomaso and colleagues (2007) review, this study links group-level power and status differentiation to both positive (job performance) and negative (nursing error and turnover) group-level outcomes by delineating two group emergent states (psychological safety and collective efficacy) as mediators/outcomes. The Pilot Study and Study 1 supported the hypothesized main effects of status differentiation on group emergent states. In particular, status differentiation was found to be negatively related to psychological safety and collective efficacy. Although, the findings do not suggest that psychological safety and collective efficacy mediate the relationship between the Power X Status differentiation interaction term and workgroup effectiveness, the findings still suggest that it may be possible that status differentiation relate to group emergent states, at least in a healthcare setting. These effects may be consistent with findings that status is likely to negatively influence group processes (e.g. Bridges, Doyle, & Mahan, 1968).

Third, by considering both power and status in groups, as well as positive and negative group-level outcomes, this study helps integrate theories of social hierarchy and small groups. As I have noted previously, to date, the small groups literature has mainly focused on compositional factors related to demographic and informational differences (Christie & Barling, 2010), whereas the power and status literatures have examined these constructs absent of each other. The theorizing and empirical findings presented here clearly demonstrate that integrating these perspective allows for a greater understanding of power and status in workgroups. Furthermore, in line with the predictions that group



members may potentially be exposed to both power and status differentiation in groups, I found that considering both types of group compositional factors can explain more variance in group members' emergent states and outcomes than just considering only one type of compositional factor.

### **Practical Implications**

The present findings suggest several possible diversity management strategies. First, selecting group members who are highly differentiated in power might help groups avoid errors in the performance of their job. Second, when a group has low power differences, a solution would be to advocate differentiation in power in order to stimulate a collaborative environment that may lead to higher group effectiveness. Third, another practical solution for managing groups with power differences would be to encourage differences as to increase power salience and encourage effectiveness. One way in which management may accomplish this is by using reward structures that emphasize or trigger power differences.

Although a strong focus on power differences can relate to better workgroup effectiveness compared to status differences, it may not have an impact on group processes. If managers would like to increase positive group processes, a solution would be to reduce perceived status differences among group members. By emphasizing a superordinate group identity, which focuses on treating individuals with equal respect and admiration, may replace the harmful effects of perceived status differences.

### **Future Research Directions**

There are several avenues for potential research directions for the topic of power and status in groups. First, one limitation of this study was that it only investigated

workgroups in the healthcare industry, which were primarily composed of female members, thus as a consequence these results do not represent the diversity common in most workgroups. Studies conducted in a greater area of organizational contexts (e.g. innovation teams, virtual teams, etc.) would permit more conclusive statements to be made about the influence of power and status differentiation on group effectiveness.

Second, our understanding of power and status in groups could be increased by investigation additional shared group processes that underlie its consequences for group behavior and outcomes. More closely related to the theoretical arguments made here, one could investigate if power leads to more collaboration than status in groups. Additionally, one could investigate if more positive expectations about performance-related outcomes are generated more for groups with power or status. Additionally, it would be interesting to see how power and status in groups interact to impact collaboration and expectation formation.

Third, future work should explore other potential moderators of the effects of power and status in groups. For instance, the extent to which power and status in groups lead to opposing outcomes might depend upon the overall group-level of power and status. Groups with power differences and low overall group power may be more collaborative than groups with power differences and high overall group power. In support of this idea, recent research finds power dispersion in groups with low power is related to conflict resolution, while power dispersion in groups with high power is negatively related to conflict resolution (Greer & van Kleef, 2010).

Fourth, it would be interesting to explore how power and status differences are stable over time, and whether they can be dampened. For instance, it may be that when a

group initially forms, status differences are more salient, but overtime power differences become more salient. Alternatively, it may be the case that when a group initially forms, power differences are more salient, which then evolve into status differences. From a more practical standpoint, it would be worthwhile exploring whether certain interventions can be taken to mitigate any potential consequences to hierarchical differentiation.

Finally, it would be interesting investigate if these results would be stable across organizational contexts. In this study, I focus on exploring the proposed phenomena within a hospital setting, which is a unique and interdependent-task setting. It may be that the results reported here may only be evident in interdependent-task environments. Therefore, it would be important to investigate whether power and status differences would still have opposing effects on group effectiveness in groups that work within independent-task settings. It may be the case that independent-task environments, social relationships and hierarchy matter less.

