

공유리더십이 팀직무열의에 미치는 영향: 팀긍정심리자본의 매개효과와 직무특성의 조절효과를 중심으로

Impact of Shared Leadership on Team Work Engagement: Focusing on the Mediating Role of Team Positive Psychological Capital and the Moderating Role of Task Characteristics

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요약

본 연구는 국내 기업의 근무자를 대상으로 팀 수준에서 공유리더십의 효과성을 연구하는데 있어 지금까지 국내에 별로 소개된 바 없는 팀 변수인 팀긍정심리자본과 팀직무열의와의 관계를 규명하는데 목적이 있다. 이를 위하여 공유리더십이 팀직무열의에 미치는 영향, 공유리더십과 팀직무열의간의 관계에서 팀긍정심리자본(Team PsyCap)의 매개효과 그리고 공유리더십과 팀긍정심리자본과의 관계에서 직무특성의 조절효과를 검증하였다. 국내 16개 기업 100개 팀의 구성원 421명을 대상으로 연구를 실시하였고, 수집된 자료의 분석과 통계처리를 위하여 SPSS23.0을 사용하였다. 연구 결과, 높은 공유리더십 수준은 팀의 직무열의에 유의한 영향을 미치는 것으로 밝혀졌고 이 과정에서 팀의 긍정심리자본이 매개 역할을 하는 것으로 검증되었다. 이러한 결과는 공유리더십이 팀긍정심리자본을 촉진하고 팀직무열의에 긍정적인 영향을 미치는 주요 변인임을 입증하는 것이다. 그러나 공유리더십과 팀 긍정심리자본에 대한 직무특성의 조절효과는 지지되지 않았다. 마지막으로, 본 연구 결과가 주는 이론적 및 실무적 함의를 논하였으며, 마지막으로 연구의 한계 및 향후 연구방향을 제시하였다.

■ 중심어 : | 공유리더십 | 팀직무열의 | 팀긍정심리자본 | 직무특성 |

Abstract

The purpose of this study is to examine, at the team level, the relationship between shared leadership and team work engagement and team psychological capital which have rarely been introduced into academic leadership research in Korea. This study tested the impact of shared leadership on team work engagement and the mediating role of team psychological capital between the two variables. And also, this study tested moderating role of task characteristics between shared leadership and team psychological capital. A total of 421 employees of 100 teams in 16 companies in South Korea participated in this study. The SPSS 23.0 statistical program was used in this study to analyze and statistically process the collected survey data. The result showed that high level of shared leadership positively influence team work engagement and team PsyCap works as mediator in the relationship between shared leadership and team work engagement. This results means that shared leadership is a crucial factor to facilitate team's psychological capital toward team's work engagement. However, Task characteristics had no moderating effect between shared leadership and team PsyCap. Finally, theoretical and practical implications of the study results have been discussed along with limitations and future direction of the study.

■ keyword : | Shared Leadership | Team Work Engagement | Team Positive Psychological Capital | Task Characteristics |

I. INTRODUCTION

Companies are entering an era of hyper-competition[1], information technology, and globalization, which presents a dynamic, complex, and extremely competitive environment. Accordingly, to effectively navigate such an environment, companies are implementing team-based structures[2]. In other words, to conduct more self-managed and complex work in response to environmental changes, the introduction of team-based structures into companies has been increasing. Thus, identifying the key factors of team effectiveness and promoting such factors to improve the organization's overall performance has become a critical issue in its management[3].

Given such tendencies toward team-based structures, scholars have started to focus on identifying and examining elements that can contribute to the entire team[4]. Leadership within and of teams has often been identified as one of the critical factors of team success[2]. In other words, the spread of team-based structures also influences the research on leadership.

To date, leadership research has been focused on the hierarchical leadership expressed by a leader, i.e., an official person. However, recently, teams have tended to reduce their dependence on a traditional leader's authority[5], and lateral leadership in which the group or team members share influence has attracted attention[6]. One such lateral leadership method within and of teams is called shared leadership, which is explained as "an emergent team property that results from the distribution of leadership influence across multiple team members"[7].

During the last decade, work engagement has been researched as an important construct for both employee performance and well-being[8]. In

accordance with the increase in implementing team-based structures, research on work engagement is being conducted on work engagement in team units, i.e., team work engagement. Team work engagement is defined as a shared, positive and fulfilling, and motivational emergent state of work-related well-being[8]. Engaged teams work energetically and actively, and productively behave and quickly bounce back from unexpected negative events.

Under a team-based structure, although the positive tendencies of an organization's individual members are important to its performance, the importance of positive tendencies at the team level has also been emphasized[9]. In accordance with such tendencies, research on the positive psychological capital of teams, rather than of units of individuals, is being conducted by scholars as well[10-16].

A review of the concepts previously mentioned, i.e., leadership, work engagement, and PsyCap, indicates that numerous studies have been conducted on the relationships among the variables at an individual level. However, research on the relationships among leadership, psychological capital, and work engagement at the team level are extremely scanty.

Accordingly, this paper examines the effect of shared leadership as an independent variable on team work engagement as a dependent variable. This paper also studies whether team PsyCap performs a mediating role between the independent and the dependent variable, and whether task characteristics have a moderating effect between the two variables.

