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## The Mediating Effect of Positive Psychological Capital between Autonomous Work Environment and Self-directed Behavior: Evidence from South Korea --Manuscript Draft--

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<b>Abstract:</b>	<p>Developing self-directed employees is often regarded as a key factor for achieving sustainable and continual organizational success in business. In recent years, a few leading business organizations have introduced and implemented autonomy supporting managerial practices. However, not all business organizations have been able to reap the benefits of those practices, and some fail in achieving positive outcomes. The purpose of this study is to identify and understand the impact of employee positivity on the self-directed employee behavior in a non-western work context. To achieve this purpose, this study investigates the relationships between employee perception of autonomous work environment (AWE), positive psychological capital (PsyCap), and self-directed behavior (SDB) in large Korean automotive parts manufacturing companies. 331 surveys from 43 teams in six organizations were gathered and analyzed by using multiple quantitative techniques. Results indicated that the PsyCap significantly mediated the relationship between AWE and SDB for subordinate (Sobel <math>B = .513</math>, <math>SE = .059</math>, <math>p &lt; .001</math>) and for supervisor (Sobel <math>B = .704</math>, <math>SE = .193</math>, <math>p &lt; .001</math>). This study showed that autonomy supporting managerial practices would not be effective in promoting self-directed employee behavior without nurturing employee positivity. Several strategic HRD interventions were proposed to enhance self-directed behavior.</p>

The Mediating Effect of Positive Psychological Capital between Autonomous Work  
Environment and Self-directed Behavior: Evidence from South Korea

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**Abstract**

Developing self-directed employees is often regarded as a key factor for achieving sustainable and continual organizational success in business. In recent years, some leading business organizations have introduced and implemented autonomy supporting managerial practices. However, not all business organizations have been able to reap the benefits of those practices, and some fail in achieving positive outcomes. The purpose of this study is to identify and understand the impact of employee positivity on the self-directed employee behavior in a non-western work context. To achieve this purpose, this study investigates the relationships between employee perception of autonomous work environment (AWE), positive psychological capital (PsyCap), and self-directed behavior (SDB) in large Korean automotive parts manufacturing companies. In total, 331 surveys from 43 teams in six organizations were gathered and analyzed using multiple quantitative techniques. Results indicated that the PsyCap significantly mediated the relationship between AWE and SDB for subordinates (Sobel  $B = .513$ ,  $SE = .059$ ,  $p < .001$ ) and for supervisors (Sobel  $B = .704$ ,  $SE = .193$ ,  $p < .001$ ). Results of this study indicate that autonomy supporting managerial practices would not be effective in promoting self-directed employee behavior without nurturing employee positivity. Several strategic HRD interventions such as PsyCap training, cultural change programs, and performance management system improvement were proposed to enhance self-directed employee behavior.

*Keywords:* autonomy, manufacturing, positive psychological capital, psychological safety, leader-member exchange, self-directed behavior, South Korea

## Introduction

Self-directed employees are often regarded as a key resource in the achievement of continuing organizational success in business (Manz and Sims 1995; Stewart, Courtright, and Manz 2011). Self-directed behavior refers to employee “behavior that demonstrates internal control such that desirable acts occur in the absence of external constraints such as supervision and procedural controls” (Stewart, Carson, and Cardy 1996, p.144). In recent years, the concept of self-directed behavior has received special attention from human resource development (HRD) scholars and practitioners because there is a belief in contemporary business organizations that developing self-directed employees is a key factor for organizational success (Manz and Sims 1995; Stewart, Carson, and Cardy 1996; Stewart, Courtright, and Manz 2011; Watson and Tharp 1997).

The importance of self-directed behavior is increasing because the nature of work is rapidly changing. These changes are driven largely by advances in information and communication technology (ICT) and by increased global integration. In recent years some leading business organizations have developed and implemented autonomy supporting HR practices in response to the strong demand for more self-directed employee behavior in the workplace (Mediratta 2007; Liu et al. 2019). For instance, Google’s twenty percent time rule allows employees to spend one day a week working on projects of their own choosing that are relevant to the overall organizational goals and are not necessarily in their job descriptions.

However, not all business organizations have realized the benefits of those autonomy supporting HR practices, such as training and development interventions, that are intended to nurture self-directed behavior. Many companies have tried emulating and applying Google’s twenty percent time rule, 3M’s fifteen percent time policy and result-only-work-environment (ROWE) HR practices have often failed to achieve positive outcomes (Goetz 2011; Von

Hippel, Thomke, and Sonnack 1999). This could be because organizational leaders, HR managers, HRD professionals, and frontline managers do not have sufficient knowledge or understanding of the dynamics of employees' perception of the autonomous work environment; personal characteristics and self-directed behavior within the organization (Stewart, Courtright, and Manz 2011; Stewart, Carson, and Cardy 1996).

Thus, there is a need for addition research to add to the body of knowledge regarding the effects of contextual and personal factors on self-directed employee behavior in the workplace. The purpose of this study is to identify and understand the impact of perceptions of autonomous work environments and personal psychological capital that affect self-directed behavior of employees in a non-western cultural context. To achieve this purpose, this study investigated the relationships between employees' perceptions of the autonomous work environment (E), employee psychological capital (P), and self-directed behavior (B), in a non-western industrial manufacturing setting.

### **Theory and Hypotheses**

The study of self-directed behavior focuses on how employees and subordinates manage and lead themselves to achieve high performing teams and organizations. This is also known as the bottom-up managerial approach (Stewart, Courtright, and Manz 2011). The conventional top-down managerial approach emphasizes how leaders and organizations influence, manage, and direct employees (Manz and Sims 1980). The concept of self-directed behavior, interchangeably referred to as employee self-direction, was first introduced as self-management in the late seventies and early eighties (Manz and Sims 1980). Self-management theory is strongly grounded in the self-control theory used in clinical psychology (Carver and Scheier 1982) and from the self-regulation concepts used in social learning theory (Kerr and Jermier 1978; Bandura 1986). Self-leadership theory emerges as distinctive from self-management and self-control theories by having a broader perspective including internal

motivation factors and internal standard building. For more than two decades, self-leadership has received strong theoretical and empirical support for its positive influences on personal and organizational outcomes including individual career success, personal productivity, and organizational performance. This has been accomplished by increasing self-leading and by the positive employee work attitudes of employee self-efficacy, psychological empowerment, job satisfaction, organizational commitment, and by decreasing negative work behavior such as employee absenteeism, stress, and anxiety (Stewart, Courtright, and Manz 2011; Neck and Houghton 2006).

