

# A Short-Term Longitudinal Study on Motivational Factors and Learning Behavior of Junior High School Students

MASAHIKO KAMBARA, SEIICHIRO TAKETSUNA  
and MASAYOSHI SHIGEMORI

## Abstract

The purpose of this study was to examine the successive change in learning behaviors and self-efficacy of Japanese junior high-school students. Sixty-six students enrolled in this study were third graders in junior high-school who also went to jukus. Though jukus are private tutoring schools, many of Japanese junior high-school students go to juku after school to prepare for the entrance examination to senior high-school or to supplement the ordinary classes of junior high-school. They were assigned questionnaires and trial examinations every month for six months.

Subjects were divided into four groups according to the change patterns indicated by their achievement scores. Learning behaviors, self-efficacy, perceived control, and motivation orientation were compared within the four groups. Results showed that student groups which displayed remarkable progress had a distinctive learning behavior pattern.

*Key Words:* motivational factor, learning behavior, short-term longitudinal study, junior high school student, trial examination

It was ordinary that learning behaviors of students related to academic achievement. Considerable studies exploring effective learning to get good grades were reported in Japan. Omura et al. (1990) described that basic learning behaviors (e.g. I remember a formula in mathematics) caused good results in a regular examination. On the other hand, Kambara et al. (1999) found divergent learning behaviors (e.g. I study and research what interests me) made student get high-score in trial examination. However, much of studies concerning these topics did not examine the change patterns of learning behaviors and their covariation with achievement score.

Two concepts of perceived control and motivation orientation were very important when we discussed human motivation, especially student motivation to academic learning. Hence, many researchers focused the construction of control perception (e.g. Bandura, 1997; Weisz & Stipek, 1982; Skinner, 1992) and of motivation orientation (e.g. Dweck, 1990; Nicholls, 1989). Kambara et al. (1999) investigated the effects of perceived control and motivation orientation on learning behaviors and academic achievement. They concluded

both personality traits played very important role in academic learning setting. A perceived control scale used in the study of Kambara et al. (1999) was developed by Kambara & Yamaji (1992) which consisted of three aspects: contingency, efficacy, and autonomy. Perceived contingency is the expected correspondence between one's response and outcome in the environment. Perceived efficacy is the judgment of the required action being in one's behavior repertoire. Perceived autonomy is the perception of being the initiating agent of given behavior. A motivation orientation scale used in the present study consisted of task orientation, achievement orientation, and approval orientation.

Kambara et al. (1999) examined effects of two kinds of personality traits on academic achievement of junior high-school students going to juku. They cleared that perceived efficacy contributed to academic achievement through learning behavior. Moreover, it was found that divergent learning behaviors were more effective than basic learning behaviors. Although Kambara et al. (1999) tried to explore the dynamic changing process using a successive investigation paradigm, their plan did not necessary succeed. They were not able to analyze the changing process of learning behavior and other variables (e.g. perceived efficacy) because of a lot of deficit values. It was also problematic that subjects were organized by different grader who differed in ego-involvement in academic learning. In this study, we planned to make procedures better in order to examine the change process dynamically.

In Japan, more than half of junior high-school students go to juku after school. And junior high-school students who are enrolled in juku have a definite goal to pass an entrance examination in future. Accordingly, in some degree, they are motivated to learn academic subjects and have a routine learning practices and customs. Therefore, this research also was conducted in juku.

The purpose of this study was to investigate the characteristics of learning behaviors and motivational factors of students gained remarkable progress in achievement.

## **Method**

### **Participants**

Participants for this study (N=66) were third graders in some municipal junior high-schools who went to the same juku in Tokyo. Third graders were chosen for this study because the juku is a preparatory school to entrance examination and they had entrance examinations for a high school after the end of this study.

## Measures

### *perceived control*

Students rated the perceived control scale which was developed by Kambara & Yamaji (1992). This scale consisted of three subscales (contingency, efficacy, and autonomy). Each subscale had 10 items.

### *motivation orientation*

To measure students' motivation orientation the scale developed by Kambara & Yamaji (1992) was also administered. This scale consisted of three subscales (task orientation, achievement orientation, and approval orientation). Each subscale contained 9 items, 7 items, and 7 items, respectively.

### *self-efficacy*

The self-efficacy scale which had 8 items was developed for this study. This scale was aimed to measure perceived confidence to get a good grade and to execute learning behaviors which are necessary to get a good grade.

