University of Cincinnati

Date: 6/11/2018

I, Jaclyn Permann-Graham, hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Business Administration.

It is entitled:

We're In This Together: The antecedents and consequences of creative effort in dyads

Student's name: **Jaclyn Permann-Graham**

This work and its defense approved by:

Committee chair: Suzanne Masterson, Ph.D.

Committee member: Amanda Christensen

Committee member: Donna Chrobot-Mason, Ph.D.

30508

We're In This Together: The Antecedents And Consequences Of Creative Effort In Dyads

A dissertation submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

in the Department of Management
of the College of Business

by

Jaclyn M. Permann-Graham

June 2018

Dissertation Committee Members:

Suzanne Masterson, Ph.D. (co-chair)

Amanda Christensen-Salem, Ph.D. (co-chair)

Donna Chrobot-Mason, Ph.D.

Abstract: Creativity, defined as the production of novel and useful ideas (Amabile, 1996), has been recognized as an important driver of both organizational and individual success (see Amabile, 1996; George, 2007; Zhou & Oldham, 2004). For the last two decades, researchers have built an impressive wealth of knowledge regarding how to increase creativity and have examined many concepts, including different leadership styles, motivating mechanisms, and personality traits (see Zhou & Shalley, 2011). Yet, there has been much less theory or evidence demonstrating how creativity-related encounters impact subsequent individual perceptions and behaviors. The conversation has largely centered on "How do we increase organizational and individual creativity?" and "which factors enhance that process?" My proposed research model (see figure 1) changes the direction of this conversation by exploring dyadic relationships to theorize about how one partner's creativity influences another partner's creativity, and the process through which those dyadic interactions related to creativity influence subsequent individual behavior. This study proposes to focus on the important role that dyads play in the process of expending creative effort and under what circumstances creativity between individuals may lead to differing perceptions and behaviors at a future period in time. In the current research I explore creativity focusing on its potentially interdependent nature and examine four specific questions: (1) To what extent is creative effort both an individually—through creative self-efficacy—and relationally constructed behavior? (2) What role does the level of perceived interpersonal similarity play in the creative effort between two people? (3) What are the potential attributions of social undermining and prosocial behavior that might stem from assessments of the level of creative effort expended by one's partner? and (4) What are the resulting actor behaviors stemming from those perceptions?

TABLE OF CONTENTS

LIST OF TABLES	VI
LIST OF FIGURES	VII
 CHAPTER 1: INTRODUCTION AND PURPOSE OF STUDY	 1
INTRODUCTION TO A PROPOSED INTERDEPENDENT MODEL OF CREATIVE EFFORT	5
CONTRIBUTIONS OF THE RESEARCH	6
<i>Theoretical Contributions</i>	6
<i>Practical Contributions</i>	8
STRUCTURE OF THE DISSERTATION PROPOSAL	10
 CHAPTER 2: LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT	 11
CREATIVITY	11
<i>Creative Self-Efficacy</i>	14
<i>Creative Effort</i>	15
SIMILARITY	18
GOAL ORIENTATION	20
<i>Performance Orientation</i>	21
<i>Social Undermining</i>	23
<i>Learning Orientation</i>	25
<i>Prosocial Behavior</i>	26
PERFORMANCE OUTCOMES	27
<i>The Norm of Reciprocity</i>	28
<i>Organizational Citizenship Behavior (OCB)</i>	29
<i>Task Performance</i>	30
<i>Individual Task Performance</i>	31
<i>Dyadic Task Performance</i>	33
 CHAPTER 3: METHODS	 36
RESEARCH DESIGN	36
LAB EXPERIMENT	38
<i>Participants</i>	39
<i>Procedure</i>	40
MEASURES	48
<i>Creative Self-Efficacy</i>	48
<i>Goal Orientation</i>	48
<i>Creative Effort</i>	50
<i>Perceived Similarity</i>	52
<i>Perceived Prosocial Behavior</i>	52
<i>Perceived Social Undermining</i>	52
<i>Organizational Citizenship Behavior</i>	53
<i>Task Performance</i>	54
DATA ANALYTIC PLAN	54
<i>Handling of Missing Data</i>	55
<i>Controls</i>	58

CHAPTER 4: RESULTS	59
TESTING THE HYPOTHESIZED MODEL	61
<i>Hypothesis 1</i>	61
<i>Hypotheses 2 and 3</i>	66
<i>Hypotheses 4a and 4b</i>	67
<i>Hypotheses 5a and 6a</i>	69
<i>Hypotheses 5b and 6b</i>	70
<i>Hypothesis 7</i>	70
POST-HOC ANALYSES	71
 CHAPTER 5: DISCUSSION	 73
THE RELATIONAL ASPECT OF CREATIVITY	73
<i>Individual</i>	73
<i>Dyadic</i>	74
CREATIVITY AND SUBSEQUENT BEHAVIORS AND PERCEPTIONS	74
<i>Learning Goal Orientation</i>	74
<i>Performance Goal Orientation</i>	75
CONTRIBUTIONS OF THE STUDY	78
<i>Theoretical Contributions</i>	78
<i>Practical Implications</i>	83
LIMITATIONS	85
FUTURE RESEARCH	88
CONCLUSION	90
 REFERENCES	 92
APPENDIX 1: SURVEY 1	102
APPENDIX 2: SURVEY 2	109
APPENDIX 3: SURVEY 3	111
APPENDIX 4: SURVEY 4	115

LIST OF TABLES

TABLE 1	LAB DESIGN	37
TABLE 2	SURVEY DATA TO BE COLLECTED PER TIME PERIOD	41
TABLE 3	TASK 1: DESIGNING THE STUDENT LOUNGE IN THE LINDNER COLLEGE OF BUSINESS BUILDING	43
TABLE 4	TASK 2: DESIGNING THE GREENSPACE FOR THE LINDER COLLEGE OF BUSINESS BUILDING	45
TABLE 5	WORD ASSOCIATION TEST	46
TABLE 6	CREATIVE SELF-EFFICACY SCALE ITEMS	48
TABLE 7	PARTICIPANT GOAL ORIENTATION SCALE ITEMS	50
TABLE 8	CREATIVE EFFORT SCALE ITEMS	51
TABLE 9	PERCEIVED PROSOCIAL BEHAVIOR SCALE ITEMS	52
TABLE 10	PERCEIVED SOCIAL UNDERMINING SCALE ITEMS	53
TABLE 11	PERCENTAGE OF VARIANCE BETWEEN- AND WITHIN-DYAD	57
TABLE 12	RELIABILITIES, MEANS, STANDARD DEVIATIONS, AND CORRELATIONS BETWEEN THE STUDY VARIABLES	61
TABLE 13	MULTILEVEL LINEAR MODELING RESULTS	63

List of Figures

FIGURE 1	AN INTERDEPENDENT MODEL OF CREATIVE EFFORT.....	6
FIGURE 2	AN INTERDEPENDENT MODEL OF CREATIVE EFFORT (SUMMARY OF RESULTS).....	59
FIGURE 3	MODERATING EFFECT OF PERCEIVED SIMILARITY ON ACTOR CREATIVE EFFORT TO PARTNER CREATIVE EFFORT.....	67
FIGURE 4	MODERATING EFFECT OF ACTOR LEARNING GOAL ORIENTATION ON PARTNER CREATIVE EFFORT TO ACTOR PERCEIVED PROSOCIAL BEHAVIOR RELATIONSHIP.....	69

Chapter 1: Introduction and Purpose of Study

For the past two decades, researchers have built an impressive wealth of knowledge regarding how to increase employee creativity. Creativity has been defined as the production of ideas that are both novel and useful (Amabile, 1996). Creativity in the organizational setting is an important area to study because it is recognized as an important driver of both organizational and individual success (see Amabile, 1996; George, 2007; Zhou & Oldham, 2004). The importance placed on creativity within organizations has resulted in a robust understanding of many creativity-related concepts, including different leadership styles, motivating mechanisms, and personality traits (see Zhou & Shalley, 2011). Yet, there has been much less theory or evidence demonstrating how creativity-related encounters, especially within a dyadic relationship, can impact individual perceptions and behavior at a subsequent period in time. The conversation has largely centered on "How do we increase organizational and individual creativity?" and "which factors enhance that process?" These questions have revolved around a desire to increase creativity for the sake of organizationally-related outcomes. I suggest that there is a plethora of knowledge to be gained by understanding creativity as an interdependent process between two individuals and examining how that process influences individual perceptions and future behavior. To this point, my research explores dyadic relationships to theorize about how one partner's creativity, specifically in the form of creative effort, influences another partner's creative effort, and the process through which that dyadic interaction influences future perception and behaviors of each person. Furthermore, my research examines four key aspects exploring how the interdependent nature of creative effort in dyads leads to these outcomes.

First, scholars have left relatively untouched the interdependent nature of creativity between two individuals. While past research has provided solid evidence of the role that

leadership styles, the environment, and personality traits play on individual creativity (Amabile 1996; Zhou & Shalley, 2011), there is reason to believe that pairs of individuals influence one another when it comes to expending creative effort. While a handful of studies have investigated the positive role that task interdependence plays in increasing creativity, such interdependence has been studied primarily in group or team settings (Gilson & Shalley, 2004). In essence, what has been left unexplored is the idea that the development of creative effort is both an individually and relationally constructed behavior such that when one engages in creative effort, it positively influences the creative effort expended by both the partner and actor him/herself. This positive relationship between actor and partner creative effort may be a result of modeling behavior (Bandura, 1977) or the spiral reinforcement of behavior (Ferrin, et al., 2008). Furthermore, the past lack of research regarding creativity within dyadic relationships is an important omission. Often times it is the case that shorter duration tasks in an organization rely on two people working together, at the same level. Without having solid knowledge on dyadic creativity, we are unable to fully understand how this one-on-one interaction takes place as well as what the potential outcomes may be.

Second, while we know that the behaviors of two individuals may have interdependent effects on one another (Cook & Kenny, 2005), there may be certain situations or variables that influence the effects of this interdependence (Kenny & Ledermann, 2010). This leaves the possibility for moderators in the interdependent relationship of creative effort. One such moderator is perceived interpersonal similarity. In fact, past research has found that when one person perceives another person to be similar to him or herself, he/she is motivated to behave similarly to that individual when placed within the same environment or situation (van Baaren et al., 2003). Thus, when two individuals work closely together, it is possible that the perceived

similarity between the two individuals may further impact the role that modeling behavior and spiral reinforcement have on the actor-partner creative effort relationship.

Third, past research has found that task interdependence in groups works as an antecedent to greater creative behavior within that group (Gilson & Shalley, 2004). However, what remains unknown are the consequences of individual engagement in an interdependent task requiring creative behavior. It seems plausible that when an actor expends creative effort, this may result in the partner forming a perception that the actor is either competing or cooperating with him/her. Specifically, this may manifest in a perception of social undermining or prosocial behavior, respectively. Since an individual may have a tendency to perceive the same act of creative effort engagement in two completely different ways, it is interesting to explore what may drive these opposite perceptions. One factor that is likely to alter this perception, or act as a moderating factor, is an individual's goal orientation. Goal orientation, defined as "a motivation orientation that influences how individuals approach, interpret, and respond to achievement situations" (Hirst, van Knippenberg, and Zhou, 2009: 281), likely holds the key to understanding why certain individuals will perceive others' creative effort as a form of either competition or cooperation. Furthermore, the role that goal orientation plays may present itself most vividly in new relationships. In fact, past research on dyads working on temporary projects (Gross, Guerrero, & Alberts, 2004) has suggested that when first placed together, dyad members working on a short-term project may be more likely to view the other person as confrontational if he/she takes the lead on the project and tries to control the task at hand. As such, it is more difficult in these newly established relationships to assign actual intent to a partner's actions and may increase the need to rely upon one's own goal orientation as a decision heuristic in perceiving the actions of the other person.

The importance of studying both dyads and task interdependence in relation to creativity creates certain methodological challenges. While traditional regression techniques assume independence of observations (Kenny & Judd, 1986), observations within dyads are likely to develop certain similarities in attributes and therefore violates this assumption (Fitzpatrick, Gareau, Lafontaine, & Gaudreau, 2015). To address this violation, Kenny (1996) suggests using the Actor Partner Interdependence Model (APIM). As will be discussed in detail in chapter 3, APIM adds a level of precision and builds veracity when studying dyadic data as it takes the interdependent nature of the observations into account (Kenny, Kashy, & Cook, 2006).

Finally, scholars have placed a heavy focus on linking individual creativity to positive outcomes such as organizational innovation and competitive advantage (Amabile, 1988; Oldham & Cummings 1996; Shalley, 1991; Zhou, 2003). While a handful of scholars have begun to examine what has become called “the dark side” of creativity, this work has almost exclusively concentrated on the negative personality traits associated with creative individuals (see Gino & Ariely, 2011; Cropley et al., 2008). What has been largely ignored is the impact that creativity-related encounters within a dyad have on an individual’s subsequent perceptions and behaviors. Thus, I will examine the extent to which creativity-related encounters within a dyad, and partners’ attributions about those encounters, impact subsequent behaviors with respect to performance; specifically, by examining when task performance and organizational citizenship behavior are both positively and negatively impacted by the formation of positive and negative perceptions.

Introduction to a Proposed Interdependent Model of Creative Effort

My dissertation research changes the direction of the existing creativity conversation by exploring how individual creative effort can be either enhanced or diminished within an interdependent dyadic relationship and how, within such partnerships, creative effort can lead to differing perceptions and future behaviors (see Figure 1). Using a modeling framework, I begin with creative self-efficacy, hypothesizing that creative self-efficacy is positively related to an individual's (the actor's) creative effort. Moreover, the actor's creative effort is positively related to the partner's creative effort. At the same time, the partner's creative effort, which stems from his/her own creative self-efficacy is positively related to the actor's creative effort.

Potentially impacting this actor creative effort to partner creative effort relationship is the perceived interpersonal similarity between the actor and partner. The level of perceived interpersonal similarity between the two will moderate the creative effort relationship between the actor and partner, such that the relationship from partner (actor)-to-actor (partner) creative effort will be stronger when perceived similarity is higher.

I further predict that the actor's creative effort will be related to the partner's perception of actor prosocial helping and social undermining. Specifically, to the extent the partner has a high learning orientation, the positive relationship between actor creative effort and partner's perception of prosocial helping will be stronger. Likewise, to the extent that the partner has a high performance orientation, the positive relationship between actor creative effort and partner's perception of social undermining will be stronger. Finally, these perceptions of prosocial behavior and social undermining will influence subsequent important individual outcomes such as organizational citizenship behavior and/or task performance.

A central theme of my dissertation model is the interdependence between the two individuals in a dyadic relationship. My dissertation model is designed to test the proposed interdependence of the dyad at multiple stages. While this chapter provides a brief overview of the model, Chapter Two will discuss in greater detail the theoretical basis for each relationship at the various stages of the model. Before moving to Chapter Two, however, I will next address the theoretical and practical contributions that my research offers.

Figure 1: An Interdependent Model of Creative Effort

Theoretical Contributions

Testing my proposed model allows for several contributions to the existing creativity literature, specifically in the area of creative effort. First, the model shifts the focus from creativity being derived primarily from aspects of the environment and/or a personality factor to

a focus on creativity as being a relationally constructed behavior. In the past, creativity research has been heavily concentrated on how the organization can encourage individual creative behavior through leader behaviors, motivating mechanisms, and selecting employees who possess certain personality traits (Zhou & Shalley, 2011). However, research has not fully demonstrated how creativity can be relationally constructed through a focus on the interdependent dynamics of dyadic relationships. The proposed model specifically tests the reinforcing nature of creative effort between two individuals working together.

Through studying the interdependent nature of creative effort between two people, my research is also contributing to the existing research on creative effort by adding a focus on a new level of analysis: dyads. Creativity research has been traditionally studied at either the individual level (Amabile, 1996) or at the team or group level (see Gilson & Shalley, 2004). My model offers a look into creative effort between two individuals, examining how each partner's level of effort is either increased or decreased through modeling and/or spiral reinforcement, and exploring how each partner's perception of the other's level of effort may influence completely different outcomes even though the partners are working on the same task, within the same environment. Additionally, my model introduces perceived similarity between two individuals as being a potential driving factor explaining the cycle of creative effort between the dyad members.

The study of dyads further offers a methodological contribution. When studying dyads, the most appropriate method of analysis (Kenny, 1996) is the Actor-Partner Interdependence Model (APIM). Relationships involving measurements taken from dyadic data will always share a certain level of connection or similarity in some of their attributes, since the responses of one partner are likely influenced by interactions with the other partner. Because of this, dyadic data

cannot be considered truly independent and cannot be analyzed as such (Fitzpatrick et al., 2015; Kenny, Kashy, & Cook, 2006). APIM takes these interdependent connections in the data into account (Kenny, 1996). While APIM itself is not a new method, a search on APIM used in the area of creativity research yields only a handful of results, none of which focus on the dyadic relationship between two individuals at the same level (see Olsson, Hemlin, & Pousette, 2012).

My model also introduces the potential role that goal orientation may play in influencing how an individual is likely to respond to and/or perceive the actions of others. While existing research has explained that an individual's goal orientation will influence how that person is likely to approach, construe, and respond to a specific achievement situation (Dweck & Leggett, 1988), little theoretical work has been devoted to understanding what role goal orientation plays in responding to or understanding the actions of other individuals. The proposed research focuses specifically on the actions of a partner—in the form of creative effort—rather than the environment itself by untangling what role goal orientation plays in forming perceptions in interdependent tasks. Whereas early work by Elliott and Church (1997) explained that goal orientation will drive how an individual interprets and engages with his/her environment, the current research takes this work a step farther by exploring how an actor will engage with and interpret the actions of a specific individual within that environment.

Practical Contributions

In addition to theoretical contributions, my research potentially contributes valuable learnings to organizations and their leaders. First, creativity researchers have long suggested that creativity is something that can be taught to employees or brought out of employees through different leadership styles, resources provided, or motivating mechanisms (Zhou & Shalley, 2001). This same line of research has also suggested that creative behavior may stem primarily

from individual personality traits and differences (Zhou & Shalley 2011). However, if supported, my model provides new insights into a potential new antecedent of creativity—the creative effort put forth by one’s partner on a particular task. Leaders can use this information to better pair individuals when assigning organizationally-related tasks that require creative effort. For instance, through understanding the role that perceived similarity may play in enhancing a situation of interpersonal mimicking or modeling, a manager may desire to pair together two similar individuals in the hope that they will feed off of one another in regards to increasing creative effort. This is especially interesting because it creates a paradox in similarity and diversity literature by potentially highlighting that different types of similarity may lead to conflicting outcomes. Research in the area of diversity explains that more diverse groups, specifically in the area of cognitive diversity (Shin et al., 2012), are likely to lead to higher levels of creativity. However, the current model, if found true, will oppose those findings within a dyadic relationship. In a practical sense, something as simple as pairing together similar individuals may be more cost effective than training leaders to exhibit particular styles and behaviors and/or providing people with motivating mechanisms or resources to increase creative behavior.

Finally, the vast majority of existing creativity research suggests that creativity acts as a driver of positive individual and organizational outcomes (Amabile, 1996; George, 2007; Shalley, et al., 2004). The small amount of work that has explored the dark side of creativity (Cropley et al., 2010) has attributed the negative aspects to unethical behavior such as dishonesty (Gino & Ariely, 2012) or as a deliberate intention to harm or deceive another individual (see Cropley et al., 2010). As a result, the extant literature seems to separate the situation from the person when it comes to describing the positive and negative sides of creativity and creative

behavior. However, if supported, my model will demonstrate that creative effort can have varying levels of outcomes, even within the same environment/situation, depending upon an individual's goal orientation. This is of practical relevance because it may help managers to better select individuals into positions that require creative effort. For example, it may be more beneficial to have an individual who possesses a learning goal orientation in a position that requires interdependent creative effort.