## **Conclusion**

This dissertation represents one of the few papers that examines the opposing effects of power and status in groups (see Blader & Chen, 2011). The results of this research indicate that power and status in groups can be a powerful determinate of psychological safety, collective efficacy, and workgroup effectiveness, and thus deserves greater research attention.

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Table 1.  
Means, Standard Deviations, and Zero-order Correlations Among Variables

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Group Size	3.94	1.25	-----										
2. Social Category Heterogeneity	.72	.06	.94**	-----									
3. Informational Heterogeneity	.71	.11	.82**	.82**	-----								
4. Power Level	3.40	.81	-.45	-.52*	-.36	-----							
5. Status Level	4.09	.54	-.36	-.34	-.20	-.77**	-----						
6. Power Differentiation	1.55	.38	-.02	.00	.07	.39	.35	-----					
7. Status Differentiation	1.34	.33	.37	.36	.17	-.63**	-.63**	-.20	-----				
8. Psychological Safety	4.59	.69	-.50*	-.56*	-.46	.42	.141	.13	-.23	-----			
9. Collective Efficacy	4.80	.80	-.46	-.43	-.17	.36	.16	.13	-.25	.77**	-----		
10. Job Performance	4.47	.38	.17	.11	-.00	-.31	-.28	.23	-.18	-.19	-.32	-----	
11. Nursing Errors	1.52	.31	-.34	-.49*	-.22	.31	.08	-.21	.15	.22	.25	.09	-----
12. Turnover	.53	.72	.03	.13	-.00	-.24	-.36	-.05	.19	-.23	-.35	.45	-.10

Note. N=18 workgroup members

\*p<0.05, \*\*p<0.01

Table 2.  
Hypothesis Testing Using Hierarchical Regression Analysis

	Psychological Safety	Collective Efficacy	Group Performance	Nursing Errors	Turnover
	Model 1	Model 2	Model 3	Model 4	Model 5
Group Size	.15(.39)	-.42(.47)	.38(.23)	.36(.15)	-.49(.48)
Social Category Heterogeneity	-3.86(8.40)	-.20(10.18)	-8.14(4.94)	-	9.20(10.31)
Informational Heterogeneity	-1.43(2.57)	3.95(3.12)	-.32(1.51)	12.37(3.31)*	-1.07(3.16)
Power Level	.56(.28)	.52(.35)	-.34(.17)	1.81(1.01)**	-.54(.35)
Power Differentiation	.58(1.00)	.03(1.21)	1.14(.58)	-.12(.11)	-.58(1.23)
$R^2$	.51	.45	.43	.92(.39)*	.30

*Note.* N= 18 supervisors/workgroups and 87 workgroup members. Table entries represent unstandardized parameter estimates with standard errors in parentheses.

\*p<0.05, \*\*p<0.01



Table 3.  
Hypothesis Testing Using Hierarchical Regression Analysis

	Psychological Safety Model 1	Collective Efficacy Model 2	Group Performance Model 3	Nursing Errors Model 4	Turnover Model 5
Group Size	.18(.33)	-.48(.380)	.25(.25)	.24(.16)	-.36(.41)
Social Category Heterogeneity	-6.32(6.71)	-.41(7.65)	-2.98(5.20)	-9.20(3.29)**	6.75(8.29)
Informational Heterogeneity	-.28(2.25)	4.70(2.57)	-1.39(1.75)	1.15(1.11)	-2.00(2.78)
Status Level	-.14(.55)	-.54(.63)	-.10(.43)	-.34(.27)	-1.40(.67)
Status Differentiation	-.83(.32)*	-.92(.37)**	.23(.25)	.10(.16)	.56(.40)
$R^2$	.59*	.60*	.17	.51	.41

*Note.* N= 18 supervisors/workgroups and 87 workgroup members. Table entries represent unstandardized parameter estimates with standard errors in parentheses.