### *learning behavior*

Learning behaviors were measured by the items extracted from the learning behavior scale by Kambara & Yamaji (1992). This scale consisted of four subscales (divergent learning behavior, learning behavior in school, learning behavior at home, and learning behavior for examination. Each had 3 items, 4 items, 4 items, and 3 items, respectively.

All measures on participants' perceived motivational factors and learning behaviors were assessed on a 5-points scales. Total scores of items of subscales were used as measures of subscales. All items of these scales are shown in Appendix.

### *Achievement measure*

Participants' scores of six trial examinations which were conducted six times every around one month were used as their achievement measure.

## Procedure

Data were collected from the end of the first semester to the middle of the third semester just before the entrance examination for a high school.

The sequence of data collecting is as follows,

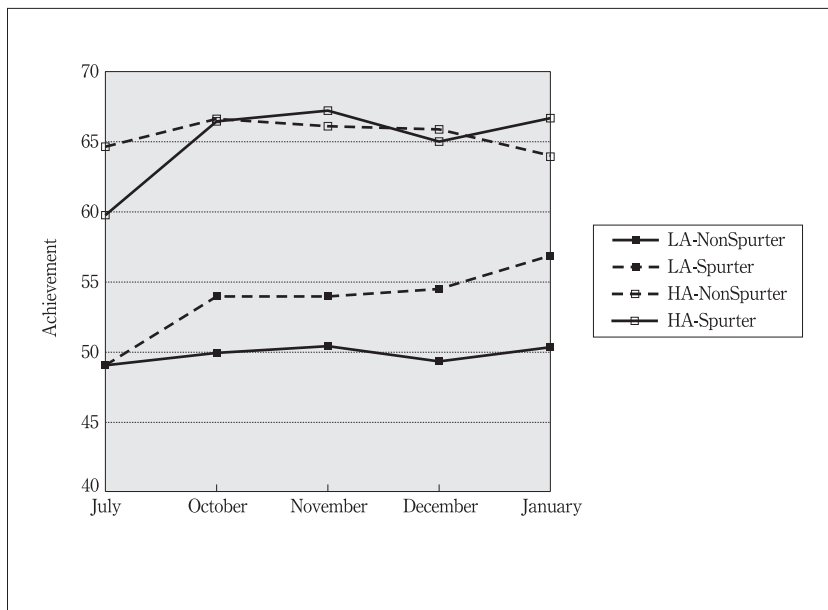
- |                     |  |
|---------------------|--|
| (1) Early July      | achievement 1 (time1)                              |
| (2) Late July       | perceived control motivation orientation           |
| (3) Early September | self-efficacy1 (time1) learning behavior 1 (time1) |
| (4) Early October   | achievement 2 (time 2)                             |

- |                        |                          |                             |
|------------------------|--------------------------|-----------------------------|
| (5) Middle of October  | self-efficacy 2 (time2)  | learning behavior 2 (time2) |
| (6) Early November)    | achievement 3 (time3)    |                             |
| (7) Late November      | self-efficacy 3 (time 3) | learning behavior 3 (time3) |
| (8) Early December     | achievement 4 (time4)    |                             |
| (9) Late December      | self-efficacy 4 (time 4) | learning behavior4 (time4)  |
| (10) Early January     | achievement 5 (time5)    |                             |
| (11) Middle of January | self-efficacy 5 (time5)  | learning behavior 5 (time5) |

## Results

### Grouping

Students were divided into  $2 \times 2$  (High-low achiever  $\times$  Spurter-NonSpurter) groups. Students whose initial achievement scores (Achievement 1) were higher than 57 were categorized high achievers (HA) and others were called low achievers (LA). Also students whose scores showed remarkable increase (more than five points) through the whole span of this study were categorized as Spurter. The number of students of four groups, HA-Spurter, HA-NonSpurter, LA-Spurter, and LA-NonSpurter were 9, 27, 15 and 15, respectively.



**Fig. 1** Achievement scores as a function of HA-LA and Spurter-Nonspurter

Means of Achievement scores of four groups were described in Fig. 1. Though LA-Spurter and LA-NonSpurter showed equal initial achievement scores, 49.0, the final scores were 56.9 for LA-Spurter and 50.3 for LA-NonSpurter. The initial achievement score of HA-Spurter was lower than HA-NonSpurter, but in the final phase HA-Spurter was higher than HA-NonSpurter. HA-Spurter gained seven points increase on average, while the scores of HA-NonSpurter dropped slightly (0.7).