Structure of the Dissertation Proposal

In Chapter Two, I will further develop my model by reviewing the literature relevant to my constructs and building theory that leads to testing the relationships suggested by the hypotheses in the model. Chapter Three serves to outline my proposed method for testing the hypotheses from Chapter Two utilizing a laboratory experiment and analyzing the data via multilevel linear modeling. Next, Chapter Four will discuss the findings of the study. Finally, Chapter Five will conclude with a discussion of the findings from Chapter Four and include contributions of the research, limitations, and future directions.

Chapter 2: Literature Review and Hypotheses Development

The purpose of this chapter is to review relevant theory and develop the specific relationships to be tested in the model presented in the previous chapter. I begin my model discussion with a brief overview of the creativity and social undermining/prosocial behavior literatures, specifically targeting the aspects most relevant to the contributions of my research.

Creativity

Creativity, defined as “the development of ideas about products, practices, services or procedures that are (a) novel and (b) potentially useful to the organization” (Shalley, et al., 2004: 934), has received an ever increasing amount of attention over the past several decades. Of particular importance to the current research is that creativity is rooted in motivation theory. Motivation theory explains an individual’s willingness to exert a particular amount of effort toward a certain behavior (Pinder, 2014). Past research on creativity has explained that environmental and contextual factors, such as relationships with coworkers and supervisors, are able to increase or decrease creative behavior based on both intrinsic and extrinsic motivation. Intrinsic motivation explains the desire to engage in creative behavior for the sake of creativity itself, or the enjoyment of the creative aspect, as opposed to some outside factor (Amabile, 1996; Deci & Ryan, 1985). Extrinsic motivation explains why an individual may be externally propelled into action based on feedback or cues taken from relationships established within the work environment (Ryan & Deci, 2000).

Employee creativity is largely regarded as necessary to innovation, organizational effectiveness, and even organizational survival (Amabile, 1996; Nonaka, 1991). As such, researchers have placed a heavy focus upon understanding what factors result in creative

behavior. While there is a rich literature devoted to creativity, one specific aspect is of particular importance to the current research. This is the aspect of relationships with others as a key driver of creativity (Shalley, et al., 2004).

In a recent review, Shalley, et al. (2004) suggested that some of the most commonly studied factors related to creativity include: personality, cognitive style, characteristics of the job, organizational setting, and—most relevant to the current research—relationships with others within the organization. Shalley, et al. conceptualized relationships within the organization as contextual characteristics that influence an individual's creative behavior. The vast majority of research on the link between relationships and creativity has focused on the influence that either leadership or the team has on an individual employee's creativity (Shalley et al., 2004).

With respect to leadership, studies have explored the relationship between different types of leadership (i.e. transformational vs. transactional) and employee creativity (see Shin & Zhou, 2003). Research has also been devoted to understanding the relationship between leader behaviors (such as controlling behavior) and employee creativity (Zhou & George, 2001).

When it comes to the work team, or work group, past research has focused on the relationship that nurturing and supportive work teams have on the individual's creativity (Amabile et al., 1996), as well as how direct feedback from coworkers impacts individual creativity (Zhou & George, 2001). While this past research has greatly informed us about the contextual factors that may impact one person's creativity, it could be further enhanced by gaining a better understanding of how relationships between two individuals with a joint outcome may impact the creative effort of each of those individuals.

Therefore, of particular importance in the current research is the focus on dyadic relationships. I am interested in how the creative process may be affected when two people are partnered with one another to work on a shared task. As previously mentioned, research on the link between creativity and relationships within the organization has focused heavily on how the group or a leader impacts individual creativity (Shalley, et al., 2004). However, I am shifting this focus to how the interdependent nature of dyads influences individual creativity.

Dyads are an important focus because past research tells us that when working with a partner, as is often done when completing an organizational task, one person's behaviors, emotions, or attitudes are likely to have a direct effect on the other person's behaviors, emotions or attitudes (Cook & Kenny, 2005). As a result, the observations of one person's score on a certain variable are affected or influenced by the other person's score, and the observations are nonindependent (Kenny & Cook, 1995). Whenever this is the situation, the dyad is the appropriate unit of analysis (Cook & Kenny, 2005; Kenny & Judd, 1986). As will be discussed in further detail below, the main variable of focus in the current research is creative effort, which is conceptualized as a behavior. Therefore, it is likely that this behavior will both affect and be affected by a partner's behavior of creative effort. This will be especially true when there is an interdependent task outcome.

When focusing on dyads, there are several features that may impact the relationship and therefore need to be highlighted. First, similarity between the two individuals, defined as interpersonal similarity (Lieberman, Trope, & Wakslak, 2007), becomes a factor as the individuals will use their perceived similarity to one another to create cognitive heuristics that will make more salient comparisons in behaviors. Under conditions of greater interpersonal similarity, the individuals will be more likely to mirror or imitate the behaviors of one another

(Chartrand & Lakin, 2013). In a sense, they are likely to use each other as benchmarks, or make attempts to match or mimic each other's behavior (Ferrin et al., 2008). This perception of similarity will work in conjunction with a sense of interdependence in the dyad to help us to better understand the level of motivation that individuals have to respond positively or negatively to the actions and needs of the other individual (see Rusbult & Arriaga, 1997 for review). Thus, when an actor engages in a certain activity or behavior, the sense of interdependence, when combined with interpersonal similarity, is what will motivate the partner to respond by engaging in a similar behavior. In the current research, this interdependence will likely emerge in how one individual in the dyad responds to the other with respect to creative effort. The interdependent nature of the dyadic relationship will drive the two individuals to each put forth similar levels of creative effort toward the joint outcome.

Creative self-efficacy

With regard to the motivational aspect that inspires creative behavior, researchers have recently identified creative self-efficacy as a way of more fully understanding creative behavior (Tierney & Farmer, 2002). Creative self-efficacy is defined as the self-view that "one has the ability to produce creative outcomes" (Tierney & Farmer, 2002: 1138). The lens used to understand the relationship between self-efficacy and a behavior itself is motivation (Bandura, 1986). According to Bandura (1986), intrinsic motivation is enhanced through increasing perceptions of self-competence. Thus, higher creative self-efficacy should motivate an individual to engage in creative behavior, resulting in greater creative outcomes (Tierney & Farmer, 2002, 2004).

Wood and Bandura (1989) explained that the definition of self-efficacy includes "beliefs in one's capacity to mobilize the motivation, cognitive resources, and courses of action needed to

meet situational demands” (408). Thus, creative self-efficacy provides the internal motivation to engage in creativity-related behavior through the belief that one has the ability to succeed in producing creative outcomes and mastering the behaviors which lead to those outcomes (Tierney & Farmer, 2002).

Past research has established that creative self-efficacy has a positive relationship to creative work involvement (Carmeli & Schaubroeck, 2007), defined as “the extent to which an employee engages his or her time, effort, and resources in creative processes associated with work” (36). Creative work involvement is a broad construct and includes the individual’s time, commitment, resources dedicated, attitudes, and effort towards creative outcomes (Kark & Carmeli, 2009). While existing research has focused on this broad construct, the narrower construct of creative effort may be a more direct result of creative self-efficacy. As a narrower construct, creative effort is particularly important as an outcome of creative self-efficacy because it specifically defines what is within an individual’s immediate control, and thus helps distinguish why two individuals, even if given the same time constraints and resources, may have different outcomes or results. In summary, the broader construct of creative work involvement is more contextual and not necessarily under one individual’s control. The effort component is what captures the aspect of creative work involvement that is actually malleable and within the direct control of an individual, and thus will be examined in this research.

Creative effort

Creative effort is defined as “the pro-active pursuit and learning of new ideas and approaches to improve one’s creative performance” (Hirst, van Dick, & van Knippenberg, 2009: 964). Past research on creative effort has found that it entails both persistence and investment of effort (Hirst van Dick, & van Knippenberg, 2009). This investment stems from both within the

individual for the sake of mastering complex and uncertain tasks, as well as cues taken from the external environment which act as signals of expected behavior (Elliot & McGregor, 2001; Fisher & Ford, 1998). Therefore, creative effort is sparked by both intrinsic motivation (i.e., the investment stemming from within the individual) and extrinsic motivation (i.e., the investment stemming from signals within the external environment, particularly from one's partner in a dyadic relationship).

While past research has linked creative self-efficacy directly to creative work involvement (Carmeli & Schaubroeck, 2007) there has been little empirical evidence specifically linking individual creative self-efficacy to actual engagement in a specific creative behavior, such as creative effort.

Additionally, past research has explained that general self-efficacy is positively related to actual engagement in the activity associated with that self-efficacy (Bandura, 1986). In the present research, effort is an aspect of creativity that is in the direct control of an individual; it is what he/she can actually change. Therefore, using the logic of self-efficacy relating to involvement in a task, I hypothesize the following:

H1: Actor (partner) creative self-efficacy will be positively related to actor (partner) creative effort.

I next look to the interdependent nature of creative effort between two individuals within a dyad. There are two theoretical reasons to expect that actor and partner creative effort will be positively related in dyads. The first is spiral reinforcement. Early work by Zand (1972) explained that spiral reinforcement is defined by a behavior, action, or feeling that is reinforced between one or more group members. Spiral reinforcement is likely to occur when two individuals enter into a task with a similar goal in mind and the reinforcement will continue until

there is a period of “marked or prolonged disconfirming behavior” from one member (Zand, 1972: 238).

The interaction created by shared tasks in a dyadic relationship likely creates a situation of mutuality and spiral reinforcement when it comes to perceptions and behaviors. Ferrin et al. (2008) explored spiral reinforcement models of trust perceptions and cooperation in dyadic relationships, and concluded that dyadic relationships are based on the idea of mutuality. This mutuality suggests that one party’s behaviors and/or perceptions are likely affected by that of the other party. This effect of one person’s perceptions on the other person’s perceptions acts as a “causal motor that drives the spiral (163)” and reinforces the behavior or perception between the two individuals. Based on these findings, when exploring creative effort in dyads, it seems probable that the mutuality of the relationship (Ferrin et al., 2008) as well as the common, joint goal (Zand, 1972) will create a spiral of creative effort between the two individuals.

The second theoretical reason to expect a positive relationship between actor and partner creative effort in dyads is due to the concept of modeling. When working in dyads, individuals directly encounter a certain level of expectations. These expectations stem from the behaviors observed and signals inferred by observing the partner in the dyad. In turn, these expectations will guide the actor to mimic the behaviors of the partner (Bandura, 1977). In fact, based on principles of learning, Bandura (1977) explained that human behavior is often developed through modeling. When an individual works closely with a partner, he/she will directly observe the behaviors of that other person. As a result, the individual will form a conception of how their own individual behavior patterns should be formed. These observations, in turn, serve as a guide for future action, resulting in a pattern of modeling.

Furthermore, Bandura (1977) explained that when an individual observes others engaging in a behavior, this situation can serve as a strong driver in reducing any threat or risk that may be associated with personally engaging in that behavior. This reduced perception of risk will motivate the individual to model behaviors similar to that of the people being observed. Relevant to the current research, the potential for observation in a dyadic relationship may be particularly strong. Through the principles of modeling, it is probable that one individual will shape his/her actions through direct observation of the other person. This will result in a positive relationship between the actor's and the partner's creative effort. It is important to note that modeling and spiral reinforcement work both separately and in conjunction to influence creative behavior between the dyad members. Modeling is likely the mechanism behind the influence within the same round of a task being completed while spiral reinforcement may work to explain the relationship between rounds. Thus, individuals are likely to mimic the behavior of one another in real time, while spiral reinforcement will work to solidify the relationship across time.

Considering the logic of spiral reinforcement combined with modeling, when the behavior at hand is engaging in creative effort, I hypothesize that there will be a creative effort spiral between two individuals in a dyadic relationship such that the parties' creative efforts are positively related.

H2: Actor (partner) creative effort is positively related to partner (actor) creative effort.

Similarity

In line with modeling or mimicking behavior, one potential moderator of the relationship proposed in hypothesis 2 is interpersonal similarity. Early work on similarity proposed that when an individual perceives another individual to be similar to him/herself, this conveys social

closeness (Heider, 1958; Tesser, 1988). This similarity can be derived from similarity in gender, social class, attitudes, personality, values, life experiences, age, etc. (Tesser & Campbell, 1980).

Research on interpersonal similarity is rooted in both construal level theory and motivation theory. Construal level theory (Liberman et al., 2007; Trope, Liberman, & Wakslak, 2007) proposes that, based on social closeness, or psychological distance, people form mental representations of others. If an individual is perceived as being similar to oneself, even if just based on one aspect (i.e. gender or age), we form judgments that the other person is similar to us in several aspects (Liberman et al., 2007). As such, we assume that we know how that individual will act in various situations and how they expect us to act in those situations. On the other hand, when another person is perceived as dissimilar, we use higher-level construals to form our judgments because we do not assume we understand the experiences of that individual. In this situation, we are unaware of how the individual will behave in various situations and we are unsure of how they expect us to behave in those situations (Liberman et al., 2007).

When individuals are similar to us, we use lower-level construals to form judgments about them and we are motivated to behave similarly to that individual (Chartrand & Lakin, 2013). This motivation is known as behavioral mimicry (Chartrand & Lakin, 2013). Recent research by Chartrand and Lakin (2013) explained that behavioral mimicry is often spontaneous and subconscious. It can happen even when there is a minimal perception of similarity between two individuals but as two people deem themselves more similar to one another, the likelihood of mimicry increases.

Finally, research by van Baaren et al. (2003) on mimicry and self-construal found that perceiving oneself as similar to another person drives oneself to feel fundamentally connected to that person. This fundamental connection will encourage the individual to assimilate and

integrate with that individual. This assimilation and integration will transpire in behavioral mimicry. Specifically, the researchers explained that when individuals perceive similarity between themselves and others, they are motivated to behave similarly to those others when placed within the same environment or situation.

In conjunction with research findings based on perceived similarity and mimicking behavior, I hypothesize the following:

H3: The positive relationship between partner (actor) creative effort and actor (partner) creative effort will be moderated by the actor's (partner's) perceived similarity to the partner (actor) such that when perceived similarity is high, the relationship will be stronger and when perceived similarity is low, the relationship will be weaker.

An interesting area to explore is whether actor perceptions of partner creative effort might spur the actor to have positive or negative perceptions of the partner's actions or behaviors. Of particular interest is whether or not perceptions of a partner's creative effort may create attributions of competition or cooperation, specifically in the form of social undermining and/or prosocial behavior. One potential way to explore this idea is through a review of the relevant goal orientation literature. In the following section I discuss goal orientation's relevance to the current research, and then explain how it may play a moderating role in the perceptions that one dyadic member forms of the other's behavior and/or intentions.

Goal Orientation

Goal orientation, originally positioned within motivational theory, proposes that the manner in which individuals pursue their goals will drive the way in which they interpret, perceive, and react to events (Dweck, 1989; Dweck & Leggett, 1988; Heyman & Dweck, 1992, Elliot & Church, 1997). As suggested by Pieterse, van Knippenberg, and van Dierendonck

(2013), an individual's goal orientation reflects how that person is likely to react in an achievement situation within the organization. Previous research demonstrates that individuals have a natural tendency to focus more on a) achieving their goals through proving a record of good performance (i.e. performance orientation), or b) bettering themselves through increasing competence (i.e. learning orientation) (Pieterse, et al., 2013). I predict that of each of these types of goal orientation will act as a moderator between creative effort and different outcome variables, mainly perceptions of social undermining and prosocial behavior.

Performance Orientation

Going into each type of goal orientation in more detail, I begin with performance orientation, in which the individual places a strong focus on portraying the image of being competent or avoiding negative judgments of competence (VandeWalle, 1997). With a higher performance goal orientation, individuals are likely to avoid challenging situations and/or avoid situations which are deemed as risky (Nicholls, 1984) and therefore put them at risk of looking incompetent. Due to the nature of seeking out new ways of learning and seeking out new approaches to one's work, creativity and creative effort entail a certain amount of risk (Shalley, et al., 2004). It therefore seems likely that an individual who possesses a higher performance orientation may not evaluate or react favorably to the higher levels of creative effort from a partner. Furthermore, VandeWalle (1997) found that individuals possessing a performance orientation are naturally more likely to view challenging or new situations as competitive. Therefore, the creative effort stemming from the partner will likely be viewed as a threat or a negative interpersonal interaction. Additionally, as explained by Dweck (1989), individuals who had a higher performance goal orientation held the belief that their competence could not be increased. As a result, when an individual's partner engages in higher levels of creative effort,

this behavior may be deemed as threatening or competitive since the individual with the high performance goal orientation will believe that he/she cannot increase his/her own competence and therefore will risk looking less competent than the partner. Finally, work by VandeWalle (1997) found that, with respect to motivation theory, individuals with a high performance goal orientation are more likely to adopt extrinsic motivation as their primary way of achieving goals. Meaning, the effort from these individuals is more likely to be derived from outside sources such as manager evaluations of performance. Therefore, they are not driven to increase effort through a process of matching or exceeding another person's effort based on the enjoyment of the task alone.

It is important to note that past researchers have positioned having a high performance goal orientation as an antecedent preventing an individual from engaging in creative activity (Gong, Huang, & Farh, 2009). However, as Shalley (1991) explained, creativity within the organization is often a necessary process as problems and challenges arise. These challenges must be addressed as part of one's job tasks. Since creative involvement in organizationally-related tasks is often not something an individual has control over, it seems logical that goal orientation may play a role *after* creative effort engagement. Therefore, I take the position in the current research that once dyad members are required to engage in creative effort, goal orientation will play a moderating role in explaining why and how one reacts to, judges, or perceives creative effort from others. Specifically, I suggest that high performance goal orientation will explain why one may perceive interdependent creative effort with a partner as a negative or personally competitive experience.

Social Undermining

Research in social psychology provides possible outcomes which may result as a consequence of an individual's goal orientation. I begin with a discussion of social undermining and how a performance orientation may influence perceptions of it.

Social undermining, defined as “behavior intended to hinder, over time, the ability to establish and maintain positive interpersonal relationships, work-related success, and favorable reputation” (Duffy, Ganster, & Pagon, 2002: 332), has been identified as a negative interpersonal interaction. While social undermining is characterized as an intended behavior, Miller (2001) explained that the behavior does not have to actually produce physical harm. Instead, what is necessary is that another individual (in this case, the actor) perceive that the partner has negative motives for engaging in a certain behavior. Crossley (2009) echoed this claim of perception being key and found that social undermining is in fact often perceived as one person engaging in a behavior or action with the motive of self-promotion. Social undermining can also be experienced as a perception of interpersonal competition (Dunn & Schweitzer, 2008). Considering that social undermining is based on perceptions, and that goal orientations help individuals in achievement situations to interpret other's actions, it seems probable that goal orientation may drive perceptions of the motives behind the partner's engagement in creative effort.

One important assumption to note is that goal orientation may be especially important in assessing intent in new (dyadic) relationships. If individuals have previous knowledge of the way one another works, actions may be interpreted based more on true intentions than perceived intentions or motives. For example, if an actor knows that the partner needs to reach a certain level of performance to keep his/her job, the creative effort stemming from the partner, while

self-promoting, may or may not be perceived as socially undermining toward the actor. Previous research has explored new versus established relationships through the dimensions of bandwidth and richness (Lewicki, McAllister, & Bies, 1998), which help to explain the previous experience two individuals have with one another. Lewicki et al. (1998) proposed that more mature relationships are characterized by greater bandwidth and richness. As a result, attitudes and behaviors toward one another are defined by an actual knowledge of how a person conducts him/herself. If relationships are not characterized by bandwidth and richness, individuals must rely on their own perceptions that are obtained through “specific uniplex linkages,” or one-time interactions (Lewicki et al., 1998). In line with this reasoning, if two individuals have not previously worked together, each individual’s trait goal orientation is more likely to drive the resulting perception of the intention behind the other’s engaging in higher levels of creative effort.

