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Nogami, Makoto

Faculty of Human-Environment Studies, Kyushu University

Furukawa, Hisataka

Faculty of Human-Environment Studies, Kyushu University

Yanagisawa, Saori

Faculty of Business, Marketing and Distribution, Nakamura Gakuen University

<https://doi.org/10.15017/18421>

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出版情報 : 九州大学心理学研究. 10, pp.93-99, 2009-03-31. 九州大学大学院人間環境学研究院  
バージョン :  
権利関係 :

# Effective strategy learning through self-regulation within a work organization: Effects of internal and external criteria for self-regulation

**Makoto Nogami** (*Faculty of Human-Environment Studies, Kyushu University*)

**Hisataka Furukawa** (*Faculty of Human-Environment Studies, Kyushu University*)

**Saori Yanagizawa** (*Faculty of Business, Marketing and Distribution, Nakamura Gakuen University*)

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Recent research has again suggested the importance of strategy learning, which leads to improvement in the performance of employees within a work organization. The current study simultaneously examined the effects of internal and external criteria (i.e., employees' effort-direction awareness and leaders' directive guidance) for self-regulation on employees' strategy learning. Two questionnaires were administered, six months apart, to 164 employees to examine the relationship between independent and dependent variables longitudinally. Employees' effort-direction awareness and feedback acquisition displayed direct and significant promoting effects on their strategy learning. On the other hand, directive guidance provided by leaders such as the presentation of visions or strategies, only indirectly affected employees' strategy learning through their positive effects on employees' effort-direction awareness and feedback acquisition. These findings indicate the importance of internal criteria for self-regulation when facilitating strategy learning in employees.

**Key Words:** strategy learning, self-regulation, effort-direction awareness, leader's directive guidance

This study examined the effects of employees' internal and external criteria (i.e., employees' effort-direction awareness and leaders' directive guidance) for self-regulation on strategy learning (acquisition of useful knowledge, skills and methods for work).

Previous research into educational psychology focused on the ability to self-regulate skillfully as a trait of the superior learner who can practise effective learning (Ley & Young, 2001). Self-regulated learning has been described such as "a multi-component, iterative, self-steering process, which modulates environmental, cognitive, affective, and behavioral elements (in order to maximize the achievement of individual goals)" (Casallar, Boekaerts & Costigan, 2006).

Past research has suggested that internal and external criteria for self-regulation promote excellent learning (Ley & Young, 2001). However, few studies have simultaneously examined the effects of these criteria on employees' learning within a work organization.

## 1. Strategy learning within a work organization

Recent research has suggested that heightened

motivation does not necessarily lead to improved performance (Yanagizawa & Furukawa, 2000), especially when the task is highly complex or novel (Cervone, Jiwani & Wood, 1991; Earley, Connolly & Ekegren, 1989).

Within an organizational setting, examples of situations mentioned above include work on product development team which requires highly developed knowledge and skills, and work on project team which is engaged in the start-up of a new business.

It is becoming increasingly more important for organizations to continuously innovate themselves in order to quickly adapt to the development of new technology or the demand of a rapidly changing market. Consequently, a high level of motivation does not always guarantee enhanced performance in today's constantly changing business environment.

In such a current state, employees' learning within the work setting is an important factor, which facilitates improved performance (Furukawa, 2002, 2003; Seijts & Latham, 2005). To enable adaptation to changes in the circumstances surrounding organizations, employees' continuous strategy learning is essential.

The quality, rather than the quantity of learning matters when it comes to ensuring improved performance. Employees' learning needs to be focused appropriately in order to enhance their performance (Kaminori & Furukawa, 2001;

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<sup>1)</sup> This research was supported by a Grant-in-Aid for Scientific Research (B) (2007-2009), Project No.19330143

<sup>2)</sup> Part of this study was presented at the 29th International Congress of Psychology (Berlin, Germany, 2008).

Bunderson & Sutcliffe, 2003).

When it comes to strategy learning within a work setting, employees need to regulate their learning effort appropriately so as to acquire the necessary knowledge, skills and methods for achieving task efficiently.