II. THEORETICAL BACKGROUND

Shared leadership, as a possible alternative or a complementary factor of traditional vertical

leadership, has been highlighted and studies have surged in the past few years[2] and are in a constant state of flux and development[17].

In the beginning, the studies concentrated on identifying antecedent conditions of shared leadership, which include coaching[7], the collectivist orientation of team members[18] and in recent, team proactivity [19]. Recently, the consequences of shared leadership have been studied and empirical studies have suggested that shared leadership positively influences team effectiveness[20-23].

Shared leadership, as a group-level construct and a team property[7], is expected to foster positive outcomes, not only for individuals but also for teams in particular. However, although some studies reported an overall positive relationship between shared leadership and team performance, as previously noted, others such as Boies, Lvina and Martens[24], Mehra, Smith, Dixon and Robertson[25] did not support this prediction[2]. Fausing, Jeppesen, Jønsson, Lewandowski, Bligh[26] also questioned the overall implications of shared leadership and failed to find any relationship between team performance and shared leadership. Pearce, Wassenaar and Manz[27] supported the concept of shared leadership but also acknowledge the need for a hierarchical underlying background structure. That is, study results on the relations between shared leadership and team performance are not harmonized and need to be reconciled through additional research.

Work engagement is a positive achievement-oriented psychological state related to work and claimed that it consists of the three sub-dimensions of “vigor, dedication, and absorption[28]. Parallel to the studies on work engagement at the individual level, multiple researchers also attempted to find a construct at the team level[29-33]. Team work engagement emerges from the interaction and the

shared experiences of the members of a work team[34][29][30]. Similar to individual-level work engagement[35][36], team work engagement is proposed as a multidimensional construct characterized by affective and cognitive dimensions. The three dimensions of team-level work engagement are team vigor, team dedication and team absorption[37].

Recently, some studies showed that work engagement has positive relationships with task and team performance, collective positive affect, and efficacy beliefs at the team level. Costa et al.[33] used data collected from 82 research teams and team leaders and found that the direct influence of task conflict and relationship conflict has a detrimental effect on the development of a positive emergent state of work engagement. Stiphout[38] reported that four clusters of characteristics, i.e., team composition, a team's level of interdependence, a safe and respectful team atmosphere, and a team's internal relations, may influence the emergence of team engagement. Torrente et al.[29] tested, for the first time, the factorial structure of a team work engagement scale by aggregating data at the team level of analysis. They reported that CFA confirms the expected three-factor structure of team work engagement (vigor, dedication, and absorption) when tested at the team level with nine items using aggregated data, and offers a validated scale with which to test work engagement in teams. Torrente et al.[29] also applied a “referent shift” to their individual work engagement questionnaire, the Utrecht Work Engagement Scale (UWES), to measure team work engagement. They shifted the survey items' focus from the individual to the collective, asking individuals to rate team properties rather than report on their personal experiences. Torrente et al.[29] also mentioned that emotional contagion is the mechanism underlying team work engagement.

Torrente et al.[30] used 62 teams from 13 organizations and reported that team social resources, a supportive team climate, coordination, and teamwork are positively related to team work engagement, which is in turn related to team performance. In the same research, they reported that two constructs of team work engagement, i.e., team work vigor and team work absorption, were significantly related to in-role performance. Salanova et al.[39] used students working in groups and showed that activity engagement increases collective positive affect and collective efficacy. Harter, Schmidt and Hayes[40] engaged in a meta-analytic study and showed that engagement positively predicts business unit outcomes. Salanova et al.[34] used a sample of students working in groups and found that, when collective efficacy is high, collective work engagement increases task performance. Salanova et al.[41] used a sample of 114 service employees from hotel front desks and restaurants and found that work engagement relates to service climate, which in turn predicts employee performance.

To date, PsyCap has been studied predominantly at the individual level and has been conceptualized as an individual-level construct concerned with an employee's state of positive psychological development[42]. However, some requests have been made to investigate the possibility of a collective version of the concept by testing PsyCap in teams and larger groups[15]. Walumbwa et al.[43] defined team PsyCap as a group's shared psychological state characterized by efficacy, hope, optimism, and resilience. Recently, research began to examine the phenomenon as a shared psychological team state[44]. Multiple studies examined PsyCap at a collective level and showed a positive relationship between team-level PsyCap and team performance. West, Patera, and Carsten[45] first tested collective PsyCap

on student groups and reported that collective optimism affects group cohesion, cooperation, coordination, conflict, and satisfaction when groups are newly formed. Clapp-Smith et al.[11] utilized social cognitive theory[46] and social contagion theory [47] to argue that PsyCap can also exist at a collective level. They found that trust in management has a mediating role between team-level PsyCap and team performance. Walumbwa et al.[43] implemented a brief referent shift version (eight items) of the PCQ with 146 intact groups from a large financial institution. The study found a significant relationship between team PsyCap and team-level performance and citizenship behavior. Petersen and Zhang[12] investigated collective PsyCap among 67 top management teams and found that the collective PsyCap of top management teams (TMT) was positively related to business unit performance. Memili, Welsh and Kaciak[48] used family franchise firms to suggest that organizational PsyCap of family franchise firms can be fostered by unique family firm LMXs characterized by trust, respect, and obligation. Vanno et al.[14] found that group-level PsyCap, on the basis of the direct consensus model and the referent-shift consensus model, had significantly positive effects on group effectiveness. Goncalves et al.[49] found that team PsyCap mediated the leader's humility and team creativity. Heled et al.[44] found a positive relationship between the team's psychological capital and the individual's job satisfaction and the team's organizational citizenship behavior (OCB). In recent, Dawkins et al.[42] pointed out the processes by which team members become akin in PsyCap perceptions; thus, generating collective PsyCap was not specified in the existing literature. To explore the process, they utilized "social contagion theory" as a theoretical framework to demonstrate the potential social processes that may contribute to the emergence

of PsyCap at higher levels. They also suggested that “emotional contagion” might complement social contagion processes in contributing to the emergence of collective PsyCap.