### Self-Efficacy

Means of self-efficacy on learning behaviors are presented in Fig. 2. ANOVA revealed the marginally significant HA-LA  $\times$  Spurter-NonSpurter interaction ( $F=3.73$ ,  $df=1, 57$ ,  $p<.10$ ). Within low achievers, Spurter showed higher self-efficacy than Non Spurter as expected, but within high achievers, the difference was not clear. Efficacy might be more important for low achievers to improve their achievements.

### Learning Behaviors

Means of learning behaviors are shown in Fig. 3, 4, 5, and 6.

While the mean of learning in school subscale of HA was significantly higher than that of LA ( $F=5.15$ ,  $df=1, 57$ ,  $p<.05$ ), ANOVA revealed that Spurter tended to take higher scores in this subscale ( $F=2.79$ ,  $df1, 57$ ,  $p=.10$ ). Though high achievers also performed the divergent learning more than low achievers ( $F=5.37$ ,  $df=1, 57$ ,  $p<.05$ ), the difference

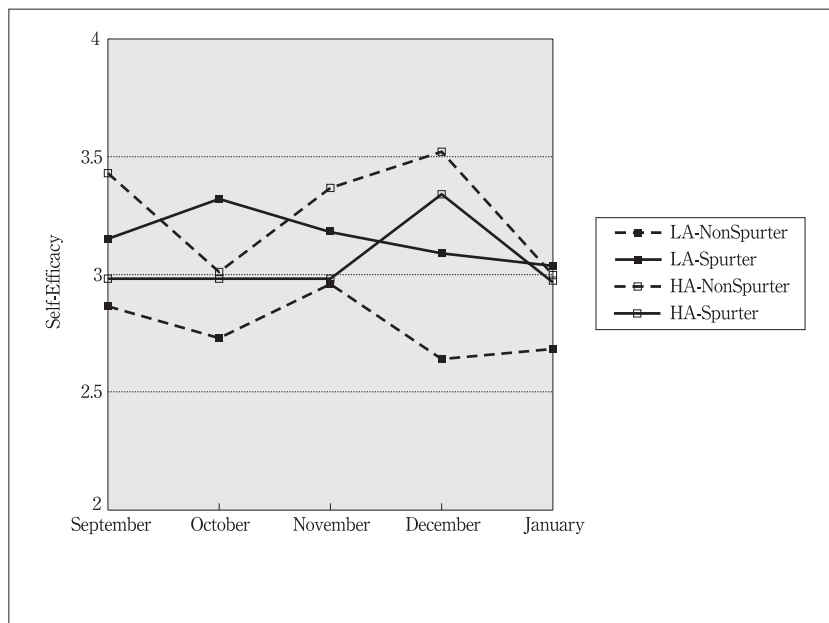
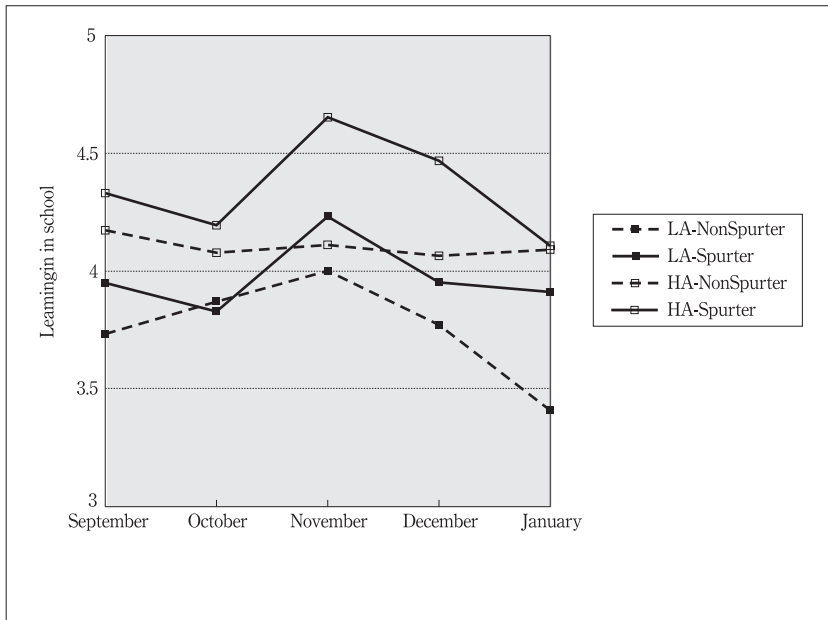
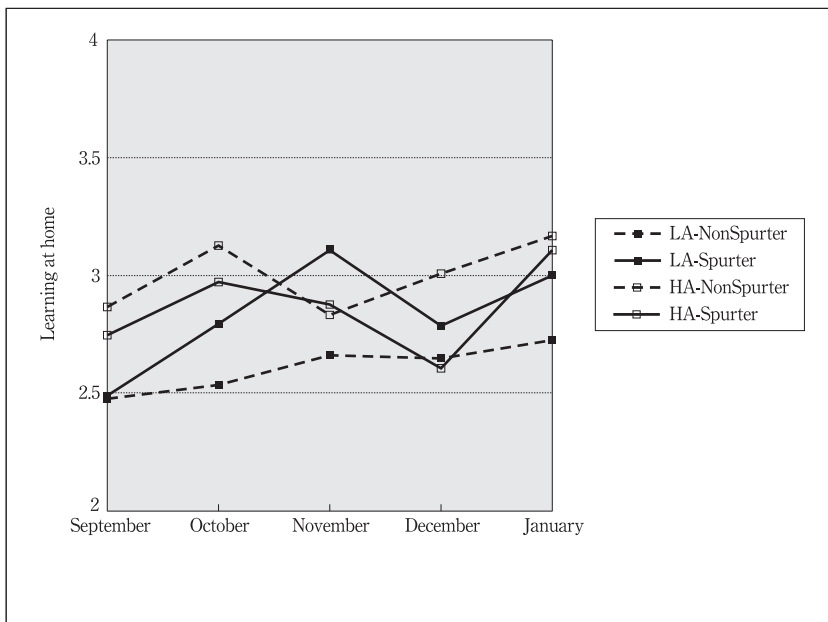


