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Predicting psychological safety and its outcome in the workplace

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PREDICTING PSYCHOLOGICAL SAFETY AND ITS OUTCOME IN
THE WORKPLACE

A Thesis

Presented to

The Faculty of the Department of Psychology

San Jose State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science

by

Diana Mi Sook Kim

August 2006

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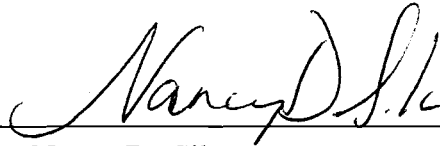
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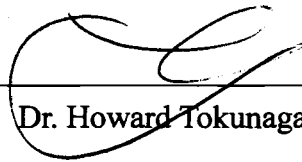
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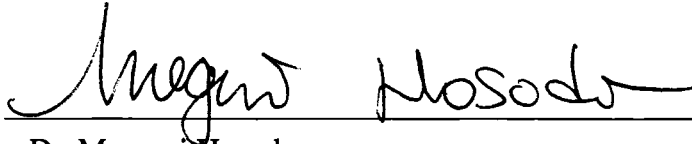
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ABSTRACT

PREDICTING PSYCHOLOGICAL SAFETY AND ITS OUTCOME IN THE WORKPLACE

by Diana Mi Sook Kim

This thesis considers the relationship of psychological safety with its predictors (satisfaction with supervisor and satisfaction with coworkers) as well as its outcome (employee creativity) in the workplace. Psychological safety is defined as one's perceptions about the consequences of interpersonal risks in the workplace and willingness to contribute ideas and actions to collective work in an organization. Results indicated that both satisfaction with supervisor and satisfaction with coworkers are important predictors of psychological safety and that psychological safety predicts employee creativity. These findings have important implications for research in psychological safety. Limitations and opportunities for future research are also presented.

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Introduction

In a work environment employees should be able to feel comfortable to speak up, seek feedback, voice their concerns, and bring up questions and doubts they might have. A work climate where employees feel secure without fear of personal censure fosters the generation of new ideas (West, 1990), which in turn is important to organizations in rapid changing markets to remain competitive and be successful (Oldham, 2004). In order for incumbents to feel safe and know that they are able to take risks without fear, it is essential to create a work environment that promotes such feeling. This feeling is referred to as psychological safety. Given this knowledge, the purpose of the present study is to assess factors that predict psychological safety (satisfaction with supervisor and coworkers), as well as an outcome of psychological safety (employee creativity).

Definition of Psychological Safety

Edmondson (2004) referred to psychological safety as one's willingness to contribute ideas and actions to collective work and it describes an individual's perceptions about the consequences of interpersonal risks in the workplace. It consists of taken-for-granted beliefs about how others will react and respond to one's actions, such as reporting a mistake or recommending a new idea. Kahn (1990) has similarly defined psychological safety as feeling "able to show and employ one's self without fear of negative consequences to self-image, status or career" (p. 708).

According to Edmondson (2004) psychological safety does not imply having close personal friends in a pleasant work environment or an absence of pressure and

problems. Rather, it fosters an environment in which employees are able to have work-related open discussions, which in turn prevents problems or misunderstandings and contributes to the accomplishment of common goals of the team or group. Other authors have extended the term psychological safety into related constructs, which are discussed below.

Related constructs of psychological safety. Baer and Frese (2003) extended the psychological safety construct to an organizational climate for psychological safety, which they defined as a work environment where employees feel safe to perform trustful interactions with others because the organization promotes and supports practices that will lead to such climate. Thus, a climate for psychological safety explains the safe work environment itself, where employees are able to voice their concerns and opinions without fear of being rejected, instead of focusing on the individual's perception of safety. This organizational climate for psychological safety construct differs from Edmondson's (2004) construct of psychological safety in that a climate for psychological safety is specifically generated by organizational practices and procedures, whereas Edmondson does not specify what generates psychological safety in her definition.

Another construct that stems from psychological safety is self psychological safety, which Tynan (2005) defined as how safe an individual feels in relation to a specific other person. Self psychological safety is similar to Edmondson's (2004) definition of psychological safety, but it differs in the sense that an individual's psychological safety is towards a specific person, whereas Edmondson affirms one's psychological safety to be towards others in the organization in general.

Trust versus psychological safety. There is no one universally accepted definition of trust (Edmondson, 2004), but most include an aspect of perceived risk of vulnerability - also present in psychological safety. Trust has been conceptualized as “the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the truster, irrespective of the ability to monitor or control the other party” (Mayer, Davis, & Schoorman, 1995, p. 712). Similarly, Jones and George (1998) affirmed that trust is an expression of confidence between two people, an exchange of confidence that they will not be harmed or put in risk by each others actions.

Edmondson (1999) argued that psychological safety involves but goes beyond interpersonal trust, meaning that the sense of confidence present in psychological safety that one will not be rejected or attacked from speaking up stems from mutual trust. However, “building trust may not necessarily promote a respectful and caring climate, trust may provide a foundation for further development of the interpersonal beliefs that constitute psychological safety” (Edmondson, 1999, p. 375).