\*p<0.05, \*\*p<0.01

Table 4.  
Means, Standard Deviations, and Zero-order Correlations Among Variables

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1. Group Size	5.07	2.50	-----											
2. Social Category	.48	.20	.23	-----										
Heterogeneity														
3. Informational Heterogeneity	.18	.22	-.02	-.13	-----									
4. Power Level	4.01	.52	-.28	-.06	-.01	-----								
5. Status Level	3.52	.55	.05	.13	.08	.51**	-----							
6. Power Differentiation	1.42	.35	.15	.31	-.26	-.25	.06	-----						
7. Status Differentiation	1.36	.29	.36*	.09	.03	.00	.49**	.29	-----					
8. Psychological Safety	5.08	.47	-.15	.08	.29	.43*	.51**	.02	-.33	-----				
9. Collective Efficacy	5.27	.60	-.09	.08	.07	.34	.35*	.15	-.44*	.72**	-----			
10. Job Performance	4.36	.44	-.12	-.12	-.16	.04	.13	.23	-.06	-.11	-.17	-----		
11. Nursing Errors	1.78	.58	.10	-.12	.16	-.23	-.17	-.35	.26	-.24	-.17	-.53**	-----	
12. Turnover	1.65	2.12	.32	.10	.18	-.42*	-.18	-.06	-.18	-.25	-.20	-.19	-.36*	-----

Note. N=80 workgroup members

\*p<0.05, \*\*p<0.01

**Table 5.** Hypothesis Testing Using Hierarchical Regression Analysis

	Psychological Safety	Collective Efficacy	Group Performance	Nursing Errors	Turnover
	Model 1	Model 2	Model 3	Model 4	Model 5
Group Size	-.01(.03)	-.00(.05)	-.03(.04)	.02(.05)	.20(.16)
Social Category Heterogeneity	.28(.43)	.14(.58)	-.40(.45)	-.10(.56)	.37(2.03)
Informational Heterogeneity	.78(.38)*	.41(.53)	-.22(.41)	.14(.51)	1.86(1.82)
Power Level	.43(.16)*	.46(.23)*	.05(.17)	-.35(.22)	-1.50(.78)
Power Differentiation	.23(.25)	.47(.35)	.37(.27)	-.68(.33)*	-.23(1.19)
$R^2$	.19	.19	.14	.24	.27

*Note.* N= 80 supervisors/workgroups and 421 workgroup members. Table entries represent unstandardized parameter estimates with standard errors in parentheses.

\* $p < 0.05$ , \*\* $p < 0.01$

**Table 6.** Hypothesis Testing Using Hierarchical Regression Analysis

	Psychological Safety	Collective Efficacy	Group Performance	Nursing Errors	Turnover
	Model 1	Model 2	Model 3	Model 4	Model 5
Group Size	-.05(.03)	-.07(.05)	-.02(.04)	.06(.05)	.36(.17)*
Social Category Heterogeneity	.25(.39)	.28(.53)	-.29(.44)	-.37(.58)	.57(2.00)
Informational Heterogeneity	.58(.36)	.13(.48)	-.40(.40)	.44(.52)	2.13(1.78)
Status Level	.33(.16)*	.13(.22)	.17(.18)	-.01(.23)	-.26(.81)
Status Differentiation	-.35(.32)	-.95(.43)*	-.15(.36)	.65(.45)	2.25(1.59)
$R^2$	.39*	.29	.10	.16	.26

*Note.* N= 80 supervisors/workgroups and 421 workgroup members. Table entries represent unstandardized parameter estimates with standard errors in parentheses.

\* $p < 0.05$ , \*\* $p < 0.01$

**Table 7.** Moderated Regression Analyses Predicting Psychological Safety and Collective Efficacy

	<i>Psychological Safety</i>		<i>Collective Efficacy</i>	
	$\beta$	<i>SE</i>	$\beta$	<i>SE</i>
Group Size	-.04	.04	-.05	.05
Social Category Heterogeneity	.33	.42	.36	.55
Informational Heterogeneity	.69	.38	.37	.50
Power Level	.27	.20	.41	.26
Status Level	.17	.20	-.09	.27
Power Differentiation	.61	.95	1.18	1.24
Status Differentiation	-.32	1.10	-.56	1.44
Power X Status Differentiation	.55	.76	1.17	1.00
$R^2$		.53		.40
<i>Change in R<sup>2</sup></i>		.01		.04

*Note.* N= 80 workgroups. Standard errors are based on standardized coefficients.

