

# When Do We Contribute to a Team? Three-way Interaction among Identifiability, Learning Goal Orientation, and Evaluation Purpose\*

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Research on teams has firmly established that identifiability is a key factor determining individuals' contribution to a team. To better understand the link between identifiability and contribution, this study proposes two moderators: learning goal orientation (LGO) and evaluation purpose. Hypothesized relationships among these factors are tested using data collected from 96 undergraduates on 20 teams, divided into two conditions: developmental evaluation and administrative evaluation. The analysis results reveal that identifiability is positively related to individual contribution to the team as rated by peers. Analyses of the joint moderating effect of LGO and evaluation purpose show that the positive relationship is stronger for those with lower LGO, when the evaluation purpose is administrative. By contrast, when the evaluation purpose is developmental, the opposite pattern is observed. The implications of these results for research and practice are discussed.

Key Words: contribution to a team, identifiability, learning goal orientation, performance evaluation

## 1. Introduction

Most of the important tasks in organizations are collective ones that can be accomplished only by combining individuals' inputs in a team. The need for individual members to pool their efforts to generate team output is pervasive in organizations. As organizations' reliance on teams increases, scholars are paying close attention to the factors that motivate or demotivate members to provide more inputs for team output.

Teams can experience productivity losses due to reduced inputs from team members. Individuals tend to decrease their inputs when they work collectively in teams. This tendency, known as "social loafing" (Latané, Williams, & Harkins, 1979), is observed across a wide variety of tasks. In examining the causes of social loafing, researchers focus on the fact that individuals' inputs are often unidentifiable in teams (Price, Harrison, & Gavin, 2006; Williams, Harkins, & Latané, 1981). Consequently, the perceived connection between individual inputs and rewards tends

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to be weak, which reduces individuals' motivation to contribute to team output. Researchers have also focused on the fact that individual members may have different levels of intrinsic involvement in and motivation to achieve a given team task, which will affect their engagement in social loafing (Brickner, Harkins, & Ostrom, 1986; George, 1992; Harkins & Petty, 1982; Park & Song, 2014).

This study extends previous research on social loafing by simultaneously examining two additional critical factors affecting social loafing in teams. First, this study focuses on an intrinsic factor, learning goal orientation (LGO), which is the preference to seek to develop competence by acquiring new skills, mastering new situations, and learning from experience in a given achievement situation (VandeWalle, 1997); and proposes that LGO accounts for individual differences in a team setting. Second, this study examines the purposes of evaluations as an important extrinsic factor affecting social loafing. Studies have shown that social loafing can be reduced when individuals believe that their behaviors are monitored and that there will be consequences for them (Price et al., 2006). In addition, when the evaluation is performed by team members rather than by external evaluators (e.g., a supervisor or professor), this belief can be enhanced because the former have more accurate information about how members behave in the team setting (Erez, Lepine, & Elms, 2002). This study further suggests that an evaluation can have differ-

ential effects on social loafing depending on its purpose. Specifically, this study investigates whether the way one behaves in a team setting is affected by whether the evaluation is for feedback only (i.e., developmental evaluation) or for an administrative or personnel decision (i.e., administrative evaluation). By investigating how extrinsic and intrinsic factors simultaneously affect how individuals contribute to a team, this study aims to provide further insight into individuals' behaviors in a team setting.

## II. Literature Review and Hypotheses

### 2.1 Identifiability

The social loafing tendency is often conceptualized within the framework of the expectancy theory of motivation (Vroom, 1964). The inputs of individuals working collectively are often unidentifiable, and outcomes are usually divided among all the team members. Therefore, the perceived contingency between individuals' inputs and outcomes is weaker for teamwork than it is for individual work, which reduces individuals' motivation. Social loafing occurs because of the belief that no one will notice it and thus, no negative consequences will follow. By contrast, when perceived identifiability (i.e., the extent to which an individual's input can be differentiated from that of other team members) is high in

a team, team members will believe that others are aware of how much effort they are exerting and will therefore be likely to contribute more instead of engaging in social loafing. In support of this reasoning, empirical studies have shown a negative relationship between identifiability and social loafing (e.g., George, 1992; Jones, 1984; Liden, Wayne, Jaworski, & Bennett, 2004; Lowry, Roberts, Romano Jr, Cheney, & Hightower, 2006; Wagner III, 1995; Williams et al., 1981). In line with this research, I thus propose the following hypothesis:

*Hypothesis 1: Identifiability is positively related to contribution to a team.*

## 2.2 Learning Goal Orientation

The posited relationship between perceived identifiability and contribution to a team, however, may differ depending on the preferred goals that one pursues in the given achievement situation. Goal orientations refers to one's goal preference that determines how he/she approaches, experiences, and responds to the achievement situation (Dweck, 1986). Achievement goal theory and the related research distinguish between two types of goal orientation: LGO (a focus on developing competence by acquiring new skills, mastering new situations, and learning from experience) and performance goal orientation (PGO; a focus on demonstrating and validating competence by seeking favorable judgments and

avoiding negative ones). As Payne, Youngcourt, and Beaubien's (2007) meta-analysis explains, goal orientation affects a wide variety of outcomes, ranging from learning strategies and feedback-seeking behaviors to academic performance, task performance, and job performance.