As previously stated, when an individual holds a high performance goal orientation, he/she is likely to view actions from others as more threatening or competitive (VandeWalle, 1997). These individuals also naturally prefer to not engage in risky or challenging situations (Button, Mathieu, & Zajack, 1996). When considering that creative effort presents a certain level of risk (Shalley, et al., 2004), combined with the logic that social undermining is characterized by a perception of negative, competitive, and harmful interpersonal interactions (Dunn & Schweitzer, 2008), high performance goal orientation may moderate the relationship between the partner’s level of creative effort and the actor’s perception of partner social undermining. Therefore I hypothesize the following:

H4a: In new relationships, actor (partner) performance goal orientation will moderate the relationship between partner (actor) creative effort and actor (partner) perceived social undermining such that the higher the performance orientation, the stronger the relationship between creative effort and perceived social undermining.

Learning Orientation

The other type of goal orientation is learning goal orientation. With a learning goal orientation, individuals are motivated to gain a better understanding of and try new things (Dweck, 1989). These individuals are more prone to seek out difficult tasks and they thrive in challenging situations (Button, Mathieu, & Zajack, 1996). As a result, individuals with a high learning goal orientation respond positively to risks and new ways of doing work.

Furthermore, a high learning goal orientation is driven by intrinsic motivation, or desire to put forth effort due to interest in the task itself (Dweck & Leggett, 1988) and potentially makes the process of matching behavior between two people more likely. An actor with a high learning goal orientation may use the partner as a benchmark to imitate actions and behaviors to try new things and learn new skills. Moreover, individuals with a learning goal orientation are more likely to invest effort in a task in order to master the task itself. Considering that I have characterized the interdependent nature of creative effort as a reinforcing model of engagement in creative effort from each person in the dyadic relationship, it is logical that a high learning goal orientation will cause an individual to be more likely to form the perception that the partner is in fact working with him/her to master the challenge at hand. This perception of helping behavior or working together is driven by the learning goal orientation.

In the past, learning goal orientation has been studied and positioned as an antecedent encouraging an individual to engage in creative activity (Gong, Huang, & Farh, 2009). As Shalley (1991) explained, creativity is a necessary process in any given organization as unusual

demands and tasks arise. Therefore, when individuals do not have a choice about whether or not they are faced with a creative task, it seems logical to study the role that the learning goal orientation will play after creative effort in a dyad has begun.

Finally, according to Dweck (1989), as opposed to individuals with a high performance goal orientation, those with a high learning goal orientation believe that they can increase their skills and competence. Again, this may increase the likelihood that an actor with a high learning goal orientation may use their partner as a benchmark or role model to mimic his/her behavior in an effort to increase the actor's knowledge and skills relevant to the task at hand. This may further form the perception of cooperation as the actor with high learning goal orientation is able to use his/her partner as a learning tool.

Prosocial Behavior

Prosocial behavior is defined as “behavior which is (a) performed by a member of an organization, (b) directed toward an individual, group, or organization with whom he or she interacts while carrying out his or her organizational role, and (c) performed with the intention of promoting the welfare of the individual, group or organization toward which it is directed” (Brief & Motowildo, 1986: 711). Similar to social undermining, prosocial behavior is often based upon perceptions of whether or not the target deems the behavior as helpful, supportive and cooperative (Puffer, 1987).

While perceived social undermining is thought to go hand in hand with negative competition (Dunn & Schweitzer, 2008), prosocial behavior is regarded as going hand in hand with cooperative behavior, positive interactions, and low perceived peer competition (Puffer,

1987). As such, when compared to social undermining, perceived prosocial behavior involves a perception of a positive interpersonal interaction.

Of particular relevance to the current research is that prosocial behavior, when enacted in the category of a helping or cooperative behavior, is especially recognizable when it is “supplemented by innovative and spontaneous behaviors initiated by organizational members in reaction to unanticipated events” (Katz, 1964: 132). Circling back to the unique and innovative side of creative effort (Amabile, 1996; Nonaka, 1991), it seems plausible that when a partner engages in creative effort, the actor may perceive this as a cooperative or helping form of prosocial behavior. Since a higher learning goal orientation will cause an individual, at least to some extent, to be more likely to interpret innovation actions on behalf of a partner as cooperative (Katz, 1964), and that creative effort is highly related to unique, innovative behavior (Amabile, 1996; Nonaka, 1991), it seems likely that creative effort from a partner would be perceived as prosocial behavior to the actor when the actor particularly likes challenging, risky, experiences—as one does with a high learning goal orientation. This leads to the following hypothesis:

H4b: In new relationships, actor (partner) learning goal orientation will moderate the relationship between partner (actor) creative effort and actor (partner) perceived prosocial behavior such that the higher the learning orientation, the stronger the relationship between creative effort and perceived prosocial behavior.

Performance Outcomes

Perceived social undermining and prosocial behavior are likely to influence subsequent behaviors both toward the partner and the task itself. Two such behaviors may be organizational citizenship behavior, in the form of future willingness to help the other person, and individual task performance, both of which are aspects of overall job performance.

Job performance is defined as "those actions and behaviors that are under the control of the individual and contribute to the goal of the organization" (Rotundo & Sackett, 2002: 66). Job performance has been studied as task performance, organizational citizenship behavior (OCB), and counterproductive work behavior (CWB) (Rotundo & Sackett, 2002; Sackett, 2002; Viswesvaran & Ones, 2000). While OCB and CWB are often factored into the measure of job performance, task performance is more closely related to both what is required of the employee as well as what is easily quantifiable (Doherty-Sneddon et al., 1997). The current research is focused on an interdependent creativity task. As a result, I will focus exclusively on two of the three aspects of job performance, task performance and interpersonal helping as a form of OCB.

The Norm of Reciprocity

Gouldner's (1960) norm of reciprocity proposes that an individual's actions are often defined as repayments for benefits received from another person. The norm of reciprocity is thought to be a universally held belief tying individuals to two demands: "(1) people should help those who have helped them, and (2) people should not injure those who have helped them" (Gouldner, 1960: 171). Gouldner (1960) explicitly discussed relationships between two individuals, or dyads, when outlining the norm of reciprocity, stating that when two individuals have a close relationship, there is mutual dependency. As a result of this dependency, these two individuals are likely to share a higher level of the norm of reciprocity. Furthermore, the reciprocity made by an actor should be "roughly equivalent" to the benefit that was received from the partner. Gouldner (1960) further explained that equivalence can have two forms: (1) the actions exchanged are equal in value (i.e. tit for tat) or, (2) the actions exchanged are equal in form (i.e. tat for tat).

Organizational Citizenship Behavior (OCB)

One form of positive behavior that an individual may engage in is organizational citizenship behavior (OCB). OCB is defined as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate, promotes the efficient and effective functioning of the organization” (Organ, 1988: 4), and has been conceptualized as a specific type of prosocial behavior (Davila & Finkelstein, 2013). While prosocial behavior is a general umbrella term that describes actions and behavior, or perceived actions and behaviors, which are aimed at benefiting others in general, OCB is specifically directed toward benefiting an organization or a particular individual within an organization (Davila & Finkelstein, 2013). As such, I have chosen OCB, and specifically helping, as an individual outcome stemming from an actor’s perception of prosocial behavior stemming from a dyadic partner.

Organizational citizenship behavior has been categorized several ways over the years (Ilies et al., 2009). Of particular relevance to the current research is the categorization of OCB on the basis of the intended beneficiary of the behavior, such that OCB is either targeted toward specific individuals or targeted toward the organization as a whole (Williams & Anderson, 1991). The former is known as OCB-I; the latter is known as OCB-O (McNeely & Meglino, 1994; Williams & Anderson, 1991). Forms of OCB-I include altruistic behavior, helping, and cooperation (Williams & Anderson, 1991). Though there are many sub dimensions of OCB-I, given that this research will be conducted in the lab setting, I will be focusing exclusively on helping.

Applying the norm of reciprocity, actors who perceive higher partner prosocial behavior are likely to feel obliged to “repay” this benefit. In line with Gouldner’s (1960) theorizing, the

repayment is likely to be similar to the benefit received. The benefit in the case of the present research is a perception of helping behavior or cooperation. As such, I hypothesize that when a partner perceives prosocial behavior from an actor, he/she will repay that benefit through engaging in future helping.

H5a: There will be a positive relationship between actor (partner) perceived partner (actor) prosocial behavior and actor (partner) helping directed toward partner (actor).

On the other hand, as Gouldner (1960) explained, the desire or obligation to return a benefit received will only be activated when an individual perceives the action of another as a benefit. In the case that the actor perceives that the partner is engaging in an act of social undermining, the relationship between actor's perceived partner prosocial behavior and helping may or may not still hold true. While I do not suggest that a perception of social undermining will lead to an opposite outcome (i.e. interpersonal deviant behavior), I am hypothesizing that the social undermining perception will lessen the likelihood of the actor returning a helping behavior in the future. Therefore, contrary to the positive relationship between perceived prosocial behavior and OCB-I, I hypothesize that there will be a negative relationship between perceived social undermining and helping.

H5b: There will be a negative relationship between actor (partner) perceived social undermining and actor (partner) helping directed toward partner (actor).

Task Performance

Past researchers have explained that research on the link between creativity and job performance is lacking (Gilson, 2008). Task performance is defined as the extent to which individuals cultivate ideas and/or physical outcomes (Amabile, 1998). The vast majority of

studies exploring this relationship have been limited to the academic setting (Gong, Huang, & Farh, 2009). Furthermore, studies have focused largely on the link between creative thinking and student performance (Chamorro-Permuzic, 2006; Gilson, 2008). The current study looks at both individual and task performance as outcomes.

Individual Task Performance

Though a direct relationship between prosocial behavior and task performance has been explored (see Puffer, 1987; Baruch, 1996; Baruch, et al., 2004), these studies have focused almost exclusively on the relationship between an individual engaging in prosocial behavior and that engagement in prosocial behavior resulting in an increase in his/her own task performance. Instead, the current study explores how an actor's perception of a partner's prosocial behavior will actually impact the actor's task performance.

The relationship between a perception of another person's helping, or prosocial behavior, and an increase in one's own task performance can be explained in the area of emotions. It has been found that positive social interactions are significantly related to greater group task performance. For example, Deci (1975) explained that positive emotions are related to increased task performance as "intrinsic motivation...appears to motivate effective performance" (p. 227). Additionally, Harackiewicz (1979) found a significant relationship between enjoyment of completing a task and increased performance on that task. As previously discussed, prosocial behavior encompasses a feeling of perceived cooperation (Puffer, 1987) which is closely tied to helping. Perceived prosocial behavior also creates a sense of a positive relationship between dyad members (Puffer, 1987) and previous research on emotions and performance demonstrated that there is a significant relationship between organizationally-related outcomes and affective reactions (Weiss & Cropanzano, 1996). As such, it seems logical that if, when working on a joint

task, an individual perceives cooperation and helping from a partner, and that this results in a feeling of a positive interaction, that interaction of working on a task should lead to more enjoyment of the task. One thing that is important to note is that the perceptions of prosocial behavior and social undermining can differ between the partners, even within the same dyad. Therefore, if the interdependent task is more enjoyable, specifically as perceived by one person in the dyad, that person should have increased task performance. I hypothesize the following:

H6a: There will be a positive relationship between actor (partner) perceived prosocial behavior and actor (partner) task performance.

In addition to recent research focusing on the link between perceived prosocial behavior and performance outcomes, research has also begun focusing on a potential link between perceived social undermining and performance. Past researchers have theorized that social undermining may lead to effort reduction (Kidwell & Bennett, 1993). In turn, reduced effort should lead to lower task performance (Kidwell & Bennett, 1993; Chiaburu & Harrison, 2008).

However, unlike the relationship with prosocial behavior, empirical assessment of a direct relationship specifically between perceived social undermining and task performance is lacking. Instead, studies have focused on individual types of social undermining behaviors. For example, Porath and Erez (2007) explored a relationship between rudeness and task performance. They found that when an individual experiences rude behavior, this experience causes negative emotions. Similar to the research on positive emotions and performance (Weiss & Cropanzano, 1996), negative emotions have been shown to negatively impact task performance (Ellis et al., 1997). In fact, negative emotions are likely to be extensively more powerful than positive emotions when it comes to impacting performance (Weiss & Cropanzano, 1996). However, emotions are not the only explanatory factor when it comes to the research

conducted on rudeness and performance. Porath and Erez (2007) also explained that when individuals perceive rude behavior, they are distracted from the task at hand. Instead, they will use cognitive resources to assess the intent of the rudeness which detracts from the resources available to engage in other job related tasks (Porath & Erez, 2007).

Rudeness is closely tied to the current research in that Porath and Erez (2007) define rudeness as behaviors that are either actually, or perceived as, insensitive and disrespectful. This definition is closely tied to social undermining behaviors which are defined as behaviors that hinder relationships between two individuals (Duffy, Ganster, & Pagon, 2002). Since it seems likely that insensitive and disrespectful behaviors would function to hinder interpersonal relationships, rudeness could be viewed as a specific type of social undermining behavior. If this is the case, I suggest that rude behaviors and the broader perception of social undermining will function similarly when it comes to task performance. Again, it is important to note that this relationship may only apply to individual task performance as the actor and partner may perceive differing levels of social undermining and prosocial behavior, based on his/her goal orientation. Therefore, I hypothesize the following relationship between perceived social undermining and task performance:

H6b: There will be a negative relationship between actor (partner) perceived social undermining and actor (partner) task performance.

Dyadic Task Performance

While perceptions of another person's behavior is likely to impact one's own task performance, the picture on dyadic effort would not be complete without mentioning how creative effort in a dyad is likely to influence dyadic task performance.

Early work in the areas of motivation and self-determination theory has provided evidence that an increase in individual effort leads to an increase in that person's performance (Brown & Leigh, 1996; Blau, 1993, Gardner et al., 1989). In line with these findings, it seems plausible that when individuals in a dyadic relationship put forth effort on a joint task, overall task performance should increase. Specifically, when an actor and a partner engage in a cycle of creative effort, that effort should lead to increased creative dyadic performance on an interdependent task. As such, I hypothesize the following:

H7: There will be a positive relationship between actor and partner combined creative effort on a joint task and dyadic creative performance on that task.

In summary, the proposed model describes how creative effort in a dyadic relationship can have conflicting outcomes. The hypotheses describe a relationship which is interdependent in nature, beginning with individual self-perceptions leading to perceptions of another person's behavior and resulting in specific organizational outcomes. Actor (partner) self-efficacy is positively related to actor (partner) creative effort, which in turn is positively related to partner (actor) creative effort. This relationship is moderated by the level of interpersonal similarity between the dyad members. The creative effort from the partner is related to perceptions of social undermining and/or prosocial behavior, moderated by the actor's goal orientation. These perceptions in turn determine potential outcomes such as interpersonal organizational citizenship behavior (in the form of helping) and/or task performance.

Motivation theory and the norm of reciprocity provide much of the foundation for the proposed relationships; each member of the dyad engages in creative effort with the intent of bettering the joint outcome. However, this effort may be interpreted based on the way each individual approaches achievement situations. Testing the proposed model relationships helps to

further unpack the black box of creativity and extend theory on creativity by focusing on the outcomes of creative effort in dyads.

CHAPTER 3: METHODS

My research focuses on studying perceptions and behaviors of peers within a dyadic relationship. I predicted that (a) individual creative self-efficacy would predict individual creative effort; (b) actor (partner) creative effort would be positively related to partner (actor) creative effort; (c) similarity between the actor and partner would moderate the relationship between actor and partner creative effort such that with greater similarity, the relationship would be stronger; (d) actor (partner) goal orientation would influence the relationship between partner (actor) effort and actor's (partner's) a perception of social undermining and prosocial behavior; and (e) the actor's (partner's) perception of social undermining and prosocial behavior would relate to actor (partner) task performance and organizational citizenship behavior. Several of these relationships were predicted to likely be most evident in new relationships, thus, I utilized a laboratory experiment design. The laboratory design allowed me to more clearly observe the impact of different hypothesized relationships in early or newly established dyads. This chapter is devoted to explaining the specifics of my laboratory study and how it was used to validate the hypothesized relationships.

Research Design

Testing of my proposed model was conducted in the laboratory setting. The experimental study involved two rounds of dyads working on a joint creativity task, and individually answering a series of questions both before and after each round. These rounds were followed by a word association exercise, which was used to measure actual task performance. Finally, the individuals were asked questions regarding whether or not they would be willing to help the partner on a future task as well as if they would like to work with that person again in the future. The flow of the lab design is included in Table 1 below.

Table 1 – Lab Design

Task	Estimated Time to Complete	Description/Questions
Survey 1	7 minutes	<ul style="list-style-type: none"> • To what extent have you worked with this person before? • Scales (creative self-efficacy, goal orientation) • Controls (openness to experience, conscientiousness, agreeableness, risk aversion, dispositional envy, extraversion, creative identity)
Task 1	10 minutes	<ul style="list-style-type: none"> • Designing the student lounge in the new Lindner College of Business building; or • Designing the greenspace on the roof of the new Lindner College of Business
Survey 2	3 minutes	<ul style="list-style-type: none"> • Scales (creative effort (self), perceived partner creative effort, perceived similarity) • Percentage of effort (out of 100%) allocated to each dyad member
Task 2	10 minutes	<ul style="list-style-type: none"> • Designing the student lounge in the new Lindner College of Business building; or • Designing the greenspace on the roof of the new Lindner College of Business (whichever task was not completed yet)
Survey 3	5 minutes	<ul style="list-style-type: none"> • Scales (creative effort (self), perceived partner creative effort, perceived partner prosocial behavior, perceived partner social undermining) • Percentage of effort (out of 100%) allocated to each dyad member • Personal perception of cooperation/competition • Emotions (PANA)
Word Association	5 minutes	<ul style="list-style-type: none"> • Word association task
Survey 4	5 minutes	<ul style="list-style-type: none"> • OCB (measured by willingness to help the other person on another task for which you will not get credit) • Emotions (PANA) • Personal perception of cooperation/competition • Desire to work with the person again • Percentage of effort (out of 100%) allocated to each dyad member • Demographic variables (major, age, gender, year in school, ethnicity)

Lab Experiment

The current research focuses specifically on interdependent dyadic relationships and explores causal relationships between observed variables. The study measures perceptions and behaviors of both the partner and the actor. As such, a laboratory setting is appropriate. Lab studies maximize precision when measuring behaviors (McGrath, 1982) and they are especially well suited for testing relationships dealing with phenomena such as reciprocity and/or interdependence (Falk & Heckman, 2009).

Furthermore, in order to gain a solid understanding of fundamental processes and causal relationships, it is advantageous to isolate situations and events. In order for this isolation to occur, the researcher needs to have a maximum level of control over the research setting. Specifically, van den Bos (2001) explained that experimental studies provide the control necessary to set up these isolated situations.

In the current study, the event that needed to be isolated was the occurrence of a dyadic creative task between two individuals. The laboratory setting provides the level of control to establish this creative event, which could have proven quite difficult to do in the context of the field setting. Falk and Heckman (2009) called this controlled variation and explained that “controlled variation is the foundation of empirical scientific knowledge since the laboratory allows tight control of decision environments” (p 535). The researchers further explained that this allows the experimenter to control the order of events, the information each member of the dyad possesses when behaviors occur, and the exact outcomes that are at stake. This level of control thus allows for “the testing of precise predictions” (Falk & Heckman, 2009; 536).

