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The Development and Evaluation of a Self-efficacy Scale for Japanese Language Assistants:Targeting "NIHONGO Partners" Dispatched to Thailand

Abstract

The purpose of this study was to create a scale of self-efficacy (SE) for Japanese language assistants. Focusing on Thai secondary schools which have a large number of Japanese learners in Southeast Asia, we conducted a questionnaire survey of "NIHONGO Partners" (NP), Japanese language assistants. Five factors were extracted: "positive communication," "enthusiasm for the class," "relationship with the teacher," "optimistic personality," and "recognition of one's position as NP." Moreover, as a result of conducting a longitudinal survey at the start, mid-term, and end of the period of dispatch to examine changes during this period, "positive communication," "enthusiasm for the class," and "recognition of one's position as NP," dropped a little at the mid-term stage. But these factors increased at the end, while the category, "optimistic personality," continued to increase from start to finish. These factors suggest that SE increased due to experience. On the other hand, the "relationship with the teacher" dropped significantly at the mid-term stage, and further decreased at the end compared to what it was at the start. Among the reasons for this, it was found that the average value of one of the subordinate items, "make a firm meeting with CP (counterpart, the Thai Japanese teacher) beforehand" was low. This scale is considered to be useful and versatile, satisfying the requirements of both reliability and validity as well as a stepwise change.

Key words

self-efficacy, Japanese language assistant, "NIHONGO Partners" Thai secondary schools, scale making

1. Introduction

According to the Japan Foundation (2020), 80 percent of the overseas learners of Japanese language are in East Asia and Southeast Asia. In addition, the numbers in most Southeast Asia countries are increasing. The percent of Japanese language learners in secondary schools is close to 50%, the largest percentage among education stages. The Japan Foundation Asia Center (2020) dispatches Japanese teaching assistants (referred to in this article as Japanese language assistants or JA) through its "NIHONGO Partners" (NP) program mainly to secondary schools in ASEAN countries in order to promote Japanese language and cultural exchange. The largest number of NP the Japan Foundation dispatches is to Indonesia, and followed by Thailand. In Indonesia, the annual number of the learners has been changing. On the other hand, in Thailand, the annual number of the learners has increased steadily and notably has reached 70 percent in secondary schools (Japan Foundation, 2017, 2020). However, it continues to be said that there is a chronic shortage of native Japanese language teachers. In the background, there are voices from the field asserting that this is due to low salaries and inconveniences in living in local cities and that there are cases where long-staying senior Japanese participate in Japanese classes as volunteers.

Therefore, in this study, we selected NP as subjects of the survey because most JA in the secondary schools in Thailand are NP. For local Japanese language learners and Japanese language teachers, NP are considered to contribute to the motivation of learners and the expansion of teaching activities as living teaching resources. However, many issues in collaboration have been pointed out (Nakayama, 2016:76). According to NP officials, NP are confused because the busy Thai Japanese teachers (referred to in this article as "the counterparts" or CP) do not have time to meet with NP, because the communication with CP does not go well, or because of the differences in the Thai education system (schedule often changes or suddenly is decided). The NP must be a native speaker of Japanese, but experience in teaching Japanese is not a condition. Therefore, NP, who are not professional, seem to face their internship practice with psychological issues related to uneasiness and lack of confidence. For example, it is assumed that an NP, who was full of motivation and self-efficacy (SE) before being dispatched, encounters situations beyond imagination during their dispatch and loses confidence in going on, or is at a loss because they do not know how to solve the problem.

In that situation it is supposed that self-efficacy, defined by Bandura (1977) as a feeling of effectiveness in anticipating how well one can accomplish the action that one needs to take, strongly influences the psychological adaptation to the activity at one's post. SE becomes an important factor in deciding one's own action, and, especially in the field of the education, it is found that it relates significantly to the achievement of the learner (Itano & Maeda, 2002, etc.).

The SE of NP, that is, the confidence of the JA, affects the classroom atmosphere in collaborating with the teacher and his or her performance in the role as an assistant, so that the learner can concentrate on learning with peace of mind and more motivation. Therefore, the SE of NP is an important aspect to consider. However, at present, there is no scale for measuring JA's SE. Developing an SE scale will enable JA and their dispatchers to visualize psychological issues that may be experienced and must be overcome in the process of growth as a JA, and can be a useful contribution to future JA development and NP dispatch projects.

In this study, we investigated SE of NP in Thailand and have designed a scale to measure SE. In that process we conducted a one-year long-term survey using the SE scale and tried to grasp the changes that occur in SE throughout the dispatch period. Through these results, for example, it is possible to know what is required of the NP before being dispatched, to measure the degree of adaptation of the NP themselves during dispatching period, and to measure what and how much has been achieved at the end of the dispatching term. In other words, we think that it may be possible to understand what kind of support and the amount of time that is necessary and effective for NP to adjust effectively to their role.

From the above, we consequently aim to create a guideline for appropriate educational support for NP (JA).

2. Previous research

As Bandura (1977, 191-192) indicates, "Stimuli influence the likelihood of a behaviour's being performed by virtue of their predictive function, not because the stimuli are automatically connected to responses by their having occurred together. Reinterpretation of antecedent determinants as predictive cues, rather than as controlling stimuli, has shifted the locus of the regulation of behaviour from the stimulus to the individual." He recognized the predictive functions of personal cognitive factors as variables mediating stimuli and responses and tried to clarify the kind of functions they played in action transformation. In his proposed model, expectations of personal efficacy derived from four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states.