\*p<0.05, \*\*p<0.01

Table 8. Bootstrapping Results for Test of Conditional Indirect Effects with the Mediator Psychological Safety

Dependent variables	Conditional indirect effect	SE	95% CI	
			Lower	Upper
Performance				
+ 1 SD	.01	.15	-.23	.28
Mean	-.03	.10	-.48	.06
- 1 SD	-.07	.16	-.62	.11
Treatment Errors				
+ 1 SD	.01	.23	-.42	.56
Mean	-.03	.16	-.76	.10
- 1 SD	-.07	.22	-.82	.17
Turnover				
+ 1 SD	.02	.73	-1.78	1.42
Mean	-.12	.51	-2.78	.32
- 1 SD	-.26	.76	-2.72	.50

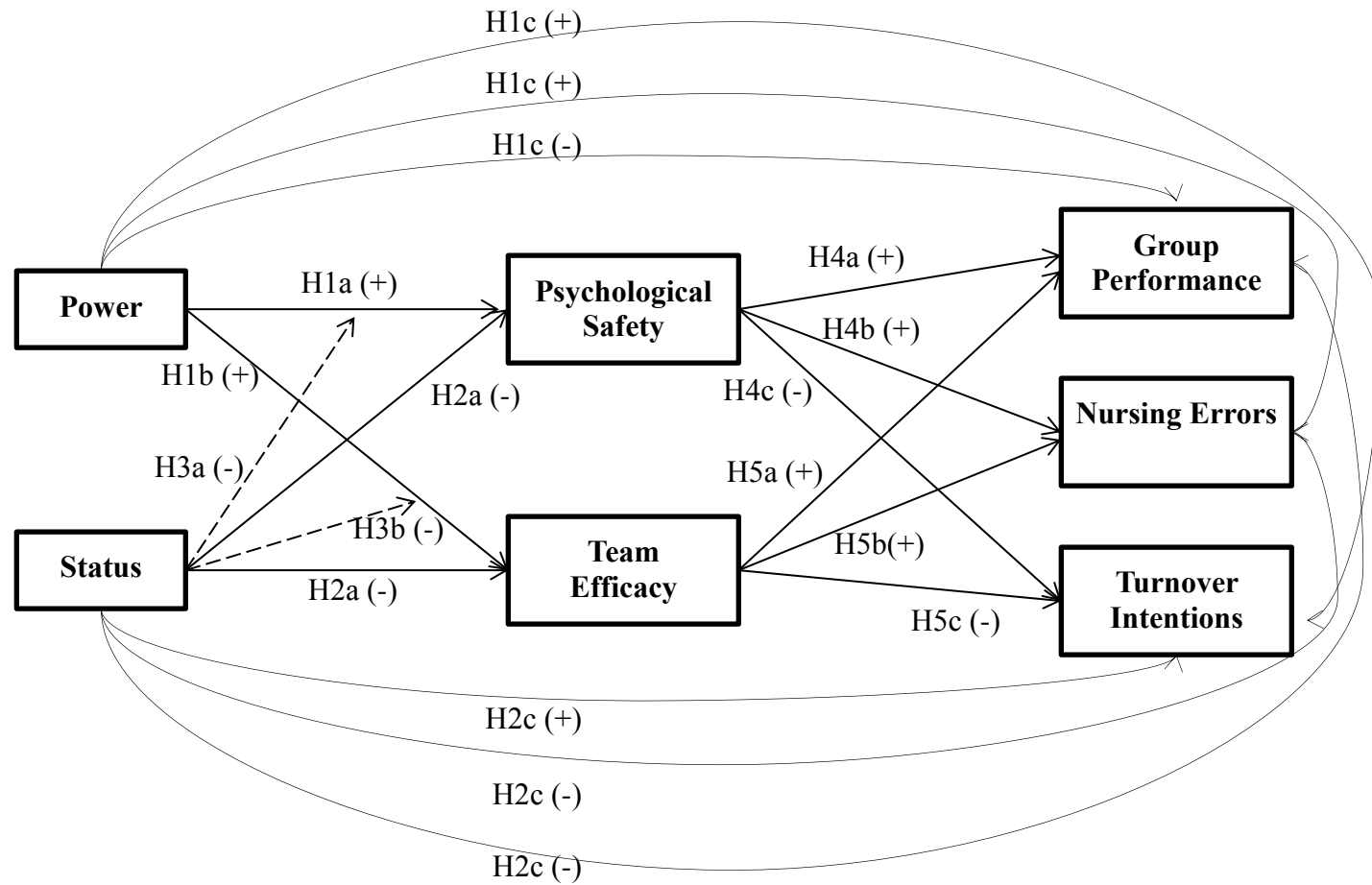
Note. Results are based on 5,000 bootstrap samples. Conditional indirect effects are one-tailed. CI = confidence interval  
\*p<.05