## 2. The relationship between internal criteria for self-regulation and strategy learning

Past studies dealing with educational psychology have pointed out the importance of internal criteria (criteria concerning what should be learnt and how much should be learnt) for self-regulated learning. According to Ley and Young (2001), if the internal criteria for learning is rigidly established, learners can compare their learning outcomes to desirable outcomes and can then make an effort to fill any specific gaps.

If we applied the above discussion on self-regulated learning to actual work settings, then employees' internal criteria for learning would in fact comprise effort-direction awareness (the awareness of points which need to be improved in order to ensure superior performance). Employees with high effort-direction awareness will be able to concentrate on appropriate strategy learning.

Moreover, employees' effort-direction awareness will promote the effectiveness of feedback acquisition (acquisition of information concerning the appropriateness of task performance) on strategy learning. Feedback acquisition itself will have a promoting effect on strategy learning, because it provides employees with the information needed for monitoring learning outcomes. In addition, effort-direction awareness will help employees understand which feedback is more useful for effective strategy learning.

The following hypotheses summarize the preceding discussion:

Hypothesis 1: Employees' effort-direction awareness and feedback acquisition will promote strategy learning.

Hypothesis 2: The higher the employees' effort-direction awareness is, the more feedback acquisition will have a promoting effect on strategy learning.

## 3. The relationship between external and internal criteria for self-regulation

The criteria for self-regulation may include not only internal but also external criteria (Ley & Young, 2001). Within a work setting, external criteria for self-regulation comprise guidelines concerning desirable work outcomes and strategies. As Yanagizawa and Furukawa (2000) have suggested members' understanding of what is desirable work

outcomes and how to accomplish them will facilitate members' self-regulation and strategy learning.

In this research, we focus on leaders who present guidelines within a work setting, and we examine the impact of a leader's directive guidance on members' internal criteria (effort-direction awareness) for self-regulation and strategy learning.

Directive guidance by leaders can be divided into two types, team-vision presentation and strategy presentation. The former emphasises the desired direction for the team, and clarifies desirable performance which should be recognized. The latter is presentation of useful strategies such as basic ways to accomplish the task.

Firstly, a leader's team-vision presentation and strategy presentation present the desired direction for task completion, so this will facilitate the members' effort-direction awareness.

Secondly, a leader's team-vision presentation and strategy presentation will promote feedback acquisition, since they provide members with external criteria which help members self-evaluate their work processes and outcomes, and facilitate acquisition of feedback which is required for self-evaluation.

Thus, a leader's directive guidance will have indirect effects on members' strategy learning through members' effort-direction awareness and feedback acquisition.

In addition, a leader's strategy presentation will also have direct promoting effect on members' strategy learning, since it presents useful ways for effective task accomplishment.

The following hypotheses summarize the preceding discussion:

Hypothesis 3: A leader's team-vision presentation will generate positive effects upon members' effort-direction awareness and feedback acquisition.

Hypothesis 4: A leader's strategy presentation will generate positive effects on members' effort-direction awareness, feedback acquisition and strategy learning.

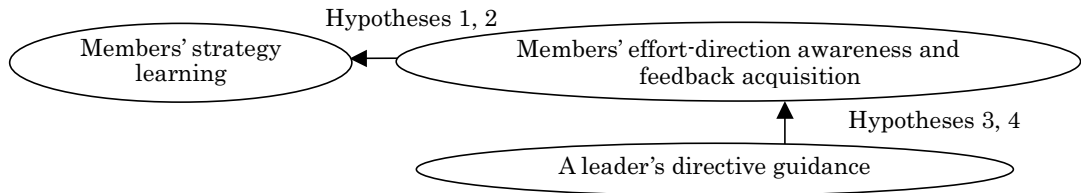
The model used in this research is shown in Fig. 1.

## Method

### 1. Participants

A sample of 164 employees in non-managerial positions, working for a Japanese pharmaceutical company which had been practicing MBO, completed the questionnaire.

Respondents included line members (members engaged in the manufacturing process) and staff members (members engaged in technical maintenance of the equipment, etc.).



**Fig.1 Research model (The relationship between members' strategy learning, effort-direction awareness, feedback acquisition and a leader's directive guidance)**

The participants had been employed for an average of 9.5 years ( $SD=4.4$ ), and they had been assigned to the current teams for an average of 6.8 years ( $SD=3.6$ ).