The lab design included two creativity tasks, four surveys, and one word association task. A thorough search for creativity tasks failed to reveal tasks that were both short enough for and relevant to the design and participants of the current study. As a result, both creativity tasks were created specifically for the current research. The responses to the two tasks were collected but were not coded for creativity because creative effort itself was captured using measures on the surveys. Rather, the creativity tasks were used to prime creativity—specifically, creative effort.

As will be explained in further detail below, each of the four surveys were completed individually. Though each included measures for several different variables, they were structured such that only one question was shown on the screen at a time. This set up was used as a way to address potential timing effects and biases in responses and has been a suggested design in past research on web survey design (Couper, Traugott, & Lamias, 2001).

Participants.

Participants in the current study were drawn from a population of the University of Cincinnati who were at least 18 years of age. In exchange for their participation in the study, participants received lab credits, which are required for undergraduate business courses at the university.

There were a total of 290 participants or 145 dyads. Due to initial registration issues with the lab technology system, SONA, individuals were able to participate in the study more than once. To minimize bias in the data, it was necessary to eliminate any dyad which included even one individual who had previously participated. In order to do this, the researcher added a question to the end of the final survey asking if the individual had previously taken part in the study. In addition, a sign-in sheet was kept for each participant and when a participant came into

the lab for the duplicate participation, the lab assistant made note of the computer number and start time of the study to flag that response once the study was finished. Once all data was collected and all dyads with duplicate participants were removed, 262 total participants, or 131 dyads, were included in the final sample. 45% were women and 55% were men. The ages of participants ranged from 18 to 48 with the average age being 20 ($SD= 3.18$).

Recent research from Du and Wang (2016) has suggested that any dyadic analysis utilize a sample size of at least 50 dyads. Due to concerns about potential singletons (PS), or cases where there is missing data due to only one partner responding to a question, the number of dyads should be increased. The dyadic sample size should thus be increased to the point that when $PS=50\%$ the research should include data from at least 50 dyads. This means that if the research includes data from 100 dyads, the number of dyads can allow missing data for up to 50% of the pairs. Taking this possibility into consideration, I was aiming for the higher end of Du and Wang's (2016) sample size suggestions. While I was aiming to include data from 150 dyads, my inclusion of 131 dyads well surpasses the minimum of 100, falling comfortably between the minimum and my optimally desired level.

Procedure.

The research was conducted in the University of Cincinnati Lindner College of Business Consumer and Market Insights Lab. Each dyadic pair answered several surveys and participated in two separate dyadic creativity tasks and one word association task. Table 2 shows specific measures that were captured during each round in the lab.

Table 2 – Survey data collected per time period

Survey Measures	Time 1 (before task 1)	Time 2 (after task 1)	Time 3 (after task 2)	Time 4 (after word association task)
Creative Self-Efficacy	X			
Goal Orientation	X			
Creative Effort-Self		X	X	
Perceived Creative Effort-Partner		X	X	
Perceived Similarity		X		
Perceived Social Undermining			X	
Perceived Prosocial Behavior			X	
Helping (OCB)				X
Desire to Work With Partner Again				X
Control Variables	X			
Demographic Variables				X

When participants first entered the lab, they were randomly assigned a partner in order to form a dyad. Each dyad was assigned to two separate, side-by-side computers with a shared workspace between them. Before the experiment began, each partner individually answered a series of questions on his/her assigned computer. These questions were answered via Qualtrics, an electronic survey tool. The questions included the following: a scale measuring creative self-efficacy and a scale measuring goal orientation. It also included the control variables: the extent to which each partner knows/has worked with the other partner previously, risk aversion, openness to new experience, conscientiousness, agreeableness, creative identity, envy, and introversion/extraversion. This portion of the study was timed and took approximately 7 minutes (see Appendix 1 for Survey 1). It is important to note, and will be explained in further detail, that even though all control variables were measured, only the extent to which the partners have

worked together previously and individual creative self-efficacy were used as controls in testing the current model. All other variables were collected for future research and alternative exploration.

Next, the dyads were presented with the first creativity task. As previously mentioned, this task was created specifically for the current study and was not coded for actual creativity but was instead used as a prime for creative effort. In this task, the individuals were told to imagine that they have been assigned to the creative design team for the new Lindner College of Business building. This design was used in an effort to make the lab study more relevant and therefore more realistic. There were two separate creative design tasks (both of which were created specifically for the current study) in which each dyad participated. One task asked the dyads to design the new student lounge for the Lindner College of Business building. The other task required the dyads to design a greenspace for the roof of the new building (see Table 3 and Table 4 for creativity tasks). In order to eliminate potential copying between groups within the room, and therefore encouraging more focus within the dyad, some dyads worked on the student lounge task first and others worked on the greenspace task first. By the end of the study, each dyad completed both tasks. The partners were given 10 minutes to complete the task they were assigned. Each of these tasks were completed on a shared piece of paper, rather than on the computer. This both encouraged and required the dyads to work together on the task rather than simply completing the task individually and combining their ideas. The dyad's output was collected at the end of the 10 minute period. As previously stated, this output was not coded for creativity because creative effort was captured using survey measures. These tasks served strictly as a creativity prime.

In the directions for the task, the dyads were primed on the use of organizational creativity. For example, statements such as “we want ideas that are novel and unique,” and “we desire our new building to be cutting edge” were used. This priming did not explicitly instruct the dyads to use creativity in crafting their ideas, but rather used wording relating to creativity. Furthermore, this wording primed not only creativity in the sense of novelty and uniqueness, but also usefulness. This was expressed in the fact that the dyads were designing an actual building and that the ideas were going to be presented to the dean.

Table 3– Task 1: Designing the Student Lounge in Lindner College of Business Building

The Lindner College of Business is in the process of designing a student lounge for the new building which will open in 2019. You and your partner have been assigned to submit ideas regarding what the new student lounge should include. Before completing this task, please read the following statement from Dean Szymanski:

*“The University of Cincinnati has rebranded itself in the past several years. Each of our colleges adds something exceptional to the university as a whole. As a result, in planning the new student lounge for The Lindner College of Business building, we want ideas that are **novel and unique**. We desire our new building to be **cutting edge** and we especially want the student lounge to **set the benchmark** for all new buildings not only on UC’s campus but also nationwide. We are looking to build a student lounge that is **a one of a kind setting that truly pushes the boundaries for students.**”*

Please work with your partner to create and submit ideas that match the desires of Dean Szymanski’s vision for the student lounge. Both quality and quantity are important so provide **at least 5 suggestions, although more is better**. Please write your ideas below:

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
-

8.

...

After completing the first task, another set of questions was administered via Qualtrics. These questions included scales measuring creative effort (self), perceived creative effort of the partner, and perceived similarity. Perceived similarity was measured using two scale items to assess how similar the actor (partner) thinks the partner (actor) is to him/herself. This set of questions was answered on each participant's individual computer via Qualtrics and took approximately 3 minutes to complete (see Appendix 2 for Survey 2). Additionally, each dyad member was asked to allocate the percentage of effort that they believe each person put forth in the task. The sum of the two percentages had to equal 100. It is important to note that this percentage of effort measure was not utilized in the current model but rather collected as an additional proxy measure for creative effort for future analysis.

For the second creativity task, the dyads completed the task that was not completed in the first round (i.e., if they completed the student lounge task in round one, they completed the greenspace task in round two, and vice versa). A second task was included in the study to introduce a time lag and prevent common method bias (Podsakoff, 2003). Again, each dyad used a shared piece of paper to force the two to work together, which was collected at the end of the 10 minute period. Subsequent to completion, the partners answered a series of questions on his/her individually assigned computer. These questions were administered via Qualtrics and took approximately 5 minutes to complete. The following was measured via the questions following round two: creative effort (self), perceived creative effort of the partner, perceived partner social undermining, and perceived partner prosocial behavior (see Appendix 3 for Survey 3). Again, each dyad member was asked to allocate the percentage of effort that they believe

each person put forth in the task. The sum of the two percentages had to equal 100 and this was again collected as another proxy to measure creative effort for future analysis.

Table 4– Task 2: Designing the Greenspace for the Lindner College of Business Building

The Lindner College of Business has recently decided to include a greenspace on top of the new building which will open in 2019. You and your partner have been assigned to submit ideas regarding what this greenspace should include. Before completing this task, please read the following statement from President Pinto:

*“The University of Cincinnati has decided, as a gift to our current and future students, to add a greenspace to the top of our new business school building. This **unique space** will provide our students with the opportunity to enjoy some fresh air and reconnect with nature during breaks in their school day. We want this space to represent the commitments we have to sustainability while putting LCB in the national spotlight for **being cutting edge and offering unparalleled amenities to our students**. The last thing we want is for this space to be boring and bland. Our desire is to really **spice things up** for our students and create a learning environment that is **exciting and limitless**. ”*

Please work with your partner to create and submit ideas that match the desires of President Pinto’s vision for the greenspace. Since the student lounge and greenspace will be in the same building, these ideas should be different from the ones submitted previously. Again, both quality and quantity are important so provide **at least 5 suggestions, although more is better**. Please write your ideas below:

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
 - 8.
-

...

After both creativity tasks were complete, the partners engaged in a word association task (see Table 5). The word association task, also known as The Remote Associates Test (RAT) was developed as a way to measure creative thinking, output and performance (see Mednick, 1962; Mednick & Mednick, 1967 for full version). For this task the dyad was given a set of 18 associative strings. Each string had three words and they were told to find the fourth word that related the string of three words. For example, if the three words were “falling, actor, dust,” the solution would be “star.” They worked together to come up with the associated word. They had one shared handout on which they wrote the answer and then indicated which person came up with the answer. They were instructed that whichever partner thought of the word first is the one who got individual credit and he/she should therefore be the one indicated on the sheet as who came up with the response. They were told that there would be three final scores. The first score would be how many total words the dyad came up with. The second and third scores were based on how many words each individual came up with. This scoring allowed us to obtain objective measures of dyadic task performance and individual task performance. The word anagram task was timed and a maximum of 5 minutes was allocated.

Table 5 – Word Association Test

Below is a set of 18 associate strings. Each string includes 3 words. Your task is to find the fourth word that relates the string of three words. For example, if the three words were “lick, sprinkle, mines,” the solution word would be “salt.” As another example, if the three words were “falling, actor, dust,” the solution word would be “star.”

The rules of the task are as follows:

- You must provide final answers jointly in the ‘solution’ column

- You must indicate which partner first thought of each association in the ‘Partner Credit’ column using that person’s unique identifier. **Please do not include the partner’s name.**

Number	Triad	Solution	Partner Credit
1	Broken Clear Eye		
2	Widow Bite Monkey		
3	Coin Quick Spoon		
4	Blood Music Cheese		
5	Off Trumpet Atomic		
6	Rabbit Cloud House		
7	Salt Deep Foam		
8	Pure Blue Fall		
9	Barrel Root Belly		
10	Chocolate Fortune Tin		
11	Mouse Sharp Blue		
12	Big Leaf Shade		
13	Hall Car Swimming		
14	Athletes Web Rabbit		
15	Lapse Vivid Elephant		
16	Zone Still Noise		
17	Magic Plush Floor		
18	Blank White Lines		

As in previous rounds, a set of questions followed this activity. The questions were administered individually via Qualtrics and included measures for the following: organizational citizenship behavior, willingness to work with the person again, and allocated percentage of effort each partner put forth. It also included our demographic variables: undergraduate major, age, gender, ethnicity, and year in school.

Measures. The questions administered before and after each round assessed the perceptions and outcomes of creative effort as suggested by the model presented in chapter 2. All items were rated using a 5 point scale. The next sections will discuss the specific variables that were measured. The actual survey items are shown in Appendices 1-4.

Creative self-efficacy. The creative self-efficacy scale (Tierney & Farmer, 2002) was used to measure individual creative self-efficacy with minor adaptations made to preserve uniformity of rating scales for all measures in the study. Creative self-efficacy measures the belief that one has in his/her ability to produce creative outcomes and reflects the level of creative knowledge and skills an individual believes he/she possesses (Tierney & Farmer, 2002). Self-efficacy has been found to be an antecedent of behavior and performance in a variety of tasks (Bandura, 1986) and should therefore also predict effort. This scale includes three items. Table 6 contains all of the creative self-efficacy scale items presented to participants. The reliability for the creative self-efficacy scale was .85.

Table 6 – Creative Self-Efficacy Scale Items

1. I feel that I am good at generating novel ideas
2. I have confidence in my ability to solve problems creatively
3. I have a knack for further developing the ideas of others

Goal orientation. Goal orientation, measured at the individual level, was assessed using a 13 item scale (VandeWalle, 1997) which included measures for both performance and learning orientation. The original scale items reflected *work* goal orientation. Therefore, the wording in some of the scale items were adapted to reflect more general goal orientation relevant to my

participants (students). For example, the scale item reading “I am willing to select challenging work assignments that I can learn a lot from” was adapted to “I am willing to select challenging tasks that I can learn a lot from,” and “I’m concerned with showing that I can perform better than my coworkers” was adapted to “I’m concerned with showing that I can perform better than my peers.” Having a performance orientation implies that the individual is likely to avoid challenging and/or risky situations that threaten their image of competence (Button, Mathieu, & Zajac, 1996). The scale for performance orientation includes 8 items and has been validated in past previous research (VandeWalle, 1997). The reliability for performance orientation was .81.

Though not specifically hypothesized in my model, performance orientation is often further categorized into two separate dimensions: performance-prove and performance-avoid. While the general construct of performance orientation reflects a tendency to gain favorable competency judgments or avoid unfavorable judgments (Button, Mathieu, & Zajac, 1996), the performance-prove orientation specifically reflects the desire to gain favorable judgments and the performance-avoid orientation reflects the desire to avoid unfavorable judgments (VandeWalle, 1997). The measure for overall performance orientation includes measures for each sub-dimension. The alphas for performance-prove and performance-avoid were .78 and .81 respectively.

The scale for learning orientation contains 5 items (VandeWalle, 1997). Having a learning orientation implies that an individual thrives in challenging and/or risky situations and approaches achievement situations with the goal of gaining a better understanding of new things (Dweck, 1989). Table 7 shows all goal orientation items included in the study. The alpha for learning orientation was .82.

Table 7 – Participant Goal Orientation Scale Items

1. I am willing to select challenging tasks that I can learn a lot from. (learning)
2. I often look for opportunities to develop new skills and knowledge. (learning)
3. I enjoy challenging and difficult tasks where I'll learn new skills. (learning)
4. For me, development of my ability to do different things is important enough to take risks. (learning)
5. I prefer to work in situations that require a high level of ability and talent. (learning)
6. I'm concerned with showing that I can perform better than my peers. (performance-p)
7. I try to figure out what it takes to prove my ability to others. (performance-p)
8. I enjoy it when others are aware of how well I am doing. (performance-p)
9. I prefer to work on projects where I can prove my ability to others. (performance-p)
10. I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others. (performance-a)
11. Avoiding a show of low ability is more important to me than learning a new skill. (performance-a)
12. I'm concerned about taking on a task if my performance would reveal that I had low ability. (performance-a)
13. I prefer to avoid situations where I might perform poorly. (performance-a)

Creative effort. Creative effort was measured for both the actor and the partner. Each individual rated his/her own creative effort as well as his/her partner's perceived creative effort. The three item scale created and validated by Hirst, et al. (2009) was used. This scale is commonly used in creativity research and was considered the most relevant for this study due to desire to keep the surveys short in order to limit respondent fatigue and meet the lab session time limits. I made minor adaptations to the scale items to better reflect the lab scenario. The original scale was designed for use in sampling a research setting so language was adapted to better reflect the

creativity tasks. Creative effort was measured for self at two time periods and the alphas were .82 and .94.

In the case of rating the partner, the scale items were adapted to reflect language for rating another person. For example, “I invested considerable effort to identify ways to enhance my design ideas” was changed to “My partner invested considerable effort to identify ways to enhance his/her design ideas.” Table 8 lists the items for creative effort. Similar to measures for self creative effort, the creative effort of the partner was also measured at time one and time two. The reliabilities were .92 and .95, respectively.

Table 8 – Creative Effort Scale Items

Creative Effort—Self:

In the previous task, I...

1. Invested considerable effort to identify ways to enhance my design ideas.
2. Incorporated new ideas into my design.
3. Suggested ideas that were novel and unique.

Creative Effort—Partner:

In the previous task, my partner...

1. Invested considerable effort to identify ways to enhance his/her design ideas.
 2. Incorporated new ideas into his/her design.
 3. Suggested ideas that were novel and unique.
-

Perceived similarity. Past researchers have utilized a method of directly asking participants their degree of similarity with a partner to assess perceived similarity (Holyoak & Gordon, 1983). Perceived similarity was measured through two questions specific to the proposed model: “Based on desire to succeed, how similar are you and your partner?” and “Overall, how similar are you and your partner?” Both of these questions used a 5-point Likert scale ranging from 1 (not at all) to 5 (to a great extent). The alpha for the 2-item perceived similarity scale was .74.

Perceived prosocial behavior. In order to measure perceived prosocial behavior as a separate construct from OBC-I, researchers have often developed their own scales (see McNeely & Meglino, 1994). In a similar fashion, I created a scale for perceived prosocial behavior relevant to the first and second tasks completed in the lab. These scale items are listed in Table 9 and the alpha for the created scale was .86.

Table 9 – Perceived Prosocial Behavior Scale Items

In the previous two tasks, to what extent did your partner engage in the following behaviors:

1. Was willing to suggest new ideas.
 2. Was engaged in the task.
 3. Listened to your ideas and helped you to improve them.
 4. Offered his/her own original ideas.
 5. Gave you more help than you expected them to.
 6. Offered to be the scribe.
 7. Took the task seriously to better your joint outcome.
-

Perceived social undermining. A commonly used and validated measure to assess perceived social undermining is the 13-item scale created and validated by Duffy et al. (2002). This scale

reflects the degree to which an individual perceives another person within an organization is behaving in a manner intended to cause personal harm, diminish the relationship, or personally compete with them (Duffy et al., 2002; Dunn & Schweitzer, 2008). I made minor adaptations to the scale by eliminating questions not relevant to the creativity tasks. For example, one question asks the participant how often the other person “talked bad about you behind your back.” Since the dyads were likely working together for the first time, and do not have outside contact with any other dyads, this question was deemed irrelevant. I kept 7 of the original 13 items, asking on a 5-point Likert scale ranging from 1 (not at all) to 5 (to a large extent), to what extent the partner engaged in each of the behaviors during each of the two tasks. These scale items are listed in Table 10 and the alpha was .94.

Table 10– Perceived Social Undermining Scale Items

In the previous two tasks, to what extent did your partner engage in the following behaviors:

1. Delayed offering ideas to make you look bad or slow you down.
2. Belittled your ideas.
3. Hurt your feelings.
4. Gave you negative feedback about your ideas that was not constructive.
5. Did not give you as much help as you expected them to.
6. Competed with you.
7. Let you know that he/she did not like something about you.

Organizational citizenship behavior. The proposed model examines organizational citizenship behavior (OCB) as an outcome variable. I am particularly interested in OCB directed at another person in terms of willingness to help, and what role it plays within the realm of the norm of reciprocity (Gouldner, 1960). To capture this, I focused on what an individual is *willing* to do, to

benefit another person, at a future point in time. Therefore, I used a one item measure asking participants their willingness to help their partner on a future task.

Task performance. Given that the dyads engaged in two creativity tasks and a word association task, task performance (both individual and dyadic) was determined based on the quantifiable outcome of the word association task. The individual and dyadic task performance on the word association was measured by the number of correct words each individual came up with and was used as the measure for individual task performance. The combined number of correct words was used as the score for dyadic task performance. As previously discussed, this task was developed to measure creative thinking and creative output (Mednick & Mednick, 1967). I chose it as the measure for task performance because it was easily applicable to the laboratory setting and allowed the capturing of both dyadic and individual performance.