Table 9. Bootstrapping Results for Test of Conditional Indirect Effects with the Mediator Collective Efficacy

Dependent variables	Conditional indirect effect	SE	95% CI	
			Lower	Upper
Performance				
+ 1 SD	-.04	.16	-.44	.25
Mean	-.09	.15	-.64	.07
- 1 SD	-.17	.23	-1.00	.07
Treatment Errors				
+ 1 SD	.00	.17	-.39	.34
Mean	.00	.16	-.35	.33
- 1 SD	.00	.23	-.45	.50
Turnover				
+ 1 SD	-.02	.65	-2.42	.83
Mean	-.11	.57	-3.12	.39
- 1 SD	-.20	.81	-3.12	.61

Note. Results are based on 5,000 bootstrap samples. Conditional indirect effects are one-tailed. CI = confidence interval  
\*p<.05

**Figure 1.** Hypothesized theoretical model. H=Hypothesis.





## **Appendix A. Employee Information Sheet**

You are invited to participate in a research study that is being conducted by Jamie Perry, who is a student at Rutgers Business School—Newark and New Brunswick at Rutgers, the State University of New Jersey. The purpose of this research is to determine the type of group compositional factors that may influence group processes and effectiveness.

Approximately, 280 employees and 76 supervisors will participate in the study. Should you choose to participate, you will be asked to complete a survey that includes questions about your experience working as a member of a workgroup. The survey should take 10 minutes to complete and no further participation is needed. The first four sections of the survey cover specific topics regarding the social standing and dynamics of your workgroup. The final section of the survey asks for demographic information. Once you have completed the survey, we ask that you place the complete survey in the envelope provided and seal it, then place the sealed envelope in the black locked box located in your department. These steps are important to protect your privacy and anonymity.

This research is confidential. Confidential means that the research records will include some information about you, and this information will be stored in such a manner that some linkage between your identity and your responses in the research exists. Some of the information collected about you includes your gender, education, work experience, and tenure. Please note that we will keep this information confidential by removing any face sheets containing identifying information (should you accidentally provide such information), properly dispose/destroy/delete study data and documents, securely store data documents in a locked location, and assign security codes to the computerized records.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. Neither your supervisor, nor anyone at your workplace will have access to the data collected. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for three years.

The potential risks associated with this study are minimal, and include potential discomfort due to the nature of some questions. We expect this research to benefit society and science by advancing the study of group processes and effectiveness.

Participation in this study is voluntary. Your decision whether or not to participate will in no way affect your current or future relationship with [redacted]<sup>3</sup> or its staff. You have the right to withdraw from the research at any time without penalty. You also have the right to refuse to answer any question(s) for any reason, without penalty.

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<sup>3</sup> The collection site has requested to stay anonymous in all the reporting and describing of data.

If you have any questions about the study or study procedures, please contact Jamie Perry at (862)-234-9223 or [jlperry@pegasus.rutgers.edu](mailto:jlperry@pegasus.rutgers.edu).

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:

Rutgers University, the State University of New Jersey  
Institutional Review Board for the Protection of Human Subjects  
Office of Research and Sponsored Programs  
3 Rutgers Plaza  
New Brunswick, NJ 08901-8559  
Tel: 848-932-0150    Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

## **Appendix B. Supervisor Information Sheet**

You are invited to participate in a research study that is being conducted by Jamie Perry, who is a student at Rutgers Business School—Newark and New Brunswick at Rutgers, the State University of New Jersey. The purpose of this research is to determine the type of group compositional factors that may influence group processes and effectiveness.