Among the different types of goal orientation, this study focuses on LGO, as it represents individuals' intrinsic interest in the given task. Individuals' interpretations and responses in a given team setting may differ depending on LGO (Kwun, 2000). Those with high levels of LGO believe in an incremental theory of intelligence, which posits that intelligence can be developed and expanded, and that exerting effort is an efficacious strategy for developing what is needed for successful task performance (Janssen & Van Yperen, 2004; VandeWalle, Cron, & Slocum Jr, 2001). Thus, for them, exerting effort is, in itself, indicative of success. Moreover, as those high in LGO regard an achievement situation as an opportunity to learn and develop their abilities, they tend to have a personal and intrinsic interest in a task. Thus, they are likely to provide consistent contributions to a team task, even when their contribution is less likely to be noticed by or even visible to others. While no study has investigated how LGO relates to social loafing, Smith, Kerr, Markus, and Stasson (2001) showed that individuals with a high need for cognition (i.e., a tendency to enjoy and take part in challenging cognitive endeavors) are less affected by situational factors leading to social loafing. In a similar

vein, Hart, Karau, Stasson, and Kerr (2004) showed that individuals with higher achievement motivation are less likely to engage in social loafing, regardless of the behaviors of other team members. In sum, LGO may act as a moderator in the relationship between perceived identifiability and contribution to a team. I thus propose the following:

*Hypothesis 2: LGO moderates the positive relationship between identifiability and contribution to a team, such that the relationship is weaker for those with high, as compared to low, LGO.*

### 2.3 Evaluation Purpose

When individuals' inputs for team output are evaluated, they conclude that social loafing will incur consequences. Thus, an evaluation transforms a collective task into an individual one. Furthermore, the presence of evaluative others on a team may increase individuals' arousal levels, leading them to work harder to achieve the team task (Cottrell, 1972). For this reason, evaluation has been considered one way to overcome social loafing in a team setting (Erez et al., 2002; Gagne & Zuckerman, 1999; Harkins & Jackson, 1985; Harkins & Szymanski, 1989; Price et al., 2006; Shepperd & Taylor, 1999; Shin & Yang, 2005). Evaluations conducted by team members can be particularly effective in reducing the motivation to social loaf. Peers on the team are in a better position than external

evaluators (e.g., supervisors) to monitor team members' behaviors and assess their contribution to the team. They are thus the most accurate and informed evaluators in a team setting.

Typically, evaluation in organizations serves either an administrative or developmental purpose (Pulakos, Mueller-Hanson, & Arad, 2019). Administrative evaluation aims at distinguishing among individuals, thereby affecting motivation through rewards or sanctions given based on the evaluation. Developmental evaluation is used to identify strengths and weaknesses, set goals, and assess training needs. This type of evaluation focuses on developing members' knowledge, skills, and abilities, by providing training and development opportunities based on the needs identified through the evaluation (Boswell & Boudreau, 2002; Youngcourt, Leiva, & Jones, 2007). Studies have shown that peer evaluation, whereby peers rate each other on a given set of standards (Farh, Cannella, & Bedeian, 1991), reduces social loafing whether it is administrative (Erez et al., 2002) or developmental (Druskat & Wolff, 1999).

According to trait-activation theory (Tett & Burnett, 2003; Tett & Guterman, 2000), individuals express certain traits when presented with trait-relevant situational cues. An evaluation conducted for a developmental purpose is a relevant situational factor that will activate an orientation to engage in learning. A developmental evaluation will thus encourage learning among those with high LGO. In support of this argument, researchers

have identified feedback-seeking behavior as a significant outcome of LGO. Those with high LGO tend to regard feedback as information useful for correcting errors and developing competencies; thus, they tend to seek such feedback (VandeWalle et al., 2001). Research has also found that individuals high in LGO tend to increase their efforts when faced with difficult, ambiguous, and challenging tasks, regardless of the level of support received from others (Nicholls, 1984; Van Yperen & Janssen, 2002). Therefore, those high in LGO see a task as an opportunity to develop competencies and tend to direct their energy to the task at hand. Their contribution level will thus not vary significantly depending on whether their contribution is identifiable or on whether the evaluation is for a developmental or administrative purpose.

On the other hand, the pattern of the relationships among the variables will differ for those low in LGO. They are less likely to be motivated by a developmental evaluation (i.e., only for learning), as there are not enough traits to be activated in the situation. What is worse, when individual members' behavior is easily identifiable (i.e., when identifiability is high), task demands become high, causing them to lose interest or become even less motivated to perform and contribute (Van Yperen & Janssen, 2002). By contrast, when the evaluation serves an administrative purpose, they are extrinsically motivated by identifiability and the resulting consequences, as

discussed above.