The concepts of psychological safety and trust are similar in the sense that “both describe psychological states involving perceptions of risk or vulnerability and making choices to minimize negative consequences, and both have potential positive consequences for work groups and organizations” (Edmondson, 2004, p. 243). Edmondson, however, proposes that they are distinct interpersonal beliefs in three elements: the object of focus, time-frame, and level of analysis. First, in discussing psychological safety, the focus is on one’s self, that is, an individual will monitor her *own*

actions in order to protect herself, whereas trust entails trying to protect herself by monitoring *other's* actions. Regarding time-frame, psychological safety considers short-term interpersonal consequences one expects from a certain action. In contrast, trust pertains to anticipated long-term consequences. Lastly, in a group level of analysis, psychological safety differs from trust in the way that it tends to be experienced at the group level of analysis, whereas trust pertains primarily to a dyadic relationship. Having the distinction between these two constructs clear, a brief overview of the present study is presented in order to clarify the sections that will follow below.

Overview of Present Study

Psychological safety is a relatively new construct that was first developed in the area of clinical psychology. As a number of studies conducted in this field have indicated, psychological safety allows one to focus on problem prevention instead of problem solving, which can lead to self-protection and make one fear the consequences of fixing the problem such as being blamed responsible for it (Edmondson, 2004). For instance, psychological safety has been found to be an important element of a therapeutic context (Swift & Copeland, 1996; Waks, 1988). Rappoport (1997) found that once patients feel that they are safe to confide personal issues with their therapist they show decreased defensiveness, increased self-acceptance, self-confidence, and self-esteem. In 1990, Kahn adopted the term psychological safety to the work setting and several studies have been conducted examining the predictors and consequences of psychological safety (e.g., Edmondson, 1999; May, Gilson, & Harter, 2004).

The present study examines psychological safety in relation to satisfaction with supervisor, satisfaction with coworkers, and creativity. Discussion on predictors of psychological safety will be presented next with a focus on satisfaction with supervisor and coworkers, followed by another section that will examine outcomes of psychological safety focusing on employee creativity.

Predictors of Psychological Safety

Understanding how to create positive states such as psychological safety is a challenge in organizational research (Edmondson, 2004). This section outlines predictors that have been found to promote psychological safety in the workplace. For example, Lau and Murnighan (2005) investigated psychological safety in demographically diverse groups. Contrary to the authors' prediction, the findings of this experimental field study indicated that members of more diverse groups experienced more psychological safety than members of less diverse groups. The authors attribute this to the increasing diversity in the workforce, particularly in the United States. Thus, homogeneity in groups may no longer be generally or uniformly helpful, but instead their effectiveness may depend on whether groups are demographically diverse. This research finding extended Edmondson's (1999) theory that team structure contributes to beliefs of psychological safety.

In an organizational level, Edmondson (1999) found that context support, defined as adequate resources, information, and rewards available, was helpful but not essential in promoting psychological safety, the argument being that access to such context support would reduce the insecurity and defensiveness of employees. Moreover, Lee,

Edmondson, Thomke, and Worline (2004) demonstrated that inconsistency in organizational conditions such as rewards, values, and evaluation systems lowers psychological safety. The implication of their finding is that inconsistent conditions make the rules unpredictable and ambiguous reducing psychological safety and thus experimentation of new ideas in the workplace.

Concerning an approach on individuals and their relationships and perceptions in the workplace, Kahn (1990) found that interpersonal relationships and organizational norms directly predicted psychological safety. Interpersonal relationships promoted psychological safety when they were supportive and trusting because such relationships had a flexibility that allowed people to try and possibly fail without fear of negative consequences. Regarding organizational norms, defined as shared expectations about the general behaviors of others, people who stayed within generally appropriate ways of working and behaving felt safer than those who strayed outside those protective boundaries. Moreover, Edmondson and Woolley (2003) affirmed that employees' perceptions of their managers' intentions and attitudes towards employees play an important role in shaping the degree of psychological safety they experience at work. Thus, one's satisfaction with his/her supervisor might predict psychological safety.

Satisfaction with supervisor. According to Hackman and Oldham (1980), satisfaction with supervisor is defined as how satisfied employees are with their supervisors in terms of fair treatment, respect and amount of support and guidance received, and overall quality of the supervision.

The research literature has demonstrated that employees are conscious and sensitive to their leader's behavior and that both formal and informal relations affect employees' perceptions of interpersonal risk in the workplace in various ways, starting with leader or supervisor relations (Tyler & Lind, 1992). For instance, people feel psychologically safer when they connect to others and experience openness and supportiveness (Gibb, 1961; Jourard, 1968). Therefore, the relation with one's immediate supervisor can have influence on individual's perceptions of the safety of a work environment (Edmondson, 1999). Consequently, interpersonal relationships are very important in promoting a safe environment. Also, supportive, resilient and clarifying management style was found to increase psychological safety as it allowed people to try and fail without fear of consequences (Kahn, 1990).