Approximately, 280 employees and 76 supervisors, between the ages of 18 and 65 years old will participate in the study. Should you choose to participate, you will be asked to complete a survey that includes questions about your experience working as a supervisor of a group. The survey should take 10 minutes to complete and no further participation is needed. The first four sections of the survey cover specific topics regarding the social standing and dynamics of the workgroup you supervise. The final section of the survey asks for demographic information. Once you have completed the survey, we ask that you place the complete survey in the envelope provided and seal it, then place the sealed envelope in the black locked box located in your department. These steps are important to protect your privacy and anonymity.

This research is confidential. Confidential means that the research records will include some information about you, and this information will be stored in such a manner that some linkage between your identity and your responses in the research exists. Some of the information collected about you includes your gender, education, work experience, and tenure. Please note that we will keep this information confidential by removing any face sheets containing identifying information (should you accidentally provide such information), properly dispose/destroy/delete study data and documents, securely store data documents in a locked location, and assign security codes to the computerized records.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. Neither your supervisor, nor anyone at your workplace will have access to the data collected. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for three years.

The potential risks associated with this study are minimal, and include potential discomfort due to the nature of some questions. We expect this research to benefit society and science by advancing the study of group processes and effectiveness.

Participation in this study is voluntary. Your decision whether or not to participate will in no way affect your current or future relationship with [redacted]<sup>4</sup> or its staff. You have the right to withdraw from the research at any time without penalty. You also have the right to refuse to answer any question(s) for any reason, without penalty.

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<sup>4</sup> The collection site has requested to stay anonymous in all the reporting and describing of data.

If you have any questions about the study or study procedures, please contact Jamie Perry at (862)-234-9223 or [jlperry@pegasus.rutgers.edu](mailto:jlperry@pegasus.rutgers.edu).

If you have any questions about your rights as a research subject, you may contact the IRB

Administrator at Rutgers University at:

Rutgers University, the State University of New Jersey

Institutional Review Board for the Protection of Human Subjects

Office of Research and Sponsored Programs

3 Rutgers Plaza

New Brunswick, NJ 08901-8559

Tel: 848-932-0150    Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

**Appendix C. Power** (Adapted from Anderson & Galinsky, 2006)

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. Group members have the same ability to get people to listen to what they say.
2. Group members' wishes carry the same amount of weight.
3. Group members have the same ability to get other group members to do what they want.
4. Group members' views have differing amounts of sway. (Reverse code)
5. Group members possess differing amounts of power. (Reverse code)
6. Group members' ideas and opinions are similarly ignored.
7. Group members have the same ability to get their own way.
8. Group members have differing abilities to make the decisions.

**Appendix D. Power** (Adapted from See, Morrison, Rothman, & Soll, 2011)

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. Group members have the same discretion over salary or bonus allocation for staff.
2. Group members have the same authority over hiring or firing of staff.
3. Group members have the same extent of power in their department.
4. Group members have the same extent of power in their workgroup.

**E. Status** (Adapted from Anderson, Srivastava, Beer, Spataro, & Chatman, 2006)

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. Group members receive differing amounts of respect. (Reverse code).
2. Group members make the same amount of valuable contributions.
3. Group members have the same amount of ability.
4. Group members have differing levels of participation. (Reverse code).
5. Group members have the same opportunities to lead.
6. Group members have differing amounts of overall contribution. (Reverse code).

**F. Status** (Adapted from Flynn, Reagans, Amantullah, & Ames, 2006)

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. Group members have the same ability to direct and steer meeting in their favor.
2. Group members have the same ability to persuade co-workers to change their opinions.
3. Group members have the same ability to build effective working relationships with others who have different opinions or interests.
4. Group members have the same ability to win arguments by dominating the discussion.
5. Group members have differing abilities in communicating their messages effectively. (Reverse code)



**Appendix G. Psychological Safety** (Edmondson, 1999)

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. If you make a mistake in this group, it is often held against you.
2. Members of this group are able to bring up problems and tough issues.
3. People in this group sometimes reject others for being different.
4. It is safe to take a risk in this group.
5. It is difficult to ask other members of this group for help.
6. No one in this group would deliberately act in a way that undermines my effort.
7. Working with members of this group, my unique skills and talents are valued and utilized.