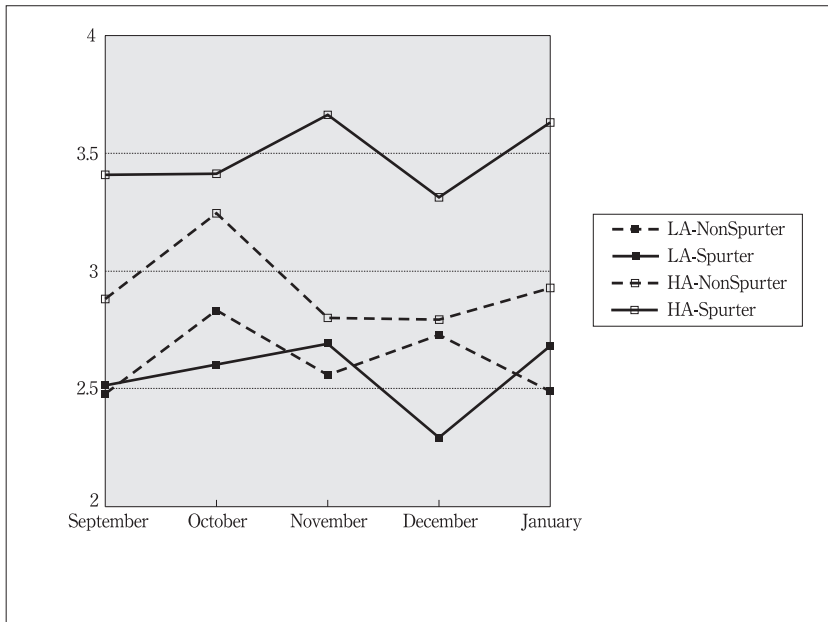
Fig. 2 Self-Efficacy as a function of HA-LA and Spurter-NonSpurter