Within the company, members set their performance goals and learning goals through an interview with their leaders twice a year. Achievement of their goals was evaluated at the end of the term (six months), and their achievement was reflected in the size of the bonus that they received.

## 2. Procedure

A survey comprising two questionnaires, six months apart, was administered to examine the relationship between independent and dependent variables longitudinally.

The first part of survey was carried out at the beginning of the final six months of the fiscal year 2002 (the end of November, 2002). A questionnaire regarding members' effort-direction awareness and leaders' team-vision and strategy presentation was administered.

The second part of survey was carried out at the end of the fiscal year 2002 (the end of April, 2003). A questionnaire regarding members' feedback acquisition and strategy learning was administered.

## 3. Measures

(1) Strategy learning: The extent to which the members acquired knowledge, skills and methods for achieving tasks efficiently was measured. Items were as follows, "I acquired the skills necessary to achieve the task efficiently"; "I acquired knowledge that was useful for achieving the task"; and "I understood the methods through which the task could be achieved smoothly" ( $\alpha=.88$ ). Respondents were asked to indicate the extent to which they agreed to each statement, using a 1 (strongly disagree) to 6 (strongly agree) Likert-type scale.

(2) Effort-direction awareness: Effort-direction awareness was measured by 4 items. The extent to which the members got aware of "Points to make an effort with", and

"Knowledge and skills which should be obtained" by setting their goals was measured ( $\alpha=.78$ ). Respondents were asked to indicate the extent to which they were aware of each item, using a 1 (weakly aware) to 6 (strongly aware) Likert-type scale.

(3) Feedback acquisition: There are two types of feedback (Butler & Winne, 1995) that employees acquire, including external feedback (feedback acquired from the external environment) and internal feedback (feedback created through one's own analysis using one's own criteria). Considering the type of jobs the respondents in this research had, the source of external feedback could be a leader, co-workers, external teams or equipment which the members use. In addition, the source of internal feedback could be goals set by the members themselves.

Thus, we measured feedback acquisition using 5 items that questioned the degree to which the members acquired feedback from each of the above sources ( $\alpha=.73$ ). Respondents were asked to indicate the extent to which they acquired feedback concerning the appropriateness of their performance from each of those sources, using a 1 (acquired little) to 6 (acquired much) Likert-type scale.

(4) Leaders' directive guidance: We prepared 13 items which could be used to measure a leader's daily directive guidance to members. Respondents were asked to indicate the extent to which their leader presented team-vision and work strategy to members, using a 1 (he or she hardly presents anything) to 6 (he or she presents everything) Likert-type scale.

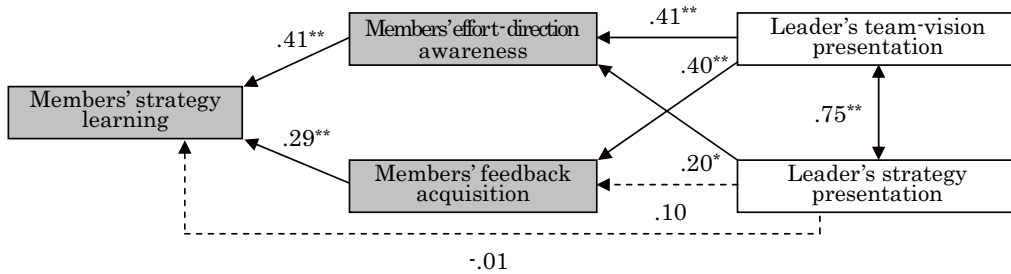
Factor analysis (principal axis method, varimax rotation) was conducted, and two factors were extracted (refer to the Appendix).

The first factor was named "team-vision presentation". The second factor was named "strategy presentation". Subscales were constructed by collecting items whose factor loading was 0.50 or greater. (Any item with a high factor loading for both factors was excluded when constructing the subscales.)