**Appendix H. Collective Efficacy (Riggs & Knight, 1994)**

Each item is rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1. The group I work with has above average ability.
2. This group is not able to perform as well as it should. (Reverse coded)
3. The members of this group have excellent job skills.
4. Some group members should be fired due to lack of ability. (Reverse coded)
5. This group is not very effective. (Reverse coded)
6. Some group members cannot do their jobs well. (Reverse coded)

**Appendix I. Performance** (adapted from Fox, Dwyer, & Ganster, 1993; Phillips & Bedeian, 1994)

Each item is rated on a scale from 1 (Poor) to 5 (Excellent)

1. Patient assessment
2. Planning
3. Developing patient care plans
4. Dependability
5. Alertness
6. People Skills
7. Know-How
8. Present Performance
9. Expected Performance

**Appendix J. Nursing Errors** (Benner et al., 2002; Leape et al., 1993)

Each item is rated on a scale from 1 (never) to 7 (every time)

1. Lack of patient attentiveness or surveillance
2. Inappropriate judgment
3. Medication errors (medication of wrong type, at the wrong time, in the wrong amount, or applied the wrong way)
4. Failure to intervene on behalf of patients
5. Errors in patient chart and/or record documentation
6. Failure to act as a patient advocate (work on behalf of patient's best interests)
7. Lack of prevention of patient complications, errors, and threats to patient safety
8. Missed or mistaken MD/Healthcare Provider's Orders
9. Practice beyond scope
10. Inappropriate delegation or supervision
11. Inappropriate judgment
12. Breach of confidentiality
13. Failure to follow universal precautions
14. Executing inappropriate orders
15. Failure to follow orders
16. Failure to assess
17. Failure to employ indicated tests
18. Failure to act on the results of monitoring or testing
19. Technical error in the performance of an operation, procedure, or test
20. Error in administering treatment
21. Error in the performance of an operation, procedure, or testing
22. Avoidable delay in treatment or in responding to an abnormal test

### **Appendix K. Multivitamin Scale**

1. This group has members who feel that they are helping each other by offering them multivitamins.
2. This group has members who make multivitamins available for each other to use.
3. This group has members who feel good purchasing multivitamins for each other.
4. This group has members who prefer offering multivitamins in lieu of candy to each other.
5. This group has members who share multivitamins with each other.

## VITA

Jamie Lyn Perry

- 1984 Born February 23 in Houston, Texas.
- 2002 Graduated from Michael E. Debakey High School for Health Professions.
- 2002-03 Attended Mary Baldwin College, Staunton, Virginia.
- 2003-06 Attended University of Houston, Houston, Texas; double majored in Psychology and Sociology.
- 2006 B.S. Psychology and Sociology; University of Houston.
- 2007 Attended Rutgers, the State University of New Jersey- New Brunswick; Postbaccalaureate Premedical Program.
- 2007-08 Attended Rutgers, the State University of New Jersey- Camden; majored in Psychology.
- 2008-09 Employed by The University of Pennsylvania, Philadelphia, Pennsylvania as Research Coordinator
- 2009 Masters in Psychology, Rutgers, the State University of New Jersey- Camden
- 2009-14 Attended Rutgers Business School—Newark and New Brunswick at Rutgers, the State University of New Jersey, majored in Organization Management
- 2009-11 Research Assistantship, Rutgers Business School—Newark and New Brunswick at Rutgers, the State University of New Jersey
- 2010 Article: “Violent Splits and Healthy Divides? Coping with Injustice Through Faultlines”, vol. 63, p.719-751.
- 2011-13 Teaching Assistantship, Rutgers Business School—Newark and New Brunswick at Rutgers, the State University of New Jersey
- 2013-14 Dissertation Fellowship, Rutgers Graduate School—Newark at Rutgers, the State University of New Jersey
- 2014 Ph.D. in Management