III. Research Hypothesis

The purpose of this study is to clarify the causal relationship between shared leadership and team psychological capital and team work engagement, and to investigate the moderating effect of task characteristics between shared leadership and team psychological capital [Figure 1].

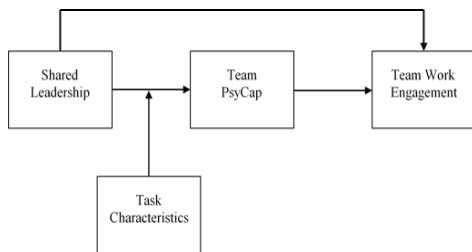


Figure 1. Conceptual Model of the Present Study

1. Shared Leadership and Team Work Engagement

According to JD-R theory, which is the most often used for studying engagement, job resources including autonomy, social support, performance feedback, which are similar to the sub dimensions of shared leadership, influence work engagement[50]. Pearce, Wassenaar, and Manz[27] emphasized that shared leadership results in a more engaged workforce and makes the workforce more effective as a direct result of having multiple leaders available. Nevertheless, a few studies were conducted that investigated whether shared leadership has an effect

on work engagement, with the exceptions of Leeuwen [51], Zeier[52], and Lovelace et al.[53]. However, those studies focused on the individual level and the results are not reconciled. Whereas Zeier[52], and Lovelace et al.[53] showed a positive relation, Leeuwen [51] concluded that shared leadership does not have a significant impact on engagement relative to vertical leadership. Therefore, the question arises as to how shared leadership stimulates or impedes work engagement in teams and team work engagement. According to the JD-R model, employees are especially engaged in their work when their resources are combined with challenging demands[54][55].

Accordingly, it is likely that employees feel more engaged when they have a high-quality exchange relationship with their leader because their leader expects high job performance and facilitates their job performance in return through a so-called social support process. Leadership styles, in their inherent position of power, can be an important source of social support. Hiller et al.[18] argued that social support is a major factor of shared leadership. Transformational and empowering leadership was shown to be positively related to work engagement[56]. According to Pearce et al.[57], effective shared leadership teams generally use a transformational and empowering leadership style. Ranthum found that the shared leadership is positively and significantly related to team performance[58]. Thus, the possibility exists that shared leadership also has a positive relationship with work engagement at the team level. On the basis of this discussion, the following hypothesis were proposed in the present study.

Hypothesis 1. Shared leadership influences team work engagement.

2. Shared Leadership and Team PsyCap

JD-R theory explains that job resources including autonomy, social support, performance feedback that is similar to the concepts of shared leadership predict PsyCapwork[50]. Research on the relations between shared leadership and PsyCap is still lacking. However, PsyCap was found to be related to a number of leadership styles. PsyCap is related to authentic leadership and ethical and empowering leadership[59]. PsyCap can become shared among team members through communications regarding the team's functions and operations[42]. McKenny et al.[60] suggested that organizational PsyCap develops through members' interactions over time and reflects the shared level of positivity among employees. Li, Shu, Lie, Guoyuan & Lei[61] found that employees who perceived higher levels of supervisor support had higher levels of PsyCap. Ranthum also found that shared leadership and team psychological capital have a positive relationship[58]. Therefore, this study proposes the following hypothesis that result from these discussions.

Hypothesis 2. Shared leadership positively influences team PsyCap.

3. Team PsyCap and Team Work Engagement

Using the Xanthopoulou et al.'s concept, Bakker and Demerouti developed a JD-R theory that shows that job resources and personal resources, independently or combined, predict work engagement[62]. Personal resources include self efficacy, hope, resilience that are identical to the sub dimensions of psychological capital. PsyCap was found to be a useful predictor of various job attitudes, behaviors, and performance [58]. Walumba et al.[43] argued that the work group's collective psychological capital is not only a product of interactive/coordinative dynamics and leadership

but also a producer of desired behaviors and performance outcomes. Additionally, three studies examined PsyCap at a collective level[11-13] and demonstrated positive relationships between team-level PsyCap and team performance. Ranthum also discovered team psychological capital to be positively and significantly related to team performance[58]. As individual work engagement has a positive impact on job performance at individual level[51], team work engagement can be an antecedent of team performance. Thus, the following hypothesis were proposed in the present study.

Hypothesis 3. Team PsyCap positively influences team work engagement.