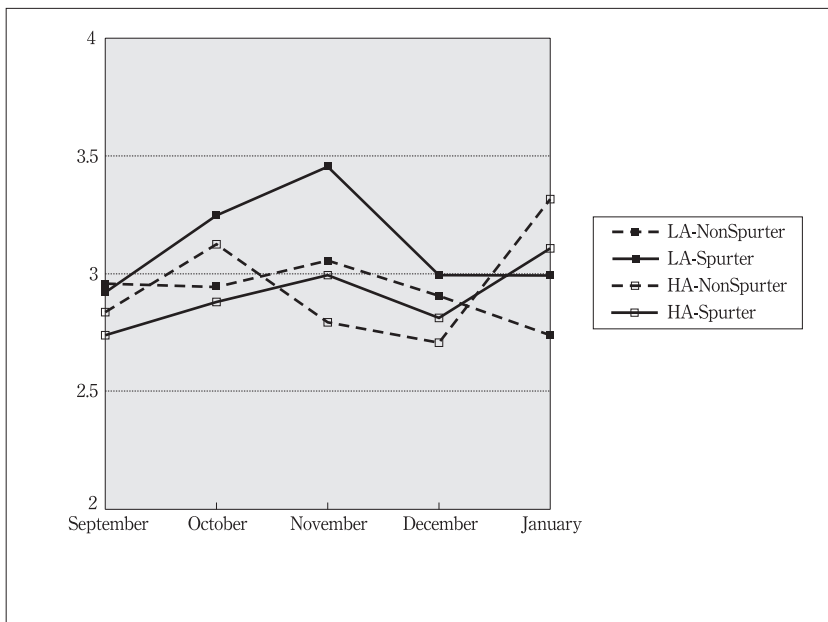
**Fig. 3 Learning in school as a function of HA-LA and Spurter-NonSpurter**



**Fig. 4 Learning at home as function of HA-LA and Spurter-NonSpurter**



**Fig. 5 Divergent learning as a function of LA-HA and Spurter-NonSpurter**



**Fig. 6 Learning for exam as a function of HA-LA and Spurter-NonSpurter**

between Spurter and NonSpurter was greater within high achievers than within low achievers. It was suggested that divergent learning was beneficial only for high achievers, while learning in school was useful for both students to improve their achievement.

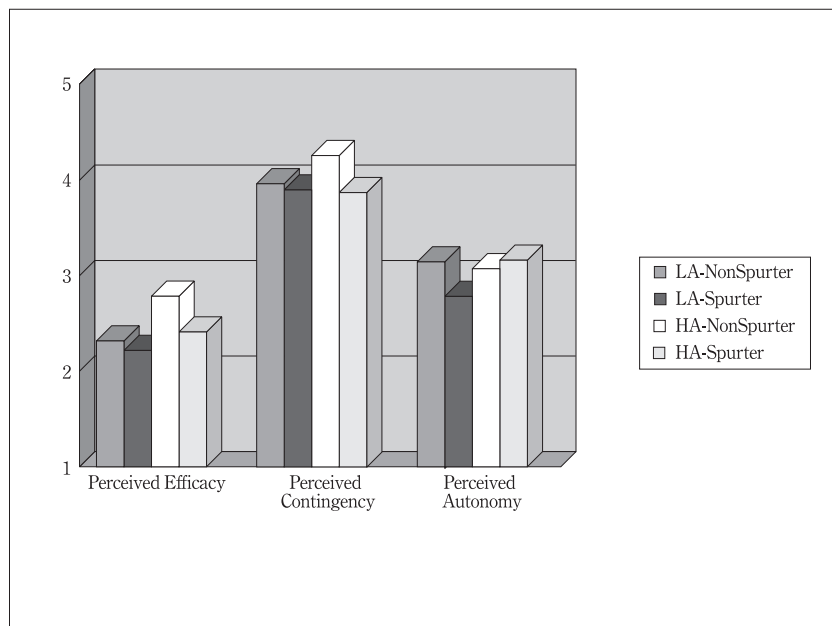
Though it was found that learning in school inclined to decrease through the whole span, learning at home showed the tendency to increase especially in low achievers. There was no constant tendency on the divergent learning.

**Perceived Control**

Means of perceived control variables are presented in Fig. 7. Perceived efficacy which represented subjective costs of learning behaviors was significantly different between high achievers and low achievers. High achievers had relatively high perceived efficacy as expected, so it was revealed that they felt easier to engage in learning behaviors than low achievers. There were no significant differences for perceived contingency and perceived autonomy.

**Motivation Orientation**

Means of motivation orientation variables are presented in Fig. 8. ANOVA of the task orientation scores revealed the significant HA-LA effect ( $F=9.15, df=1, 60, p<.01$ ) and the marginally significant Spurter-NonSpurter effect ( $F=3.74, df1, 60, p<.10$ ). As shown in Fig. 8, HA was more task oriented than LA. On the contrary Spurter showed less task



**Fig. 7 Perceived control as a function of HA-LA and Spurter-NonSpurter**



orientation in comparison to NonSpurter.