Self-directed behavior differs from organizational citizenship behavior (OCB) or proactivity because it occurs in the routine functions of a job. Self-directed behavior is explicitly recognized as desirable employee behavior in recurring activities, while OCB is considered to be an extra-role (Organ 1997). In contrast, proactivity is part of any internal mindset that results in self-initiated, future-oriented, and change oriented behaviors (Grant and Ashford 2008).

In this sphere of self-control, self-management, self-leadership, and self-directed behavior are considered to be a skill that is learned and developed in the workplace (Watson and Tharp 1997). Viewing self-directed behavior as a learned skill implies that the behavior is adapted to particular environments and certain personal factors (Watson and Tharp 1997). The theoretical rationale behind identifying self-directed behavior as a learned and developed skill in the workplace can be illustrated by both Kurt Lewin's Field Theory and Bandura's Social Learning Theory. Lewin (1939) argued that human behavior cannot be explained solely through examination of a person or an environment, but it can be understood as a function of the persons' interaction with the environment. Expanding on this concept, social learning theory suggests the model of triadic reciprocity depicted here in Figure 1 (Bandura 1986).

[INSERT FIGURE 1 HERE]

The model of triadic reciprocity indicates that human behavior (B), personal factors (P), and environmental influences (E) mutually affect one another. Thus, human behavior changes through the self-regulating process that comes from continual interactions with cognitive and personal factors and environmental influences (Bandura 1986).

In this study, the autonomous work environment (AWE) is set as the environmental factor and psychological capital (PsyCaP) is used as the cognitive and personal factor that influences self-directed behavior.

#### **Autonomous Work Environment (AWE)**

The AWE gives employees choices and encourages employees to take personal initiative. The AWE also manages employees' perceptions about the consequences of interpersonal risks. Specifically, the AWE is suggested as a construct composed of autonomy, psychological safety, and quality of leader-member exchange.

Over time, autonomy in the workplace has been conceptualized in different ways as a result of changing business environments and work nature. For example, autonomy in the workplace once simply referred to the job characteristics that provided employees with a certain level of freedom and independence over their work schedules and flexibility with regard to how they performed their work activities and processes in what was at the time, predominantly manufacturing based industries of the 1970s (Hackman and Oldham 1980). In the 1980s and 90s, the emergence of new manufacturing technologies like flexible manufacturing systems (FMS), total quality management (TQM), just-in-time (JIT) supply chain management, continuous improvement process (CIP or Kaizen), and lean production have changed the nature of autonomy in the workplace and have required the concept to be

revised and expanded. Wall et al. (1990) proposed three forms of autonomy in the workplace: autonomy in timing control (i.e. work schedule and production speed), method control, (discretion in determining which work tasks best support the organization's goal), and boundary control (integration across work units and their respective employees). Starting early in the 21<sup>st</sup> century, the concept of autonomy in the workplace began to integrate additional dimensions such as decision-making autonomy, performance criterion autonomy, and context-related autonomy (e.g. a high involvement work system). These additional dimensions of workplace autonomy have become more significant as the knowledge work increases, technology advances, and global integration deepens (Gagné and Bhave 2011).

Employee perceptions of AWE have been studied as an antecedent of self-directed behavior. Researchers have found that employee perceived AWEs such as autonomy supporting environments (Gagné 2003), psychologically safe environments (Edmondson and Nembhard 2009), and environments with high quality exchanges between supervisors and subordinates (Volmer, Spurk, and Niessen 2011), encourage subordinates to have high levels of self-directed behavior in the workplace.

*Hypothesis 1. Employees who perceive a high level of Autonomous Work*

*Environment exhibit a high level of self-directed behavior.*

### **Positive Psychological Capital (PsyCap)**

Positivity helps people to search for and explore new solutions that draw positive outcomes while negativity leads people to actions and responses that tend to draw negative outcomes (Cohn and Fredrickson 2009; Fredrickson 2001; Garland et al. 2010). For example, the broaden-and-build theory of positive psychology proposes that positive emotions such as joy, interest, contentment, and love *broaden* employees' momentary cognition (i.e. flexible and

creative thinking) and *build* their physical, physiological, and psychological resources resulting in increased positive behaviors which in turn serve to increase positive outcomes (Cohn and Fredrickson 2009; Fredrickson 2001).

Underpinning knowledge of the influence of positivity on employee behavior, Luthans and his colleagues conceptualized positive organizational behavior (POB) theory and proposed positive psychological capital (PsyCap) (Luthans and Youssef 2007) as a research construct and measure. PsyCap is defined as individuals' positive psychological state that is characterized by self-efficacy, optimism, hope, and resilience.

The relationship between PsyCap and self-directed behavior can be inferred from several previous studies. A meta-analysis study indicated a strong positive relationship between PsyCap and positive employee behavior ( $k = 8$ , corrected  $r = .45$ ,  $SD = .15$ ), and a strong negative relationship between PsyCap and negative employee behavior ( $k = 7$ , corrected  $r = -.42$ ,  $SD = .12$ ) (Avey et al. 2011, p. 143). With this in consideration, it is reasonable to hypothesize that employees who have a high level of PsyCap would be likely to exhibit a high level of self-directed behavior.

*Hypothesis 2. Employees who have a high level of positive psychological capital (PsyCap) will exhibit a high level of self-directed behavior (SDB).*

On the other hand, the autonomous work environment could result in employees exhibiting higher levels of positivity. Resource theorists view the work environment as a key management resource that interacts with other resources (Carver and Scheier 1982; Thoits 1995; Hobfoll 2002). From this perspective, positive environmental resources, such as an autonomous work environment (AWE) may create the conditions that result in increased PsyCap in the workplace (Luthans, Norman, et al. 2008).

*Hypothesis 3. Employees who perceive a high level of autonomous work environment (AWE) have a high level of positive psychological capital (PsyCap).*

### **The Mediating Role of PsyCap**

As described previously, many business organizations have been unable to realize the potential of the benefits of autonomy supporting managerial practices because of employees' negative attitudes toward the concept (Goetz 2011; Von Hippel, Thomke, and Sonnack 1999). This fact may indicate that employees' levels of PsyCap play a critical mediation role in the relationship between employee perceived autonomy and their self-directed behavior.

In other words, employees who perceive the work environment in their organizations to be more autonomous may be more likely to experience higher levels of PsyCap which in turn may positively impact their self-directed behavior.