Taken as a whole, the posited moderating effect of LGO on the relationship between identifiability and contribution to a team may differ depending on the purpose of the evaluation. I thus propose the following:

*Hypothesis 3: The three-way interaction among identifiability, LGO, and evaluation purpose is significantly related to contribution to a team.*

*Hypothesis 3a: When the evaluation has a developmental purpose, the positive relationship between identifiability and contribution to a team is weaker for those with low, as compared to high, LGO.*

*Hypothesis 3b: When the evaluation has an administrative purpose, the positive relationship between identifiability and contribution to a team is stronger for those with low, as compared to high, LGO.*

### III. Methods

#### 3.1 Data Collection

##### 3.1.1 Participants, Design, and Procedures

Data were collected from undergraduate students at a South Korean university based on a quasi-experimental research design (Campbell & Stanley, 1963). In all, 101 students enrolled in two classes taught by the

same instructor with the same course content and teaching methods agreed to participate in the study. The participants were assigned to teams of approximately five members (mean = 4.94, standard deviation = .43), resulting in 20 teams. Peer evaluation by team members was adopted in the two classes, but for different purposes. In one class, the peer evaluation was implemented to offer developmental feedback (i.e., developmental evaluation). In the other class, the peer evaluation was used to determine the students' grades (i.e., administrative evaluation). Excluding five participants who dropped out during the procedure, the developmental evaluation condition comprised 52 subjects consisting of 11 teams, and the administrative evaluation condition comprised 44 subjects consisting of nine teams, yielding a final sample of 96.

The participants in each team engaged in a team project relevant to the course content. Before they started working on the project, the participants completed the survey questionnaire including the LGO scale and the items for all control variables. Then, they were told that a peer evaluation would be conducted by team members after the completion of the project. Specifically, those in the developmental evaluation condition were told that developmental feedback would be given based on the peer evaluation, and those in the administrative evaluation condition were told that their scores would be partly determined based on the peer evaluation.

After the team project was completed, the

participants rated the level of identifiability they perceived while working on the project. Each participant also evaluated other team members' contribution to the team, in terms of two general categories of team outcomes (Mathieu, Gallagher, Domingo, & Klock, 2019): task performance and contextual performance. While these two types of performance differ in that the former focuses on prescribed role behaviors and the latter concerns discretionary ones, both are essential to team functioning.

### 3.1.2 Sample Demographics

The mean age of the participants was 21.96 years (standard deviation = 1.72). Fifty participants (52.08%) were male, and 46 were female (47.92%). More than half the sample (58 participants, 60.42%) was majoring in business administration; other majors included the humanities (16, 16.67%), social sciences (14, 14.58%), engineering (5, 5.21%), and natural sciences (3, 3.12%). Seventy-nine participants (82.29%) were from Asian countries, and 17 (17.71%) were from European countries.

## 3.2 Measures

All psychometric scales were based on a seven-point Likert-type indicator (1 = "strongly disagree" to 7 = "strongly agree"). The scales adopted in the study were originally developed and validated in a Western context. Therefore, a Korean version of the questionnaire was

prepared utilizing the translation-back-translation method (Brislin, 1970). With the help of three English - Korean bilingual researchers, the items were modified and refined in each phase of translation to maintain the validity and reliability of the original instruments. A multivariate outlier test using Mahalanobis D2 (Cohen, Cohen, West, & Aiken, 2002) did not detect any abnormal case. There was no missing value.

### 3.2.1 Identifiability

Perceived identifiability was measured using three items from Wagner III (1995): "My behaviors as a team member were readily observable to others in the team," "Others in the team could not tell whether I was doing what I was supposed to do (reverse-coded)," and "In the team, each member could tell whether other members were doing their fair share." The average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha values were .50, .73, and .70, respectively.

### 3.2.2 Learning Goal Orientation

Five items from VandeWalle's (1997) goal orientation instrument were adopted to measure LGO. Sample items included "I am willing to select a challenging work assignment that I can learn a lot from" and "I often look for opportunities to develop new skills and knowledge." The AVE, CR, and Cronbach's alpha values were .57, .87, and .86, respectively.

### 3.2.3 Evaluation Purpose

The evaluation purposes were dummy-coded (0 = developmental evaluation condition, 1 = administrative evaluation condition).

### 3.2.4 Contribution to a Team

The dependent variable, individual contribution to the team, was evaluated by peers in terms of task and contextual performance. Five items for task performance and another five items for group maintenance drawn from Farh et al. (1991) were used to measure both task and contextual performance during the project. Farh et al. modeled a peer-rating form based on Benne and Sheats' (1948) classic study on the classification of group member roles/behaviors. While task performance represents the member roles/behaviors relevant to the achievement of the team task, group maintenance is related to the roles/behaviors relevant to the effective functioning of the team, thereby capturing essential elements of contextual performance. The sample items included "He/She offered valuable ideas or suggestions to the project," "He/She actively participated in team activities" (task performance), "He/She encouraged cohesiveness and warmth between team members," and "He/She helped reduce conflict and tension" (group maintenance).