The analysis of achievement orientation scores showed the marginally significant interaction between LA-HA and Spurter-NonSpurter ( $F=3.98$ ,  $df=1, 60$ ,  $p=.05$ ). Within high achievers, Spurter manifested achievement orientation beliefs less than NonSpurter and HA-Spurter was the lowest in the four groups. But there was little difference between Spurter and NonSpurter within low achievers.

## Discussion

It was revealed that self-efficacy specific to the examination might be important for low achievers to improve their achievement. As LA-Spurter showed higher scores of learning in school compared to LA-NonSpurter, high self-efficacy of low achievers might motivate them to engage in learning behavior and then heighten their examination performance. On the contrary, there was no clear difference of self-efficacy between HA-Spurter and HA-NonSpurter. HA-Spurter might have a higher criterion of their performance than HA-NonSpurter and evaluate that their self-efficacy were not so high.

The previous study showed the divergent learning behavior had positive effect on the achievement score (Kambara et al., 1999). This study also showed that high achievers

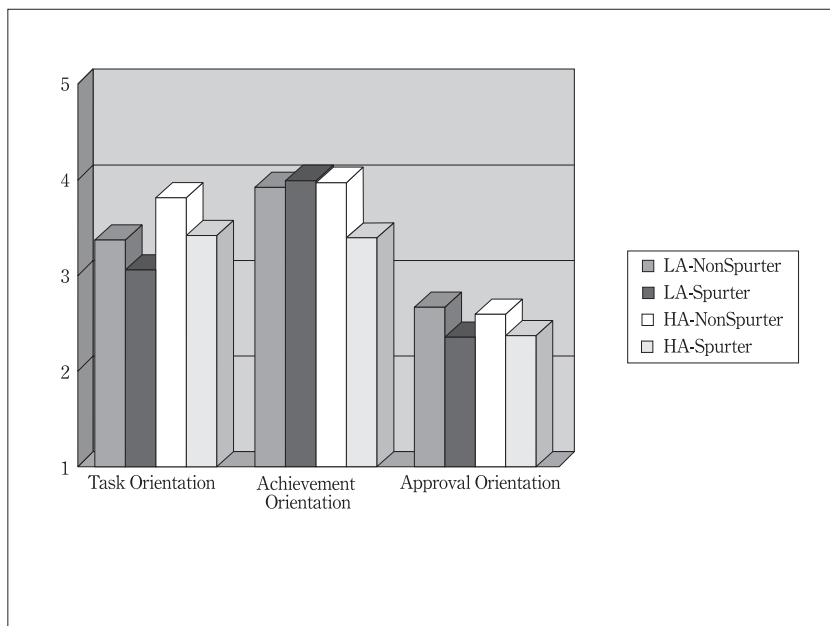


Fig. 8 Motivation orientation as a function of HA-LA and Spurter-NonSpurter

engaged in the divergent behavior more than low achievers. Though HA-Spurter showed the higher divergent learning score, in low achievers there was no difference between Spurter and NonSpurter. This fact suggested that the divergent behavior might be beneficial for high achievers.

HA-NonSpurter and LA-Spurter showed a similar pattern of learning behaviors. They showed high scores in the leaning in school subscale. Though this type of learning behavior might be useful for the improvement of the achievement of students in standard level, it might be not necessarily useful for students in high level to improve their achievement further. HA-NonSpurter had gotten good grades before the start of this study and they had been confident of their pattern of learning behavior. Moreover, their descending tendency was slow-moving. Therefore, they might not be aware of a limit of this type of behavior.

LA-Spurter showed higher scores in subscales of learning behavior in school, learning behavior at home, and learning behavior for examination than LA-NonSpurter. The previous study revealed the negative effect of basic learning behavior on the score of trial examination, but the result of this study confirmed the importance of these basic learning behaviors for LA which were standard students to improve their achievement. HA groups those had high score in divergent learning behavior in general showed greater learning behavior for exam in the last phase just before entrance examinations. It seems that the finding suggests also the importance of basic learning behavior.

LA-NonSpurter showed relatively low self-efficacy and low scores of learning behaviors in general. Self-efficacy variable specific to the examination might be a index for students' amotivation to learn. Their self- efficacy decreased in the latter half of this study and could not motivate them to engage in learning behavior.