Data Analytic Plan.

The dyadic nature of the relationships in the proposed model results in interdependence of observations in the data. Specifically, “one fundamental principle of dyadic data is that members of a dyad share and/or develop similarities (i.e. emergence) in some of their attributes, to the extent that their data cannot be considered totally independent from one another” (Fitzpatrick, et al., 2015: 74; Kenny, Kashy, & Cook, 2006). To account for the interdependent nature of the data, I utilized the Actor-Partner Interdependence Model (APIM). The Actor-Partner Interdependence Model is the most relevant model to assess dyadic, interdependent data (Fitzpatrick, et al., 2015).

When using APIM to model interdependent data, it is important to decide whether the dyads are indistinguishable or distinguishable (Kenny & Cook, 1999). Indistinguishable dyads

are characterized by having two members who cannot be meaningfully discerned from one another by any variable that would change the relationships hypothesized. Indistinguishable dyads are the focus of the current research. Kenny, Kashy, and Cook (2006) suggest that multilevel modeling (MLM), commonly known as hierarchical linear modeling is “the best method for estimating the Actor-Partner Interdependence Model when dyad members are indistinguishable” (99). MLM is appropriate because by nature it assumes a hierarchy of data where one set of data is nested within another set of data. In the current study, individual observations are nested within the observations of the dyad. In MLM, variables are characterized by level. As such, the current study has two levels—level 1 is characterized as the individual level and level 2 the dyadic level.

Furthermore, and as previously discussed, dyadic data is characterized by observations which are nonindependent. As such, when utilizing MLM with dyadic data, it is important to center all predictors and controls. In order to center, the mean of each study variable was calculated. Next, that mean value was deducted from the overall value of each variable. This process of centering is necessary for dyadic data. All hypotheses in the model study individuals nested within dyads which creates shared characteristics within the data observations. This suggests that there is a need to control for any dyad-level influences in order to uniquely explain individual-level behavior. Therefore, this method of centering results in the researcher being able to account for nonindependence in observations by controlling for any dyad-level effects and therefore reducing the likelihood of including any spurious results.

Handling of Missing Data.

Before testing any specific hypotheses, it was necessary to determine if there was any missing data. The study surveys were administered via Qualtrics, which allows for a forced

response format. This format was used for all variables included within the surveys. However, as explained by Little and Rubin (2002), in experimental studies, missing values occur frequently in the outcome variable. Though not a frequent occurrence in the current study, I did find that there was missing data in the measure of individual and dyadic task performance. The study was structured so that each task was completed on a shared piece of paper, to encourage and ensure that the partners worked together to complete the tasks. These task papers were then collected by lab assistants when the participants completed the experiment and exited the experiment. Each evening the lab assistants would return the completed task sheets to the researcher. However, for an unexplainable reason, the lab assistants misplaced the task worksheets for the word association task for one session of the lab. This resulted in missing task performance data for 16 dyads. As a result, it was necessary to account for the missing data before engaging in any analysis.

In SPSS, the missing values were coded using the System- or user-missing method in which all missing data in a selected column, or for a selected variable, are recognized as discrete missing values and are eliminated from the linear mixed model analyses.

For linear mixed models, when there is missing data, the analysis is run with the assumption that data is missing at random (West, Welch, & Galecki, 2007). In order for missing data to be considered missing at random, it cannot be systematic—meaning, the reason that the data is missing has nothing to do with the data itself (West, Welch, & Galecki, 2007). In order to determine if the data was in fact missing at random, a one-way ANOVA was conducted for average creative effort between the groups with the missing data and the groups without the missing data. There was no statistically significant difference between groups as determined by one-way ANOVA ($F(7,8) = .59, p = .75$). The missing task performance scores are therefore

considered to be missing at random. Linear mixed models, by nature, can accommodate missing outcomes when the data is missing at random. Therefore, after coding for missing data in SPSS, analysis done using linear mixed modeling incorporates only the data available and any inferences made with missing data are still considered valid (Verbeke & Molenberghs, 2000).

Next I examined whether there was statistical evidence for use of a dyadic model by assessing if there is dyadic dependence. In order to do this, and as explained in detail by Cillessen, Jiang, West, and Laszkowski (2005), dyadic dependence can be assessed by examining the variance explained by the dyad. In the case of the current research, each variable was examined both within- and between-dyad. The results of this analysis are presented in Table 11. Though no exact cutoff exists (Schneider, Ehrhart, & Macey, 2013), in line with prior research that has utilized MLM and APIM (see Krasikova & LeBreton, 2012; Kenny, Kashy, & Cook, 2006), in cases where close to half of the variance is within-dyad for each dyadic-level variable of interest, there can be a case made for using a multilevel, dyadic design. As can be seen from this table, all variables had sufficient variance within-dyad and therefore supports the use of dyadic analysis and multilevel modeling.

Table 11 Percentage of Variance Between- and Within-Dyad

VARIABLE	PERCENT VARIANCE	PERCENT VARIANCE
	WITHIN-DYAD	BETWEEN-DYAD
PERCEIVED SIMILARITY	36%	64%
ACTOR CREATIVE EFFORT TIME 1	53%	47%
PARTNER CREATIVE EFFORT TIME 1	58%	42%
PERCEIVED PROSOCIAL BEHAVIOR	53%	47%
PERCEIVED SOCIAL UNDERMINING	43%	57%
WILLINGNESS TO HELP (OCB-I)	47%	53%
PARTNER CREATIVE EFFORT TIME 2	35%	65%

Controls.

Before beginning a discussion of results, it is important to note how controls were handled. First, creative self-efficacy and perceived similarity were used as controls in all analyses in which they were not the independent variable. Furthermore, when running MLM in SPSS, the overall model is run step by step. For each subsequent dependent variable, or each new step, I controlled for all individual and dyadic variables that came before it. As a result, the variables that were deemed most relevant in the current research, as well as any previous effects, were fully controlled for and therefore no outside controls were included in the analysis. Based on the suggestions of Kenny, Kashy, and Cook (2006), it is also important not to include too many control variables. In traditional regression analysis, the researcher loses one degree of freedom for each control that is added to the model. However, in dyadic studies, two degrees of freedom are lost for each control. As such, with each additional control that is included, the researcher decreases statistical power and increases the likelihood of Type II error (Kenny, Kashy, & Cook, 2006).

Chapter 3 has provided a description of the methods used. Next, Chapter 4 will discuss the findings.

Chapter 4: Results

This chapter presents the results of the data analysis. As previously stated, the dyadic structure of the relationships in the proposed model created a situation of interdependence of the observations in the data. This resulted in data which is nested in nature. Specifically, each individual observation is nested within a dyad. As such, each observation at the individual level has a certain amount of shared variance according to its membership within the dyad. To account for this interdependence, or shared variance, I have utilized linear mixed models with repeated measures to test the hypothesized relationships. All hypotheses were tested using SPSS 23. Descriptive statistics, correlations, and alpha values for the study variables are presented in Table 12. The overall model with the summary of results is presented in Figure 2.

Figure 2: An Interdependent Model of Creative Effort (Summary of Results)

Table 12 Reliabilities, Means, Standard Deviations, and Correlations Between the Study Variables

Variable	<i>A</i>	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>
Individual Level																				
1. Creative Self-Efficacy	.85	4.07	.57	-																
2. Actor Creative Effort Time 1	.82	3.95	.61	.42**	-															
3. Partner Creative Effort Time 1	.92	3.99	.71	.10	.54**	-														
4. Perceived Similarity	.74	3.43	.80	.13	.32**	.45**	-													
5. Partner Creative Effort Time 2	.95	4.17	.69	.24**	.42**	.58**	.41**	-												
6. Performance Goal Orientation	.81	3.24	.67	.12*	.09	.15*	.00	.12	-											
7. Learning Goal Orientation	.82	4.09	.56	.39**	.13*	.03	.04	.07	.09	-										
8. Perceived Prosocial Behavior	.86	4.11	.59	.14*	.45**	.61**	.39**	.71**	.07	.12*	-									
9. Perceived Social Undermining	.94	1.43	.62	.02	.01	.01	.12	-.20**	-.05	-.06	-.14*	-								
10. Willingness to Help (OCB-I)	-	3.92	.69	.10	.21**	.36**	.39**	.39**	.02	.14*	.47**	-.04	-							
11. Individual Task Performance	-	3.48	2.41	-.05	-.04	-.12	-.09	-.10	.05	.00	-.14*	.03	-.05	-						
12. Age	-	20	3.18	.00	.04	.02	-.05	.00	.07	.04	.08	.00	.06	.12	-					
13. Gender	-	-	-	-.02	-.09	.03	-.12	.03	-.14*	-.05	.00	-.08	-.01	.05	.04	-				
14. Ethnicity	-	-	-	-.18**	-.09	-.05	-.09	-.04	.03	.05	.02	.06	-.06	-.12	-.05	.14*	-			
15. Year in School	-	-	-	.05	.04	-.04	-.07	.01	.00	-.02	-.02	-.06	.04	.06	.55*	.16	.00	-		
16. English as First Language	-	-	-	-.03	.02	.13*	.05	.12	-.02	-.05	.15*	.07	.00	-.12	.05	.12	.26**	.13*	-	
17. Major	-	-	-	.04	.02	-.07	-.11	-.04	-.02	-.01	-.05	-.03	-.15*	-.02	-.05	.02	.03	-.19**	-.06	-
Dyad Level																				
	1	2	3	4	5	6														
1. Dyadic Creative Effort Time 1	-																			
2. Perceived Similarity	.18**	-																		
3. Dyadic Creative Effort Time 2	.34**	.18**	-																	
4. Perceived Prosocial Behavior	.43**	.24**	.48**	-																
5. Perceived Social Undermining	-.05	.00	-.16*	-.24**	-															
6. Dyadic Willingness to Help (OCB-I)	.26**	.49**	.38**	.38**	.06	-														

n=262 nested within 131 dyads. Individual-level variables are level 1 centered within-dyad. Dyad-level variables are level 2 mean dyadic variables.

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

Testing the Hypothesized Model

Hypothesis 1. The first hypothesis examined the relationship between individual creative self-efficacy and individual creative effort. It was predicted that creative self-efficacy would be positively related to creative effort. As shown in Model 1 in Table 13, individual self-efficacy was positively related to creative effort ($\hat{\gamma}=.32, p < .01$). Therefore, Hypothesis 1 was supported.

Table 13 Multilevel Linear Modeling Results

Multilevel Results					
Estimate	Actor Creative	Partner	Partner	Actor	Actor
	Effort Time 1	Creative	Creative	Perceived	Perceived
		Effort Time	Effort	Social	Prosocial
		1	Time 1	Undermining	Behavior
	Model	Model	Model	Model	Model
	1	2	3	4	5
Intercept	2.68 (.26)**	1.82	.98 (.38)*	2.04 (.50)**	1.99 (.34)**
<i>Within Dyad (Individual Level)</i>					
Worked Together	-.03 (.04)	.01 (.05)	.02 (.02)	-.01 (.04)	.02 (.03)
Previously					
Creative Self-Efficacy	.32 (.06)**	-.14 (.07)	-.07	.002 (.07)	-.08 (.05)
			(.02)**		
Actor Creative Effort Time 1		.72 (.09)**	-.01 (.03)	.03 (.10)	.08 (.07)
Similarity			.09	.17 (.08)*	.02 (.06)
			(.02)**		
Partner Creative Effort Time 1				.08 (.09)	.18 (.06)**
Partner Creative Effort Time 2				-.36 (.11)**	.54 (.07)**
Performance Goal Orientation				.02 (.06)	
(Actor)					
Learning Goal Orientation					.18 (.05)**
(Actor)					
Actor Perceived Prosocial					
Behavior					
Actor Perceived Social					
Undermining					

Note. Values are unstandardized regression coefficients. Standard errors are in parentheses. $N = 262$ nested within 131 days. Level 1 variables are centered at each individual's level within the dyad. Level 2 variables are grand-mean centered. * $p < .10$. * $p < .05$. ** $p < .01$.

Multilevel Results

Estimate	Actor	Partner	Partner	Actor Perceived	Actor Perceived
	Creative	Creative	Creative	Social	Prosocial
	Effort Time 1	Effort Time 1	Effort Time 1	Undermining	Behavior
	Model	Model	Model	Model	Model
	1	2	3	4	5
<i>Dyad Level</i>					
Dyadic Creative Effort		.70 (.09)**	.69 (.09)**	.06 (.11)	.12 (.07) ⁺
Time 1 (mean)					
Similarity (mean)			.15 (.06)*	.05 (.07)	.04 (.04)
Similarity Interaction			.30 (.01)**		
Dyadic Creative Effort				-.25 (.09)**	.43 (.06)**
Time 2 (mean)					
Performance Goal				.17 (.13)	
Orientation Interaction					
Learning Goal Orientation					.25 (.12)**
Interaction					
Dyadic Perceived					
Prosocial Behavior					
(mean)					
Dyadic Perceived Social					
Undermining (mean)					

Note. Values are unstandardized regression coefficients. Standard errors are in parentheses. $N = 262$ nested within 131 days. Level 1 variables are centered at each individual's level within the dyad. Level 2 variables are grand-mean centered. ⁺ $p < .10$. * $p < .05$. ** $p < .01$.

Multilevel Results

	Actor OCB	Actor OCB	Actor Task	Actor Task	Dyadic Task
			Performance	Performance	Performance
Estimate	Model	Model	Model	Model	Model
	6	7	8	9	10
Intercept	1.78 (.52)**	.99 (.49)*	4.68 (2.43)*	3.31 (2.25)	
<i>Within Dyad (Individual Level)</i>					
Worked Together	.05 (.04)	.06 (.04)	.22 (.18)	.16 (.18)	
Previously					
Creative Self-Efficacy	-.11 (.08)	-.002 (.07)	-.59 (.33)*	-.41 (.30)	
Actor Creative Effort	-.04 (.10)	-.02 (.10)	.60 (.40)	.46 (.40)	
Time 1					
Similarity	.22 (.09)*	.23 (.09)*	-.26 (.31)	-.29 (.33)	
Partner Creative Effort	.05 (.09)	.13 (.10)	-.38 (.35)	-.59 (.35)	
Time 1					
Partner Creative Effort	.09 (.13)	.25 (.12)*	.33 (.49)	-.13 (.44)	
Time 2					
Performance Goal		-.05 (.06)		.18 (.24)	
Orientation (Actor)					
Learning Goal	.19 (.08)*		.31 (.33)		
Orientation (Actor)					
Actor Perceived	.32 (.13)**		-.92 (.48)*		
Prosocial Behavior					
Actor Perceived Social		-.02 (.10)		.22 (.36)	
Undermining					

Note. Values are unstandardized regression coefficients. Standard errors are in parentheses. $N = 262$ nested within 131 days. Level 1 variables are centered at each individual's level within the dyad. Level 2 variables are grand-mean centered. * $p < .10$. * $p < .05$. ** $p < .01$.

Multilevel Results

	Actor OCB	Actor OCB	Actor Task	Actor Task	Dyadic Task
			Performance	Performance	Performance
Estimate	Model	Model	Model	Model	Model
	6	7	8	9	10

Dyad Level

Dyadic Creative Effort Time 1 (mean)	.03 (.10)	.05 (.10)	.32 (.46)	.35 (.44)	
Similarity (mean)	.29 (.06)**	.28 (.06)**	-.50 (.29)*	-.50 (.29)*	
Similarity Interaction					
Dyadic Creative Effort Time 2 (mean)	.32 (.10)**	.35 (.08)**	.01 (.46)	.25 (.38)	
Performance Goal Orientation Interaction					
Learning Goal Orientation Interaction					
Dyadic Perceived Prosocial Behavior (mean)	.02 (.13)		.33 (.65)		
Dyadic Perceived Social Undermining (mean)		.16 (.08)*		.59 (.37)	

Note. Values are unstandardized regression coefficients. Standard errors are in parentheses. $N = 262$ nested within 131 days. Level 1 variables are centered at each individual's level within the dyad. Level 2 variables are grand-mean centered. * $p < .10$. * $p < .05$. ** $p < .01$.

Hypotheses 2 and 3. Hypotheses 2 and 3 examined the role that the actor's creative effort plays in the amount of creative effort that the partner puts forth. Specifically, Hypothesis 2 predicted that when one person (actor) in the dyad engages in creative effort on a task, the other dyad member (partner) will also engage in creative effort on that task such that the parties' creative efforts are positively related. As shown in Model 2 in Table 13, Hypothesis 2 was supported ($\hat{\gamma}=.72, p < .01$).

Hypothesis 3 predicted that the positive relationship between the parties' creative efforts is moderated by perceived similarity between the dyad members. In order to properly test this moderation hypothesis, an interaction term was created between the actor's perceived similarity measure and the centered measure of partner creative effort at time 1. To test the moderation hypothesis, both main effects and the interaction term were included in the analysis. As shown in Model 3 in Table 13, interpersonal similarity played a significant role in the creative effort between two individuals ($\hat{\gamma}=.09, p < .01$) meaning that, when perceived similarity was higher, the creative effort relationship within the dyad was stronger, and when perceived similarity was lower, the relationship was weaker. Thus, Hypothesis 3 was supported.

The pattern of the significant interaction effects of perceived similarity on creative effort is illustrated in Figure 3. The results of a simple slopes test (Cohen, Cohen, West, & Aiken, 2003) revealed a similar pattern for both high (simple slope= .14, $t = 5.50, p < .01$), and low (simple slope= -.15, $t = -5.25, p < .01$) levels of perceived similarity.

Figure 3: Moderating Effect of Perceived Similarity on Actor Creative Effort to Partner Creative Effort Relationship

Hypotheses 4a and 4b. Similar to Hypothesis 3, Hypotheses 4a and 4b examined interactions. These two hypotheses examined the moderating role that goal orientation plays in the relationship between the partner's engagement in creative effort and the actor's resulting perceptions. Hypothesis 4a predicted that the positive relationship between the partner engaging in creative effort and the actor having a perception of social undermining would be stronger when the actor has higher levels of performance goal orientation. To properly test this hypothesis, an interaction variable was created between centered partner creative effort and actor performance goal orientation. As was done in the analysis of Hypothesis 3, main effects and the interaction were included in the analysis. As shown in Model 4 of Table 13, Hypothesis 4a was not supported ($\beta = .02, p = .20$)

Hypothesis 4b predicted a moderation effect of actor learning goal orientation on the relationship between partner creative effort and actor perceived prosocial behavior. Specifically, it was expected that the relationship between partner creative effort and the actor's perception of prosocial behavior would be stronger when the actor has higher levels of learning goal orientation. To test this hypothesis, an interaction variable was created between centered partner creative effort and actor learning goal orientation and both main effects as well as the interaction effect were included in the analysis. As can be seen in Model 5 of Table 13, hypothesis 4b was supported ($\beta=.18, p < .01$).

To better understand and visualize this moderation effect, the interaction was graphed, similar to the procedure used for Hypothesis 3. The interaction is illustrated in Figure 4. As predicted, the relationship between partner creative effort and actor perception of prosocial behavior was stronger with higher levels of actor learning goal orientation. The results of a simple slopes test (Cohen, Cohen, West, & Aiken, 2003) revealed a similar pattern for both high (simple slope = .54, $t = 85.87, p < .01$), and low (simple slope = .54, $t = -82.17, p < .01$) levels of actor learning goal orientation.

Figure 4: Moderating Effect of Actor Learning Goal Orientation on Partner Creative Effort to Actor Perceived Prosocial Behavior Relationship

Hypotheses 5a and 6a. Hypotheses 5a and 6a examined the relationship between prosocial behavior and resulting outcomes. Specifically, Hypothesis 5a predicted a positive relationship between actor perceived prosocial behavior and future intentions of organizational citizenship behavior directed at the partner. As shown in Model 6 of Table 13, there was a significant relationship between perceived prosocial behavior and organizational citizenship behavior, specifically willingness to help the partner on a future task ($\hat{\gamma}=.32, p < .01$). Therefore, Hypothesis 5a was supported.