Deci and Ryan (1987) found that supervisors who promote a supportive work environment show concern for employees' needs and feelings, provide positive feedback and encourage them to voice their concerns, develop employees' new skills and solve their work-related problems. Consequently, supervisor relations were found to be positively related to psychological safety, that is, the more supportive management is the more employees perceive safety in the work environment (May et al., 2004). In a related vein, Tynan (2005) found that employees tend to be more psychologically safe when supervisors are supportive and aware of employees' needs and concerns, also finding additional support for Edmondson's (1999) claim that supervisor supportiveness is positively related to psychological safety.

These findings support the idea that satisfaction with supervisor leads to psychological safety, even though research has not addressed this relationship directly, but according to Hackman's and Oldham's (1980) definition of satisfaction with supervisor it is plausible to make such an inference. Thus, the present study attempts to fill in this gap in research examining the direct relationship of satisfaction with supervisor and psychological safety, hence the following hypothesis was tested:

Hypothesis 1: Satisfaction with supervisor predicts psychological safety.

Satisfaction with coworkers. The definition of satisfaction with coworkers, according to Hackman and Oldham (1980), is how satisfied one is with people s/he works with, and more specifically, how satisfied one is with the opportunity to get to know other people and help them at work.

Although the relationship of satisfaction with coworkers and psychological safety has not been looked at directly, past research shows that such an assumption of an existing relationship can be made. For instance, May et al. (2004) found that relations with coworkers are just as important as relations with supervisors in the sense that when coworker behaviors are perceived to be supportive and trustworthy in nature, feelings of psychological safety are likely to be produced.

Kahn (1990) also found that interpersonal relationships among employees promoted psychological safety when they were supportive and trusting. Moreover, Edmondson (1996) found that the quality of relations – whether leaders make themselves available and approachable – in the workplace had an impact on employees' perception of psychological safety, that is, shared beliefs regarding whether mistakes would be held

against them. Consequently, when employees are satisfied with their coworkers and maintain good relations with them, employees are more likely to experience psychological safety. Thus:

Hypothesis 2: Satisfaction with coworkers predicts psychological safety.

Outcomes of Psychological Safety

The presence and degree of psychological safety is likely to affect the way employees behave in the workplace (Edmondson, 2004). For instance, Baer and Frese (2003) found in their study that companies that encourage employees to engage in self-starting behavior and provide a non-threatening psychologically safe work environment are more successful in terms of company goal achievement.

With respect to a more narrow approach on the job itself, in a qualitative study, Kahn (1990) found that the more psychological safety was present the more one was engaged in an activity. Abraham (2004) presented a model that proposes, although not empirically tested, that psychological safety leads to job involvement and superior performance in tasks.

At an individual level, Peltokorpi (2004) found that psychological safety enhances interpersonal communication with people within the organization. Tynan (2005) found that psychological safety is useful in predicting how one will react to a face threat (e.g., criticism). That is, the less psychologically safe the person is the more he or she is likely to respond to it with a negative affective reaction such as anger, hurt feelings, and feeling of betrayal.

Related to the present study, Edmondson and Woolley (2003) affirmed that if interpersonal relations are characterized by psychological safety, employees are more likely to engage in experimentations displaying new behaviors or ideas. Therefore, psychological safety might foster creativity in the workplace.

Employee creativity. It has been argued that enhancing the creative performance of employees is a necessary step if organizations are to achieve a competitive advantage (Oldham & Cummings, 1996). Employee creativity is defined in the present study as the “generation of new and potentially valuable ideas concerning new products, services, manufacturing methods, and administrative processes” according to Zhou and George’s (2001, p. 682) conceptualization.

It is important to distinguish creativity from innovation as creativity refers to the development of novel, potentially useful ideas, and although employees might share these ideas with others, only when the ideas are successfully implemented at the organization or unit level would they be considered innovation (Amabile, 1996). Therefore, creativity might best be conceptualized as a first step that is necessary for subsequent innovation, which is defined as doing novel or different things intelligently to produce useful outcomes (Edmondson, 2004).

Psychological safety has not been previously considered as a predictor of creativity. Therefore, it is necessary to consider related organizational research in order to provide support for its inclusion in the present study. There are a number of studies that assess psychological safety and innovation or innovative behavior that can provide support for the proposed framework in this study. For example, West (1990) proposed

that “risk-taking or innovation is more likely in situations of high psychological safety” (p. 313) and that “work group members are more likely to take risk of proposing new and improved ways of working in a climate which they perceive as personally non-threatening and supportive” (p. 313). West also argued that participation leads to less resistance to change and more innovative behavior. This increased interaction leads to cross-fertilization of ideas, which is important to creativity and innovation. Similarly, psychological safety promotes information sharing and gives individuals more knowledge to develop ideas. In addition, Oldham (2004) suggested that a safe climate is a necessary component in the work environment for creativity to occur.

Anderson and West (1998) confirmed in their study the propositions mentioned above as they found that perceptions of interpersonal safety and trust were important predictors of innovations in a group setting. Moreover, Baer and Frese (2003) showed that those working in organizations that provide a personally non-threatening and supportive climate are more likely to take the risk of voicing new ideas than in environments where such behavior is believed to lead to an attack.