**Table 1**  
Means, Standard Deviations, and Correlations among Variables

Variable	Mean (SD)	1	2	3	4	5
1. Members' strategy learning	3.81 (0.71)	-				
2. Members' effort-direction awareness	4.40 (0.65)	.48**	-			
3. Members' feedback acquisition	3.55 (0.73)	.39**	.28**	-		
4. Leader's team-vision presentation	4.01 (0.72)	.33**	.55**	.46**	-	
5. Leader's strategy presentation	3.89 (0.86)	.32**	.50**	.39**	.76**	-

Note \*\*p < .01



**Fig.2 The impact of members' effort-direction awareness, feedback acquisition and leader's directive guidance on members' strategy learning (Colored parts are members' internal processes.)**

A leaders' team-vision presentation was measured using 8 items. Items used to measure a leader's team-vision presentation included: "Our leader presents us with the ideal future directions for the company and the factory" and "Our leader presents us with important points which should be considered in our evaluation" ( $\alpha=.91$ ). A leader's strategy presentation was measured using 4 items. Items used to measure a leader's strategy presentation included: "Our leader presents us with the basic ways to accomplish the task" and "Our leader presents us with concrete strategies through which to achieve the goal" ( $\alpha=.92$ ).

**Results**

Table 1 presents the mean value (per 1 item), standard deviation, and correlation among all the variables.

According to Table 1, there are significant positive correlations between members' strategy learning and each variable. Correlation between members' strategy learning and effort-direction awareness was relatively high.

To examine the hypotheses for this research, path analysis was conducted with AMOS. The results are presented in Fig. 2. In Fig. 2, solid lines show significant paths, while dotted lines show non-significant paths. The

goodness-of-fit index shows the satisfactory score (GFI=1.0, AGFI=.99, RMSEA < .01).

According to Fig. 2, firstly, members' effort-direction awareness and feedback acquisition had significant positive effects on members' strategy learning. In addition, the effect of effort-direction awareness on strategy learning was greater than that of feedback acquisition.

Secondly, a leader's team-vision presentation had significant positive effects upon members' effort-direction awareness and feedback acquisition. On the other hand, a leader's strategy presentation had significant positive effects only on members' effort-direction awareness. A leader's strategy presentation did not display any significant effects upon members' feedback acquisition or strategy learning.

In order to examine the interaction effect by members' effort-direction awareness and feedback acquisition upon strategy learning, two-way ANOVA (effort-direction awareness high/low  $\times$  feedback acquisition high/low) was conducted. The results showed that the interaction effect was not significant ( $F=.35, n.s.$ ).

**Discussion**

This study simultaneously examined the effects of

members' internal and external criteria (i.e., effort-direction awareness and leader's directive guidance) for self-regulation upon members' strategy learning.

### **1. Effects of internal criteria for self-regulation on strategy learning**

Members' effort-direction awareness and feedback acquisition had promoting effects on strategy learning. This result supported Hypothesis 1 (Employees' effort-direction awareness and feedback acquisition will promote strategy learning). In addition, the promoting effect of effort-direction awareness on strategy learning was more remarkable than that of feedback acquisition.

From the above results, it was confirmed that internal criteria (effort-direction awareness) for self-regulation, rather than feedback acquisition, comprise important factor that facilitates strategy learning.

The interaction effect between members' effort-direction awareness and feedback acquisition upon strategy learning was not significant. This result did not support Hypothesis 2 (The higher the employees' effort-direction awareness is, the more feedback acquisition will have a promoting effect on strategy learning).

The reason why Hypothesis 2 was not supported was thought to be as follows. In this research, to measure feedback acquisition, we queried the extent to which members acquired "useful information" with which to evaluate the appropriateness of their performance. It is considered that because members barely need to refer to "points which need to be improved" to utilize the feedback which they acquired in being clearly aware of the "utility" for evaluating their performance, there was no moderating effect of effort-direction awareness on the relationship between feedback acquisition and strategy learning.

It is possible that a moderating effect of effort-direction awareness on the relationship between information acquisition and learning may be found when it is not clear whether the acquired information is actually useful for monitoring the appropriateness of performance. In future research, it would be worth examining whether, in an effort to attain learning and improvement, members with a high effort-direction awareness do in fact utilize information which seems to have little relevance to their task.

### **2. Effects of external criteria for self-regulation on internal criteria**

A leader's team-vision presentation had significant positive effects on members' effort-direction awareness and

feedback acquisition. This result supported Hypothesis 3 (A leader's team-vision presentation will generate positive effects upon members' effort-direction awareness and feedback acquisition).