Since task performance and group maintenance are peer-rated constructs, ICC(1), ICC(2), and rwg(J) were investigated as in-

terrater (within-individual) reliability and agreement in order to determine whether the data aggregation to the individual level was appropriate (Biemann, Cole, & Voelpel, 2012; Bliese, 2000). The ICC(1) and ICC(2) values were .53 and .82 for task performance, and .38 and .71 for group maintenance, respectively. The mean values of  $rwg(J)$  across all participants were .88 (standard deviation = .21, median = .95, percentage of values higher than .70 = 90.82%) for task performance, and .85 (standard deviation = .24, median = .91, percentage of values higher than .70 = 91.84%) for group maintenance, indicating “strong” interrater agreement (LeBreton & Senter, 2008, p. 836). Based on the results, the peer-rated data for each participant were aggregated as individual-level variables. The AVE, CR, and Cronbach’s alpha values were .75, .94, and .93 for task performance, and .69, .92, and .94 for group maintenance, respectively.

### 3.2.5 Control Variables

Team size and individual demographic characteristics (i.e., age, gender, major, nationality) were controlled for to remove any spurious relationships among the major variables. Collectivism was also included in the analysis to control for its effects on social loafing as reported in previous studies (Earley, 1989; Wagner III, 1995). Performance goal orientation (PGO) was also included as a control variable due to its potential effects on

individuals’ behavior in the evaluation context, as this study focused on LGO, representing individuals’ intrinsic interest in the task. Three items from Wagner III (1995) and four items from VandeWalle (1997) were used to measure collectivism and PGO, respectively.

## IV. Results

### 4.1 Measurement Model Assessment

Prior to the hypothesis testing, confirmatory factor analysis (CFA) was implemented to investigate the fit between the measured data and the proposed latent factor structure. The hypothesized four-factor model (i.e., Model 1 in Table 1) demonstrated an acceptable fit ( $\chi^2 = 199.29$ ,  $df = 125$ ,  $\chi^2/df = 1.59$ , CFI = .94, TLI = .93, IFI = .94, RMSEA = .07, SRMR = .08), providing evidence that the collected data fit appropriately with the original factor structure (Hu & Bentler, 1999; Kline, 2015). In addition, possible aggregated factor structures were tested by combining the latent factors of the variables. The  $\chi^2$  difference tests confirmed that the model fit of the originally proposed factor structure was significantly better than the fit of any other aggregated factor structures (see  $\Delta\chi^2(\Delta df)$  tests in Table 1).

While task performance and group maintenance were measured by peer ratings, identifiability and LGO were based on the partic-

(Table 1) Confirmatory Factor Analysis Results

Latent Factor Structure	$x^2$	$df$	$x^2/df$	CFI	TLI	IFI	RMSEA	SRMR	$\Delta x^2(\Delta df)$
Model 1: Full four factors	199.29***	125	1.59	.94	.93	.94	.07	.08	—
Model 2: Three factors TP & GM aggregated	213.49***	128	1.66	.93	.92	.94	.08	.08	14.20(3)**
Model 3: Three factors Identifiability & LGO aggregated	262.49***	128	2.05	.90	.88	.90	.10	.11	63.20(3)***
Model 4: One factor All aggregated	484.80***	131	3.70	.74	.70	.75	.16	.16	285.51(6)***

Note.  $n = 96$ .  $x^2$  differences are tested relative to Model 1. All  $\Delta x^2(\Delta df)$  values are significant. TP = task performance; GM = group maintenance. +  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; two-tailed tests.

ipants' self-perception. Identifiability and performance variables were collected at the same time point, and causality cannot be argued for the relationship between the main independent and dependent variables. Because data collection based on self-reporting at a single point of time can be a source of common method bias (Podsakoff, MacKenzie, & Podsakoff, 2012), the level of data contamination was investigated. Harman's single-factor test revealed that only 32.15% of the covariance among the psychometric variables was explained by a fixed single factor (i.e., lower than 50%). Most importantly, methodologists argue that an interaction effect, a focus of this study, "cannot be artificially created through common method variance" (Siemens, Roth, & Oliveira, 2009, p. 472). It was thus concluded that data contamination via common method bias was not a serious threat to the study's primary analysis.

#### 4.2 Descriptive Statistics and Correlations

The mean, standard deviation, Pearson correlation, and Cronbach's alpha values are presented in Table 2. Among the major variables, identifiability had marginally significant relationships with task performance ( $r = .19$ ,  $p < .10$ ) and group maintenance ( $r = .18$ ,  $p < .10$ ). Two moderators (i.e., LGO and evaluation purpose) showed a significantly negative correlation ( $r = -.29$ ,  $p < .01$ ), which means that the participants in the developmental evaluation condition had higher LGO levels. In addition, two moderators were correlated with neither identifiability nor task performance or group maintenance. This observation accords with the argument in both traditional (e.g., Blum & Naylor, 1968) and cutting-edge (e.g., Hayes, 2017) texts on interaction effects that a moderator is not necessarily correlated with either of the two variables whose relation is affected by the moderator.