Hypothesis 6a examined the relationship between the actor's perception of prosocial behavior and resulting individual task performance. The results of Hypothesis 6a are shown in Model 8 of Table 13. The predicted relationship was significant ($\hat{\gamma}=-.92, p < .05$) thus, Hypothesis 6a was supported.

Hypotheses 5b and 6b. Similar to Hypotheses 5a and 6a, Hypotheses 5b and 6b examined organizational citizenship behavior and task performance outcomes. However, these hypotheses examined perceived social undermining as the predictor. Hypothesis 5b predicted a negative relationship between an actor's perception of social undermining and future intentions to help the partner. As can be seen in Model 7 of Table 13, while not significant, the results are still promising and the relationships were in the predicted direction ($\hat{\gamma} = -.02, p = .06$).

Hypothesis 6b predicted a negative relationship between the actor's perception of social undermining and his/her resulting task performance. As displayed in Model 9 of Table 13, this relationship was not significant ($\hat{\gamma} = .22, p = .55$). Therefore, Hypothesis 6b was not supported.

Hypothesis 7. Hypothesis 7 predicted that there would be a positive relationship between combined actor and partner creative effort and dyadic task performance. Unfortunately, this hypothesis is unable to be tested, due to study accommodations for the lab setting. The UC lab allows studies to take up to an hour of lab time, but requires a 10-15 minute buffer be built into the study, in case of unforeseen delays or issues that may arise during the experiment. The originally proposed study was designed to fit comfortably within a 55 minute time frame. However, after final submission of the study, the researcher was informed that the study needed to be redesigned to take a maximum of 45 minutes. This time constraint meant that data on actor and partner creative effort could not be collected after the final task. Considering the fact that the hypothesized relationship predicted that joint creative effort on a task would be positively related to dyadic task performance, creative effort of the actor and partner would need to be measured for the final task—the task which provided concrete scores for individual and dyadic task performance. Therefore, there is no data that would be relevant or appropriate to use in order

to test Hypothesis 7. This hypothesis is discussed in more detail in the Future Research section of Chapter 5.

Post-hoc analyses. Though not specified prior to collecting the data, several exploratory, post-hoc analyses were conducted. Two were conducted to further explore and narrow in on the role that having a high performance goal orientation plays in strengthening a relationship between partner creative effort and actor perceive social undermining. The third was completed to test task satisfaction as a possible significant outcome.

As previously discussed, performance goal orientation can be further broken down into two types: performance-prove goal orientation and performance-avoid orientation. My initial hypotheses were based on the overall measure of performance goal orientation, and I didn't have a priori hypotheses proposing that each sub-type would act differently in the hypothesized relationships. However, when those relationships were not supported, I ran post-hoc analyses using each sub-type to further explore the relationship. I first tested a moderating relationship using high performance-prove orientation, and the results demonstrate that this relationship was not supported ($\hat{\gamma}=.07, p=.53$). Thus, high performance-prove orientation does not influence the relationship between a partner's engagement in creative effort and an actor's perception of social undermining.

I next ran the post-hoc analysis using the sub-dimension performance-avoid goal orientation. Similar to above, this relationship was not supported ($\hat{\gamma}=.15, p=.15$). Thus, an actor's performance-avoid goal orientation does not influence the relationship between partner creative effort and actor perception of social undermining.

The third set of post hoc analyses related to other potential outcome variables. In the model, I tested OCB-I and individual task performance as outcomes. However, past research on creativity in groups has suggested that an increase in group creativity results in an increase in individual job satisfaction (Valentine, Godkin, Fleischman, and Kidwell, 2010). Therefore, it might be the case that task satisfaction is a relevant outcome variable. While Valentine et al. (2010) specifically studied job satisfaction, task satisfaction was used in the current study to be more relevant to the research design and laboratory setting. The specific hypotheses re-tested were hypotheses 5a and 5b, replacing OCB-I with task satisfaction as the dependent variable. Though 5a was supported using OCB-I as the outcome, neither 5a nor 5b were supported when task satisfaction was modeled the dependent variable. Thus, there was no relationship between actor perceived prosocial behavior and actor task satisfaction ($\hat{\gamma} = -.23, p = .16$), nor a relationship between actor perceived social undermining and actor task satisfaction ($\hat{\gamma} = -.11, p = .38$), respectively.

Chapter 5 discusses the findings of this analysis including theoretical implications, practical implications, limitations, and suggestions for future research.

Chapter 5: Discussion

This study was designed to explore the potential interdependent nature of creativity in dyadic relationships. The purpose was to examine how one partner's creativity influences another partner's creativity, and the processes through which those dyadic creative interactions influence subsequent individual perceptions and behavior. Towards this end, four specific questions were examined: (1) To what extent is creative effort both an individually—through creative self-efficacy—and relationally constructed behavior? (2) What role does the level of perceived interpersonal similarity play in the creative effort between two people? (3) What are the potential attributions of social undermining and prosocial behavior that might stem from assessments of the level of creative effort expended by one's partner? and (4) What are the resulting actor behaviors stemming from those perceptions?

The current study revealed several significant results in the proposed model of dyadic creativity. Specifically, support was found for relationships regarding creative effort within dyads and several resulting behaviors and perceptions stemming from creative effort between two individuals.

The Relational Aspect of Creativity

Individual. Evidence from the current study suggests that creativity, specifically creative effort, is both an individually and relationally constructed behavior. Early research by Tierney and Farmer (2002) suggested that studying creative self-efficacy offers the potential to more fully understand an individual's creative effort. Rooted in motivation theory (Bandura, 1986), self-efficacy provides the internal motivation to engage in relevant behaviors. In the current study, creative effort was targeted because it is the aspect of creative behavior that is in the direct

control of each individual, and the findings reveal that individual creative self-efficacy is significantly related to the amount of creative effort expended on the creative task. These findings provide support for the role of individual drive in engaging in creative effort.

Dyadic. Furthermore, similar to past research on spiral reinforcement (Zand, 1972) and modeling (Bandura, 1977), the current study provides evidence that creative behaviors are also relational. Specifically, when an individual engages in creative effort, there is likely an effect of spiral reinforcement as well as some level of modeling that occurs, which both encourages and increases the creative effort put forth by the partner in the dyad. Therefore, it seems that individuals rely both on their own creative self-efficacy as well as the perceived behaviors of their partner in determining how much creative effort they will put forth in a certain situation. The results also reveal that individuals are more likely to mimic their partner and expend more effort when they believe that there is some level of similarity between themselves and the partner.

Creativity and Subsequent Behaviors and Perceptions

Learning Goal Orientation. Past researchers have suggested that an individual's goal orientation plays a significant role in individual creativity. Gong, Huang, and Farh (2009) found evidence that individuals with a high learning goal orientation were more likely to seek out and engage in creative activity. This effect is due primarily to the fact that having a high learning goal orientation implies that a person prefers to immerse themselves in challenging situations as a way to increase their knowledge and skills and achieve their goals. However, the research on learning goal orientation and creativity has been limited to studying goal orientation as an antecedent to engaging in creative behavior. Though having a high learning goal orientation may drive an individual to seek out creative and challenging situations, it is often the case in

organizations that we do not *choose* when we are faced with a creative task but rather the organization *tells us* that we are faced with a creative task. In creating this situation in the lab, the current study found support for a relationship between one individual's creative effort and perceptions of the partner's prosocial behavior when the perceiver has a higher level of learning goal orientation. This finding suggests that an individual may perceive another person's engagement in creative effort as cooperative when the individual has a high learning goal orientation.

Moreover, this perception of cooperation translates directly into positive subsequent behaviors and performance. Specifically, a perception of cooperation is likely to result in both an increased willingness to help the partner in the future as well as increased individual performance.

Performance Goal Orientation. Similar to the past research on learning goal orientation, performance goal orientation has been posited as an antecedent that hinders creative behavior. Gong, Huang, and Farh (2009) provided evidence that individuals with a performance orientation are more likely to avoid engaging in creative activities. Instead, these individuals prefer to partake in activities which will allow them to showcase skills they already possess and that they feel certain about. However, individuals may not be able to choose whether or not they will be required to partake in a creative task. In this study, I predicted that high performance goal orientated individuals would view their partner's creative effort as socially undermining or competitive. However, contrary to that prediction, the expected relationships relating to performance goal orientation were not supported.

Considering the opposing natures of learning goal orientation and performance goal orientation, and cooperation and competition, the question remains as to why the performance

goal orientation relationships were not supported while the learning goal orientation relationships were supported. I propose four possible explanations. First, the scale items for both learning goal orientation and performance goal orientation were adapted for the student sample, such that each item containing the wording “co-worker” was changed to “peer” in order to maintain relevance in the laboratory setting. This specific word, however, only occurred in the scale items for performance goal orientation (for example, “I’m concerned with showing that I can perform better than my peers.”). It could be that the performance goal orientation scale items are only relevant in the organizational setting, from co-worker to co-worker, and not simply from peer to peer. If this is the case, even though the reliability of the scale was sufficient, the scale might not have fully captured the extent to which an individual has a performance orientation. Therefore, the lack of support for the proposed relationship might be an artifact of the laboratory setting, and should be tested further in an organizational setting.

A second reason why the proposed relationship may not have been supported is because, in the laboratory setting, there really wasn’t anything “at stake.” Having a performance goal orientation implies that the individual has a strong desire to portray the image of being competent or avoiding negative judgments of competence (VandeWalle, 1997). In the laboratory setting, the students received credit for the experiment regardless of how they performed on the creativity tasks. Therefore, because the measure of competence was not directly tied to performance on the tasks, performance goal orientation may not have been relevant between dyad members, and thus did not drive a perception of performance-based competition or social undermining.

Third, there was no feedback provided to the participants on any of the creativity tasks. All tasks were evaluated at the end of the study and the participants were never informed as to

how they performed. Having a high performance goal orientation implies that the person is concerned with achieving their goals through proving a record of good performance (Pieterse, et al., 2013). Therefore, in the absence of performance feedback, how the participants defined competence, performance, or achievement might have changed. If there had been feedback given during each round, it may have enhanced the perceptions of social undermining or competition. This could have especially been the case in the word association task where there were clear right and wrong answers that could have been directly tied to each dyad member. This issue would not have related to learning goal orientation findings because individuals with a learning orientation are driven by a motivation to simply try new things and engage in challenging tasks (Dweck, 1989). Therefore, the participation in the creativity tasks alone would have been satisfying to those with a learning orientation. As a result, this satisfaction could have driven the perception of cooperation and prosocial behavior when the dyadic partner increased his/her creative effort.

The last reason these findings may not have been supported may have been due to the fact that there was limited possibility for perceived competition. The vast majority of the dyads had not previously interacted. While this was an important condition of the study, and most hypotheses were rooted in a condition of new relationships, this condition does not parallel what would be expected in the business environment. In the lab, dyads were able to make the assumption that they likely would not work together again in the future. This is quite the opposite in the organization setting. Additionally, in the laboratory the partners may not have had enough time to actually notice any social undermining or competition stemming from one another. Past research on customer service has found that when customers first encounter a service provider, any effort put forth by the employee is perceived as friendly and helpful,

whereas the employee has to actually engage in a negative behavior to be perceived as rude (Mohr & Bitner, 1995). A similar effect may be occurring in the current study: regardless of goal orientation, the actor may be perceiving the partner as friendly simply based on any effort put forth by that individual, and rudeness may be too difficult to detect due to the short amount of time the dyad worked together.

Furthermore, all answers to the creativity tasks were anonymous. In fact, the participants were guaranteed anonymity at the beginning of the study. This anonymity may have actually worked against the proposed relationship. Considering that the social undermining hypotheses were not supported, the anonymous reporting may have created a situation where the participants experienced an immunity to the effects of having a high performance goal orientation: because their responses could not be tied back to them individually, there was nothing that put their self-confidence or competency on the line.

Given these reasons, it would be beneficial for future researchers to test these hypotheses in the field, as they may be supported in the real world when things of actual value are at stake.

Theoretical Contributions

As creativity research has gained traction, so has the importance of studying the organizationally-related factors that encourage creative behaviors in individuals. Through past research, the field has acquired a robust understanding of the different leadership styles, motivating mechanisms, and personality traits that help to increase creative thoughts and behaviors in individuals (see Zhou & Shalley, 2011). However, there has been much less theory or evidence providing any insight into the individual outcomes of creativity-related encounters. As such, this study changes the direction of the creativity research conversation and takes an in-

depth view at what outcomes might stem from engaging in creative activity. My findings support the notion that creative engagement can in fact lead to positive perceptions of cooperation by a partner in dyadic teams. The results also find support for subsequent increases in individual performance—specifically task performance—and organizational citizenship behaviors. These findings not only work to change the direction of the current creativity conversation by placing creative behavior as the predictor of important individual-level outcomes, but it also supports and extends current theory which argues that creativity plays a positive role in individual and organizational success.

Furthermore, past researchers have identified creative self-efficacy as a way of more fully understanding creative behavior (Tierney & Farmer, 2002). While more recent research (Carmeli & Schaubroeck, 2007) has established that creative self-efficacy has a positive relationship to creative work involvement, the current research focuses and narrows in on these findings by establishing a relationship between creative self-efficacy and individual creative effort. Whereas creative work involvement is a broad structure that includes an individual's time, commitment, resources dedicated, attitudes, and effort towards creative outcomes (Kark & Carmeli, 2009), the current study extends research in creativity and motivation by focusing in on the part of creative work involvement that is truly driven by motivation and is under the direct control of the individual, creative effort.

This research also shifts the focus from creativity being derived mainly from aspects of the environment or the individual to a focus on creativity being relationally constructed. To date, creativity has been largely focused around individual behaviors and success or overall organizational success (Amabile, 1996; George, 2007; Zhou & Oldham, 2004). This has left unexplored the potential for an interdependent process of creativity between individuals and an

examination of how that process might influence subsequent perceptions, behaviors, and performance. The current research informs creativity theory in this area by first finding support that creativity can in fact be strictly an independent process, such that an individual's creative self-efficacy increases his/her engagement in creative effort. After establishing that relationship, the focus shifted to the interdependent nature of creative effort, proposing that creativity is relationally constructed in dyads. Once again, this interdependence was supported. When the creative effort of one member of the dyad increased, so did the creative effort of the other dyad member. While traditional creativity research has been limited to the individual (Amabile, 1996) or team level (Gilson & Shalley, 2004), the current research opens the doors to another unique opportunity: studying creativity at the dyadic level. It suggests that continued creativity research within dyads may prove to be quite fruitful. This finding adds to creativity theory by providing evidence that creativity has an interdependent aspect and opens the door for further research into the specific processes that might influence that interdependent relationship. This type of continued research might identify unexplored variables at the dyad level that may enhance or detract from the creative effort put forth by each person within a dyad. Additionally, this type of future research may even inform and ultimately extend creativity theory at the team level.

A fourth contribution of this research is a methodological one. As discussed by Kenny (1996), the Actor-Partner Interdependence Model (APIM) is the most appropriate method for studying dyads. When two people work together in a dyad, the relationships involving data drawn from that dyad will always share a certain level of similarity, due to the fact that the responses from one individual are always influenced, to some extent, by working with the partner. As a result, dyadic data violates the traditional assumptions of independence (Fitzpatrick et al., 2015; Kenny, Kashy, & Cook, 2006). APIM takes this non-independence into

consideration and accounts for the interdependence in observations (Kenny, 1996). While not a new method, this is one of only a handful of studies that utilize the method in the area of creativity research, and the only organizational study, to date, focusing on the dyadic relationship between peers in an organizational study (see Olsson, Hemlin, & Pousette, 2012).

Yet another major contribution that this research makes to theory lies in its approach to the study of goal orientation and creativity. Existing theory suggests that an individual's goal orientation plays a very specific role in creativity. Specifically, past researchers have found that individuals with a high learning goal orientation are more likely to seek out creative work opportunities whereas individuals with a high performance goal orientation are more likely to steer clear of creative work opportunities (Gong, Huang, & Farh, 2009). However, the current research underlines the importance of studying engagement in creative effort and goal orientation simultaneously. These findings better inform theory by expanding existing theory on goal orientation and allowing it to play a new role—the role of moderating one's perceptions of one's partner during interdependent creativity processes. The current research highlights the fact that engaging in creative tasks is often a required part of the job. Therefore, simply because we possess a certain type and level of goal orientation does not mean that we have the power to choose when we are or are not faced creative tasks in our job. As such, the current research provides deep insight into the role that goal orientation plays in shaping perceptions stemming from the actions of others. Specifically, when engaging with a partner who exerts high creative effort, a person is more likely to perceive that the partner is cooperative when the person has higher levels of learning orientation.

A final theoretical contribution of this research rests in the similarity between dyad members. Past research on teams and groups suggests that diversity may hold the key to

increasing creativity. In fact, Shin et al. (2012) found that that diversity was related to creativity—specifically, cognitively diverse teams were more creative. However, the findings in this study suggest the opposite—similarity was related to creativity. In fact, similarity served as an important moderator in the amount of creativity that individuals in dyads exerted. As perceived similarity increased, the level of creative effort exerted increased. While the consensus in the field of creativity seems to be that diversity increases creativity, recent research in other areas is more in line with the findings of the current study. For example, Windeler, Maruping, Robert, and Riemenschneider (2015) found evidence that, in virtual teams, focusing on similarity early in the team formation process reduced both relational and task conflict. Furthermore, research in the area of mentoring (Ensher & Murphy, 1997) found evidence that similarity, and specifically perceived similarity, between a new protégé and mentor, resulted in a better mentoring relationship characterized by increased liking, satisfaction, and contact between the two individuals. Similarly, research on teams characterized by high turnover rates (Kang, Yang, & Rowley, 2006) has found evidence that cognitive similarity between team members results in greater team effectiveness and coordination. It seems likely that high turnover teams would be marked by a constant sense of “newness.” Therefore, in light of the current study, the findings may suggest that the newness of the relationship—most dyads had not previously worked together—combined with a perception of similarity might provide a common ground and create a sense of freedom to explore and engage in higher levels of creativity. As stated, this directly contrasts to the current consensus that diversity is a major driver of creativity within groups. It isn’t to say that these findings negate past findings that diversity holds the key to increased creativity but rather, something else may be at work to explain the opposing findings. For example, it may be that as the relationship becomes more established, similarity becomes less

important, and potentially detrimental, and diversity begins to become increasingly important. In the current study, it was perceived similarity that drove the creative effort relationships. However, it could be the case that different types of similarity and diversity—for example, cognitive versus demographic—have different impacts on the creative effort between two. This is something that should be explored in future research.

Practical Implications

The findings of this study also have contributions to management practice. It has long been thought that creativity is something that can be taught to individuals within an organization or brought out of people through providing the necessary resources and support (Zhou & Shalley, 2001). Additionally, it has been suggested that creative behavior stems primarily from individual personality traits and differences (Zhou & Shalley, 2011). However, the current research provides evidence that creativity can also be enhanced through working with another person. Specifically, creative effort can be increased through working with a partner who is engaging in creative effort on the same task. Managers can use this information to better pair individuals when assigning organizationally-related tasks that require the use of creative effort. Based upon the findings of the current research, this is especially relevant if managers can assign pairs based upon some level of similarity. This is enlightening because it is contrary to what managers have been told with respect to cognitive diversity (Shin et al., 2012). It has previously been thought that the greater diversity present in groups, the higher resulting levels of creativity. However, the model supported in the current study opposes those findings—at least within dyadic relationships. In a practical sense, if managers pair together similar individuals, especially when first working together, it may be more cost effective than training leaders to portray a specific management style or providing individuals with motivating mechanisms or other

resources to encourage creativity. Again, it may be that within dyads, similarity drives creativity whereas within groups diversity is the driver.