This concept of SE had an impact in basic psychological theories related to incentive, and is recognized in many fields including education, sociology, career studies, medical science, etc. Among them, Manabe et al. (2007) conducted a quantitative survey of nursing trainees and developed a scale to measure SE. They considered that SE affects the anxiety and self-confidence of nursing students in the clinical practical training that requires nursing practice and interpersonal skills because it is expected that nursing students will experience difficulties and stress in dealing with subjects of various ages and diverse social backgrounds.

In the field of teaching Japanese as a foreign language, Oka (2006) conducted a questionnaire survey of students attending Japanese language schools to clarify their motivations for learning Japanese. Assuming the expectation for the learner's own ability, that is, SE, promotes learning motivation, she used the SE scale for Japanese in their national language by Ito (1996) the scale of which was created with reference to the SE scale of Pintrich and De Groot (1990). The results clarified that finding pleasure in learning increases the sense of competence, and finding difficulty in learning lowers SE. In addition, Karakisawa (2010) analyzed the participant observation of Japanese language support practice for JSL children who had difficulty in participating in "writing" activities, and found that it is important to connect the motivation "they want to participate", to "they seem to be able to participate", and the sense of accomplishment "they were able to participate."

As for previous studies on JA, Furubeppu (2009) described how the image of a good Japanese teacher held by two JAs dispatched from a university course in teaching Japanese as a foreign language to secondary schools in New Zealand changed in the course of their overseas teaching experience based on PAC (Personal Attitude Construct) analysis and semi-structured interviews. The post-return data showed strong influences on each assistant by their mentoring Japanese language teacher. After returning from abroad the JAs' common image of a good Japanese teacher included class

management ability and a cheerful personality. Furubeppu (2018) sought to discover the behavioral characteristics of good Japanese language assistants (JA) from the standpoint of secondary school Japanese language teachers (JLT) in English zone countries. The analysis revealed four notable factors: "JLT's expertise, English ability and discipline," "the basic attitude as the person engaged in teaching toward learners," "cheerfulness," and "diligence and role recognition." Among them, "the basic attitude as a person engaged in teaching toward learners" was strongly demanded and "JLT's expertise, English ability and discipline" was less demanded. However, there are few previous studies on JA overseas, and empirical surveys outside the English zone countries have not been conducted as far as we have been able to discover in the literature.

From the above, it could be said that it is important to investigate SE of NP in Thailand, because SE relates to motivation, especially in responding to difficulties and problems, and because there is still not a scale of SE for JA while the number of Japanese learners is increasing remarkably in Southeast Asian countries.

3. Purpose

As mentioned in the Introduction, SE is defined here again as "a feeling of effectiveness in anticipating how well one can accomplish the action that one needs to take." Based on that, in this study, we define SE of JA as follows: "The confidence that the native Japanese

language person has when he/she plays the role of supporting the qualified teacher." Furthermore, we aim to extract factors that influence SE of NP in Thailand who act as JA especially in the secondary schools which contain nearly half of the world's Japanese language learners, to make a SE scale and confirm the effectiveness of the scale by using it on a trial basis.

4. Methods and Ethical considerations

With reference to Manabe et al. (2007) mentioned in the section above on previous research, we made a preliminary SE scale [Investigation 1] first. Then, we examined the factor structure and chose question items through an exploratory factor analysis and tested the reliability of the factors. After that, we examined the validity of the provided model through confirmatory factor analysis [Investigation 2]. As a follow-up we conducted a longitudinal survey with NP during the dispatch period, in order to investigate the changes in SE throughout the length of the dispatch period [Investigation 3].

In conducting [Investigation 1], [Investigation 2] and [Investigation 3], the ethical procedures were reviewed and approved by the Japan Foundation Asia Center and the research ethics rules of the institution to which the authors belong. In addition, at the beginning of the online questionnaire, the following things were specified: the purpose of the research, cooperation is voluntary, protection of personal information, respondents are not identified because the data is treated statistically, the results are to be published as research, answering the questionnaire is considered as consent to the survey, and the method was provided of contacting the person in charge of the survey.

4-1 [Investigation 1] : Making question items for the preliminary scale
4-1-1 Subjects and survey period

In March 2019, the survey was conducted with 79 people in the group referred to as the NP6th (dispatched from May, 2018 to March, 2019) just after they had finished their activity. All 79 people agreed to take the survey (sex: male [20], female [59]; age: twenties [45], thirties [15], forties [6], fifties [4], sixties [9]).

It is a characteristic (feature) of NP that the age range is from 20s to 60s, and not only in the NP6 period but also other periods the gender ratio is biased (there are far more women than men). These variables do not seem to effect the result.

4-1-2 The process of making question items for the preliminary scale

The aim was to collect words of NP with full variations and items about the effect of anticipation on SE, a feeling of how well they could accomplish the actions that were needed. Respondents were asked to use the sentence completion method (around 100 characters in the Japanese language) for three important items: (1) what is/was important in playing as the assistant in the class, (2) what is/was important in acting as NP in the field, (3) what

is/was important in building the relations with CP and the pupils. In addition, the term "important thing" was used as a stimulus phrase because the survey was conducted just after the NP finished all of their activities and it was assumed that they had gotten a feeling of accomplishment through their activity experience.