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## Appendix

### Perceived Control

#### (Perceived Efficacy)

I do not know exactly how to study to improve understanding. (-)

It is hard to get into study. (-)

I do not know exactly how to study to make study fun. (-)

I do not know how to study to better my grade. (-)

I do not know well how to study. (-)

It seems difficult for me to study hard. (-)

To study is a trouble. (-)

To study is not difficult.

I get into study rather easily.

I possess study skills.

#### (Perceived Contingency)

Hard study will not fail to bear fruit.

Hard study will make me confident.

Hard study will make me mature.

Hard study will improve understanding.

Hard study will lead to something good.

Hard study will makes me feel easy.

Hard study will guarantee success in entrance exams.

Hard study will make study fun.

Hard study will not assure approval from my parents or teachers. (-)

Hard study will not better my grade. (-)

**(Perceived Autonomy)**

- I feel urged to study. (-)
- I always feel watched so I study hard. (-)
- Without study, I will be scolded by my parents or teachers. (-)
- I feel made to study. (-)
- I am often told to study. (-)
- I feel reluctant to study. (-)
- I will not study unless told to (-)
- I am often told to study at school (-)
- Regarding study, I feel strong parental expectations. (-)
- Study is something I must do anyway. (-)

**Motivation Orientation**

**(Task Orientation)**

- I enjoy studying.
- I want to know various things.
- I can be mature through studying.
- I think I'll need it.
- I have something to know in detail.
- There is no choice for me. (-)
- I can get satisfaction through studying.
- I don't know. (-)
- I don't understand the reason of studying. (-)

**(Achievement Orientation)**

- I want to pass the entrance examination in the future.
- I want to understand what our teachers teach us.
- I want to get better grades.
- Everyone studies.
- I avoid bad scores on tests.
- I have to study anyhow.
- I don't want to have a hard time in the future.

**(Approval Orientation)**

- I want to win the respect of my friends.
- My parents will buy me something.
- I don't want to lose to my friends.
- I want to be approved by my parents and my teachers.
- I want to be popular among the opposite sex.
- I'll be left behind by my friends unless I study.
- I don't want to be scolded by my parents or teachers.

## Learning Behavior

### (Divergent Learning Behavior)

When I am interested in one subject, I read books about it or take a field trip.

I study deeply what interests me during a long vacation.

I study and research what interests me until I get a full knowledge of it.

### (Learning Behavior in School)

I take neat notes during class hours.

I consult reference books what is not enough understood.

I ask my friends or my teacher what is not enough understood.

I listen to my teacher eagerly in class.

### (learning Behavior at Home)

I review everyday.

I usually have a good plan of studying.

I study for a certain period everyday.

I prepare for class everyday.

### (Learning Behavior for Examination)

I learn by heart anyway even if I don't have a clear understanding.

I usually study only what will be appeared on the examination.

Before the examination I intensively study only what will be appeared on the examination.

## Efficacy

I have a confidence to get a good grade in next regular examination in English.

I have a confidence to get a good grade in next regular examination in mathematics.

I have a confidence to get a good grade in next regular examination in Japanese.

I have a confidence to get a good grade in next trial examination in English.

I have a confidence to get a good grade in next trial examination in mathematics.

I have a confidence to get a good grade in next trial examination in Japanese.

I have a confidence to execute learning behaviors which are necessary to get a good grade in regular examination.

I have a confidence to execute learning behaviors which are necessary to get a good grade in next trial examination.

*Note: Items with a (-) are conceptually reversed.*

## 論文要旨

### 中学生の動機づけ要因と学習行動に関する短期の縦断的研究

鎌原雅彦・竹綱誠一郎・重森雅嘉

本研究の目的は中学生のセルフエフィカシーと学習行動の継時的変化を検討することである。通塾する中学3年生66名を対象に、6ヶ月間、1ヶ月ごとに、セルフエフィカシー、学習行動、模擬試験成績を繰り返し測定した。

まず最初に中学生66名は試験成績の変化パターンによって4群に分け、生徒の学習行動とセルフエフィカシーなどの動機づけ変数について、その継時的変化を群間で比較した。その結果、時間経過に伴い成績が伸びていくパターンの生徒群が他の3群に比べると、そ

れぞれの変数においてきわめて特徴的であることが明らかにされた。

**キーワード**【動機づけ要因 学習行動 短期縦断的研究 中学生 模擬試験】