*Hypothesis 4. The level of employee's personal psychological capital (PsyCap) mediates the relationship between employee's perceived autonomous work environment (AWE) and self-directed behavior (SDB).*

The mediating role of PsyCap between work environment and employee behavior has been supported with several empirical studies. Luthans, Norman, et al. (2008) conducted a study with three different populations – business students, employees at a service firm, and employees at a large high-tech manufacturing firm in the U.S. – to examine the mediating role of PsyCap, and they found it to have a full mediation effect between work environment and employee performance. More recently, the partial mediation effect of PsyCap in the relationship between work environment and positive employee behavior was empirically

supported not only at the individual level (Luthans, Youssef, and Rawski 2011; Walumbwa et al. 2010), but also at the working group (team) level (Walumbwa et al. 2011).

The theoretical framework of the mediation role played by PsyCap in the relationship between autonomous work environment and self-directed behavior is depicted in the following model:

[INSERT FIGURE 2 HERE]

## **Method**

### **Procedure**

The researcher selected the South Korean automotive manufacturing industry as the field setting because the self-directed behavior of non-western employees in the highly hierarchical, structured, and standardized work environment was relatively under explored in the existing literature (Ardichvili 2011; Luthans, Avey, et al. 2008). The researcher contacted several large, (more than 300 employees), Korean automotive parts manufacturing companies to recruit companies willing to participate in the research. After two companies initially agreed to participate in the study the researcher applied the snowball sampling technique to recruit an additional four companies. Sample sizes at each company were carefully determined by using Bartlett II, Kotrlik, and Higgins (2001)'s table to achieve the sufficient representation level.

Two survey forms were administered at each site, one to supervisors and one to subordinates. The survey questions were designed to measure the core variables and to gather the basic demographic information of age, gender, education level, job position, and organizational tenure. The survey was distributed to employees who worked on the core

functions of the company sites; R&D, manufacturing, purchasing, and quality control rather than those organizational units that provided support functions; HR, Accounting and Finance.

In total, 489 surveys (73.0%) were collected out of the total of 679 surveys distributed. Collected surveys were carefully reviewed and screened to ensure complete and usable data for the analysis stage of the research. 135 surveys were discarded due to incomplete or unrecognizable data. After matching and screening the data, a total of 331 (49.4%) of the surveys were selected for quantitative data analysis.

### **Participants**

The sample consists of 43 supervisors and 288 subordinates. Participants in this study could be characterized as well-educated, experienced, and nearly all male technical experts. More than sixty four percent (64%) of (the) participants have a four-year or graduate college diploma. Most participants, more than seventy eight percent (85.1%), worked in technical areas of the companies such as research and development (R&D), manufacturing, purchasing, and quality control.

The age distribution of the sample showed that many subordinates were in their thirties (30-40 years old, 53%) with an average age of subordinates ( $n = 288$ ) of 34.7. The supervisors were mostly in their forties (40-50, 69.7%) and the average age of supervisors ( $n = 43$ ) was 45.7 years old. The average tenure with the participating organizations was 5.8 years for subordinates whereas and the average tenure of supervisors was 14.7 years. This data indicates that the participating employees were experienced in the performance of their work activities. Finally, men outnumbered women by almost nine to one. All participating supervisors were males. This fact shows that large Korean automotive part manufacturing companies were relatively homogeneous in the perspective of gender diversity.

### **Measurement Instruments**

**Autonomous work environment.** In this study, the autonomous work environment was measured with three instruments: autonomy supporting environment by the work climate questionnaire (WCQ) (Baard, Deci, and Ryan 2004); psychological safety (PsySafe) (Edmondson 1999); the quality of social exchange from the perspective of subordinates (LMX-MDM) and thirdly, from the perspective of the supervisors (SLMX-MDM) (Greguras and Ford 2006).

First, autonomy was measured by the work climate questionnaire (WCQ). This 15-item scale assesses a subordinate's perceptions of the degree of autonomy supportiveness provided by their supervisors (Baard, Deci, and Ryan 2004). It included items such as "I feel my supervisor provides me with choices and options about my work." Responses were made on 6-point scales ranging from 1 (strongly disagree) to 6 (strongly agree). The WCQ reported a high internal consistency and reliability not only in the general workplace settings (Baard, Deci, and Ryan 2004), but also in the healthcare field (Cronbach's  $\alpha = .96$ ) (Williams et al. 1996), and educational settings (Cronbach's  $\alpha = .92$ ) (Williams and Deci 1996).

Second, psychological safety was measured with seven items that were introduced by Edmondson (1999). A sample item for team psychological safety is: "It is safe to take a risk in this unit". The reliability of the psychological safety measurement was reported as Cronbach's  $\alpha = .82$  (Edmondson 1999). Another empirical study in the U.S. that used the psychological safety measure also showed a strong degree of reliability (Cronbach's  $\alpha = .82$ ) (Kim 2007). For this study, the researcher used a Korean version of the psychological safety measure. The reliability of this Korean version was acceptable (Cronbach's  $\alpha = 0.74$ ) (Zhang 2011).

Third, the quality of social exchange between subordinates and their supervisors was measured with the subordinate version and the supervisor version of the leader-member exchange (LMX) questionnaires. Conventionally, LMX has been used for measuring

subordinates' perception of the quality of social exchanges they experienced with their supervisors. However, Greguras and Ford (2006) argued that measuring only subordinates' perception of LMX might be significantly flawed because another source of information, the supervisors, was missing. It was suggested that information from supervisors regarding the dyadic relationship between subordinate and supervisor would help to provide a complete understanding LMXs. The supervisor version of LMX measure, called SLMX-MDM (supervisor perceived leader-member exchange) was proposed to measure the supervisor's perceptions about the quality of social exchange with his or her subordinates (Greguras and Ford 2006). The SLMX-MDM was developed by adapting the LMX-MDM (Liden and Maslyn 1998). The SLMX-MDM included items such as "My subordinate(s) is the kind of person one would like to have as a friend." The LMX-MDM instrument for subordinates included items such as "My supervisor is the kind of person one would like to have as a friend." Responses were made on a 6-point scales ranging from 1 (strongly disagree) to 6 (strongly agree).

The re-translation (or frequently called back translation) technique was used to translate all proposed measurement scales from English to Korean to minimize inaccuracy of the translation by following Brislin's guidelines for re-translation (Brislin 1980). A Korean native speaker who received his master and doctoral degrees in the U.S. translated the English version of the instrument into Korean. The Korean version of the instrument was sent to a native Korean who teaches an English-Korean bilingual course in a U.S. college, and was re-translated back into English. The original and the re-translated versions of the instrument were carefully compared and reconciled. For example, the item of 'I feel that I accept subordinates' was originally translated into Korean without the phrase 'subordinates' suggestions'. However, the phrase 'subordinates' suggestions' was added in the re-translated Korean instrument for a clear description. Two native Korean speakers and two native

English speakers assessed the instrument, minor concerns, discrepancies and uncertainties were resolved.