4-1-3 Results

We examined the collected descriptions with statistical analysis of text using KH Coder, an open source content analysis and text mining software program. Statistical analysis of text refers to the method of performing a content analysis by arranging or analyzing text type data using quantitative analysis techniques (Higuchi, 2014, p.15). According to Higuchi, KH Coder's statistical analysis of text makes full use of both quantitative and qualitative methods, and it is said to make it is possible to discover a potential concept not found by simply reading text data. Therefore, in this survey, we used this software to discover potential concepts noted by NP in free answer sentences.

Morphological analysis was performed using KH Coder to extract noun phrases contained in each sentence. The total number of extracted words was 10,011, of which the number of different words was 1,191. The most frequently used words in the extracted word analysis were "think" (113 times), "myself" (107 times) second, and "CP" (99 times) third. After that, a co-occurrence network was created to confirm the commonality of the vocabulary (Fig. 1). In KH Coder's co-occurrence network diagram,

categories are automatically generated based on the strength of the co-occurrence relationship between vocabularies. As a result, 14 categories were extracted from the network diagram. And 1,243 descriptive sentences containing the relevant words were classified by frequency with reference to the preceding and subsequent sentences of the vocabulary contained in each category (Fig. 2). The details are described as follows:

The items most frequently described were items related to the class lesson (categories ①, ⑩, ⑪). Category ① mainly referred to the relationship between "myself" as an NP and "the other party" who are CP or pupils, and about the "important thing" when conducting classes and activities. There were 603 items in total. Applicable in category ⑩, there were 107 items related to "relationship with CP" in the class and "creating an atmosphere" in which it is easy to learn in the class. In category ⑪, there were 24 items related to voluntarily "express NP's opinions to CP". The next most frequently described were items related to the understanding of cultural differences between Thailand and Japan (category ③). There were 152 items describing these differences such as respecting and accepting Thai culture and thinking about what they would do as Japanese people. Moreover, there were items related to class preparation in advance (categories ⑦, ⑭). Category ⑦, "meeting beforehand with CP," was considered the most important and category ⑭, "preliminary grasp of the lesson content" followed. The former was noted in 22 items

and the the latter in 13 items. There were 49 items related to the recognition of the NP's position as the assistant (category ④). In addition, there were 69 descriptions (categories ⑤ and ⑧) related to interpersonal skills in communication such as greetings and making friends to consult with. Finally, there were items related to the overall attitude toward participation in NP activities (categories ②, ⑥, ⑨, ⑫, ⑬). Category ②was related to attitudes toward overseas life such as enjoying "daily life" and having a "regular life." There were 54 items. Category ⑥ was related to cooperation and gratitude, such as remembering to be "grateful." There were 36 items. Category ⑨ included 17 items related to flexible response. Category ⑫ consisted of 23 items related to enjoying life. And Category ⑬ was made up of 74 items related to maintaining a "positive" attitude toward everything.
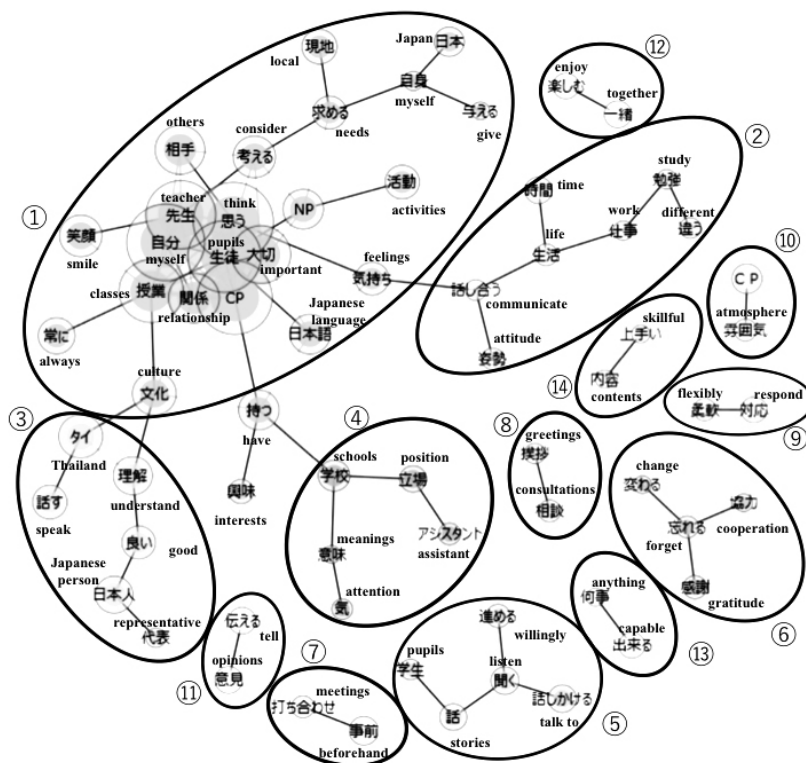
*The numbers from ① to ⑭ correspond to ① to ⑭ in Fig. 2.
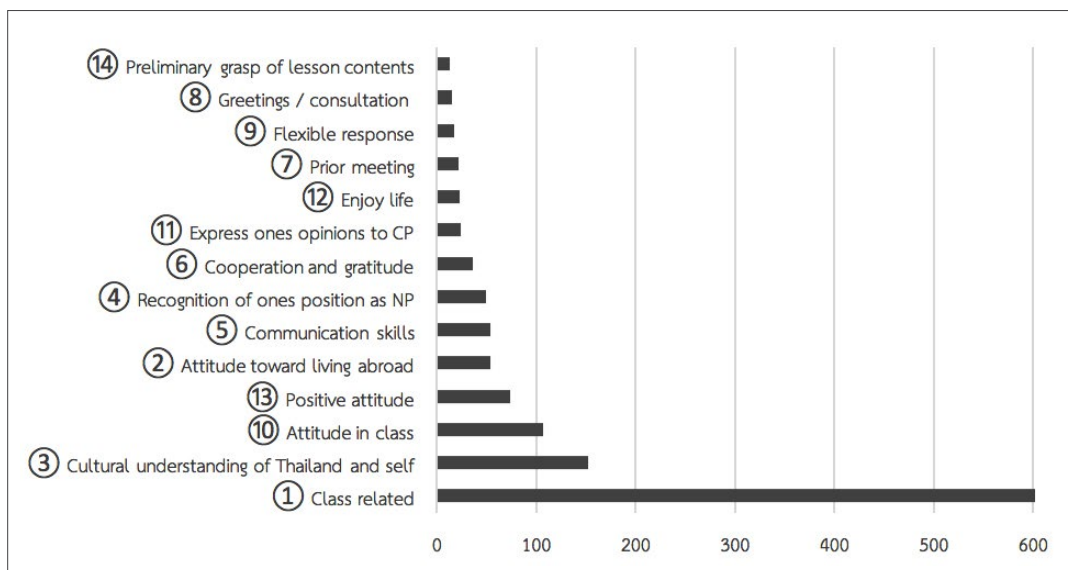
Figure 1 Network diagram