Consequently, feeling safe to take interpersonal risks without fear of rejection by group members should foster an environment where one is comfortable to come up with new ideas. Thus:

Hypothesis 3: Psychological safety predicts employee creativity.

Method

Participants

The participants of this study were employees in seven departments of a joint public and University library in Northern California. A total of 162 employees responded to the survey voluntarily, yielding a response rate of 61%.

Among the participants, 40% were employed by the University, and 35% held supervisory positions. Twenty-one percent of the participants reported that they were professional librarians, and 42% worked part time. Other demographic information such as gender and ethnicity were not collected to maintain anonymity of the participants.

Procedure

All employees over the age of eighteen were asked and encouraged to participate in order to voice their opinion about the recent library partnership. It is essential to note that the measures used in this study are part of a larger study conducted at the library, which included other measures.

The surveys were given to the unit head of each department, who in turn distributed the surveys to the employees. Participation was anonymous and the responses were confidential. Unit-heads were contacted one week after the surveys were distributed as a reminder to encourage participation in the study. The survey was a paper and pencil administration. Written instructions asked participants to respond to how they felt about their job, their coworkers, and the organization as a whole, drawing from experiences within the last month. They were also instructed to be as honest and

accurate as possible.

Measures

Psychological safety. Psychological safety was defined as one's perceptions about the consequences of interpersonal risks in the workplace and willingness to contribute ideas and actions to collective work and it was measured by averaging seven items from Edmondson (1999). Among the seven items, three were reverse-coded so that higher scores reflected greater psychological safety perception. Participants were instructed to respond to the items on a five-point scale that ranged from *strongly disagree* (1) to *strongly agree* (5). For example, one of the items asked participants the degree to which they agreed or disagreed that "No one in this unit would deliberately act in a way that undermines my efforts." Cronbach's alpha for the team psychological safety measure was .82.

Satisfaction with supervisor. The extent to which employees are satisfied with their supervisor was measured by averaging three items from Hackman and Oldham (1980). Participants were asked to respond to the items on a five-point scale ranging from *extremely dissatisfied* (1) to *extremely satisfied* (5). A sample item of the satisfaction with supervisor measure is: "The amount of support and guidance I receive from my unit head." Cronbach's alpha for this measure was .89.

Satisfaction with coworkers. The extent to which employees are satisfied with their coworkers was assessed through three items from Hackman and Oldham (1980). Participants were asked to rate their satisfaction level to items such as "The people I talk to and work with on my job." The response scale was a five-point scale ranging from

extremely dissatisfied (1) to *extremely satisfied* (5). Cronbach's alpha for satisfaction with coworkers measure was .70.

Employee creativity. Creativity, in this study, was referred to as the development of novel and potentially useful ideas. This construct was measured by averaging six items from Zhou and George (2001). Sample items include: "I come up with creative solutions to problems at work" and "I develop adequate plans and schedules for the implementation of new ideas". The participants were instructed to respond to the items on a five-point scale that ranged from *strongly disagree* (1) to *strongly agree* (5). Cronbach's alpha for employee creativity was .91.

Results

The first step of the data analyses, in order to test the hypotheses and conduct regression analyses, was to conduct inter-item correlations, factor analysis, and develop scale means for the constructs. Therefore, results begin with a description of this process, specifically discussing the results of the factor and reliability analyses. This section then proceeds with a discussion of the correlations among the four constructs of the study and its hypotheses testing.

Factor Analyses

Principal Component Analyses (PCA) was used to check the accuracy of the hypothesized models of satisfaction with supervisor and satisfaction with coworkers, that is, that they are different constructs. A forced factor analysis was conducted entering items of both measures and since the constructs are related, a direct oblimin form of rotation was used.

As anticipated, the results of the forced two factor solution provided evidence that the items of each measure properly load on different factors. The total variance accounted for was of 73%, having the first factor accounting for 53% of the variance including all three of the satisfaction with supervisor items. The second factor accounted for the remaining 20% of the variance and included all three satisfaction with coworkers items. As shown in Table 1, all items loaded as predicted and none were complex items, thus all items were retained for the remaining analyses. The two factors were moderately correlated ($r = .43, p < .01$) but appear to be distinct constructs. Therefore, there is one factor measuring satisfaction with supervisor being comprised of

Table 1.

Principal component analysis of satisfaction with supervisor and coworkers, with oblimin rotation.

Items	Component	
	Satisfaction with Supervisor	Satisfaction with Coworkers
The degree of respect and fair treatment I receive from my unit head.	.93	
The amount of support and guidance I receive from my unit head.	.93	
The overall quality of the supervision I receive in my work.	.86	
The people I talk to and work with on my job.		.78
The chance to get to know other people while on the job.		.80
The chance to help other people while at work.		.79

three items and a second factor measuring satisfaction with coworkers also being comprised of three items.

Regarding the psychological safety measure a forced one factor solution was conducted because this scale was established to measure one construct. The forced factor model confirmed a single-factor scale, having 47% of the total variance accounted for by the factor. All seven items loaded appropriately on the factor, as shown in Table 2. Thus, psychological safety was comprised of seven items for the rest of the analyses.