<Table 2> Descriptive Statistics, Correlations, and Internal Consistency Reliability

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	21.96	1.72	—											
2. Gender	.48	.50	-.42***	—										
3. Major	.08	.28	.23*	-.21*	—									
4. Nationality	.18	.38	.01	.05	.06	—								
5. Team Size	4.94	.43	-.09	-.01	.04	-.06	—							
6. Collectivism	4.30	1.37	-.08	-.13	.23*	.02	-.00	(.83)						
7. PGO	5.01	1.11	-.13	.17	-.06	-.31**	-.21*	.09	(.85)					
8. Identifiability	5.43	1.04	-.03	.11	-.02	.04	-.18 <sup>+</sup>	.16	.14	(.70)				
9. LGO	5.24	1.00	.25*	-.18 <sup>+</sup>	.03	.02	-.13	.30**	.32**	.12	(.86)			
10. Evaluation Purpose	.46	.50	-.16	.16	.03	-.10	.43***	-.12	-.12	.12	-.29**	—		
11. Task Performance	5.59	.98	-.05	.03	.07	-.15	.00	-.06	.30**	.19 <sup>+</sup>	.03	.07	(.93)	
12. Group Maintenance	5.38	.88	-.05	.08	.13	-.12	.03	-.03	.31**	.18 <sup>+</sup>	-.05	.10	.85***	(.94)

Note. *n* = 96. Cronbach's alpha values are in parentheses. Age in years; for gender, 0 = male, 1 = female; for major, 0 = business/social science/humanity, 1 = engineering/natural science; for nationality, 0 = Asian countries, 1 = EU countries. <sup>+</sup> *p* < .10; \* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001; two-tailed tests.

### 4.3 Hypothesis Testing

The results of the hierarchical moderated regression analysis are presented in Table 3. As the regression analysis included several two- and three-way interaction terms, all continuous independent variables were mean-centered to reduce multicollinearity (Aiken & West, 1991; Cohen et al., 2002). The variance inflation factor (VIF) values were below 3.56 in all models, as shown in Table 3.

Hypothesis 1 predicted a positive relation-

ship between identifiability during a team project and individual contributions to the project. Models 2 and 7 (see Table 3) indicated that identifiability was related to task performance ( $\beta = .20, t = 1.90, p < .10$ ) and group maintenance ( $\beta = .18, t = 1.80, p < .10$ ) at a marginal level. The weak relationships between identifiability and both performance variables might be due to a low statistical power caused by the relatively small sample size. Therefore, it is concluded that Hypothesis 1 is marginally supported.

<Table 3> Hierarchical Moderated Regression Analysis Results

Variables	Task Performance					Group Maintenance				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Age	-.06	-.07	-.06	-.09	-.10	-.04	-.04	.01	-.02	-.04
Gender	-.04	-.06	-.07	-.08	-.10	.04	.01	-.01	-.02	-.03
Major	.12	.13	.12	.11	.06	.18 <sup>+</sup>	.19 <sup>+</sup>	.17	.18	.13
Nationality	-.05	-.06	-.05	-.11	-.18	-.02	-.03	-.01	-.03	-.09
Team Size	.06	.09	.08	.10	.07	.09	.12	.11	.14	.11
Collectivism	-.12	-.16	-.14	-.17	-.09	-.10	-.13	-.08	-.08	-.02
PGO	.31**	.30**	.31*	.22 <sup>+</sup>	.29*	.33**	.32**	.38**	.30*	.36**
Identifiability		.20 <sup>+</sup>	.19 <sup>+</sup>	.01	-.13		.18 <sup>+</sup>	.18 <sup>+</sup>	.02	-.11
LGO			-.03	.01	.06			-.16	-.11	-.07
Evaluation Purpose (EP)			.02	.02	.10			.03	-.00	.07
Identifiability x LGO				.07	.49**				-.03	.34 <sup>+</sup>
Identifiability x EP				.28 <sup>+</sup>	.37*				.28 <sup>+</sup>	.36*
LGO x EP				.06	-.01				.01	-.05
Identifiability x LGO x EP					-.49**					-.43*
<i>R</i> <sup>2</sup>	.12	.16	.16	.20	.27	.14	.17	.19	.23	.29
Adjusted <i>R</i> <sup>2</sup>	.05	.08	.06	.07	.15	.07	.09	.09	.10	.16
<i>F</i>	1.70	1.99 <sup>+</sup>	1.57	1.54	2.18*	2.02 <sup>+</sup>	2.21*	1.96*	1.85*	2.32**
$\Delta R^2$	—	.04	.00	.04	.07	—	.03	.02	.04	.06
$\Delta F$	—	3.62 <sup>+</sup>	.06	1.37	8.63**	—	3.22 <sup>+</sup>	.97	1.37	6.79*

Note. *n* = 96. Coefficients are standardized. Values in bold are relevant to hypotheses. Interactions are the products of mean centered values. In all models, variance inflation factor (VIF) values are below 3.56.  
<sup>+</sup> *p* < .10; \* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001; two-tailed tests.

As expected, based on the correlation analysis, both moderators (i.e., LGO and evaluation purpose) showed no significant relationship with task performance or group maintenance (see Models 3 and 8 in Table 3). Hypothesis 2 proposed that LGO moderated the relationship between identifiability and individual contribution, such that the positive relationship would be weaker for those with high LGO. As shown in Models 4 and 9 in

Table 3, the two-way interaction term of identifiability and LGO was not significant for task performance ( $\beta = .07, t = .63, p > .10$ ) or group maintenance ( $\beta = -.03, t = -.25, p > .10$ ). Thus, Hypothesis 2 is not supported.