Figure 2 Frequency of descriptive sentences including vocabulary of each category

4-1-4 Composition of preliminary scale items

We adjusted the overlapping items in the above 14 categories based on previous studies such as Furubeppu (2018). Finally, a preliminary scale of 50 items was created. The instructional question was "How well do you think you did in your activity as NP. Please select a number from 1 to 6." The NP was to answer on a six-point scale from "I think I couldn't do it at all" to "I think I could do very well." The higher the SE is, the higher the rating is.

4-2 [Investigation 2] : Making the SE scale and examination of reliability and validity

4-2-1 Item analysis

We conducted an exploratory factor analysis in order to investigate the factor structure of the SE scale of NP and selected question items, and calculated reliability coefficient. Moreover, confirmatory factor analysis was performed to examine the validity of the model obtained by the analysis. As for the data collection procedure in the analysis, an online questionnaire of 50 items was used. We asked those who had had experience as NP (a total of 290 people from the NP1st to the NP6th, from September 2014 to March 2019) to respond to the survey.

4-2-2 Results

The responses were obtained from 95 people: (NP1st [10], NP 2nd [9], NP 3rd [3], NP 4th [4], NP 5th [47], NP 6th [22]). Descriptive statistics are as follows in Table 1.

Table 1 Descriptive statistics of 50 question items

* Shaded items are deleted		M	SD	kurtosis	skewness
TP1	Give your CP an open and clear opinion	4.28	1.32	-0.36	-0.70
TP2	Have a sincere attitude toward pupils	5.42	0.85	-2.13	7.36
TP3	Support smooth lessons that follow the CP lesson style	4.77	1.14	-0.86	0.45
TP4	Prepare for interesting and fun classes	4.51	1.14	-0.65	0.42
TP5	Take on the attitude of learning from Thai people and Thai culture	5.68	0.84	-2.23	5.64
TP6	Often talk to the CP, pupils, and people around	5.04	1.09	-1.10	0.94
TP7	Take a humble attitude toward the work.	5.11	0.92	-1.11	1.31
TP8	Respect CP	5.09	1.09	-1.20	0.78
TP9	Create an atmosphere that is easy for pupils to talk to	5.15	0.93	-1.38	2.08
TP10	Understand the position of being a teacher, but not in authority	5.15	0.99	-1.08	0.66
TP11	Do one's best in class	4.98	0.97	-1.14	2.14
TP12	Enjoy what happens unexpectedly	4.95	1.02	-0.89	1.07
TP13	Try to understand what the other person is saying	5.13	0.84	-0.77	0.02
TP14	Think optimistically	4.79	1.25	-1.01	0.48
TP15	Adapt your style to that of the CP	5.13	0.94	-1.56	3.64
TP16	Greet pupils with a smile	5.55	0.71	-2.10	6.17
TP17	Realize that you could come because there was a dispatch request from the school.	4.97	1.03	-1.28	2.20
TP18	Have conversations using easy Japanese in class	5.03	0.89	-0.68	0.12
TP19	Treat Thai people without prejudice	5.54	0.92	-1.42	4.41
TP20	Make full use of various means for communication	5.31	0.86	-1.11	0.89
TP21	Take good care of your health	4.74	1.25	-0.57	-0.85
TP22	Initiate your own proposals to CP	4.60	1.16	-0.93	1.03
TP23	Value the personality of the students	5.41	0.81	-2.07	7.53
TP24	Be aware that you are an assistant	5.39	0.76	-1.20	1.11
TP25	Be aware of being a native Japanese speaker in class	5.42	0.72	-0.81	-0.70
TP26	Continue to be interested in Japanese culture and Japanese language	5.22	0.88	-0.81	-0.34