**Psychological capital.** Positive psychological capital was measured with a reduced version, 12 items (PCQ-12) of the original 24-item psychological capital questionnaire (PCQ-24) (Luthans, Youssef, and Avolio 2007). The PCQ-12 included three items for efficacy, four items for hope, two items for optimism, and three items for resilience. Responses were put into a six-point Likert –type scale with these categories: 1=strongly disagree, 2=disagree, 3=somewhat disagree, 4=somewhat agree, 5=agree, and 6=strongly agree (Luthans, Norman, et al. 2008). Sample items for each subscale included the following: “I felt confident in representing my project area in meetings with management” (efficacy); “If I should find myself in a jam at work, I could think of many ways to get out of it” (hope); “I always looked on the bright side of things regarding my job” (optimism); and “I could get through difficult times at the project because I’ve experienced difficulties before (resilience).”

**Self-directed behavior.** The self-directed behavior of employees was measured with the following four items that were proposed by Stewart, Carson, and Cardy (1996): (a) coming up with new, original ideas for handling work; (b) redesigning job tasks for greater effectiveness and efficiency, even if it is not required; (c) taking initiative and doing whatever is necessary; (d) going against established policies and procedures if he or she thinks it would result in meeting broader organizational goals.

**Control variable.** Employees’ thinking, behaviors, and attitudes may be influenced by demographic variables such as gender, age, education level, organizational tenure, and role in an organization (Luthans et al. 2005; Luthans, Norman, et al. 2008). Studies examining self-directed behavior (Stewart, Carson, and Cardy 1996), PsyCap (Avey et al. 2010), and autonomous work environment (Gagné 2003) reported that these demographic variables needed to be carefully treated in order to draw meaningful and reliable results. For

example, Luthans et al. (2005) study on Chinese workers' PsyCap found that there was a need to control demographic variables in order to examine the effect of PsyCap on Chinese workers' performance. In this sense, demographic information of gender, age, education level, organizational tenure, and job position were collected to examine the potential influential relationships with the core variables of this study and to control for undesired effects from inherent variables.

### **Data Analysis Strategy**

Multiple quantitative data analysis techniques were used to extract meaning from the data gathered for this study and to test the hypotheses. The analysis included confirmatory factor analysis, descriptive data analysis and inferential data analysis techniques. Sobel test and structural equation modeling (SEM) methods were used to analyze the mediation effect of PsyCap between autonomous work environment and self-directed behavior.

### **Measurement and Validity Issues**

Confirmatory factor analysis (CFA) results indicated that the measurement instruments of LMX and PsyCap showed good validity levels (LMX:  $\chi^2=126.05$ ;  $df=50$ ;  $RMSEA=.069$ ;  $CFI=.970$ ;  $TLI=.960$ ;  $SRMR=.039$  and PsyCap:  $\chi^2=18.87$ ;  $df=2$ ;  $RMSEA=.160$ ;  $CFI=.965$ ;  $TLI=.896$ ;  $SRMR=.039$ ). Test reliability (Cronbach's alpha) of collected data were acceptable for LMX ( $\alpha$ ) = .84 – .86. and PsyCap ( $\alpha$ ) = .81 – .86.

The other measurement instruments were modified to increase validity and reliability levels to an appropriate point. For example, a shorter version of autonomy (the short WCQ with 6 items) was selected. Four items were purposefully excluded from the psychological safety measurement because those items had insufficient factor loadings: item 1 = .245; item 3 = .512; item 6 = .343; item 7 = .418. In the self-directed employee behavior measurement, item 4 of 'going against established policies and procedures' was also removed because of poor factor loading (.269). The item might be thought of as an unfavorable self-directed

behavior in the context of this research, Korean manufacturing companies, because of the collectivistic and hierarchical culture of the nation (Hofstede 2001).

## Results

### Descriptive Statistics Results

Subordinate and supervisor data were analyzed in this study to explore the effects of positive psychological capital on the relationship between work environment and self-directed behavior respectively.

Means, standard deviations, correlations, and reliabilities among key variables in Table 1 and Table 2.

[INSERT TABLE 1 Here]

[INSERT TABLE 2 Here]

It is noteworthy that measurement instruments' Cronbach's alphas were all within satisfactory ranges: Autonomy ( $\alpha$ ) = .83 – .86.; Psychological safety ( $\alpha$ ) = .83 – .86.; Self-directed behavior ( $\alpha$ ) = .82 – .86. The descriptive means of key variables were compared to determine whether there were perceptual differences between supervisors and subordinates. The results are indicated in Table 3.

[INSERT TABLE 3 HERE]

Supervisors perceived that their self-directed behaviors were much more prevalent than their subordinates perceived them. Supervisors most likely felt that the work environment was much safer, psychologically, than their subordinates felt it was. Supervisors had much higher self-efficacy and more hope than their subordinates, and reported having

more positivity in general. Meanwhile, subordinates and supervisors had similar perceptions about autonomy and the quality of social exchange between them.

It should be noted that mean value differences between self-reported and counterpart-reported (supervisor evaluated subordinates; subordinate evaluated supervisors) self-directed behavior items were not statistically significant except in the case of subordinates “redesigning tasks” behavior, Welch’s  $t(287) = 2.86, p = .005$ . This result could indicate that there was a certain level of agreement between self-report data and counter-part rated data, which in turn is indicative of the marginal common method bias from a self-reporting survey.

### **Hypothesis Test Results**

The Sobel test was applied to examine the mediating effect of PsyCap in this study. The Sobel test is a specialized t-test that tests whether the mediator significantly reduces the effect on the independent variable, and therefore, whether the mediation effect is statistically significant (Sobel 1987, 1982). Mediation effects of the positive psychological capital on the relationship between autonomous work environment and the self-directed behavior of subordinates and supervisors can be summarized as indicated in Table 4 and Figure 3.

[INSERT TABLE 4]

Hypothesis 1 predicted a positive direct relationship between employees’ higher autonomous work environment perception and their self-directed behavior. However, the direct positive direct relation was not statistically supported when the employee positivity was considered both for subordinates ( $B = -.139, SE = .072, p = .053$ ) and supervisors ( $B = -.003, SE = .089, p = .336$ ).