Hypothesis 3 proposed a three-way interaction among identifiability, LGO, and evaluation purposes in predicting individual contributions to the team project. As indicated

<Table 4> Bootstrapping Analysis Results for Three-way Interactions

Dependent Variable	Test of Interaction Term		Conditional Effect of Three-way Interaction			
	Effect (SE)	95% BCCI	Level of LGO	Level of EP	Effect (SE)	95% BCCI
Task Performance	-.62** (.21)	[-1.04, -.20]	-1 SD	0	-.57* (.25)	[-1.08, -.06]
			+1 SD		.33+ (.17)	[-.00, .67]
			-1 SD	1	.57** (.21)	[.16, .98]
			+1 SD		.23 (.19)	[-.15, .62]
Group Maintenance	-.49* (.19)	[-.87, -.12]	-1 SD	0	-.37 (.23)	[-.82, .08]
			+1 SD		.19 (.15)	[-.11, .49]
			-1 SD	1	.58** (.18)	[.22, .95]
			+1 SD		.17 (.17)	[-.18, .51]

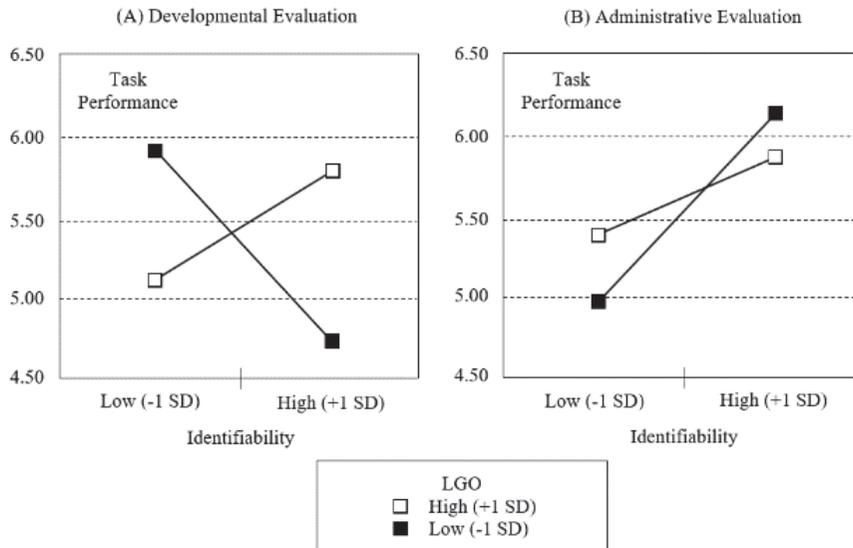
Note.  $n = 96$ . 5,000 bootstrap samples. Unstandardized coefficients with standard errors are reported. All control variables are included. EP = evaluation purpose; BCCI = bias-corrected confidence intervals. +  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; two-tailed tests.

in Model 5 and 10 in Table 3, the three-way interaction term was significant for both task performance ( $\beta = -.49, t = -2.94, p < .01$ ) and group maintenance ( $\beta = -.43, t = -2.61, p < .05$ ). Bootstrapping analysis, a non-parametric resampling test, was conducted using PROCESS 3.2 to more thoroughly investigate the three-way interaction (Hayes, 2017). As presented in Table 4, the test results reconfirmed the three-way interaction effect for task performance ( $b = -.62, 95\%$  bias-corrected confidence interval = [-1.04, -.20]), and group maintenance ( $b = -.49, 95\%$  bias-corrected confidence interval = [-.87, -.12]).

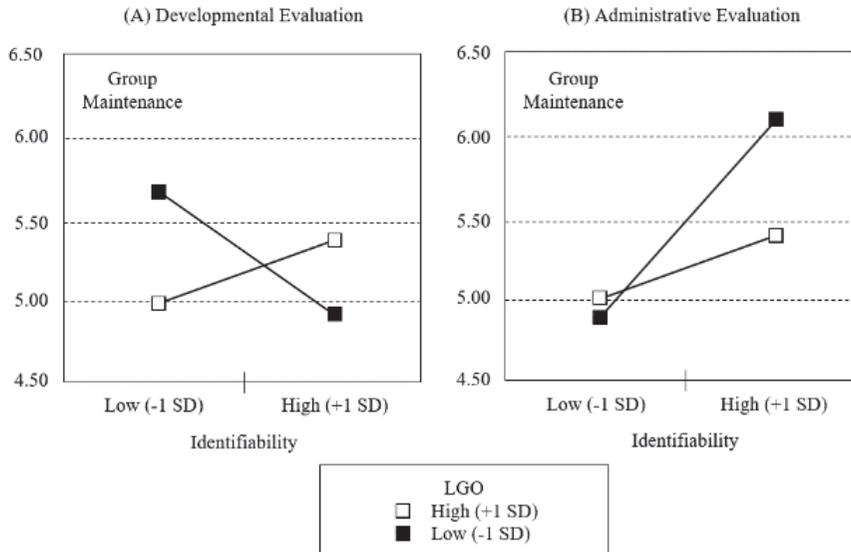
Specifically, Hypothesis 3a proposed that the positive relationship between identifiability and individual contribution was weaker for those with low, as compared to high, LGO given a developmental evaluation. The interaction graphs are illustrated in Figures 1 and 2. All simple slope test results based on boot-