4. Mediating Role of Team PsyCap

JD-R theory explains that PsyCap mediates job resources and work engagement[50]. Walumba et al. empirically proved that group-level psychological capital fully mediates the relationship between authentic leadership and two desired group outcomes: group OCB and performance[43]. Luthans et al. empirically tested the concept that PsyCap fully mediates the relationship between a supportive organizational climate and employee performance, a consequence of work engagement[63]. A supportive organizational climate, which is defined as the overall amount of perceived support that employees receive from their immediate peers and their supervisor that they view as helping them successfully perform their work duties, is similar to the basic concept of shared leadership[18]. Ranthum found that team psychological capital partially mediated the relationship between shared leadership and team performance[58]. Newman, Ucbasaran, Zhu and Hirst[64] argued that their intensive meta-analysis on the antecedents and outcomes of PsyCap and PsyCap's role as a mediator

at the individual, team, and organizational levels indicated the possibility of a mediating role of team PsyCap between shared leadership and team-level engagement. Therefore, this study proposes the following hypothesis, which results from the previous discussions.

Hypothesis 4. Team psychological capital partially mediates shared leadership and team work engagement.

5. Moderating Role of Task Characteristics

The primary focus of research on shared leadership to date has been on investigating the direct effects of shared leadership. However, several scholars suggested the possibility that the relationship between shared leadership and outcomes may be moderated by other variables[24]. One of the variables is task characteristics, which has a direct effect on employee work-related attitudes and behaviors and, more importantly, the individual differences needed for development, which is called the Growth Need Strength in Job Characteristics Theory (Hackman and Lawler 1971). Hoch et al.[65] found that task characteristics, including task independence, task complexity has a moderating effect on the shared leadership and team performance relationship. The moderating effects highlight the possible variation in the relationship between shared leadership and team processes for implementation teams. Dawkins et al.[42] proposed that teams with high task interdependency may have a better opportunity to develop team PsyCap because members regularly communicate about the team's overall likelihood of achieving goals (team optimism) and their shared belief in their ability to achieve tasks (team efficacy). Using the previous discussion, the following hypothesis was proposed in the present study.

Hypothesis 5. Task characteristics moderate the relationship between team PsyCap and team work engagement, such that the relationship is stronger when task characteristics is high.

IV. Methodology

Participants for this study were employees in South Korea. A total of 700 surveys were sent by mail and direct delivery, and 421 surveys from 100 teams in 16 companies were collected, representing a response rate of 60.1%. Respondents had the following demographic characteristics: approximately 63.4% were male, 69% had a bachelor's degree, 13.5% had a master's degree or higher, and 73.6% had job tenure less than 10 years. The average age of the participants was 36 years, and the average years of work experience was 4.6 years.

Participants rated their team's shared leadership level, team PsyCap, team work engagement, and task characteristics levels by using a five-point Likert scale that ranged from "strongly disagree" (1) to "strongly agree" (5). Shared leadership was measured with the 25-item scale that was developed and validated by Hiller et al.[18] and used by Bang[66]. We measured team's shared leadership level by checking the items by each team member and team leaders because the shared leadership is a group-level construct and a team property[7] and the interactive influence among team members including team leader. Sub-factors are composed of 1) planning and organizing, 2) problem solving, 3) support and consideration, and 4) development and mentoring. Sample items include "organizing tasks so that work flows more smoothly,"(우리 팀원들은 공동으로 팀의 업무가 원활히 흘러갈 수 있도록 업무를 조정한다).

“diagnosing problems quickly,”(팀원들은 공동으로 당면 문제를 빠르게 분석한다.) and “helping to develop each other’s skills.”(팀원들이 공동으로 다른 구성원들이 스킬을 배양할 수 있도록 돕는다.)

Team work engagement is divided into three categories: team vigor, team dedication and team absorption. This measure adapted the nine-item scale to assess team work engagement that was developed and validated by Costa et al.[32]. Each of the three factors was assessed by three items. In the present research, a referent shifted questionnaire was used. Sample items include “At our work, we feel bursting with energy,” “We are enthusiastic about our job,” and “We feel happy when we are working intensely.” Team psychological capital which has four constructs, Team hope, Team resilience, Team optimism, and Team efficacy was measured with the 24-item scales that was developed by Dawkins et al.[15]. Each of the four factors was assessed using six items. Sample items include “My team is confident analyzing a long-term problem to find a solution,” “Right now my team is pretty successful at work,” “My team usually manages difficulties one way or another at work,” and “My team always looks on the bright side of things regarding our jobs.” Task characteristics which has seven constructs, task variety, task significance, task identity, interdependent feedback and reward, task interdependence, goal interdependence and heterogeneity were measured with 21-item scales that was developed by Campion et al.[67]. Each of the seven factors was assessed using three items. Sample items include “Most everyone on my team gets a chance to do more interesting tasks.”, “The work performed by my team is important to the customers in my area.”, “My team is responsible for all aspects of a product for its area.”