With respect to employee creativity, the forced factor analysis also verified one factor as hypothesized, which accounted for 69% of the total variance. Table 3 presents the factor loadings of the items. Therefore, all six employee creativity items were retained for the remaining analyses.

Reliability

Before creating the scale means, the internal consistency of each measure was calculated based on the results of the Principal Component Analyses. According to Nunnally (1978), a Cronbach's alpha that is greater than .70 is considered adequate. This criterion was used in evaluating the internal consistency of the measures included in this study. Firstly, coefficient alpha for the satisfaction with supervisor scale, comprised of three items, was .89, which was considered acceptable. Second, in term of satisfaction with coworkers, the coefficient alpha for the three initial items was .70, which was also deemed sufficient.

Table 2.

Principal component analysis of psychological safety.

Items	Component Psychological Safety
If you make a mistake in this unit, it is often held against you. (R)	.73
Members of this unit are able to bring up problems and tough issues.	.66
People in this unit sometimes reject others for being different. (R)	.65
It is safe to take a risk in this unit.	.72
It is difficult to ask members of this unit for help. (R)	.64
No one in this unit would deliberately act in a way that undermines my efforts.	.72
Working with members of this unit, my unique skills and talents are valued and utilized.	.68

Table 3.

Principal component analysis of employee creativity.

Items	Component Employee Creativity
I come up with new and practical ideas to improve performance.	.86
I am good source of creative ideas.	.79
I develop adequate plans and schedules for the implementation of new ideas.	.66
I come up with creative solutions to problems at work.	.88
I generate novel and useful work-related ideas.	.89
I suggest creative ways of performing new tasks.	.89

As for the seven items of psychological safety measure, the coefficient alpha was .82 and therefore considered internally consistent. Finally, looking at the criterion, the coefficient alpha for the employee creativity scale, which included six items, was .91 and thus considered acceptable.

Correlations among Measures

After calculating the means and standard deviations for each scales, correlations among measures were also computed (Table 4). Descriptive statistics showed that participants were similarly satisfied with both their supervisor ($M = 3.71, SD = .93$) and coworkers ($M = 3.73, SD = .62$). Participants also demonstrated to feel psychologically safe ($M = 3.39, SD = .65$) and to consider themselves creative ($M = 3.68, SD = .65$).

As anticipated, satisfaction with supervisor and satisfaction with coworkers were moderately and significantly correlated ($r = .44, p < .01$). Psychological safety was also significantly correlated to its predictors ($r = .56$ and $r = .43, p < .01$, satisfaction with supervisor and satisfaction with coworkers respectively). With respect to the relationship between psychological safety and employee creativity, these two constructs were positively and significantly correlated as expected, having a correlation coefficient of $r = .24, p < .01$.

Regression Analyses

A standard multiple regression model was used to test the hypotheses that satisfaction with supervisor and satisfaction with coworkers predict psychological safety (H1 and H2). Both predictors were entered simultaneously in the model for two

Table 4.

Descriptive statistics and correlations (N=160).

Variables	Mean	SD	1	2	3	4
1. Satisfaction with supervisor	3.71	.93	.89			
2. Satisfaction with coworkers	3.73	.62	.43 **	.70		
3. Psychological safety	3.39	.65	.55 **	.42 **	.82	
4. Employee creativity	3.68	.65	-.01	.19 *	.24 **	.91

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

Reliability is shown in bold on the diagonal.

All scales used a 5-point Likert scale.

reasons: first, the measures of satisfaction with supervisor and satisfaction with coworkers are intercorrelated ($r = .43$), thus it makes sense to take this correlation into account and enter the two measures together; second, by entering both predictors together family wise Type I error is also reduced. After discussing the results from this analysis, the third hypothesis testing will be discussed. It was hypothesized that psychological safety predicts employee creativity (H3).

Predicting psychological safety. The multiple regression analysis used psychological safety as its criterion. As can be seen in Table 5, the predictor variables (satisfaction with supervisor and satisfaction with coworkers) predicted 35% of variance in psychological safety, which is a significant amount, $R = .59$, $R^2 = .35$, $R^2_{adj} = .34$, $F(2,159) = 43.09$, $p < .001$. Both predictors, satisfaction with supervisor and satisfaction with coworkers, made significant contributions to psychological safety, having satisfaction with supervisor contribute more than satisfaction with coworkers, $\beta = .46$, $p < .001$, $\beta = .22$, $p < .001$, respectively.

Predicting employee creativity. The linear regression model used employee creativity as its criterion and psychological safety as its predictor. Table 6 shows that psychological safety significantly predicted 6% of the variance in employee creativity, $R = .24$, $R^2 = .06$, $R^2_{adj} = .05$, $F(1,158) = 9.44$, $p < .01$.

Exploratory Analyses

Given that the variance accounted for by psychological safety in relation to employee creativity was only 6%, as stated above, additional exploratory analyses were conducted in order to investigate the reason as to why this relationship, although

Table 5.

Multiple regression analysis predicting psychological safety.