TP27	Express your gratitude to others	5.40	0.78	-1.48	2.91
TP28	Act in a modest manner	5.25	0.87	-1.73	4.86
TP29	Understand the character and thoughts of CP	5.01	0.98	-1.35	2.66
TP30	Try to talk to pupils in Thai as well as Japanese	4.66	1.28	-0.57	-0.62
TP31	Make a Japanese fan	4.91	0.97	-1.00	1.78
TP32	Create an atmosphere that allows pupils to use incorrect Japanese	5.42	0.78	-1.14	0.42
TP33	Be aware of being a representative of the Japanese	4.95	0.94	-1.12	2.42
TP34	Proactively greet	5.46	0.90	-2.34	7.01
TP35	Be willing to build relationships with others	4.98	1.07	-1.34	2.45
TP36	Maintain clarity of roles with CP	4.92	1.17	-1.44	2.28
TP37	Enjoy class with pupils and CP	5.08	0.99	-1.16	1.72
TP38	Show enthusiasm for class, school events and cultural introduction	5.36	0.74	-0.82	-0.22
TP39	Try to communicate even if they are not perfect	5.35	0.82	-1.95	6.75
TP40	Be flexible	5.27	0.80	-0.77	-0.35
TP41	Make classes that encourage pupils to learn more	4.59	1.03	-0.82	1.61
TP42	Be patient in class	5.07	0.90	-1.62	2.53
TP43	Continue to have a challenging spirit	4.99	0.97	-1.08	1.94
TP44	Communicate closely with CP	4.77	1.21	-0.88	0.20
TP45	Give pupils confidence	4.71	0.98	-1.15	2.37
TP46	Make a firm meeting with CP beforehand	3.67	1.19	-0.04	-0.72
TP47	Be natural	4.98	1.20	-1.03	1.40
TP48	Build trust with CP	4.80	1.30	-0.92	0.11
TP49	Actively interact with pupils during non-class hours	4.92	1.14	-1.13	1.04
TP50	Guess what CP wants in class and take the initiative	4.56	1.10	-0.69	0.36

First, 12 items among 50 question items were excluded since those were remarkable both with high ceiling effect and floor effect, and with high kurtosis/skewness (Table 1). After that, the remaining 38 items were subjected to an exploratory factor analysis. From the change of eigenvalues (7.99, 1.74, 1.62, 1.34, 1.15, 0.63, 0.56…), we judged that the five-factor structure was appropriate. The number of factors was determined to be 5 and factor analysis (maximum likelihood method, promax rotation) was performed. Items with commonality less than .20, items with factor loading less than .40, and items showing high factor loading with

multiple factors were excluded and analyzed again. As a result, a five-factor structure in which all items have a commonality of .20 or more and a factor loading of .50 or more for any factor was extracted, and Table 2 shows the final result. Each factor was labelled "positive communication," "enthusiasm for class," "relationship with CP," "optimistic personality" and "recognition of position as NP." The ratio of explaining the total variance of 19 items by the 5 factors before rotation was 64%. The reliability coefficient of factors (Cronbach's α coefficient) is preferably .70 or more in the case of the questionnaire scale (Takeuchi & Mizumoto, 2014). All five factors are greater than .70 and satisfy the criteria.

Table 2 Results of exploratory factor analysis

		I	II	III	IV	V	*h2*
I. Positive communication (α = .88)							
TP6	Often talk to the CP, pupils, and people around me	**.929**	-.233	-.040	.098	-.053	.306
TP9	Create an atmosphere that is easy for. pupils to talk to	**809**	.058	-.023	-.112	.068	.355
TP49	Actively interact with pupils during non-class hours	**.681**	-.016	.013	.055	-.048	.520
TP35	Be willing to build relationships with others	**.675**	.109	.141	-.055	.017	.344
TP20	Make full use of various means for communication	**.582**	-.017	-.006	.052	.122	.567
TP45	Give pupils confidence	**.535**	.228	.060	.058	-.049	.450
II. Enthusiasm for class (α = .80)							
TP11	Do one's best in class	-.055	**.917**	-.182	-.057	.167	.251
TP4	Prepare for interesting and fun classes	-.134	**.735**	.038	.260	-.033	.360
TP22	Initiate your own proposals to CP	.106	**.679**	.257	-.109	-.325	.398
TP33	Be aware of being a representative of the Japanese	.030	**.525**	-.105	-.060	.461	.426
III. Relationship with CP (α = .84)							
TP48	Build trust with CP	.017	-.075	**.862**	.183	.103	.124
TP44	Communicate closely with CP	.178	.005	**.772**	-.124	.069	.250
TP46	Make a firm meeting with CP beforehand	-.168	.229	**.559**	.014	.079	.531

IV. Optimistic personality (α = .82)

TP47	Be natural		-.024	-.208	.277	**.794**	-.005	.283
TP12	Enjoy what happens unexpectedly		-.045	.327	-.149	**.705**	-.025	.375
TP14	Think optimistically		.181	.052	-.067	**.704**	.029	.319