V. Result

1. Exploratory Factor Analysis and Reliability analysis

1.1 Shared Leadership

The results of the reliability analysis on a total of three latent variables are as follows. The Cronbach’s α coefficient was higher than 0.7, thereby indicating a highly reliable score[Table 1]. Furthermore, exploratory factor analysis was performed using principal component analysis for factor extraction and the Varimax method as the rotation method. As a result, two variables with significantly low factor loading values were removed, and a total of 17 variables were selected. A factor loading value higher than 0.4 is considered a valid variable, and a value higher than 0.5 is considered an important variable. All 17 variables presented factor loading values of more than 0.4 and, thus, can be considered important variables. Additionally, the three variables can be

Table 1. Exploratory Factor Analysis on Shared Leadership

Variables			Factor1	Factor2	Factor3
Factor	Measurement items				
Shared Leadership	Planning and Organizing	SL1	.660		
		SL2	.773		
		SL3	.781		
		SL4	.787		
		SL5	.745		
		SL6	.682		
	Support and Consideration	SL14			.713
		SL15			.754
		SL16			.619
		SL17			.476
		SL19			.758
	Developing and Mentoring	SL20		.695	
		SL21		.759	
		SL22		.762	
		SL23		.768	
SL24			.708		
	SL25		.744		
Explained variance (%)			53.263	8.308	6.313
Cumulative variance (%)			53.263	61.571	67.884
Cronbach’s α coefficient			.900	.913	0.856
KMO = 0.951, Bartlett ($\chi^2 = 4712.854$, $df = 136$, $p = 0.000$)					

viewed as having an explanatory power of 67%. The KMO value, which measures the adequacy of the sample, was 0.951, i.e., close to 1.

1.2 Team Work Engagement

The result of conducting a reliability analysis on a total of two latent variables indicated that the Cronbach's α coefficient was higher than 0.7, thereby signifying very high reliability [Table 2]. Furthermore, exploratory factor analysis was performed using principal component analysis for factor extraction and the Varimax method as the rotation method. As a result, four items with significantly low factor loading values were removed and five items were selected. A factor loading value higher than 0.4 is considered valid, and a value higher than 0.5 is considered important. All five variables presented factor loading values higher than 0.5 and, thus, are considered important variables. Additionally, the two variables are viewed as having an explanatory power of 73%. The KMO value, which measures the adequacy of the sample, was 0.748 or close to 1. Bartlett's sphericity test statistics, which verify whether the correlation between the variables is 0, was 1410.603 ($df=15$, $p=0.000$), thereby significant at the 0.01 significance level. Therefore, the correlation matrix can be interpreted as appropriate for the factor analysis.

Table 2. Exploratory Factor Analysis on Team Work Engagement

Variables		Factor1	Factor2
Factor	Measurement items		
Team Work Engagement	Team vigor	WE1	.835
		WE2	.857
	Team absorption	WE7	.581
		WE8	.911
		WE9	.915
Explained variance (%)		57.237	15.936
Cumulative variance (%)		57.237	73.173
Cronbach's α coefficient		0.828	0.912
KMO = 0.748, Bartlett ($\chi^2 = 1410.603$, $df = 15$, $p=0.000$)			

1.3 Team PsyCap

The result of conducting a reliability analysis on a total of three latent variables indicated that the Cronbach's α coefficient was higher than 0.7, thereby signifying very high reliability [Table 3]. Furthermore, exploratory factor analysis was performed using principal component analysis for factor extraction and the Varimax method as the rotation method. As a result, five items with significantly low factor loading values were removed, and a total of 13 items were selected. A factor loading value of higher than 0.4 is considered a valid variable, and a value higher than 0.5 is considered an important variable. All 13 variables presented a factor loading value higher than 0.5 and, thus, can be considered important variables. Additionally, the three variables are viewed as having an explanatory power of 64%. The KMO value, which measures the adequacy of the sample, was 0.923, i.e., close to 1, and Bartlett's sphericity test statistics, which verify whether the correlation between the variables is 0, was 2541.503 ($df = 78$, $p = 0.000$), thereby significant at a 0.01 significance level. Thus, the correlation matrix can be interpreted as appropriate for the factor analysis.

Table 3. Exploratory Factor Analysis on Team PsyCap

Variables		Factor1	Factor2	Factor3	
Factor	Measurement items				
Team PsyCap	Team Self Efficacy	TP1	.658		
		TP2	.786		
		TP3	.728		
		TP4	.736		
		TP5	.760		
		TP6	.710		
	Team Resilience	TP15			.640
		TP16			.857
		TP17			.652
		TP18			.556
	Team Optimism	TP21		.806	
		TP22		.813	
		TP24		.644	
Explained variance (%)		47.322	9.486	7.626	
Cumulative variance (%)		47.322	56.807	64.434	
Cronbach's α coefficient		.883	.781	.766	
KMO = 0.923, Bartlett ($\chi^2 = 2541.503$, $df = 78$, $p=0.000$)					

1.4 Task Characteristics

The results of conducting reliability analysis on a total of four latent variables indicated that the Cronbach's α coefficient was higher than 0.7, thereby signifying very high reliability[Table 4]. Furthermore, exploratory factor analysis was performed using principal component analysis for factor extraction and the Varimax method as the rotation method. As a result, two items with significantly low factor loading values were removed and ten items were selected. A factor loading value of higher than 0.4 is considered a valid variable, and a value higher than 0.5 is considered an important variable. All ten variables presented factor loading values higher than 0.7 and, thus, can be considered important variables. Additionally, the four variables can be viewed as having an explanatory power of 74%. The KMO value, which measures the adequacy of the sample, was 0.747, i.e., close to 1. The Bartlett's sphericity test statistics, which verifies whether the correlation between the variables is 0, was 1322.933 (df=45, $p=0.000$), thereby significant at the 0.01 significance