Predictors	β	R^2
Satisfaction with Supervisor	.46 **	.35 **
Satisfaction with Coworkers	.22 *	

Note. ** $p < .001$, * $p < .01$.

Table 6.

Linear regression analysis predicting employee creativity.

Predictor	β	R^2
Psychological Safety	.24 *	.06 *

Note. * $p < .01$.

significant, was small and whether this relationship differs when splitting the sample into different groups. Thus, correlations were calculated using different demographics such as primary employer (public vs. university library), position held (supervisory vs. non-supervisory position), and number of hours worked (full-time vs. part-time).

The results showed that when analyzing the correlation of psychological safety and employee creativity of only those employees who work for the public library in the sample ($n = 96$), the coefficient is $r = .32, p < .01$; whereas, when analyzing the correlation of those who have the university library as a primary employer ($n = 64$) the relationship was not significant ($r = .06, ns$). Concerning the nature of position participants hold, the sample of those who have a non-supervisory position ($n = 98$) revealed a significant correlation, $r = .24, p < .01$; though the sample that hold supervisory positions ($n = 57$) did not reveal a significant correlation ($r = .17, ns$). With respect to number of hours worked, 40 hours or more per week was considered full-time while less than 40 hours a week was considered part-time. Results showed that the sample that works full-time ($n = 90$) had a significant correlation between psychological safety and employee creativity, $r = .31, p < .01$. Those who work part-time ($n = 67$) did not reveal a significant relationship between the two constructs ($r = .13, ns$). Thus, for those participants who are employed by the public library psychological safety was related to employee creativity. Likewise, the participants who hold non-supervisory positions showed that the more they experience psychological safety the more they think of themselves being creative in the workplace. Finally, for those who work full-time psychological safety was also related to employee creativity.

In light of the above findings, additional analyses were conducted combining some of the demographics. For instance, a sample of those who are primary employees of the public library and hold non-supervisory positions ($n = 63$) indicated a significant relationship between psychological safety and creativity, $r = .33, p < .01$. In addition, a sample of employees who work for the public library and work full-time ($n = 49$) also presented a significant correlation, $r = .54, p < .01$. Lastly, a sample with employees who work full-time and hold non-supervisory positions ($n = 37$) demonstrated a significant relationship as well, $r = .38, p < .05$. Thus, the three samples (the employees that work for the public library and hold non-supervisory positions, the sample of participants who work for the public library and work full-time, and those who work full-time and hold non-supervisory positions) demonstrated that psychological safety is related to employee creativity, that is, the more psychologically safe they feel the more creative they are.

Discussion

The present study was designed to assess predictors of psychological safety – one’s perceptions about the consequences of interpersonal risks in the workplace and willingness to contribute ideas and actions to collective work – as well as its outcome in the work environment. Previous research has neither directly assessed satisfaction with supervisor and satisfaction with coworkers as predictors of psychological safety nor it has assessed employee creativity as an outcome of psychological safety. Thus, this study proposed that satisfaction with supervisor and satisfaction with coworkers would positively predict psychological safety. It was also hypothesized that psychological safety would positively predict employee creativity. The findings of this study along with integration with previous research are discussed in the following sections.

Findings and Integration with Previous Research

Predictors of psychological safety. The results indicated that satisfaction with supervisor and satisfaction with coworkers were both significant positive predictors of psychological safety, although satisfaction with supervisor was a stronger predictor.

As Lyle and Lind (1992) asserted, employees are aware of their leader’s behaviors showing the importance of supervisors to make a conscious effort to provide a psychologically safe environment for the employees. The significant relationship between satisfaction with supervisor and psychological safety reinforces previous research on psychological conditions in the work environment. For instance, May et al. (2004) affirmed that the more supportive management is the more employees perceive an environment where they can be psychologically safe. Gibb (1961) and Jourard (1968)

also asserted that people feel psychologically safer when they connect to others and experience openness and supportiveness. This is consistent with the view that when employees are satisfied with their supervisor they tend to experience more psychological safety, that is, they feel that they are able to employ themselves without fear of negative consequences.

It was assessed in this study that employees feel satisfied with their supervisor in terms of fair treatment, respect and amount of support and guidance received, and overall quality of the supervision. Previous research has found that when supervisors promote a supportive work environment and have a clarifying management style providing positive feedback employees feel safer to take work-related risks and to voice their concerns (Deci & Ryan, 1987; Kahn, 1990). The findings of the present study also extended this in the sense that when more support and guidance is present from management the more satisfied employees will be with their supervisor and consequently feel psychologically safer. As mentioned previously the relationship between satisfaction with supervisor and psychological safety has not been studied directly, thus this study bridges this gap drawing from the definition of satisfaction with supervisor and existing related research.

As stated above, the findings of this study also indicate that the construct satisfaction with supervisor was a stronger predictor of psychological safety than the satisfaction with coworkers construct. Although this statement cannot be made from a statistical standpoint, it is important to mention it from a practical point of view.