strapping analysis are summarized in Table 4. As shown in Graph A in Figure 1, when the evaluation purpose was developmental, the relationship between identifiability and task performance was marginally positive ( $b = .33, t = 1.97, p < .10, 95\%$  bias-corrected confidence interval = [-.00, .67]) for those with high LGO. The relationship was less positive, and even negative ( $b = -.57, t = -2.24, p < .05, 95\%$  bias-corrected confidence interval = [-1.08, -.06]), for those with low LGO. A similar pattern was observed for group maintenance (see Graph A in Figure 2), although the slope test results were not significant ( $b = .19, t = 1.28, p > .10, 95\%$  bias-corrected confidence interval = [-.11, .49] for those with high LGO;  $b = -.37, t = -1.63, p > .10, 95\%$  bias-corrected confidence interval = [-.82, .08] for those with low LGO).

Hypothesis 3b predicted that, given an ad-



〈Figure 1〉 Interaction Effects of Identifiability and LGO Predicting Task Performance



〈Figure 2〉 Interaction Effects of Identifiability and LGO Predicting Group Maintenance

ministrative evaluation, the positive relationship between identifiability and individual contribution was stronger for those with low, as compared to high, LGO. As illustrated in

Graph B in Figure 1, when the evaluation had an administrative purpose, the positive relationship between identifiability and task performance was strengthened for those with

low LGO ( $b = .57, t = 2.78, p < .01, 95\%$  bias-corrected confidence interval =  $[.16, .98]$ ). For those with high LGO, the relationship was not significant ( $b = .23, t = 1.21, p > .10, 95\%$  bias-corrected confidence interval =  $[-.15, .62]$ ). The analysis for group maintenance showed parallel results. As described in Graph B in Figure 2, the positive relationship between identifiability and group maintenance was stronger for those with low LGO ( $b = .58, t = 3.18, p < .01, 95\%$  bias-corrected confidence interval =  $[.22, .95]$ ), whereas the relationship was not significant for those with high LGO ( $b = .17, t = .97, p > .10, 95\%$  bias-corrected confidence interval =  $[-.18, .51]$ ). These results support the general arguments of Hypotheses 3a and 3b. Therefore, it is concluded that Hypothesis 3 is supported.

## V. Discussion and Conclusions

Research aimed at determining the conditions under which individuals are more or less likely to engage in social loafing is important for both researchers and practitioners, as the findings may provide guidance on how to design interventions for reducing social loafing and related phenomena (e.g., free-riding). Based on previous research on social loafing, this study proposed LGO and evaluation purposes as moderators and examined how they affected the extent to which individuals

contribute to a team.

The results provide empirical evidence of the relationship between identifiability and contribution to a team in terms of both task and contextual performance as rated by peers (Hypothesis 1). While LGO did not have the expected moderating effect on the relationship between these two (Hypothesis 2), the suggestion that the positive relationship was weaker for those with higher LGO was supported via analysis of a three-way interaction including an additional moderator, evaluation purposes (Hypothesis 3). As expected, the positive relationship between identifiability and individual contribution was weaker for those with higher LGO, when the evaluation purpose was administrative (Hypothesis 3b). Also as expected, when the evaluation purpose was developmental, the pattern was the opposite: the positive relationship was more salient for those with higher LGO (Hypothesis 3a). These analysis results emphasize the importance of the evaluation purpose in determining the relationships among identifiability, LGO, and contribution to a team.

### 5.1 Implications for Research and Practice

This study makes a number of important contributions to the social loafing literature. First, this study examines factors that have not been investigated in relation to social loafing. The research on social loafing has tended to focus on situational influences, and little attention has been paid to individual

differences (Schippers, 2014). This study focused on LGO, which leads to intrinsic motivation to perform a task, and examined it together with situations in which LGO is highlighted. This study further proposed that an evaluation can have differential effects on social loafing depending on its purpose. While increasing identifiability has been reported to generally decrease social loafing, this study further showed that the impact of identifiability differs across combinations of individual and situational factors: For those low in LGO, increased identifiability can lead to reduced social loafing in the context of an administrative evaluation but not a developmental evaluation. In the latter condition, it may even reduce contributions to a team, with detrimental effects on the team outcome. By contrast, the contributions made by those high in LGO are relatively stable and consistent across conditions. This study expands our knowledge base concerning the interactions among the individual and situational factors affecting social loafing.

Second, many studies on social loafing have been conducted in a laboratory setting, with few exceptions (e.g., George, 1992; Liden et al., 2004; Perry, Lorinkova, Hunter, Hubbard, & McMahon, 2016; Schippers, 2014; Stark, Shaw, & Duffy, 2007). This study was conducted in a real-world setting to assess an individual difference factor (i.e., LGO) before the formation of a team as well as perceived identifiability and actual behaviors after the completion of the team task. The findings

thus provide explanations of how team members behave that have a higher degree of external validity than findings produced in a laboratory setting.