Table 4. Exploratory Factor Analysis on Task Characteristics

Variables			Factor1	Factor2	Factor3	Factor4
Factor	Measurement items					
Task Characteristics	Task Variety	TC1				.871
		TC2				.872
	Task Identity	TC8			.876	
		TC9			.856	
	Interdependent Feedback and Rewards	TC16	.787			
		TC17	.866			
TC18		.763				
Heterogeneity	TC19		.796			
	TC20		.837			
	TC21		.716			
Explained variance (%)			35.657	14.265	12.499	11.676
Cumulative variance(%)			35.657	49.922	62.421	74.096
Cronbach's α coefficient			.772	.749	.755	.772

KMO = 0.747, Bartlett ($\chi^2 = 1322.933$, df = 45, $p=0.000$)

level. Thus, the correlation matrix can be interpreted as appropriate for the factor analysis.

2. Review of Analysis Level

The results of the analysis level review indicate that the value of ICC (1), which conducts a degree-of-freedom-based F test, exists between -1 and +1. Statistically significant values were derived for all variables; therefore, the size of the between-group dispersion on the total variance of the corresponding variable was determined to be sufficiently large [Table 5]. The current ICC (1) value for each variable is indicates between the .31 and .45levels, which can be interpreted as 31% - 42% of the total variance being explained by between-group dispersion. The ICC (2) values indicate that Developing and Mentoring, Team PsyCap, and Task Characteristics are low, at less than .7. However, this level needs to be reviewed comprehensively with the analysis results from other coefficients.

Considering the statistical inference results on such analysis levels, all variables measured at the individual level can be summed at the group level to perform an analysis and resolve the level issue.

Table 5. Results of Analysis Level Review

Variables	ICC(1)	ICC(2)	F value
	F test	> .7	
Planning and Organizing	.45	.77	4.397**
Support and Consideration	.38	.72	3.615**
Developing and Mentoring	.35	.69	3.250**
Team Work engagement	.41	.75	3.927**
Team PsyCap	.31	.65	2.883**
Task Characteristics	.31	.65	2.869**

Table 6. Correlation Analysis

Latent Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
Planning and Organizing	3.69	0.49	1											
Support and Consideration	3.74	0.45	.798**	1										
Developing and Mentoring	3.58	0.48	.774**	.790**	1									
Team Vigor	3.44	0.53	.718**	.684**	.677**	1								
Team Absorption	3.72	0.47	.637**	.669**	.676**	.761**	1							
Team Self Efficacy	3.6	0.4	.792**	.742**	.765**	.667**	.683**	1						
Team Resilience	3.56	0.39	.642**	.614**	.635**	.657**	.638**	.689**	1					
Team Optimism	3.47	0.43	.751**	.704**	.744**	.773**	.708**	.695**	.768**	1				
Task Variety	3.39	0.49	.657**	.644**	.723**	.626**	.567**	.600**	.424**	.543**	1			
Task Identity	3.68	0.51	.502**	.503**	.503**	.448**	.487**	.662**	.541**	.528**	.344**	1		
Interdependent Feedback and Rewards	3.28	0.5	.534**	.494**	.536**	.451**	.430**	.528**	.495**	.548**	.405**	.262**	1	
Heterogeneity	3.58	0.42	.462**	.499**	.526**	.552**	.533**	.599**	.407**	.551**	.396**	.407**	.361**	1

p < 0.05 *, p < 0.01 **

3. Correlation Analysis Results of the Latent Variables

The correlations among the latent variables included in the research model are shown in [Table 6]. The correlations of latent variables were, for the most part, highly statistically significant. When all variables were compared, the correlations between the independent variable and mediating variable, the independent variable and dependent variable, and the mediating variable and dependent variable showed strong correlations.

4. hypothesis Testing Results

To test the hypothesis, a simple regression analysis and a three-step regression analysis were performed for the mediating effect. Moreover, a hierarchical regression analysis was performed for the moderating effect and a post-hoc test was conducted through the Sobel Test.

Hypothesis 1 states that shared leadership is positively related to team work engagement.

As shown in [Table 7], the regression analysis results indicate that the shared leadership and team work engagement regression model was suggested to be significant through F value verification ($F = 151.621$, $p < .01$). The explanatory power was high at $R^2 = 0.607$. Additionally, the regression coefficient regarding shared leadership and team work engagement is .779 ($p < .01$), which presents a significant positive (+) effect. Therefore, hypothesis 1 was supported.

Table 7. Effect of Shared Leadership on Team Work Engagement

	Team work engagement			
	B	SE	β	t
Constant	.544	.248		
Shared Leadership	.827	.067	.779**	12.313
$R^2 = 0.607$, adj $R^2 = 0.603$, $F = 151.621$ ** ($p < .05$)				

p < 0.05*, p < 0.01**

Hypothesis 2 states that shared leadership is positively related to team PsyCap.

As shown in [Table 8], the regression analysis results indicate that the regression model of shared leadership and team PsyCap was suggested as significant through F value verification ($F = 261.682$, $p < .01$). The explanatory power was very high at $R^2 = 0.728$.