Hypothesis 2 proposed that employees who have a high level of positivity, measured by positive psychological capital, probably exhibit a high level of self-directed behavior. In line with the expectation, results showed the PsyCap was significantly positively associated with employee self-directed behavior: subordinates ( $B = .875, SE = .071, p < .001$ ) and supervisors ( $B = 1.01, SE = .204, p < .001$ ).

Hypothesis 3 stated that employees who perceive a high level of autonomous work environment have a high level of positive psychological capital. Consistent with the prediction, the analyses revealed significant positive correlations between AWE and PsyCap: subordinates ( $B = .586, SE = .048, p < .001$ ) and supervisors ( $B = .697, SE = .128, p < .001$ ).

For Hypothesis 4, which pertained to the indirect effect of positive psychological capital between autonomous work environment and self-directed behavior, Sobel test results fully supported the hypothesis for both subordinate (*Sobel*  $B = .513, SE = .059, p < .001$ ) and supervisor (*Sobel*  $B = .704, SE = .193, p < .001$ ).

These findings provide full support for the significant mediation effect of personal positive psychological capital on the relationship between work environment and self-directed employee behavior both for subordinates and supervisors in the non-western manufacturing based industrial population. A summary of these effects is presented in Figure 3.

[INSERT FIGURE 3 HERE]

PsyCap's mediation effect of subordinate population was confirmed when it was examined by structural equation model (SEM), the standardized coefficient  $\beta = .718, p < .001$ . SEM technique was not used for supervisor data analysis because the sample size was considerably smaller than the 200 cases that are generally required (Kline 2010).

## **Discussion**

This study investigated the relationship between employees' perception of the autonomous work environment (E), positive psychological capital (P), and self-directed behavior (B) of employees who are working in the hierarchical and standardized non-western manufacturing industrial context. Such a context contrasts sharply with western technology and service industries. Understanding self-directed employee behavior is important because organizations are increasingly reliant upon their employees' self-directed, self-driven, and self-organizing behavior to survive and thrive in the quickly changing modern business environment.

Generally, when organizations replicate or apply autonomy supporting managerial practices such as Google's 20% rule, 3M's 15% rule, flexible work time, result-only-work-environment (ROWE), or remote work initiative to provide an autonomous work environment, there is an expectation of higher self-directed behavior. Many of these managerial practices fail to realize any real benefit because of a poor understanding of the dynamics between the work environment and the various personal factors that influence employee behavior. Particularly, this study examined the role and effect of employee positivity as a personal factor based on the recently emerging positive organization behavior theory. Findings of this study support the significant mediation role and effects of employee positivity (i.e. positive psychological capital – PsyCap) on the relationship between autonomous work environment and employee self-directed behavior both for subordinates and supervisors.

## **Implications**

Developing self-directed employees is becoming one of the top priorities of business organizations as they seek to achieve and to maintain continuing organizational success (Manz and Sims 1995; Stewart, Courtright, and Manz 2011). Adding to the existing research in the area of self-directed behavior or positive behavior (Karloly and Panis 2004; Osterloh

2005; Liu et al. 2019), employee positivity (Avey et al. 2011), and autonomy (Gagné and Bhave 2011) in the western context, this study can expand our understanding of the significant mediating role of employee positivity in the non-western manufacturing industrial context. From this finding, we may draw some implications, both theoretical and practical that may be useful to HRD scholars and practitioners.

First, providing a high level of autonomous work environment alone is not sufficient to get employees to have a high level of self-directed behavior if employees' personal positivity is not well managed and developed. This is due to the important mediating role of PsyCap.

As predicted, the higher the perception of AWE and the higher the positive psychological capital (PsyCap) of subordinates, the higher the respective positive relationships with self-directed subordinate behavior (SDB). It is noteworthy that an indirect-only mediation effect was observed when PsyCap was included as a mediator in the relationship between AWE and SDB. Full mediation is described as the point at which the mediated (indirect) path exists but no significant direct path exists between an independent variable and a dependent variable (Zhao, Lynch, and Chen 2010). The direct effects between AWE and SDB were statistically insignificant or marginal: for subordinate data ( $n=288$ ), unstandardized coefficient  $B = -.139$ ,  $p = .053$ ; for supervisor data ( $n=43$ ),  $B = -.003$ ,  $p = .998$ .

This fact may mean that employees do not take proactive or self-directed actions if they are not positive towards their tasks although their perception is that they do have an autonomous work environment within their organization or work unit. Thus, organizational leaders and HRD professionals should consider the dynamics of an employee perceived work environment and how those dynamics interact with the employees' behaviors with regards to employee positivity. Ideally, to reap the full benefit of investing in work environment

improvement actions, these considerations should be done prior to the autonomy supporting management practices. In order to maximize the potential benefits from the application of autonomy supporting HR practices and providing a high level of empowerment to employees. Organizational leaders need to invest in training employees to have clear understanding of the organizational goals, strategies, and visions. All employees, not only supervisors, can more proactively participate in the achievement of organizational goals and the enhanced organizational performance that accompanies an effective positive psychological capital training program. Aligning employees perceptions, attitudes, and behaviors with organizational goals is a strategic activity that is highly encouraged for organizational leaders in managing people (Garavan 2007; Becker, Huselid, and Ulrich 2001). Organizational leaders can apply strategic HRD activities such as cultural change programs, leadership development, and performance management system in order to align employee with organizational goals and objectives (Garavan 2007).

Second, developing employee positivity is necessary to reap the benefit of autonomy support managerial practices. If employee positivity affects the way in which employees carry out self-directed behaviors to achieve organizational goals and mission, and if subordinates have relatively lower positivity than supervisors, then HRD professionals may need to give special attention to developing subordinate positivity.

HRD professionals can design and implement training and development programs for subordinates such as Psychological Capital Intervention (PCI) or similar programs whose effectiveness has been empirically proven (Luthans et al. 2010) through careful assessment of organizational and employee characteristics (Kuchinke 2003).

Third, institutionalizing the self-directed employee behavior as a key performance appraisal factor can help organizations to encourage employees' self-directed behavior and proactive behavior. Institutionalizing of these desirable behaviors is necessary to secure long-

term organizational effectiveness (Avey, Luthans, and Youssef 2010). For example, if an employee experiences failure in his or her self-directed actions, and those failures are not clearly defined and assessed, the experience will lead to questions about the meaning of work and threaten identification with the organization (Shepherd, Patzelt, and Wolfe 2011).