V. Recognition of position as NP (α = .78)

TP24	Be aware that you are an assistant		-.225	-.065	.143	-.031	**.754**	.480
TP7	Work humbly		.156	.127	-.008	-.027	**.690**	.340
TP36	Keep a proper sense of distance from CP		.243	-.028	.173	.136	**.573**	.226

Factor correlations					
II	.575				
III	-.392	-.386			
IV	-.538	-.415	.458		
V	.561	.472	-.417	-.416	

Next, based on the results of the exploratory factor analysis, a verification factor analysis was conducted with 5 factors (Fig. 3). The goodness of fit was GFI=.80, AGFI=.73, CFI=.90, RMSEA=.08, and AIC=332.391. Although the GFI and AGFI values were slightly low, the factor loadings were all above .50, and it was judged that the fit was satisfactory. The observation variable items in Fig. 1 correspond to the item numbers shown in Table 1. The numerical value on the observed variable indicates the coefficient of determination (R^2).

From this, it can be considered that the interpersonal relationship between CP and pupils and the consideration and surrounding attitudes have a stronger influence on SE as an NP, than the notion of the Japanese language itself. In particular, NP seem to have an image of SE which is characterized by making use of actions and various means, that is, by much more active communication ability.
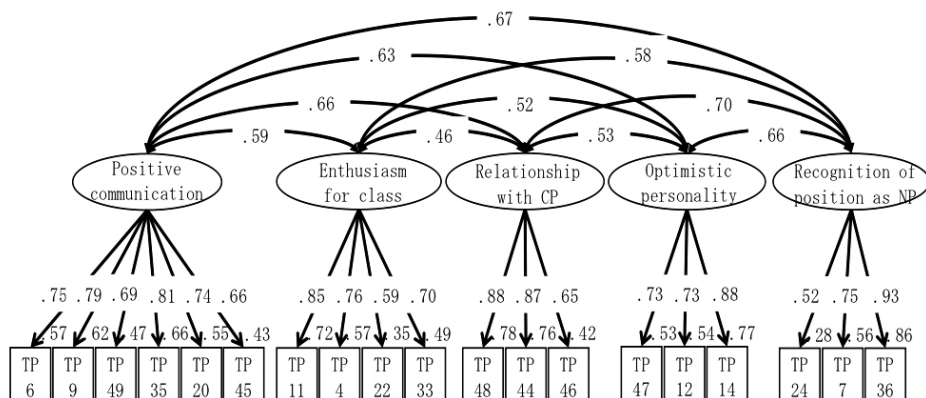

Figure3 Results of verification factor analysis (standardized estimated value)

4-3 [Investigation 3] : Utilization of the SE scale

4-3-1 Subjects and survey period

In order to investigate the changes in SE due to the progress of the NP during the dispatch period, an online questionnaire of the 50 question items that resulted from the above analysis was used[1]. A longitudinal survey was conducted with 84 participants in the NP7th cohort (dispatched from May 2019 to February 2020) at the start of activities (when they arrived in Thailand), in the middle period (after 5 months), and at the end (after 9 months)(when they were still at their assigned positions).

4-3-2 Results

Multivariate analysis of variance (MANOVA) was performed to examine the effects of the three survey times on the five factors obtained by exploratory factor analysis. A significant difference was observed (positive communication: Wilks's λ = .789, F (2, 166) = 10.964, p < .01, η^2 = .211, enthusiasm for the lesson: Wilks's λ = .824, F (2,166) = 8.735, p <.01, η^2 = .176, relationship with CP: Wilks's λ = .786, F (2,166) = 11.159, p <.001, η^2 = .214, optimistic personality: Wilks's λ =. 882, F (2,166) = 5.476, p <.05, η^2 = .118, and recognition of position as NP: Wilks's λ = .760, F (2,166) = 12.914, p < .001, η^2 = .240).

Next, a multiple comparison test using the Bonferroni correction was performed to examine where there were significant differences at the start, middle period, and end. The *p*-value was corrected during the test. First, in "positive communication," there was a significant difference between the values in the middle period (4.77) and the end (5.03). Next, also in the "enthusiasm for class," there was a significant difference between the values in the middle period (4.54) and the end (4.80). In "relationship with CP," significant differences were observed between the beginning (4.61), the middle period (4.02), and the end (4.2). The "optimistic personality" showed a significant difference between the beginning (4.77) and the end (5.04), and between the middle period (4.83) and the end. Finally, in "recognition of ones position as NP," there were significant differences between the beginning (5.14) and the end (5.35), between the middle period (5.08) and the end (Table 3 and Fig.4).

Table 3 Mean value of SE scale according to progress (standard deviation in parentheses)

Factors		Time 1	Time 2	Time 3	F
Positive communication		4.93 (0.64)	4.77 (0.69)	5.03 (0.66)	10.964 **
	TP6	4.88 (0.92)	4.56 (1.13)	4.89 (1.04)	
	TP9	5.01 (0.81)	5.05 (0.82)	5.24 (0.80)	

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[1] Since the survey was conducted at the same time as the item analysis survey, 50 items from the preliminary scale were used.