Table 8. Effect of Shared Leadership on Team PsyCap

	Team PsyCap			
	B	SE	β	t
Constant	.941	.162		
Shared Leadership	.709	.044	.853**	16.177
$R^2 = 0.728$, adj $R^2 = 0.725$, $F = 261.682^{**}$ ($p < .01$)				

$p < 0.05^*$, $p < 0.01^{**}$

Additionally, the regression coefficient regarding shared leadership and team PsyCap is .853 ($p < .01$), thus presenting a significant positive (+) effect. Therefore, hypothesis 2 was supported.

Hypothesis 3 states that team PsyCap is positively related to team work engagement.

As shown in [Table 9], the regression analysis results indicate that the team PsyCap and team work engagement regression model was suggested as significant through F value verification ($F = 194.566$, $p < .01$).

Table 9. Effect of Shared Leadership on Team PsyCap

	Team work engagement			
	B	SE	β	t
Constant	-.109	.266		
Team PsyCap	1.041	.075	.815**	13.949
$R^2 = 0.665$, adj $R^2 = 0.662$, $F = 194.566^{**}$ ($p < .01$)				

$p < 0.05^*$, $p < 0.01^{**}$

The explanatory power was very high at $R^2 = 0.665$. Additionally, the regression coefficient regarding team PsyCap and team work engagement is .815 ($p < .01$), thus presenting a significant positive (+) effect. Therefore, hypothesis 3 was supported.

Hypothesis 4 states that team PsyCap mediates the relationship between shared leadership and team work engagement.

As shown in [Table 10], the result of testing Hypothesis 4 through the aforementioned three-step hierarchical regression analysis indicated that team PsyCap acts as a mediating role between shared leadership and team work engagement. First, examining regression models in step 1 indicates that the F value is 261.682 and the p (.000) value is smaller than the .01 significance level, thus presenting a significant result. The explanatory power was very high at $R^2 = 0.728$, and $\beta = .853$; therefore, shared leadership, i.e., an independent variable, can be viewed as having a significant positive (+) relationship with team PsyCap, i.e., a mediating variable. Next, an examination of regression models in step 2 indicates that the F value is 151.621 and the p (.000) $p < 0.05^*$, $p < 0.01^{**}$ value is smaller than the significance level of .01, thus presenting a significant result.

Table 10. Mediating Effect of Team PsyCap

	Step1.			Step2.			Step3.		
	Team PsyCap.			Team work engagement.			Team work engagement.		
	B.	β .	t.	B.	β .	t.	B.	β .	t.
Shared Leadership.	.709.	.853**.	16.177.	.827.	.779**.	12.313.	.326.	.307**.	2.843.
	(.044).			(.067).			(.115).		
Team PsyCap.	-.1.	-.1.	-.1.	-.1.	-.1.	-.1.	.706.	.553**.	5.115.
							(.138).		
	$R^2 = 0.728$.			$R^2 = 0.607$.			$R^2 = 0.691$.		
	adj $R^2 = 0.725$.			adj $R^2 = 0.603$.			adj $R^2 = 0.684$.		
	$F = 261.682^{**}$ ($p < .01$).			$F = 151.621^{**}$ ($p < .01$).			$F = 108.353^{**}$ ($p < .01$).		
	$p < 0.05^*$, $p < 0.01^{**}$.								

characteristics are both input, the F value result is 20.735 and the p (.001) value was smaller than the 0.01 significance level. Therefore, a statistically significant result was presented.

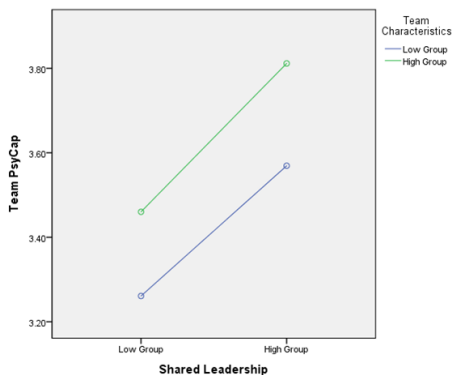


Figure 2. shared leadership and team psycap by team characteristics

Additionally, the explanatory power was very high at $R^2 = 0.776$. In step 3, the input of interactive terms for shared leadership and task characteristics indicated an F value of 1.670 with p (.199), which is larger than the 0.05 significance level and was not significant. Therefore, the results of hypothesis 5 appear to be not statistically significant as [Figure2].

VI. DISCUSSIONS

This study contributes to expanding our understanding of the effect of shared leadership by highlighting the concepts of team psychological capital and team work engagement – topics that have not been fully investigated in the literature on team effectiveness but that seems to be stimulated by the emergence of shared leadership among team members. The result of testing the effects of shared leadership and team work engagement indicated that shared leadership presents a positive (+) significant

and direct effect on team work engagement. This result signifies that an increase in the degree of shared leadership among team members leads to an increase in energy, dedication, and absorption to process work, as well as improved engagement within the team.

Team PsyCap functioned as a mediating role in the relationship between shared leadership and team work engagement. The results of preceding empirical studies on shared leadership presented a somewhat conflicting result. For this reason, this study suggests the effects of team PsyCap as an alternative to the process between shared leadership and team work engagement and empirical results support the hypothesis.