Fourth, the necessity of empowering employees is compatible with recent business organizations' attempts to replace conventional hierarchical control with structures designed to empower employees, and to quickly address changing business environments through increasing employee positivity which in turn can unleash the self-directed employee behavior (Manz and Sims 1995, 1980; Stewart, Carson, and Cardy 1996; Stewart, Courtright, and Manz 2011). Decentralization of decision-making drives top-management away from command-control leadership styles to empowerment across all levels of employees and addresses various and complex market demands by themselves (Károlyi and Panis 2004).

### **Limitations**

This study may have limitations that affect the generalizability and robustness of the findings. First, there exists limited agreement among researchers over the measurement and definition of AWE. Although this study proposes autonomous work environments be composed of autonomy support, psychological safety, and the quality of leader-member exchange as contextual variables, other methods exist for future research.

Second, the cross-sectional and non-experimental design of this study may affect the validity of this study. Cross-sectional data cannot take into account causality or change (Bono and McNamara 2011). As a result, the external validity and causality of the study may be limited to the research sites at the specific time.

Finally, risk associated with the issue of cross-cultural validity was not completely mitigated for this study. The inaccuracy of the translation of the measurement instrument is always a significant risk in cross-cultural research (Luthans et al. 2005). Although a re-

translation technique was used in order to minimize inaccuracy of the instrument translation, (Brislin 1980), some of the core variables required modifications. For example, the item of ‘going against established policies and procedures’ which might be thought of as an unfavorable self-directed behavior in the Korean culture (Hofstede 2001), and it resulted in unacceptable factor loading on the SDB measurement.

### **Future Research**

This study raises several opportunities and questions for further research on self-directed behavior, specifically that which is associated with diverse work environments, personal capabilities, various workplace settings and in different cultures. First, regarding the issue of generalizability, follow-up studies investigating the service industry, IT industry, or small-medium sized corporations could be valuable to determine whether the results of this study generalize to these respective industrial settings.

Second, international comparative studies are necessary to determine whether the findings of this study would be compatible to findings from different national cultures in the area of the effects of autonomous work environment and positive psychological capital on self-directed employee behavior. Specifically, this study investigated the self-directed behavior of employees who were working at large Korean manufacturing industry settings because those employees were believed to be exposed to a cultural work context which included a highly collectivistic, hierarchical, and uncertainty avoidant culture in the highly standardized work processes as opposed to western employees who are exposed to individualistic and independent culture in the flexible nature of their work (Hofstede 2001; Chin and Liu 2015; Park et al. 2018). The results of this study showed that the mediation effect of PsyCap in the relationship between work environment and employee behavior was significant in the collectivistic and hierarchical culture. More extensive international studies

are necessary to test the generalizability of the mediation effect of PsyCap in different cultural settings.

Third, the possibility that additional personal factors could interact with the autonomous work environment and self-directed employee behavior should be considered. Investigating the effect of personality would be a good start for such research.

Finally, multilevel studies are necessary to cultivate additional knowledge and practical implications regarding self-directed behavior. This study focused on individual level effects of employee positivity, but team level and organizational level studies would allow us to better understand the dynamics of environmental and personal factors on employee behavior (Korte 2008; Upton and Egan 2010).

In conclusion, this study increases our knowledge in the field of autonomy supporting managerial practices that would and would not work in the promotion and development of self-directed employee behavior, if implemented without specifically nurturing employee positivity. This study also supports and brings attention to the importance of employee positivity in the highly hierarchical, structured, and standardized non-western work context.

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## TABLES

Table 1. Means, Standard Deviation, Correlations, and Reliabilities among Observed Variables of Subordinate

Subordinate (n=288)	M	SD	1	2	3	4	5	6	7	8	9	10
1. Autonomy	4.46	.69	(.83)									
2. Psychological safety	4.08	.85	.46**	(.84)								
3. LMX-MDM	4.60	.65	.80**	.46**	(.83)							
4. Self-efficacy	4.05	.84	.42**	.35**	.35**	(.82)						
5. Hope	4.01	.73	.41**	.38**	.37**	.72**	(.81)					
6. Resiliency	4.42	.69	.35**	.32**	.41**	.45**	.59**	(.83)				
7. Optimism	4.37	.83	.45**	.38**	.45**	.37**	.47**	.46**	(.83)			
8. Bringing new ideas	3.69	.97	.21**	.22**	.18**	.53**	.62**	.31**	.24**	(.82)		
9. Redesigning tasks	4.07	.93	.21**	.18**	.22**	.49**	.53**	.34**	.24**	.59**	(.83)	
10. Taking initiative	4.14	.86	.26**	.14**	.26**	.49**	.51**	.41**	.31**	.53**	.60**	(.83)

Note. LMX-MDM: leader member exchange in the perspective of subordinate. SDB = self-directed behavior. Reliability coefficients are reported in diagonal. \*  $p < .05$ ; \*\*  $p < .01$

Table 2. Means, Standard Deviation, Correlations, and Reliabilities among Observed Variables of Supervisor

Supervisor (n=43)	M	SD	1	2	3	4	5	6	7	8	9	10
1. Autonomy	4.48	.47	(.86)									
2. Psychological safety	4.37	.55	.46**	(.86)								
3. SLMX-MDM	4.69	.40	.55**	.56**	(.86)							
4. Self-efficacy	4.67	.56	.49**	.53**	.39*	(.85)						
5. Hope	4.49	.51	.39**	.39*	.41**	.48**	(.85)					
6. Resiliency	4.61	.60	.38*	.48**	.42**	.39*	.50**	(.86)				
7. Optimism	4.38	.55	.22	.52**	.13	.40**	.37*	.40**	(.86)			
8. Bringing new ideas	4.30	.74	.30*	.26	.19	.44**	.48**	.34*	.35*	(.86)		
9. Redesigning tasks	4.53	.67	.28	.38*	.26	.52**	.62**	.43**	.46**	.68**	(.86)	
10. Taking initiative	4.58	.73	.42**	.44**	.23	.53**	.44**	.49**	.41**	.46**	.51**	(.86)

Note. SLMX-MDM: leader member exchange in the perspective of supervisor. SDB = self-directed behavior. Reliability coefficients are reported in diagonal. \*  $p < .05$ ; \*\*  $p < .01$

Table 3. Comparison of Subordinate versus Supervisor Observed Variable Means

	Key variables	Subordinate (n=288)	Supervisor (n=43)	Welch's <i>t</i>	<i>p</i>
AWE	Autonomy	4.46	4.48	t(73.33) = -.29	.770
	Psychological safety	4.08	4.37	t(76.78) = -3.00**	.004
	LMX	4.60	4.69	t(83.00) = -1.32	.189
PsyCap	Self-efficacy	4.05	4.67	t(76.50) = -6.33**	< .001
	Hope	4.01	4.49	t(72.87) = -5.37**	< .001
	Resiliency	4.42	4.61	t(60.72) = -1.93	.058
	Optimism	4.37	4.38	t(75.65) = -.18	.859
SDB	Bringing new ideas	3.69	4.30	t(67.24) = -4.82**	< .001
	Redesigning tasks	4.06	4.53	t(70.95) = -4.05**	< .001
	Taking initiative	4.14	4.58	t(61.79) = -3.61**	< .001

Note. AWE = autonomous work environment. PsyCap = psychological capital. SDB = self-directed behavior. \*  $p < .05$  (two-tailed); \*\*  $p < .01$  (two-tailed).