Third, this study measured individual members' contributions to a team by aggregating peer ratings. This provides advantages over studies that assess individuals' social loafing through self-reporting (e.g., Schippers, 2014), which is likely to be subject to biases (e.g., social desirability). Furthermore, using peer evaluation data is better than assessing overall social loafing tendencies on a team (e.g., Perry et al., 2016) or using scores from external evaluators such as supervisors or managers (e.g., George, 1992), as wide variance may appear in the extent to which team members engage in social loafing, and peers are the most highly informed judges of how each member behaves.

From a practical standpoint, the findings of the present study indicate that different approaches are needed for individuals with different levels of LGO. While those with high LGO are less likely to be affected by the evaluation purpose and provide relatively consistent contributions to a team task, those with low LGO act differently depending on the purpose of the evaluation. When the evaluation is conducted for an administrative purpose, they contribute more to the team as identifiability increases. By contrast, when the evaluation serves a developmental purpose, they tend to contribute less to the team as identifiability increases. These results em-

phasize the importance of LGO in a team setting, which is regarded as a dispositional factor, relatively stable over time (VandeWalle, Nerstad, & Dysvik, 2019). However, some studies demonstrate that individuals can be temporarily induced to prefer a goal of self-development and building competence, and thus have state LGO (e.g., Button, Mathieu, & Zajac, 1996). These studies suggest that leaders can induce LGO by, for example, creating a team climate with a learning-oriented focus and fostering that focus through interactions with team members (Dragoni, 2005; Van Yperen, Hamstra, & van der Klauw, 2011). To increase team effectiveness, team leaders need to take the actions required to improve state LGO, particularly for those with low LGO working under a developmental evaluation condition and/or when perceived identifiability is low.

## 5.2 Limitations and Future Research Directions

First, individuals' abilities, a key determinant of their contribution to a team, were not included in this study which focused on intrinsic and extrinsic motivators in the team context. To highlight motivation issues, the team project the participants had to complete was designed to be neither complex nor challenging, so that those who were motivated were able to contribute. However, future studies could contribute to a more comprehensive understanding by including a complex array of factors that may affect individuals in

the team setting.

Second, peer evaluation can be conducted through peer ratings, peer nominations, or peer rankings (Farh et al., 1991). The first was used for this study, as it is known to be useful when providing feedback to individuals (i.e., for developmental purposes). However, some researchers argue that its reliability and validity may be lower than those of the other two (Kane & Lawler, 1978; Love, 1981). Future studies that examine evaluation purposes should seek to gather more comprehensive data from peers—not only through peer ratings but also through peer nominations and rankings—to advance our knowledge about when and how individuals contribute most effectively to the team.

Finally, the study's data were collected in an academic setting in South Korea, and researchers need to be cautious when generalizing the findings to other contexts. Future research could replicate this study in different contexts. Particularly, exploring the relationship between perceived identifiability in a team and contributions to the team, as well as the moderating roles of LGO and evaluation purposes (e.g., developmental feedback, promotion/pay increase), in a real-world organizational context and/or across different industrial and cultural contexts would help enhance the generalizability of the study's findings.

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## 팀 기여도에 대한 연구: 식별가능성, 학습목표지향성, 평가목적의 삼원상호작용을 중심으로

최명원\*

### 요 약

기존 연구에 의하면 팀원 개개인이 수행하는 활동의 식별가능성은 팀 구성원의 기여도에 영향을 미치는 주요한 요인 중 하나이다. 이 두 변수 간의 관계를 보다 명확하게 설명하기 위하여, 본 연구에서는 개인차 변수인 학습목표지향성과 맥락적 변수인 평가목적이 갖는 조절효과를 살펴보았다. 총 20팀으로 구성된 96명의 대학생이 연구에 참여하였으며 이 중 10개 팀은 동료평가 결과가 개발 피드백 리포트로 제공되는 조건(developmental evaluation)에서, 나머지 10개 팀은 동료평가 결과가 성적에 반영되는 조건(administrative evaluation)에서 과제를 수행하였다. 과제 수행 전에 수집한 학습목표지향성, 그리고 과제 완료 후에 수집한 식별가능성 및 동료평가 설문자료를 분석한 결과는 다음과 같다. 첫째, 팀 구성원 개개인이 인식한 식별가능성은 개인의 팀 과업 기여도와 정적 관계를 갖는다. 둘째, 식별가능성, 학습목표지향성, 평가목적의 삼원상호작용 분석 결과, 개발 목적의 평가 상황에서는 학습목표지향성이 높을수록 식별가능성과 기여도 간의 정적 관계가 강화되는 것으로 나타났다. 한편, 평가 결과가 의사결정(즉, 성적)에 반영되는 상황에서는 학습목표지향성이 낮을수록 식별가능성과 기여도 간의 정적 관계가 강화되는 것으로 나타났다. 연구 결과를 바탕으로 이론적, 실무적 함의를 논의하였다.

주제어: 팀 기여도, 식별가능성, 학습목표지향성, 성과평가

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