In this study, the moderating effect of the task characteristics on the relationship between shared leadership and team PsyCap was tested, but no significant effect was found. A few interpretations can be drawn to explain this result. First, various variables that can influence this study's result should have been controlled properly to minimize the result contamination. Considering that the analysis level of this study is a team, a number of reasons for the absence of moderating variable effect can be inferred: the team size and average tenure, known to influence the dynamic interaction within a team were not controlled; the fact that this study was conducted on teams from 16 different corporations was not taken into consideration so a control by industries was not factored in; and there was no control on the collectivism, a prevalent cultural characteristic of organizations in South Korea. Second, the samples, the subject of measurement of this study, were mainly office workers in corporations. It is difficult in reality to find significant differences in task characteristics of such samples. Third, another possible reason for insignificant moderating effect of

task characteristics might be multi-collinearity, because correlation between task characteristics and shared leadership showed strongly significant figure. ($r = 0.82$, $p < .01$) in this study. When we develop research model with task characteristics and shared leadership, definitely task characteristics is 'task' related variable, 'Task characteristics is defined as various aspects which a task has', and shared leadership is 'leadership' related variable, 'a dynamic, interactive influence process among individuals and groups with the objective of leading one another to the achievement of group or organizational goals or both' (Pearce & Conger 2003). However, the result of survey revealed multi-collinearity between two variables. This can be a reason why the hypothesis 5 was not supported.

The implications of this study from a theoretical aspect are as follows. First, shared leadership was indicated as posing a significant positive (+) effect on team work engagement. Considering that a high degree of team work engagement is a predictor of strong performance, this result provides an explanation of the mechanism between shared leadership and team performance in reference to existing studies that connected shared leadership within the team to, ultimately, high performance[68]. Second, the improvement mechanism of team work engagement of shared leadership is identified. Existing empirical studies on shared leadership lacked research into shared leadership that positively (+) affects team work engagement in a direct or an indirect manner. In this study, by testing the mediating effect of team PsyCap, the path through which shared leadership influences team work engagement was identified. In particular, team self-efficacy, among the sub-variables, was revealed as being the most important mediating variable in a mediating role. This study indicates that shared

leadership within teams activates team PsyCap and presents the result that this activation improves team work engagement. Moreover, shared leadership within teams is confirmed as an important input variable of team effectiveness.

The following is a discussion on the implication at the practical aspects in this study. First, at the leadership level, the implementation of shared leadership within the team does not mean that no vertical leaders exist. As mentioned in a previous study, shared leadership and traditional leadership are not alternative relationships; rather, they are interdependent relationships. A vertical leader has the final responsibility for managing the team's boundary and performance-related matters. Above all, support and coaching are needed to activate shared leadership. Most every team has a team head who is the official leader, and the role of the official leader is important in implementing shared leadership. Therefore, when explaining the phenomenon of shared leadership, rather than merely emphasizing that the role of the leader is shared among team members, to be effective, one must consider the various roles of the leader in accordance with team and task characteristics.

Second, in reality, where the hierarchical vertical relationship between supervisors and employees continues to be practiced, team members need to be aware of shared leadership throughout the organization. The mindset must exist that leadership can be shared within the team and all team members, including the team head, must have the awareness that lateral feedback needs to be implemented first. Second, the organizational environment that is defined as hyper-competitive indicates that, for companies to continue to grow, they are in dire need of team members with energy, dedication, and absorption based on a high PsyCap that cannot be imitated by

other organizations. Shared leadership can be viewed as being effective compared with existing vertical leadership in organic formation and the emergence of such factors for the organization. Moreover, providing systems, institutions, and devices for empowerment and secure autonomy for team members during work at the organizational level is important for shared leadership to be implemented well among team members. Third, to achieve the activate practice of shared leadership, companies must go beyond mere HRD and establish a training system at the level of organizational development. In particular, shared leadership can change according to the duration of the team and changes in the members; therefore, a development program must provide practical education with the possibility of continuous monitoring and feedback. education through a long-term perspective plan that can be internalized within the team is needed.

The limitations of this study are as follows. First, the research sample of this study is 16 companies. Although the research results might be favorable for generalization given the diversity secured within the dataset in terms of size, business sectors, and company age, doubt exists regarding whether or not errors exist in the data because they were collected from various samples. In particular, limitations exist in establishing credibility from the intervention of the organizational characteristics in the sub-variables. Second, various exogenous variables and antecedents that can effect team PsyCap and team work engagement were not sufficiently considered. The following suggestions concern future research. First, a longitudinal study is desperately needed to test the sustainability effects of shared leadership, team PsyCap, and team work engagement. Team-related variables can be viewed as variables that react sensitively to the team's age, i.e., from team creation

to growth, maturity, and decline. Therefore, identifying the patterns that occur through a long-term periodic constant, and measuring the effect of each variable accordingly, is necessary. Second, examining the level of harmonization between vertical leadership and shared leadership, and its effect on team PsyCap and team work engagement, is a good research topic for future studies. Lastly, actively searching out mediating variables other than team PsyCap as suggested in this study is needed to further identify the process of shared leadership that influences team work engagement. To which, research on the mediating effect of factors, such as team potency and team cohesion, is a possibility.

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