Previous research supporting the idea that relations with supervisors and leaders are important in establishing psychological safety is more available than research supporting

the idea that relations with coworkers are essential for psychological safety. According to Edmondson (2004), a supervisor's behavior can directly influence one's perceptions because the supervisor is often seen as a role model in the work environment by his/her subordinates. It is likely that employees feel more threatened by an authoritative figure, such as a supervisor, than by coworkers who technically have no power over an employee's future in the organization. Consequently, supervisor relations might be more important to employees in regards to their psychological safety than relations with coworkers.

Regarding satisfaction with coworkers as a predictor of psychological safety, previous research has found that relations with coworkers are just as important as relations with supervisor (May et al., 2004). The results of this study indicated consistency with this statement and extends it in a way that the more satisfied employees are with their coworkers the more likely they will experience more psychological safety. Kahn (1990) has affirmed that interpersonal relationships among employees promote psychological safety when they were supporting and trusting. Thus, being satisfied with coworkers is essential in feeling comfortable in the workplace and consequently feeling psychologically safe.

The existing literature on psychological safety and satisfaction with coworkers has not been directly assessed. Thus, through the definition of satisfaction with coworkers – how satisfied one is with people he or she works with and with the opportunity to get to know other people and help them at work – it is possible to draw assumptions that being satisfied with coworkers promotes feelings of psychological

safety in a work environment. A possible explanation for this relationship is that the more employees get to know each other the more they will be able to help each other and consequently also get more help when needed or when they find difficulties and obstacles at work. Thus, when employees feel that they have the support of coworkers they feel psychologically safer to take risks, admit errors and seek feedback knowing that they will not be attacked by those who they feel they have a satisfying relationship with.

Outcome of psychological safety. Results also indicate that psychological safety positively predicts employee creativity in the workplace. Employee creativity was defined as the generation of new and valuable ideas, and previous research has indirectly assessed its relationship with psychological safety through innovation and/or innovative behavior, which is defined as doing novel things intelligently to produce useful outcomes. For instance, West (1990) found that when employees who experience high levels of psychological safety tend to take more risks and display more innovative behavior. The findings of this study demonstrate that psychological safety predicts employee creativity in the workplace, confirming the assumption drawn through research on innovation that psychological safety fosters the creation of new and valuable ideas since creativity is conceptualized as the first step necessary for subsequent innovation.

The results found in the present study are also consistent with Oldham's (2004) statement that a safe climate is a necessary component in the work environment for creativity to occur. An explanation to this statement is that in order to be creative an employee needs security knowing that he or she will not be attacked or made fun of when voicing an idea that is not welcome by others or that is not possibly the best suggestion.

On the contrary, when employees do not feel safe to take risks, they might shut down and even when they generate novel ideas, they might not attempt to make it public for fearing rejection. Consequently, they might never consider themselves creative, thinking that the ideas they come up with are not valuable or useful. Although the results demonstrated that psychological safety significantly predicts employee creativity, this relationship was small. For that matter, the next section discusses the additional analyses that were conducted in order to shed some light on this unexpectedly small relationship.

Exploratory analyses. The results revealed that when taking into consideration certain demographics of the sample the relationship between psychological safety and employee creativity altered. For instance, for those participants who are employed by the public library, psychological safety is significantly correlated to employee creativity, whereas for those who work for the university library the relationship was not significant. One possible explanation for this might be that because employees work for different organizations, though they work together, they are under distinct management styles and possibly distinct norms and job systems.

Psychological safety was also found to be significantly related to employee creativity for those who work full-time and not significant for those who work part-time. This might be due to the fact that full-time employees get more involved in their jobs since they spend more time working with the same people, consequently feeling psychologically safer, which leads to more creativity; whereas those who work less hours (i.e. part-time) might have other jobs or other responsibilities, which makes it harder for

them to give priority for their library job and get involved enough with it.

For those employees who oversee the work of others, that is, hold supervisory positions, the relationship between psychological safety and employee creativity was not significant, although for those who do not hold a supervisory position it was significant. Overseeing other employees probably requires managing skills and having to pay attention to the work of others being left with little time to be creative at work. For those who do not oversee the work of other employees, they probably have less responsibilities being left with more time to be creative.

Based on the above, the present study brought a significant and unique contribution to research on psychological safety finding that satisfaction with supervisor and satisfaction with coworkers positively predicted psychological safety in the work environment, which also positively predicted employee creativity. These findings have important implications for both theoretical and practical domains, which will be discussed in the following section.

Contributions and Implications

There are several contributions this study makes to the psychological safety literature. One of the most notable strengths is that it assessed the relationships of constructs that had not been studied directly previously. As stated above, satisfaction with supervisor and satisfaction with coworkers were found to be direct and positive predictors of psychological safety, which was found to predict employee creativity. Moreover, a strong point in this study's methodology was its sample of employees. This study added to the body of psychological safety literature by using a new sample of

employees in its research, which was from a public and University setting. Previous research has used participants in hospital settings (e.g., Edmonson, 1996) and private settings such as insurance company (May et al., 2004) and architecture firm (Kahn, 1990).