	TP49	4.93 (0.88)	4.67 (1.03)	4.94 (0.86)	
	TP35	5.01 (0.81)	4.62 (1.17)	4.87 (0.96)	
	TP20	5.27 (0.79)	5.21 (0.72)	5.35 (0.72)	
	TP45	4.61 (0.85)	4.52 (0.88)	4.92 (0.92)	
Enthusiasm for class		4.71 (0.64)	4.54 (0.75)	4.80 (0.66)	8.735 **
	TP11	5.15 (0.79)	5.00 (0.83)	5.10 (0.78)	
	TP4	4.30 (0.92)	4.06 (1.09)	4.39 (0.91)	
	TP22	4.27 (0.84)	4.26 (1.15)	4.60 (1.06)	
	TP33	5.13 (0.83)	4.82 (0.91)	5.12 (0.81)	
Relationship with CP		4.61 (0.71)	4.02 (1.00)	4.27 (1.10)	11.159 ***
	TP48	4.80 (0.74)	4.57 (1.21)	4.75 (1.10)	
	TP44	4.76 (0.87)	4.23 (1.26)	4.48 (1.40)	
	TP46	4.27 (0.89)	3.26 (1.18)	3.57 (1.36)	
Optimistic personality		4.77 (0.78)	4.83 (0.85)	5.04 (0.80)	5.476 *
	TP47	4.60 (1.07)	4.60 (1.14)	5.04 (0.91)	
	TP12	4.82 (1.03)	5.00 (0.98)	5.05 (1.05)	
	TP14	4.90 (0.89)	4.88 (1.07)	5.05 (0.97)	
Recognition of position as NP		5.14 (0.56)	5.08 (0.58)	5.35 (0.59)	12.914 ***
	TP24	5.35 (0.73)	5.39 (0.76)	5.55 (0.64)	
	TP7	5.26 (0.71)	5.02 (0.79)	5.26 (0.77)	
	TP36	4.81 (0.68)	4.81 (0.93)	5.23 (0.90)	

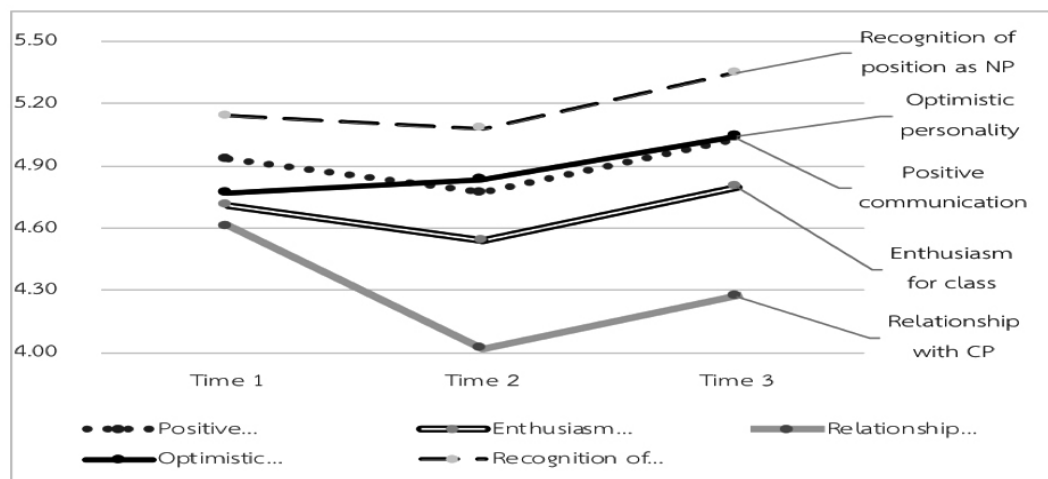*$p < .05$, **$p < .01$ ***$p < .001$

Figure4 Transition of average value of SE scale

5. Discussion

In [Investigation 2], five factors of "positive communication," "enthusiasm for class," "relationship with CP," "optimistic personality," "recognition of ones position as NP" were extracted and the scale consisting of 19 subscales of self-efficacy (SE) of NP dispatched to Thailand was created.

Four of the five factors, outside of "optimistic personality," are established by mutual interactions with others, and it can be said that SE is strongly influenced by the relationship with others. Furthermore, from [Investigation 3], among the five factors, four factors ("positive communication," "enthusiasm for class," "optimistic personality," and "recognition of ones position as NP") were enhanced by experience. That is, it is assumed that the experience level increased confidence.

However the three factors of "positive communication," "enthusiasm for class," and "recognition of ones position as NP" slightly decreased in the middle term. It is likely that a lack of ability and self-confidence through the early experience caused SE to be decreased at the mid-term. For example, it takes time to build relationships even if you talk positively to pupils, your enthusiasm for class does not rise easily unless you know how to prepare and have confidence in your basic instructional skills, since you cannot easily carry out what you are not accustomed to. It may be assumed that it is the time to continue searching for a position as an NP which is not a teacher. But those three factors increased at the end to higher than at the start. From these results, we could consider that SE eventually improved even if there were problems and worries which may have caused the NP to lose their confidence on the way. Since "recognition of ones position as NP" always maintained a value of 5.0 or more, it is speculated that the NP used trial and error to determine how they should participate in daily classes as NP, accumulate ideas, and finally reach a sense of achievement to obtain the goal. To confirm these points, it is necessary to conduct a qualitative survey such as an interview with the NP at the time of the mid-term training and the end.