Yet another practical implication falls within the realm of goal orientation. The supported models suggests that individuals with higher levels of learning goal orientation respond more positively to creative effort expended by a partner. As such, the current findings may suggest that when managers are pairing together only two people, rather than teams of people, they may want to pair certain goal orientations together. The findings propose that the most positive perceptions and resulting behavior—specifically a positive perception of cooperation and subsequently higher individual performance—stem from dyads which have peers with higher learning goal orientations. These findings were tested over more than one time period. As a result, it may be more practical for managers to pair together two individuals with high learning goal orientation on tasks that require subsequent work—or working together over a longer-term—and assign shorter duration tasks to pairs with higher performance goal orientation. The major benefit of this lies in the fact that peers with higher learning goal orientation were more likely to want to help their partner again in the future. This could be indicative of a successful, long-term dyad that will quickly and easily form high cohesion.

Finally, another practical implication lies in the need to train or educate people on their ability to influence another person's creativity. The current research provides evidenced that one person's engagement in creative effort has the ability to increase another person's creative effort as well as influence the other person's individual outcomes. As such, it may be necessary to train individuals within an organizational setting on how their attitudes and behavior are likely to impact a partner.

Limitations

While the current research contributes much to both theory and practice, there are a handful of limitations that should be addressed. The limitations fall into two primary categories: the research methodology and the sample. I will first address the methodology and will conclude with a discussion of the sample.

As previously stated, the research was conducted in a laboratory setting. Past researchers have pointed out criticisms of using a lab design. Specifically, the laboratory has been criticized for having a lack of realism, and therefore external validity, as compared to research conducted in the field (Gordon, Slade, & Schmitt, 1986). Lab designs have also been criticized for having low or trivial stakes and for falling prey to Hawthorne effects distorting outcomes (Falk & Heckman, 2009). While the findings in the lab may not perfectly represent the reality of the business world, as stated earlier, the laboratory setting was deemed appropriate for the current research due to the need to isolate a creative event. In this situation, van den Bos (2001) suggests that experimental studies should be used in order to gain the control necessary to isolate specific events. Furthermore, previous researchers have argued that the laboratory is the best setting when testing relationships characterized by reciprocity and/or interdependence (Falk & Heckman, 2009).

However, the low stakes (Falk & Heckman, 2009; Camerer & Thaler, 1995) associated with performance in the lab is a potential limitation of the current research. As explained in the findings, the hypotheses addressing performance goal orientation and perceived social undermining, and subsequent task performance, were not supported. This certainly could have been an artifact of the lab setting. Since the stakes were trivial, the laboratory may not have been an appropriate enough setting to create a real sense of competition between an actor and a

partner. However, the lab did prove to be a suitable setting to establish a sense of cooperation. This was seen in the supported findings associated with the learning goal orientation and perceptions of prosocial behavior within dyads.

The current study may have been impacted by the Hawthorne effect (Falk & Heckman, 2009). The research lab assistant was a graduate student and he/she was always present, in plain view of the participants. Therefore, there is the potential that this awareness of being observed could have encouraged participants to suppress any negative behaviors that they might have otherwise exhibited. This might explain why the prosocial behavior-related relationships were supported but the social undermining-related relationships were not.

Another potential issue arises when using surveys within the lab study design. Past research suggests that “survey respondents are sensitive to the context in which a question is asked” and that “almost any question can be altered by a preceding question” (Converse & Presser, 1986: 39). For example, as can be seen in appendix 4, survey 4 first asked the participants if they were willing to help the partner at a future point in time. Following this question they were asked whether they felt that they were trying to cooperate or compete with the partner. While this presents the potential problem that the first question could bias the participants or steer them toward answer the second question a certain way, I do not believe that this impacted the current study for two main reasons. First, the survey was structured so that there was only question on the screen at a time. This prevented the respondents from viewing the OCB question simultaneously to the cooperation question. Second, the cooperation/competition question was not utilized in the tested model. Rather, it was collected as a proxy for prosocial behavior and social undermining for future investigation.

Finally, while not a criticism specifically addressed by past researchers, the time limits imposed in the lab used in this study created a limitation. As previously stated, the final hypothesis predicting dyadic performance was not tested. The final survey of the study had to be cut due to the time restraints which prohibited the researcher from collecting data on creative effort on the third task. Future research should include these measures and test the final hypothesis.

The second potential limitation was with the sample itself. The current research utilized a student sample. Past researchers have suggested that student samples are not truly representative of organizational employees and therefore lack generalizability to the organizational setting (Gordon, Slade, & Schmitt, 1986). However, multiple researchers have argued against this claim (see Highhouse & Gillespie, 2009; Greenberg, 1987). In fact, it seems that more recently a consensus is building around advocating college students as samples unless the phenomena of interest has the intention of only being relevant in a well-defined, specific population (see Kardes, 1996). Being that the current findings are relevant to individuals in general, and not a specific type of employee or occupation, a student sample should be well-suited. Furthermore, as discussed previously, the participants in this research represented a broad range of demographics (age, gender, year in school, major, etc.) meaning that one specific type of student was not overrepresented. Furthermore, the University of Cincinnati is known as the pioneer of the college co-op program, founding it in 1906. An estimated 15% of undergraduate students are currently enrolled in a co-op and several colleges within the university require students to co-op at least once before graduation (Bach, 2005). It is estimated from the undergraduate programs office that 60% of all undergraduate business students either co-op or work full-time. Even though years of

business experience was not collected from participants, this highlights the potential vast amount of experience that participants in the current study likely had.

Future Research

The final hypothesis, predicting an increase in dyadic task performance, should be tested in future research, given that I was unable to test it in the current study. Considering the previously discussed time limits imposed in the lab, it would be advisable to test this specific hypothesis in either an extended lab session which would allow for the inclusion of additional surveys, or in the field. Additionally, several of the findings in the current research should be further explored in future research.

First, the conflicting findings from this research compared to past research regarding increased creativity under situations of diversity versus similarity when working with others is an interesting area warranting future attention. The identification of conditions under which diversity and similarity may contribute differentially to creativity may be a fruitful area of additional examination. Along those same lines, it would be interesting to uncover the specific dimensions individuals working in dyads use to assess the level to which they are different or similar. In the current study, a measure of perceived similarity was used to measure similarity in dyads. However, there may be other characteristics under which two people may consider themselves similar or different. Uncovering the different dimensions under which individuals consider themselves similar or different and how those perceptions of similarity impact creativity will both build upon and inform current theory. As previously discussed, research by Shin et al. (2012) found support that differences in cognitive diversity within groups lead to higher creativity within that group whereas the current study found that similarity drove higher creativity. As such, that line of research could be extended and better informed by exploring if

the conflicting findings between the current research and Shin et al. (2012) findings are due to the setting being within dyads versus groups or if there are significantly different ways upon which individuals consider themselves similar or different.

Testing different outcomes might also be a great area of future exploration. While post-hoc analyses tested the model with task satisfaction, there are several other organizational-related outcomes that may have different results. For example, it would be interesting and beneficial for future research to test the suggested hypotheses with organizational-related outcomes such as partner satisfaction, job satisfaction, dyad cohesion, or turnover intentions. Specifically, past research has found that high levels of team creativity is directly correlated with higher team cohesion (Joo, Song, Lim, and Yoon, 2012). However, if support can be found for the performance goal orientation and social undermining hypotheses in the field, this would extend the findings of Joo et al. (2012) by suggesting that there are certain situations under which cohesion might be increased and decreased as a result of higher creativity. For example, if I feel threatened by my partner's engagement in creative effort due to having a dominant performance orientation, it is likely that even though our dyad may have a high level of creativity, our cohesion may in fact decline as a result of the perception of social undermining. Additionally, past research on creativity has found that group creativity is associated with increased job satisfaction (Valentine, et al., 2010). However, and again if the perceived social undermining hypotheses were supported in an organizational setting, this would extend Valentine et al.'s (2010) findings by suggesting that there may be certain conditions under which creativity within a group or dyad may actually decrease job satisfaction.

The extent to which creative effort becomes more of an interdependent dyadic phenomenon over time should also be investigated further in future research. As can be seen with

partner creative effort in Table 11, at time 1, the percentage of within-dyad variance is 58%. However, at time 2, the percentage of within-dyad variance of partner creative effort drops significantly to 38%. This indicates that at time 1 creative effort was more individualized but became more of a dyad-level property at time 2. Future research should investigate this further and see what additional dyad-level changes happen over a more extended period of time.

A final area of future research that would be promising is exploring how people choose who to partner with, if their preferences for a partner change under certain conditions, and whether or not perceptions change based on how the dyad was formed. For example, individuals with certain characteristics may choose to work with different people when a task is creative versus routine. As previously stated this may be especially relevant under conditions of different goal orientations. For example, if I have a dominant learning goal orientation and I am aware of other peoples' dominant goal orientation, in a creativity-based task I may choose to work with another dominant learning goal orientation since existing research suggests that these individuals thrive in creative environments and challenging situations (Button, Mathieu, & Zajack, 1996). However, if the task at hand is performance-based and some sort of reward is tied specifically to how the dyad performs, I may choose to work with a partner who has a dominant performance goal orientation since these individuals are known to focus strongly on achievement and having the best performance (VandeWalle, 1997).

Conclusion

For decades, researchers and practitioners alike have acknowledged the importance of understanding creativity and how it impacts both individual and the organization as a whole. Past research has placed a heavy focus on the fact that creativity is an enhancing factor within the organization. As a result, past researchers have clearly demonstrated the many ways that

creativity in employees can be encouraged and increased. However, since past research has taken a rather narrow view of creativity and focused exclusively on the inputs to creativity, the outcomes of creative engagement have been quite neglected. Recognizing the importance that organizations place on creativity, it is, therefore, important to understand the creative process as a whole.

As a way to more fully understand the overall creative process, the current study explored the potential interdependent nature of creativity in dyadic relationships as well as examined how creativity in dyads influences subsequent perceptions and behaviors. The results of this study showed that creativity is both an individually and relationally constructed process. Overall, the results of this study point towards the importance of understanding creativity as a process and recognizing the significant role that creativity can play in forming the perceptions and future behavior of individuals, especially when working in a dyadic partnership.

References:

- Amabile, T. M. (1998). *How to kill creativity* (Vol. 87). Boston, MA: Harvard Business School Publishing.
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of management journal*, 39(5), 1154-1184.
- Amabile, T. M. (1996). *Creativity in context: Update to the social psychology of creativity*. Westview press.
- Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in organizational behavior*, 10(1), 123-167.
- Bach, J. (2005, December). University of Cincinnati co-op sets standard for rest of world. *UC Magazine*. <http://magazine.uc.edu/issues/1205/coop1.html>
- Bakker, A. B., & Xanthopoulou, D. (2009). The crossover of daily work engagement: Test of an actor-partner interdependence model. *Journal of Applied Psychology*, 94(6), 1562.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall
- Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of social and clinical psychology*, 4(3), 359-373.
- Baruch, Y. (1996). Self performance appraisal vs direct-manager appraisal: A case of congruence. *Journal of Managerial Psychology*, 11(6), 50-65.
- Baruch, Y., O'Creevy, M. F., Hind, P., & Vigoda-Gadot, E. (2004). Prosocial behavior and job performance: Does the need for control and the need for achievement make a difference?. *Social Behavior and Personality: an international journal*, 32(4), 399-411.
- Blau, G. (1993). Operationalizing direction and level of effort and testing their relationships to individual job performance. *Organizational Behavior and Human Decision Processes*, 55(1), 152-170.
- Brief, A. P., & Motowidlo, S. J. (1986). Prosocial organizational behaviors. *Academy of management Review*, 11(4), 710-725.
- Brown, S. P., & Leigh, T. W. (1996). A new look at psychological climate and its relationship to job involvement, effort, and performance. *Journal of applied psychology*, 81(4), 358.
- Button, S. B., Mathieu, J. E., & Zajac, D. M. (1996). Goal orientation in organizational research:

- A conceptual and empirical foundation. *Organizational behavior and human decision processes*, 67(1), 26-48.
- Camerer, C. F., & Thaler, R. H. (1995). Anomalies: Ultimatums, dictators and manners. *Journal of Economic perspectives*, 9(2), 209-219.
- Carmeli, A., & Schaubroeck, J. (2007). The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly*, 18(1), 35-48.
- Chamorro-Premuzic, T. (2006). Creativity versus conscientiousness: Which is a better predictor of student performance?. *Applied Cognitive Psychology*, 20(4), 521-531.
- Chartrand, T. L., & Lakin, J. L. (2013). The antecedents and consequences of human behavioral mimicry. *Annual review of psychology*, 64, 285-308.
- Chiaburu, D. S., & Harrison, D. A. (2008). Do coworkers make the place? Conceptual synthesis and meta-analysis of lateral social influences in organizations. *Journal of Applied Psychology*, 93(5), 1082-1103.
- Cillessen, A. H., Jiang, X. L., West, T. V., & Laszkowski, D. K. (2005). Predictors of dyadic friendship quality in adolescence. *International Journal of Behavioral Development*, 29(2), 165-172.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Applied multiple correlation/regression analysis for the behavioral sciences. UK: Taylor & Francis.
- Converse, J. M., & Presser, S. (1986). *Survey questions: Handcrafting the standardized questionnaire* (Vol. 63). Sage.
- Cook, W. L., & Kenny, D. A. (2005). The actor-partner interdependence model: A model of bidirectional effects in developmental studies. *International Journal of Behavioral Development*, 29(2), 101-109.
- Couper, M. P., Traugott, M. W., & Lamias, M. J. (2001). Web survey design and administration. *Public opinion quarterly*, 65(2), 230-253.
- Cropley, D. H., Cropley, A. J., Kaufman, J. C., & Runco, M. A. (Eds.). (2010). *The dark side of creativity*. Cambridge university press.
- Crossley, C. D. (2009). Emotional and behavioral reactions to social undermining: A closer look at perceived offender motives. *Organizational Behavior and Human Decision*

- Processes*, 108(1), 14-24.
- Dávila, M. C., & Finkelstein, M. A. (2013). Organizational citizenship behavior and well-being: Preliminary results. *International Journal of Applied Psychology*, 3(3), 45-51.
- Deci, E. L. (1975). *Intrinsic Motivation*: (by) Edward L. Deci. Plenum Press.
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of research in personality*, 19(2), 109-134.
- Doherty-Sneddon, G., Anderson, A., O'malley, C., Langton, S., Garrod, S., & Bruce, V. (1997). Face-to-face and video-mediated communication: A comparison of dialogue structure and task performance. *Journal of experimental psychology applied*, 3, 105-125.
- Du, H., & Wang, L. (2016). The impact of the number of dyads on estimation of dyadic data analysis using multilevel modeling. *Methodology*.
- Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of management Journal*, 45(2), 331-351.
- Dunn, J., & Schweitzer, M. E. (2005). Why good employees make unethical decisions: The role of reward systems, organizational culture, and managerial oversight. *Managing organizational deviance*, 39-68.
- Dunn, J. R., & Schweitzer, M. E. (2006). Green and mean: Envy and social undermining in organizations. In *Ethics in Groups* (pp. 177-197). Emerald Group Publishing Limited.
- Dweck, C. S. (1989). Motivation. In A. Lesgold & R. Glaser (Eds.). *Foundations for a psychology of education*. Hillsdale, NJ: Law.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological review*, 95(2), 256.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of personality and social psychology*, 72(1), 218.
- Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of personality and social psychology*, 80(3), 501.
- Ellis, H. C., Moore, B. A., Varner, L. J., Ottaway, S. A., & Becker, A. S. (1997). Depressed mood, task organization, cognitive interference, and memory: Irrelevant thoughts predict recall performance. *Journal of Social Behavior and Personality*, 12(2), 453.
- Ensher, E. A., & Murphy, S. E. (1997). Effects of race, gender, perceived similarity, and contact

- on mentor relationships. *Journal of Vocational Behavior*, 50(3), 460-481.
- Falk, A., & Heckman, J. J. (2009). Lab experiments are a major source of knowledge in the social sciences. *science*, 326(5952), 535-538.
- Ferrin, D. L., Bligh, M. C., & Kohles, J. C. (2008). It takes two to tango: An interdependence analysis of the spiraling of perceived trustworthiness and cooperation in interpersonal and intergroup relationships. *Organizational Behavior and Human Decision Processes*, 107(2), 161-178.
- Fisher, S. L., & Ford, J. K. (1998). Differential effects of learner effort and goal orientation on two learning outcomes. *Personnel Psychology*, 51(2), 397-420.
- Fitzpatrick, J., Gareau, A., Lafontaine, M. F., & Gaudreau, P. (2015). How to use the actor-partner interdependence model (apim) to estimate different dyadic patterns in mplus: a step-by-step tutorial. *The Quantitative Methods for Psychology*, 12(1), 74-86.
- Gardner, D. G., Dunham, R. B., Cummings, L. L., & Pierce, J. L. (1989). Focus of attention at work: Construct definition and empirical validation. *Journal of Occupational Psychology*, 62(1), 61-77.
- George, J. M. (2007). 9 Creativity in Organizations. *The academy of management annals*, 1(1), 439-477.
- Gilson, L. L. (2008). Why be creative: A review of the practical outcomes associated with creativity at the individual, group, and organizational levels. *Handbook of organizational creativity*, 303-322.
- Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of teams' engagement in creative processes. *Journal of management*, 30(4), 453-470.
- Gino, F., & Ariely, D. (2012). The dark side of creativity: original thinkers can be more dishonest. *Journal of personality and social psychology*, 102(3), 445.
- Gong, Y., Huang, J. C., & Farh, J. L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of management Journal*, 52(4), 765-778.
- Gordon, M.E., Slade, L. A., & Schmitt, N. (1986) The "science of the sophomore" revisited: From conjecture to empiricism. *Academy of Management Review*, 11, 191-207.
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American*

- sociological review*, 161-178.
- Gross, M. A., Guerrero, L. K., & Alberts, J. K. (2004). Perceptions of conflict strategies and communication competence in task-oriented Dyads. *Journal of Applied Communication Research*, 32(3), 249-270.
- Harackiewicz, J. M. (1979). The effects of reward contingency and performance feedback on intrinsic motivation. *Journal of personality and social psychology*, 37(8), 1352.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Heyman, G. D., & Dweck, C. S. (1992). Achievement goals and intrinsic motivation: Their relation and their role in adaptive motivation. *Motivation and emotion*, 16(3), 231-247.
- Hirst, G., Van Dick, R., & Van Knippenberg, D. (2009). A social identity perspective on leadership and employee creativity. *Journal of Organizational Behavior*, 30(7), 963-982.
- Hirst, G., Van Knippenberg, D., & Zhou, J. (2009). A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of management journal*, 52(2), 280-293.
- Holyoak, K. J., & Gordon, P. C. (1983). Social reference points. *Journal of Personality and Social Psychology*, 44(5), 881.
- Ilies, R., Fulmer, I. S., Spitzmuller, M., & Johnson, M. D. (2009). Personality and citizenship behavior: the mediating role of job satisfaction. *Journal of Applied Psychology*, 94(4), 945.
- Joo, B. K. B., Song, J. H., Lim, D. H., & Yoon, S. W. (2012). Team creativity: the effects of perceived learning culture, developmental feedback and team cohesion. *International Journal of Training and Development*, 16(2), 77-91.
- Kang, H. R., Yang, H. D., & Rowley, C. (2006). Factors in team effectiveness: Cognitive and demographic similarities of software development team members. *Human Relations*, 59(12), 1681-1710.
- Kardes, F. R. (1996). In defense of experimental consumer psychology. *Journal of Consumer Psychology*, 5(3), 279-296.
- Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior*, 30(6), 785-804.