On the practical side, the indication that satisfaction with supervisors and satisfaction with coworkers are significant predictors of psychological safety is critical to organizational design, that is, design of jobs, employee selection and relations with supervisors and employees. Managers should work to establish employee perception of safety by developing supportive, trustworthy relationships with their employees so employees are satisfied with their leaders, managers and supervisors. Specifically, it is important for managers to treat all employees fairly demonstrating integrity between their words and actions, and help employees develop new skills providing constructive feedback and letting them partake in important organizational decisions. Moreover, managers should use organizational selection devices such as 'realistic job preview' to expose future employees to potential coworkers to help improve fit with coworkers and their relations (May et al., 2004).

It is essential that managers keep in mind that employee satisfaction with the people he or she works around plays a critical role determining whether the employee feels that the work environment displays a safe climate for him or her. Therefore, not only managers should foster and maintain good relations with employees, managers should also provide opportunities for employees to develop good relations among themselves in the workplace. For instance, managers can design tasks and assign teams

so employees have an opportunity to get to know and help each other. Without such opportunity employees might not get the chance to interact as much amongst them, which makes it harder for them to be satisfied with one another.

Regarding creativity, it is essential for organizations in rapidly changing markets to have employees voicing their novel ideas. One way for managers to foster employee creativity in the workplace is to make them feel comfortable speaking up and taking risks, that is, creating a safe environment. Managers should model certain behaviors such as commenting on suggestions and showing that they value employees opinions and new ideas even if they are not implemented. Moreover, managers might consider designing the organizational context to support idea generation and sharing, perhaps by enriching jobs and creating a nonjudgmental climate (Oldham, 2004).

Limitations and Future Research

This study presents a number of limitations that can be addressed in future research. First, one of the obvious limitations was its use of self-report measures. The employee creativity scale used was a self-rating scale, which brings up issues of subjectivity and social desirability effects on responses of participants. Thus, future research should use a supervisor rating and/or another way to measure creativity in the workplace objectively. For example, employee creativity could be measured by the number of suggestion an employee makes for a new program in the organization. Future research should also include a social desirability scale in order to control this effect on responses of participants.

A second limitation of this study was its cross-sectional research design. Given that, causal inferences cannot be made. Also, the study sample was limited to employees within a single large organization and the sample was made up of primarily administrative employees. Future research should examine the generalizability of these results to other organizational settings as the predictors of psychological conditions may vary in their importance in the model. For example, satisfaction with coworkers may be more important in interdependent work settings, while satisfaction with supervisor may play an important role in hierarchical organizations.

The results of this study indicated that psychological safety has positive effects on employee creativity, however it did not address whether too much psychological safety can be detrimental to employees motivation in being creative in the workplace. Excessive psychological safety could be unfavorable if employees are so comfortable with each other and with their job that they do not feel the need and/or motivation to put extra effort to excel doing the job and thus to be creative. A complete lack of censorship could create such a low barrier to seeking feedback and help or speaking up with concerns that valuable time could be wasted on unimportant things (Edmondson, 2004). Consequently, could there be an optimal level of psychological safety? No research evidence is available to date on this issue, which should be assessed in future research.

On a different note, managers should be well advised to carefully consider their groups' tasks, communication structures, and members' individual characteristics. For instance, managers who naturally encourage their group members to work closely with each other might actually be making a mistake if the members have incompatible

personalities. The present study did not address individual differences and future research should tackle such gap. For instance, it is important to know when interpersonal relationship among coworkers will best be beneficial in terms of predicting psychological safety. One of the major limitations of this study was that demographics such as gender, age, race/ethnicity, and educational level were not included and they could provide useful information and evidence of when and how relations are most beneficial. For example, are young employees more satisfied working with other young workers, or are they more satisfied working with older people? The same goes for gender: do female employees get more satisfaction working with other females or working with the opposite gender? This study did not include such variables and future studies should extend these findings in terms of its generalizability, which was limited because of the absence of such demographic variables.

Lastly, it was mentioned above that satisfaction with supervisor was a stronger predictor of psychological safety than the satisfaction with coworkers construct. The reasons as to why one predictor variable is stronger than the other are unknown. Thus, future research should also investigate whether this difference is statistically significant and why.

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Appendix A:
Survey Items

Satisfaction with Supervisor

The degree of respect and fair treatment I receive from my unit head.

The amount of support and guidance I receive from my unit head.

The overall quality of the supervision I receive in my work.

Satisfaction with Coworkers

The people I talk to and work with on my job.

The chance to get to know other people while on the job.

The chance to help other people while at work.

Psychological Safety

If you make a mistake in this unit, it is often held against you. (R)

Members of this unit are able to bring up problems and tough issues.

People in this unit sometimes reject others for being different. (R)

It is safe to take a risk in this unit.

It is difficult to ask members of this unit for help. (R)

No one in this unit would deliberately act in a way that undermines my efforts.

Working with members of this unit, my unique skills and talents are valued and utilized.

Employee Creativity

I come up with new and practical ideas to improve performance.

I am a good source of creative ideas.

I develop adequate plans for the implementation of new ideas.

I come up with creative solutions to problems at work.

I generate novel and useful work-related ideas.

I suggest creative ways of performing new tasks.