With regard to "optimistic personality," it was suggested that the SE was gradually rising and could be enhanced by the accumulation of experience. In particular, since it increased significantly at the end, it is thought that the confidence and flexibility to be able to deal with it and the ability to respond to different cultures had improved. Furubeppu (2018) says that "cheerfulness" was pointed to as one of the factors of the behavioral characteristics of a good JA which Japanese language teachers in secondary school in the English zone demanded. Both Japanese teachers in the English zone and NP in Thailand seem to consider it important.

However, the "relationship with CP" is the only factor that was lower at the end time than at the start. Unlike the initial expectations, it dropped sharply in the mid-term and picked up slightly at the end, but was not as high as at the start.

What was happening in the "relationship with CP"? Looking at the changes in the sub-items of the "relationship with CP" factor, the average values at the beginning, middle period and the end were 4.80, 4.57, 4.75 respectively for "build trust with CP" (TP48). The values were 4.76, 4.23, 4.48 for "communicate closely with CP" (TP44) and 4.27, 3.26, 3.57, for "make a firm meeting with CP beforehand" (TP46). That is, especially in the middle term, the average value of "make a firm meeting with CP beforehand" was low. The average value of "make a firm meeting with CP beforehand" was 3.67, the lowest in the results of [Investigation 2] (Table 1). From these data, it could be said that "make a firm meeting with CP beforehand" influenced the low SE of the "relationship with CP" factor in the middle of the term. In other words, it may be possible that overall relations with the CP did not make carrying out a regular meeting possible. Nakayama (2016: 82-83) says that it is essential to secure a sufficient discussion meeting in the survey on collaboration between Thai teachers and Japanese teachers, and that it is important to ask, "Why do we need a meeting?" in case Thai teachers do not understand a Japanese-style view of work and do not feel the need for discussion. Did the NP feel a sense of dissatisfaction and anxiety in not being able to "make a firm meeting with CP beforehand'? As can be seen from the information of NP officials in "1. Introduction", it is considered that NP are confused because a busy CP does not have time to meet with NP, because the communication with CP does not go well, or because of the differences in the Thai education system (schedule often changes or suddenly is decided). On the other hand, how did CP feel? Furthermore, there is a possibility that NP took some action as an individual in the situation since the average value finally rose a little bit from 3.3 to 3.6. What kind of concrete actions were taken? Or, is it inferred that the rise in this factor was influenced by the NP's "optimistic personality," or was accepted as a cultural "feature" (for example, "I thought this was the Thai style"). In the future, it is necessary to conduct qualitative research such as interviews with both NP and CP during the period of the mid-term training and the end to clarify causes.

Furupeppu (2018) also stated that the "teacher's expertise, English ability and discipline" that is, qualifications and English proficiency of Japanese teachers, knowledge of curriculum and Japanese culture were factors that were not so highly demanded. In the results of this survey, Japanese expertise and Thai language proficiency did not appear as items that affected SE either. Rather, SE seems to be related to a more positive stance, such as talking to teachers, pupils, and people around and using various means of communication.

From the above discussion, regarding the factors that affect the SE of NP, the effectiveness of the scale could be confirmed by referring to the process of change of each factor and showing the problems and issues.

6. Future topics

In developing this survey, we were able to create a measure of SE that satisfies reliability and validity. In addition, a longitudinal survey of this scale allowed us to observe changes in SE, including before, during and after the dispatch period.

The following three points are listed as future issues:

1) As for the three factors related, "active communication," "enthusiasm for class," and "recognition of ones position as NP," which have declined in the middle of the term and increased at the end of the term, it is suggested to investigate the causes of the decline by conducting a qualitative survey such as an interview with the NP at the time of the mid-term training and the end.

2) As for "relationship with CP," a qualitative survey of NP and CP is required regarding the problems they face during the middle and end of the term. In particular, regarding "make a firm meeting with CP beforehand," we could suggest they have an opportunity to indicate possible problems and share the significance of such a meeting as a preliminary step at the NP / CP joint training upon the NP's arrival.

3) Regarding "relationship with CP," educational interventions in pre-dispatch training and mid-term training, such as four principal sources of information proposed by Bandura (1977: above): performance accomplishments, vicarious experience, verbal persuasion, and physiological states could be utilized. However, studying specific information sources will be a future task.

Remarks:

OTA Yoshie, one of the authors, is directly in charge of "NIHONGO Partners" program by The Japan Foundation Asia Center

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Appendix

The Japanese version of the final NP self-efficacy scale items:

NPの自己効力感尺度項目（日本語版）

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TP4	面白い，楽しい授業ができるように準備する。
TP6	日頃からCPや生徒，周囲の人にたくさん話し掛ける。
TP7	謙虚に取り組む。
TP9	生徒が話しかけやすい雰囲気を作る。
TP11	授業に全力で取り組む。
TP12	想定外のことが起こることを楽しむ。
TP14	楽観的に考える。
TP20	コミュニケーションのためにいろいろな手段を用いる。
TP22	CPに自分から提案する。
TP24	あくまでもアシスタントであることを自覚する。
TP33	日本人の代表であるという自覚を持つ。
TP35	自分から相手との人間関係を築く。
TP36	CPと適切な距離感を保つ。
TP44	CPと密にコミュニケーションを取る。
TP45	生徒に自信を与える。
TP46	CPと事前の打ち合わせをしっかりする。
TP47	自然体でいる。
TP48	CPとの信頼関係を築く。
TP49	生徒と授業以外の時間も積極的に関わりを持つ。

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