On the other hand, a leader's strategy presentation had significant positive effects only on members' effort-direction awareness. A leader's strategy presentation did not exert any significant effects on members' feedback acquisition or strategy learning. Thus, Hypothesis 4 (A leader's strategy presentation will generate positive effects on members' effort-direction awareness, feedback acquisition and strategy learning) was only partially supported.

A leader's team-vision presentation rather than strategy presentation had greater positive effects on members' effort-direction awareness and feedback acquisition. The following discussion explains the results.

A leader's strategy presentation is considered to provide members with concrete methods for task accomplishment. However, such intervention may obstruct members' learning through self-regulation, since it can hinder members from developing their own strategies. On the other hand, a leader's team-vision presentation provides members with only vague advice, thereby enabling members to remain fully aware of their original effort-direction, thus facilitating spontaneous feedback acquisition and consequently promoting strategy learning through self-regulation.

However, for completely novice members, the leader may need to present concrete strategies in order to promote the members' growth (Harsey, Blanchard & Johnson, 1996 Tras. Yamamoto & Yamamoto 2000). In future research, the maturity of members should be considered when examining the effectiveness of the two different types of leaders' directive guidance (team-vision presentation and strategy presentation) on members' strategy learning.

## **Conclusion**

The effects of internal and external criteria (i.e., employees' effort-direction awareness and leaders' directive guidance) for self-regulation on strategy learning were examined simultaneously.

The results revealed that employees' internal criteria (effort-direction awareness) for self-regulation had a direct positive effect on strategy learning. On the other hand, employees' external criteria (leaders' directive guidance) for self-regulation had only indirect effects on strategy learning.

The results of this study suggest that enhancing employees' effort-direction awareness is an effective strategy

with which to facilitate their strategy learning. Leaders' directive guidance, especially team-vision presentation is one such intervention.

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## 付 録

### 和文タイトル

仕事における課題達成方略の学習を促進する自己統制に関する実証的研究 自己統制のための内的および外的基準の効果に注目して

野上 真

(九州大学大学院 人間環境学研究院)

古川 久敬

(九州大学大学院 人間環境学研究院)

柳澤さおり

(中村学園大学 流通科学部)

### 和文要約

近年の研究では、組織における業績を高める上での課題達成方略の学習の重要性が指摘されている。本研究では自己統制のための内的および外的基準（努力の方向性の意識化およびリーダーによるガイダンス）が組織成員の課題達成方略の学習にもたらす効果が同時に検討された。独立変数と従属変数の因果関係を明らかにするため、6ヶ月の期間をおき、164人の企業従業員を対象とした縦断的調査が実施された。従業員の努力の方向性の意識化およびフィードバックの獲得は、課題達成方略の学習に有意な促進的効果を持っていた。一方、リーダーによるガイダンス（ビジョンおよび方略の提示）が課題達成方略の学習にもたらす効果は、従業員の努力の方向性の意識化およびフィードバックの獲得の促進を介した間接的効果のみであった。これらの知見は従業員の課題達成方略の学習の促進要因として、自己統制のための内的基準が重要であることを示している。

キーワード：課題達成方略の学習，自己統制，努力の方向性の意識化，リーダーによるガイダンス

**Appendix**  
Results of Factor Analysis on a Leader's Guidance

Items	Factor 1	Factor 2	Communality
Our leader presents us with			
targets for the team and section which need to be accomplished	.680	.331	.572
visions for the team and section	.791	.334	.738
ideal images for the team and section which need to be realized	.597	.326	.463
ideal future directions for the company and the factory	.618	.395	.538
attitudes and behaviors which should be evaluated highly	.577	.433	.521
important points which should be considered in our evaluation	.707	.321	.603
criteria for achievement which are demanded	.683	.417	.641
attitudes and behaviors which are never allowed	.585	.319	.444
basic ways to accomplish the task	.367	.763	.717
schedules for work	.376	.745	.695
concrete strategies through which to achieve the goal	.363	.836	.831
ideal ways for mutual collaboration needed for the team and section	.458	.721	.729
problems that need to be overcome to achieve the goal	.564	.625	.709
Eigenvalue	4.40	3.80	
percentage of variance explained	33.9	29.2	