Table 4. Sobel Test Results

	Path	Coefficient ( <i>B</i> )	<i>SE</i>	<i>z</i>	$p >  z $
Subordinate (n=288)	Indirect effect (mediated by PsyCap)	.513**	.059	8.606	< .001
	AWE → PsyCap	.586***	.048	12.177	< .001
	PsyCap → SDB	.875***	.071	12.165	< .001
	Direct effect	-.139	.072	-1.933	.053
	Total effect	.374**	.072	5.183	< .001
Supervisor (n=43)	Indirect effect (mediated by PsyCap)	.704**	.193	3.653	< .001
	AWE → PsyCap	.697**	.128	5.414	< .001
	PsyCap → SDB	1.010**	.204	4.950	< .001
	Direct effect	-.003	.220	-0.015	.988
	Total effect	.700**	.211	3.322	< .001

Note. The coefficients (*B*) in this table are unstandardized values. *SE* = standard error. \*  $p < .05$  (two-tailed); \*\*  $p < .01$  (two-tailed)

FIGURES

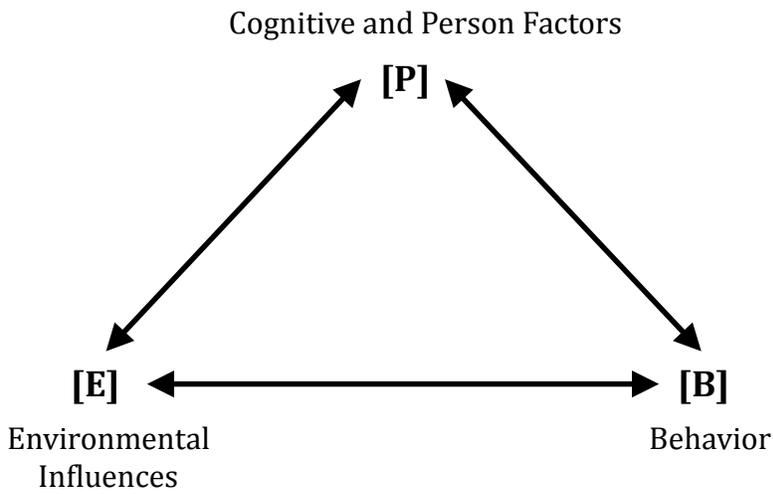


Figure 1. Bandura's (1986) model of triadic reciprocity.

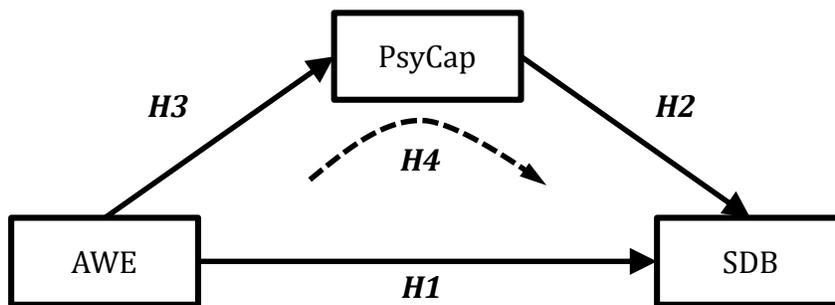


Figure 2. The mediation role of PsyCap in the relationship between autonomous work environment and self-directed behavior.

Note. AWE: Autonomous work environment. PsyCap: Psychological capital. SDB: Self-directed Behavior

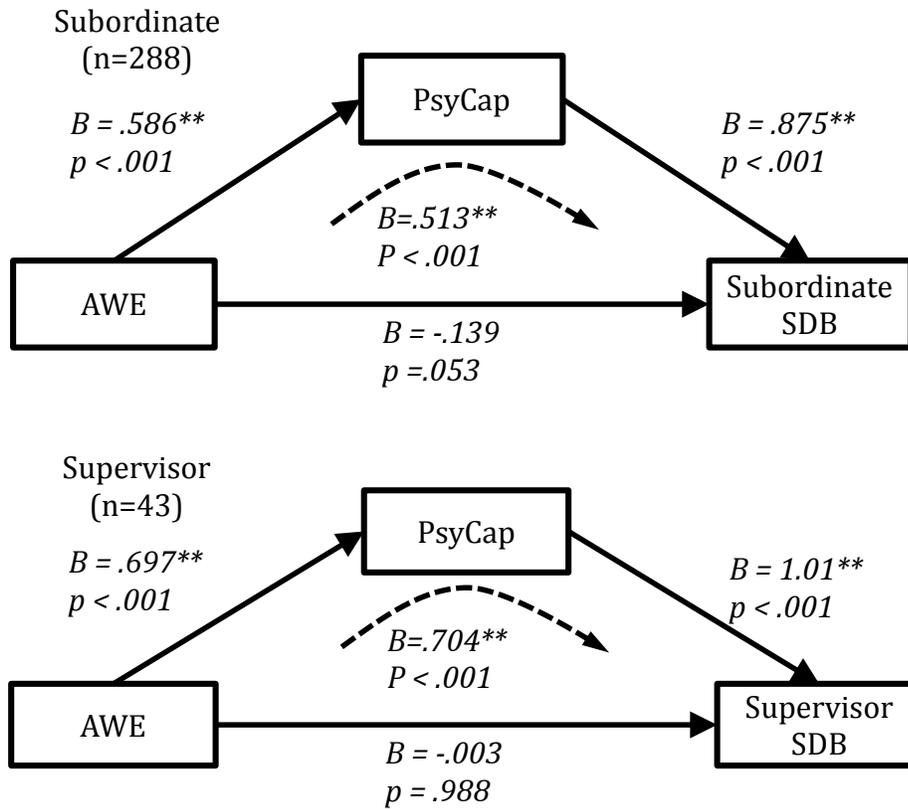


Figure 3. Summary of personal psychological capital's mediation effects for subordinate and supervisor samples.