- Katz, D. (1964). The motivational basis of organizational behavior. *Systems Research and Behavioral Science*, 9(2), 131-146.
- Kenny, D. A. (1996). Models of non-independence in dyadic research. *Journal of Social and Personal Relationships*, 13(2), 279-294.
- Kenny, D. A., & Cook, W. (1999). Partner effects in relationship research: Conceptual issues, analytic difficulties, and illustrations. *Personal Relationships*, 6(4), 433-448.
- Kenny, D. A., & Judd, C. M. (1986). Consequences of violating the independence assumption in analysis of variance. *Psychological Bulletin*, 99(3), 422.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York: Guilford Press.
- Kenny, D. A., & Ledermann, T. (2010). Detecting, measuring, and testing dyadic patterns in the actor-partner interdependence model. *Journal of Family Psychology*, 24(3), 359.
- Kidwell, R. E., & Bennett, N. (1993). Employee propensity to withhold effort: A conceptual model to intersect three avenues of research. *Academy of management review*, 18(3), 429-456.
- Krasikova, D. V., & LeBreton, J. M. (2012). Just the two of us: Misalignment of theory and methods in examining dyadic phenomena. *Journal of Applied Psychology*, 97(4), 739.
- Lewicki, R. J., McAllister, D. J., & Bies, R. J. (1998). Trust and distrust: New relationships and realities. *Academy of management Review*, 23(3), 438-458.
- Lieberman, N., Trope, Y., & Wakslak, C. (2007). Construal level theory and consumer behavior. *Journal of Consumer Psychology*, 17(2), 113-117.
- Little, R. J., & Rubin, D. B. (2002). Bayes and multiple imputation. *Statistical Analysis with Missing Data, Second Edition*, 200-220.
- McGrath, J.E. 1982. "Dilemmatics: The Study of Research Choices and Dilemmas." In *Judgement Calls in Research*, edited by J.E. McGrath, J. Martin, and R.A. Kula, 69– 101. Beverly Hills, CA: Sage Publications.
- Naslund, D. 2002.
- McNeely, B. L., & Meglino, B. M. (1994). The role of dispositional and situational antecedents in prosocial organizational behavior: An examination of the intended beneficiaries of prosocial behavior. *Journal of applied psychology*, 79(6), 836.
- Mednick, S. (1962). The associative basis of the creative process. *Psychological review*, 69(3),

- Mednick, S. A., & Mednick, M. T. (1967). *Examiner's manual, Remote Associates Test: College and adult forms 1 and 2*. Houghton Mifflin.
- Miller, D. T. (2001). Disrespect and the experience of injustice. *Annual review of psychology*, 52(1), 527-553.
- Mohr, L. A., & Bitner, M. J. (1995). The role of employee effort in satisfaction with service transactions. *Journal of Business Research*, 32(3), 239-252.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological review*, 91(3), 328.
- Nonaka, I. 1991. The knowledge-creating company. *Harvard Business Review*, 69: 96–104.
- Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of management journal*, 39(3), 607-634.
- Olsen, J. A., & Kenny, D. A. (2006). Structural equation modeling with interchangeable dyads. *Psychological methods*, 11(2), 127.
- Olsson, L., Hemlin, S., & Pousette, A. (2012). A multi-level analysis of leader–member exchange and creative performance in research groups. *The Leadership Quarterly*, 23(3), 604-619.
- Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington Books/DC Heath and Com.
- Pieterse, A. N., Van Knippenberg, D., & Van Dierendonck, D. (2013). Cultural diversity and team performance: The role of team member goal orientation. *Academy of Management Journal*, 56(3), 782-804.
- Pinder, C. C. (2014). *Work motivation in organizational behavior*. Psychology Press.
- Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Porath, C. L., & Erez, A. (2007). Does rudeness really matter? The effects of rudeness on task performance and helpfulness. *Academy of Management Journal*, 50(5), 1181-1197.
- Puffer, S. M. (1987). Prosocial behavior, noncompliant behavior, and work performance among commission salespeople. *Journal of applied psychology*, 72(4), 615.
- Rotundo, M., & Sackett, P. R. (2002). The relative importance of task, citizenship, and

- counterproductive performance to global ratings of job performance: a policy-capturing approach. *Journal of applied psychology*, 87(1), 66.
- Rusbult, C. E., & Arriaga, X. B. (1997). Interdependence theory.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67.
- Sackett, P. R. (2002). The structure of counterproductive work behaviors: Dimensionality and relationships with facets of job performance. *International journal of selection and assessment*, 10(1-2), 5-11.
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual review of psychology*, 64, 361-388.
- Shalley, C. E. (1991). Effects of productivity goals, creativity goals, and personal discretion on individual creativity. *Journal of Applied psychology*, 76(2), 179.
- Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here?. *Journal of management*, 30(6), 933-958.
- Shin, S. J., & Zhou, J. (2003). Transformational leadership, conservation, and creativity: Evidence from Korea. *Academy of management Journal*, 46(6), 703-714.
- Shin, S. J., Kim, T. Y., Lee, J. Y., & Bian, L. (2012). Cognitive team diversity and individual team member creativity: A cross-level interaction. *Academy of Management Journal*, 55(1), 197-212.
- Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. *Advances in experimental social psychology*, 21, 181-227.
- Tesser, A., & Campbell, J. (1980). Self-definition: The impact of the relative performance and similarity of others. *Social Psychology Quarterly*, 341-347.
- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management journal*, 45(6), 1137-1148.
- Tierney, P., & Farmer, S. M. (2004). The Pygmalion process and employee creativity. *Journal of Management*, 30(3), 413-432.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance:

- Effects on representation, prediction, evaluation, and behavior. *Journal of consumer psychology*, 17(2), 83-95.
- Valentine, S., Godkin, L., Fleischman, G. M., & Kidwell, R. (2011). Corporate ethical values, group creativity, job satisfaction and turnover intention: The impact of work context on work response. *Journal of Business Ethics*, 98(3), 353-372.
- Van Baaren, R. B., Holland, R. W., Steenaert, B., & van Knippenberg, A. (2003). Mimicry for money: Behavioral consequences of imitation. *Journal of Experimental Social Psychology*, 39(4), 393-398.
- van den Bos, K. (2001). Fundamental research by means of laboratory experiments is essential for a better understanding of organizational justice. *Journal of Vocational Behavior*, 58(2), 254-259.
- VandeWalle, D. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement*, 57(6), 995-1015.
- Viswesvaran, C., & Ones, D. S. (2000). Perspectives on models of job performance. *International Journal of Selection and Assessment*, 8(4), 216-226.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work.
- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of management*, 17(3), 601-617.
- Windeler, J. B., Maruping, L. M., Robert, L. P., & Riemenschneider, C. K. (2015). E-profiles, conflict, and shared understanding in distributed teams. *Journal of the Association for Information Systems*, 16(7), 608.
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of management Review*, 14(3), 361-384.
- Zand, D. E. (1972). Trust and managerial problem solving. *Administrative science quarterly*, 229-239.
- Zhou, J. (2003). When the presence of creative coworkers is related to creativity: role of supervisor close monitoring, developmental feedback, and creative personality. *Journal of applied psychology*, 88(3), 413.

Zhou, J., & George, J. M. (2001). When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management journal*, 44(4), 682-696.

Zhou, J., & Shalley, C. E. (2011). Deepening our understanding of creativity in the workplace: A review of different approaches to creativity research.

Appendix 1

Survey 1

1. To what extent have you worked with your partner in the past?

1. Never
2. A few times
3. Several times
4. Often
5. A lot

2. Creative Self-Efficacy

Used for two groups: $\alpha = .83$ for group 1; $\alpha = .87$ for the other

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management journal*, 45(6), 1137-1148.

On a scale from 1 (strongly disagree) to 5 (strongly agree), please select how well the following statements represent you:

Strongly Disagree	Disagree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

I feel that I am good at generating novel ideas

I have confidence in my ability to solve problems and come up with ideas creatively

I have a knack for further developing the ideas of others

3. Goal Orientation (these are typically on a 1-7 scale)

VandeWalle, D. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement*, 57(6), 995-1015.

Learning Goal Orientation

$\alpha = .88$

On a scale from 1 (not at all) to 5 (to a large extent), how much do each of the statements represent you?

Not at all	Very Little	Neutral	Somewhat	To A Large Extent
1	2	3	4	5

I am willing to select a challenging tasks that I can learn a lot from

I often look for opportunities to develop new skills and knowledge

I enjoy challenging and difficult tasks where I'll learn new skills

For me, development of my ability to do different things is important enough to take risks

I prefer to work in situations that require a high level of ability and talent

Performance-Prove Goal Orientation

Performance-prove

$\alpha = .84$

On a scale from 1 (not at all) to 5 (to a large extent), how much do each of the statements represent you?

Not at all	Very Little	Neutral	Somewhat	To A Large Extent
1	2	3	4	5

I'm concerned with showing that I can perform better than my peers

I try to figure out what it takes to prove my ability to others

I enjoy it when others are aware of how well I am doing

I prefer to work on projects where I can prove my ability to others

Performance-Avoid Goal Orientation

Performance-avoid

$\alpha = .83$

On a scale from 1 (not at all) to 5 (to a large extent), how much do each of the statements represent you?

Not at all	Very Little	Neutral	Somewhat	To A Large Extent
1	2	3	4	5

I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others

Avoiding a show of low ability is more important to me than learning a new skill

I'm concerned about taking on a task if my performance would reveal that I had low ability

I prefer to avoid situations where I might perform poorly

4. Openness to Experience

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five inventory-versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research

$\alpha = .80$

Below are a number of characteristics that may or may not apply to you. On a scale from 1 (disagree strongly) to 5 (agree strongly), please select the number that indicates the extent to which you agree or disagree with the statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1	2	3	4	5

I see myself as someone who...

Is original, comes up with new ideas.

Is curious about many different things.

Is ingenious, a deep thinker.

Has an active imagination.

Is inventive.

Values artistic, aesthetic experiences.

Prefers work that is routine (R)

Likes to reflect, play with ideas.

Has few artistic interests (R)

Is sophisticated in art, music, or literature.

5. Conscientiousness

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five inventory-versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research

$\alpha = .82$

Below are a number of characteristics that may or may not apply to you. On a scale from 1 (disagree strongly) to 5 (agree strongly), please select the number that indicates the extent to which you agree or disagree with the statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1	2	3	4	5

I see myself as someone who...

Does a thorough job.

Can be somewhat careless (R)

Is a reliable worker.

Tends to be disorganized (R)

Tends to be lazy (R)

Perseveres until the task is finished

Does things efficiently

Makes plans and follows through with them

Is easily distracted (R)

6. Agreeableness

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five inventory-versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research

$\alpha = .79$

Below are a number of characteristics that may or may not apply to you. On a scale from 1 (disagree strongly) to 5 (agree strongly), please select the number that indicates the extent to which you agree or disagree with the statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree
-------------------	-------------------	----------------------------	----------------	-------

1	2	3	4	5
---	---	---	---	---

I see myself as someone who...

Tends to find fault with others (R)

Is helpful and unselfish with others

Starts quarrels with others (R)

Has a forgiving nature

Is generally trusting

Can be cold and aloof (R)

Is considerate and kind to almost everyone

Is sometimes rude to others (R)

Likes to cooperate with others

7. Risk Aversion

Donthu, N., & Garcia, A. (1999). The internet shopper. *Journal of advertising research*, 39(3), 52-52.

$a = .78$

On a scale from 1 (strongly disagree) to 5 (strongly agree), how much do you agree with the following statements:

Strongly Disagree	Moderately Disagree	Neither Agree nor Disagree	Moderately Agree	Strongly Agree
-------------------	---------------------	----------------------------	------------------	----------------

1	2	3	4	5
---	---	---	---	---

I would rather be safe than sorry.

I want to be sure about something before I make a decision. (*this did say "I want to be sure before I purchase anything"*)

I avoid risky situations.

8. Envy (dispositional)

Smith, R. H., Parrott, W. G., Diener, E. F., Hoyle, R. H., & Kim, S. H. (1999). Dispositional envy. *Personality and Social Psychology Bulletin*, 25(8), 1007-1020.

$\alpha = .83$

On a scale from 1 (strongly disagree) to 5 (strongly agree), how much do you agree with the following statements:

Strongly Disagree	Moderately Disagree	Neither Agree nor Disagree	Moderately Agree	Strongly Agree
1	2	3	4	5

I feel envy every day.

The bitter truth is that I generally feel inferior to others.

Feelings of envy constantly torment me.

It is so frustrating to see some people succeed so easily.

No matter what I do, envy always plagues me.

I am troubled by feelings of inadequacy.

It somehow doesn't seem fair that some people seem to have all the talent.

Frankly, the success of my peers makes me resent them.

9. Extraversion

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five inventory-versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research

$\alpha = .86$

Below are a number of characteristics that may or may not apply to you. On a scale from 1 (disagree strongly) to 5 (agree strongly), please select the number that indicates the extent to which you agree or disagree with the statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1	2	3	4	5

I see myself as someone who...

Is talkative.

Is reserved (r)

Is full of energy.

Generates a lot of enthusiasm.

Tends to be quiet (r)

Has an assertive personality

Is sometimes shy, inhibited (r)

Is outgoing, sociable.

10. Creative Identity

Farmer, S. M., Tierney, P., & Kung-McIntyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal*, 46(5), 618-630.

$\alpha = .80$

On a scale from 1 (strongly disagree) to 5 (strongly agree), how much do you agree with the following statements?

Strongly Disagree	Disagree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

I often think about being creative.

I do not have any clear concept of myself as a creative person. (r)

To be a creative person is part of my identity.

Appendix 2

Survey 2

1. Creative Effort (Self) (these are typically on 7 pt scale. Are adapted to fit our study)

Hirst, G., Van Dick, R., & Van Knippenberg, D. (2009). A social identity perspective on leadership and employee creativity. *Journal of Organizational Behavior*, 30(7), 963-982.

$\alpha = .74$

On a scale from 1 (strongly disagree) to 5 (strongly agree), rate how much these items are representative of **you**.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

In the previous task, I...

Invested considerable effort to identify ways to enhance my design ideas.

Incorporated new ideas into my design.

Suggested ideas that were novel and unique.

2. Perceived Partner Creative Effort (these are typically on 7 pt. scale. Adapted to fit study)

On a scale from 1 (strongly disagree) to 5 (strongly agree), rate how much these items are representative of **your partner**.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

In the previous task, my partner....

Invested considerable effort to identify ways to enhance his/her design ideas.

Incorporated new ideas into his/her design.

Suggested ideas that were novel and unique.

3. Perceived Similarity

On a scale from 1 (not at all) to five (to a great extent), please answer the following questions:

Not At All	Very Little	Neutral	Somewhat	To a Great Extent
1	2	3	4	5

Based on desire to succeed, how similar are you and your partner?

Overall, how similar are you and your partner?

4. Using a total of 100 percentage points, please allocate the number that you and your partner should each receive based on the effort you put into the previous task. The total should equal 100 percent.

Me: _____

My partner: _____

Appendix 3

Survey 3

1. Creative Effort (Self) (these are typically on 7 pt scale. Are adapted to fit our study)

Hirst, G., Van Dick, R., & Van Knippenberg, D. (2009). A social identity perspective on leadership and employee creativity. *Journal of Organizational Behavior*, 30(7), 963-982.

$\alpha = .74$

On a scale from 1 (strongly disagree) to 5 (strongly agree), rate how much these items are representative of **you**.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

In the previous task, I...

Invested considerable effort to identify ways to enhance my design ideas.

Incorporated new ideas into my design.

Suggested ideas that were novel and unique.

2. Perceived Partner Creative Effort (these are typically on 7 pt. scale. Adapted to fit study)

On a scale from 1 (strongly disagree) to 5 (strongly agree), rate how much these items are representative of **your partner**.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

In the previous task, my partner....

Invested considerable effort to identify ways to enhance his/her design ideas.

Incorporated new ideas into his/her design.

Suggested ideas that were novel and unique.

3. Perceived Partner Prosocial Behavior

On a scale from 1 (strongly disagree) to 5 (strongly agree), please rate to what extent your partner engaged in the following behaviors during the previous two tasks:

Not at all	Very Little	Neutral	Somewhat	To A Large Extent
1	2	3	4	5

Was willing to suggest new ideas.

Was engaged in the task.

Listened to your ideas and helped you to improve them.

Offered his/her own original ideas.

Gave you more help than you expected them to.

Offered to be the scribe.

Took the task seriously to better your joint outcome.

4. Perceived Partner Social Undermining

Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of management Journal*, 45(2), 331-351.

$\alpha = .85$ for full scale

On a scale from 1 (strongly disagree) to 5 (strongly agree), please rate to what extent your partner engaged in the following behaviors during the previous two tasks:

Not at all	Very Little	Neutral	Somewhat	To A Large Extent
1	2	3	4	5

Delayed offering ideas to make you look bad or slow you down

Belittled your ideas

Hurt your feelings

Gave you negative feedback about your ideas that was not constructive

Did not give as much help as you expected them to

Competed with you

Let you know that he/she did not like something about you

5. Using a total of 100 percentage points, please allocate the number that you and your partner should each receive based on the effort you put into the previous task. The total should equal 100 percent.

Me: _____

My partner: _____

6. Personal perception of competition/cooperation

In the previous two tasks, do you feel like you have been trying to cooperate or compete with your partner?

1. Cooperate
2. Compete

7. Emotions (PANA)

Please rate how strongly you are currently feeling each emotion, using the following scale:

Not at All	A Little Bit	Moderately	Quite a Bit	Extremely
1	2	3	4	5

Enthusiastic

Interested

Determined

Excited

Inspired

Alert

Active

Strong

Proud

Attentive

Scared

Afraid

Upset

Distressed

Jittery

Nervous

Ashamed

Guilty

Irritable

Hostile

Appendix 4

Survey 4

1. OCB-Helping

Your partner needs one extra lab credit for another class they are taking. This lab credit requires your partner to work with someone who they have worked on a lab task with before. Even though you have completed your lab credits, are you willing to help your partner with the credit they still need?

1. Yes
2. No

2. Personal perception of competition/cooperation

In the previous word anagram task, do you feel like you have been trying to cooperate or compete with your partner?

1. Cooperate
2. Compete

3. Desire to work with the person again

On a scale from 1 (not at all) to five (to a great extent), please answer the following:

Not At All	Very Little	Neutral	Somewhat	To a Great Extent
1	2	3	4	5

How much do you desire to work with the person again in the future?

4. Using a total of 100 points, please allocate the amount of points both you and your partner should receive based on the effort you put into the previous task. The total should equal 100 points.

Me: _____

My partner: _____

5. Emotions (PANA)

Please rate how strongly you are currently feeling each emotion, using the following scale:

Not at All	A Little Bit	Moderately	Quite a Bit	Extremely
1	2	3	4	5

Enthusiastic

Interested

Determined

Excited

Inspired

Alert

Active

Strong

Proud

Attentive

Scared

Afraid

Upset

Distressed

Jittery

Nervous

Ashamed

Guilty

Irritable

Hostile

6. Please select your current major:

1. Accounting

2. Business Economics

3. Entrepreneurship
4. Information Systems
5. Insurance & Risk Management
6. International Business
7. Marketing
8. Operations Management
9. Economics
10. Industrial Management
11. Other

7. What is your current age?

8. Please select your gender

1. Male
2. Female

9. Year in School

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Other

10. Ethnicity

1. Hispanic or Latino
2. Black or African American
3. White/Caucasian
4. Native American or American Indian
5. Asian/Pacific Islander
6. Other