Revision2:

The Mediating Effect of Positive Psychological Capital between Autonomous Work Environment and Self-directed Behavior: Evidence from South Korea [RHRD-2019-0012\_R1]

Before	Page	Revised
Reviewer #1: I believe that the authors have addressed most of my requests and recommendations, made during the first round of reviews. I still see some minor editing issues, but I assume that these will be taken care of at the copy editing stage. I recommend to accept the article.		The author got professional editing service to correct grammar and writing errors.  Revised words and sentences were marked with red color.
331 surveys from 43 teams in six organizations were gathered and analyzed by using multiple quantitative techniques.  This study showed that autonomy supporting managerial practices would not be effective in promoting self-directed employee behavior without nurturing employee positivity.	Abstract	In total, 331 surveys from 43 teams in six organizations were gathered and analyzed (by) using multiple quantitative techniques.  Results of this study indicate that autonomy supporting managerial practices would not be effective in promoting self-directed employee behavior without nurturing employee positivity.
Many companies have tried emulating and applying Google's twenty percent time rule, 3M's fifteen percent time policy, and the result-only-work-environment (ROWE) HR practices have often failed to achieve positive outcomes	p.2	Many companies have tried emulating and applying Google's twenty percent time rule, 3M's fifteen percent time policy and result-only-work-environment (ROWE) HR practices have often failed to achieve positive outcomes
In contrast, proactivity is part of any internal mindset resulting in self-initiated, future-oriented, and change oriented behaviors	p.4	In contrast, proactivity is part of any internal mindset that results in self-initiated, future-oriented, and change oriented behaviors
In this study, the autonomous work environment (AWE) is set as the environmental factor, psychological capital (PsyCaP) is used as the cognitive and personal factor that influences self-directed behavior.	p.5	In this study, the autonomous work environment (AWE) is set as the environmental factor and psychological capital (PsyCaP) is used as the cognitive and personal factor that influences self-directed behavior.
Specifically, the AWE is suggested as a construct composed of autonomy, psychological safety, and the quality of leader-member exchange.	p.5	Specifically, the AWE is suggested as a construct composed of autonomy, psychological safety,

		and quality of leader-member exchange.
In the 1980s and 90s, the emergence of new manufacturing technologies like flexible manufacturing systems (FMS), total quality management (TQM), just-in-time (JIT) supply chain management, continuous improvement process (CIP or Kaizen), and lean production changed the nature of autonomy in the workplace and required the concept to be revised and expanded.	p.5-6	In the 1980s and 90s, the emergence of new manufacturing technologies like flexible manufacturing systems (FMS), total quality management (TQM), just-in-time (JIT) supply chain management, continuous improvement process (CIP or Kaizen), and lean production <b>have</b> changed <b>the nature of</b> autonomy in the workplace and <b>have</b> required the concept to be revised and expanded.
Researchers have claimed that employee perceived AWEs such as autonomy supporting environments	p.6	Researchers have <b>found</b> that employee perceived AWEs such as autonomy supporting environments
Underpinning knowledge of the influence of positivity on <b>the</b> employee behavior, Luthans and his colleagues conceptualized positive organizational behavior (POB) theory and proposed positive psychological capital (PsyCap)	p.7	Underpinning knowledge of the influence of positivity on employee behavior, Luthans and his colleagues conceptualized positive organizational behavior (POB) theory and proposed positive psychological capital (PsyCap)
PsyCap is defined an individuals' positive psychological state that is characterized by <b>having</b> self-efficacy, optimism, hope, and resilience.	p.7	PsyCap is defined an individuals' positive psychological state that is characterized by self-efficacy, optimism, hope, and resilience.
A meta-analysis study indicated <b>there was</b> a strong positive relationship between PsyCap and positive employee behavior (k = 8, corrected r = .45, SD = .15), and <b>there was</b> a strong negative relationship between PsyCap and negative employee behavior (k = 7, corrected r = - .42, SD = .12)	p.7	A meta-analysis study indicated a strong positive relationship between PsyCap and positive employee behavior (k = 8, corrected r = .45, SD = .15), and a strong negative relationship between PsyCap and negative employee behavior (k = 7, corrected r = - .42, SD = .12)
The survey was distributed to employees who worked at the core functions of the company sites; R&D, manufacturing, purchasing, and quality control rather than organizational units that provided support functions; HR, Accounting and Finance.	p.10	The survey was distributed to employees who worked <b>on</b> the core functions of the company sites; R&D, manufacturing, purchasing, and quality control rather than <b>those</b> organizational units that provided support functions; HR, Accounting and Finance.

489 surveys (73.0%) were collected out of the total 679 surveys distributed.	p.10	<b>In total</b> , 489 surveys (73.0%) were collected out of the total <b>of</b> 679 surveys distributed.
The sample consists of 43 supervisors and 288 subordinates. Participants in this study could be characterized as well-educated, experienced, male technical experts.	p.10	The sample consists of 43 supervisors and 288 subordinates. Participants in this study could be characterized as well-educated, experienced, <b>and nearly all</b> male technical experts.
Measurement	p.11	Measurement Instruments
Test reliabilities (Cronbach's alpha) of collected data were acceptable for LMX ( $\alpha$ ) = .84 – .86. and PsyCap ( $\alpha$ ) = .81 – .86.	p.15	Test <b>reliability</b> (Cronbach's alpha) of collected data were acceptable for LMX ( $\alpha$ ) = .84 – .86. and PsyCap ( $\alpha$ ) = .81 – .86.
Institutionalizing of these desirable behavior is necessary to secure long-term organizational effectiveness	p.22	Institutionalizing of these desirable <b>behaviors</b> is necessary to secure long-term organizational effectiveness
First, regarding the issue of generalizability, follow-up studies investigating the service industry, IT industry, or small-medium sized corporations could be valuable so if it determine the results of this study generalize to these respective industrial settings.	p.23	First, regarding the issue of generalizability, follow-up studies investigating the service industry, IT industry, or small-medium sized corporations <b>could be valuable to determine whether</b> the results of this study generalize to these respective industrial settings.
<b>However</b> , the results of this study showed that the mediation effect of PsyCap in the relationship between work environment and employee behavior was significant in the collectivistic and hierarchical culture.		The results of this study showed that the mediation effect of PsyCap in the relationship between work environment and employee behavior was significant in the collectivistic and hierarchical culture.