

Exploring Motivational Profiles in Public Elementary School English Classes

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We conducted a pilot study investigating elementary school students' motivational profiles in Japan. These profiles may be used to develop person-centered models of students' growth and development. We framed our inquiry within the self-determination theory literature on autonomous and controlled motivation. Students in their 5th year ($N = 100$) completed surveys regarding their motivation to learn English. We calculated person-centered motivational profiles based on their responses using *k*-means clustering. Three profiles showed the best fit for the data: a *high quantity* motivation profile, a *good quality* motivation profile, and a *poor quality* motivation profile. These profiles successfully predicted students' engagement 6 months later. Implications for theory and practice are also discussed.

日本の小学校の児童の動機付けプロフィールを検証した。このプロフィールで、児童の成長と発達に関する長期的な人間中心研究法を用いたモデルを提案する。この研究は自己決定理論の自律的・制御的動機付けに基づいたものである。小学校5年生100名が英語学習の動機付けについてのアンケートに回答した。児童のプロフィールをk-means (K平均) クラスタ分析した結果、3つのプロフィール(大量動機付けプロフィール、良質動機付けプロフィール、不良質動機付けプロフィール)が示された。このプロフィールを用いて、6ヶ月後の授業の取り組みが予測された。理論と実践の影響についても論じる。

Students study for many concurrent reasons. Motivational profiles offer direct insights into this simultaneous pursuit. By understanding the patterns of individual students' motivation, researchers and teachers may be able, through longitudinal extension, to begin to understand how and why students' attitudes change over time. Previous research on students' motivational profiles has indicated that motivational profiles can predict students' time management and use of metacognitive strategies (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). The positive benefit in these profiles came primarily from students' autonomous motivation.

Autonomous motivation to learn—that is, a sense of enjoyment, interest, and value with regard to educational tasks—offers numerous benefits for students. Students who recognize the fun and benefit of learning often develop better self-regulation (Brophy, 2010), learn more deeply towards mastery goals (Fryer, Ginns, & Walker, 2014), and show better achievement (Soenens & Vansteenkiste, 2005). In learning a foreign language, autonomous motivation correlates cross-sectionally with a desire to continue learning the language (Noels, Pelletier, Clément, & Vallerand, 2000), predicts sustained interest in learning the language (Fryer, 2015), and encourages students to engage in in-class learning (Oga-Baldwin & Nakata, 2017; Oga-Baldwin, Nakata, Parker, & Ryan, 2017). In order to understand students' degree of autonomous motivation in context, it is often necessary to look at their motivational profiles (Vansteenkiste et al., 2009).

With the implementation of the Course of Study for Foreign Languages in Japanese elementary schools, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has made the development of autonomous motivation a central element in learning English (Oga-Baldwin & Nakata, 2014). The goals of this curriculum include building interest and positive attitudes toward learning a foreign language. Hence, teachers are expected help students develop autonomous motivation to learn a foreign language.

At the same time, there has been no empirical piloting for this national curriculum. Although the Course of Study is clear in its goals of employing communicative language

teaching and motivating students through experiential learning (MEXT, 2008), relatively few studies grounded in theoretical principles have been conducted since the implementation of this curriculum in 2011 (recent exceptions include Oga-Baldwin & Nakata, 2013, 2014, 2015, 2017). In the current pilot study, we sought to explore the quality of students' baseline motivation to learn a foreign language.

Motivational Profiles

According to self-determination theory (SDT; Deci & Ryan, 1985), motivation is simultaneously regulated by internal and external forces and represented on a continuum from controlled to autonomous motivation. Controlled motivation is represented by *external* regulations. External regulation consists of the traditional "carrot-and-stick." Under this regulation, students act with little choice, either to gain a specific concrete reward or to avoid a negative outcome.

At the opposite end of the continuum, autonomous motivation comes from within the person. This type of motivation is represented by *intrinsic* regulations. Intrinsic regulation comes from the student's interest and enjoyment. Intrinsically regulated students may find tasks fun, interesting, meaningful, and enjoyable.

Autonomous and controlled motivation are not mutually exclusive; students' behavior may be simultaneously affected by both of these motivations to differing extents. Although it is acknowledged that these motivations act simultaneously, numerous studies have demonstrated the benefits of autonomous motivation on learning. More autonomously motivated students show greater persistence (Hardre & Reeve, 2003) and think more deeply about their studies (Vansteenkiste, Zhou, Lens, & Soenens, 2005). As a result of these behaviors, they often show stronger achievement (Soenens & Vansteenkiste, 2005). Likewise, pernicious effects from stronger controlled motives have also been found. More controlled motivation leads students to manage their time poorly and procrastinate (Vansteenkiste et al., 2005). These students are less likely to pursue deep level approaches to learning (Fryer, Van den Broeck, Ginns, & Nakao, 2016) and show lower achievement as a result (Soenens & Vansteenkiste, 2005). The crucial factor in all of these cases is the balance of these motives; with more autonomous and less controlled motives, students are more likely to show the more positive outcomes listed above.

Accordingly, four logical profiles that comprise different combinations of these motives may be found (Vansteenkiste et al., 2009). Students may have a *low quantity* of overall motivation; they may not be particularly strongly motivated by external control or an internal desire to act. Students may show *poor quality* motivation, with which they act solely because they have to but show little desire to act of their own accord. Students may have

a *high quantity* of motivation, with which they act both because they have to and because they feel an internal desire to do the given task. Finally, students may show *good quality* motivation, which means they act primarily out of a desire to do the task itself.

Previous research has found mixed support for these theoretical profiles. In upper secondary schools and universities in numerous western countries, all four profiles were evident (Hayenga & Corpus, 2010; Ratelle, Guay, Vallerand, Larose, & Senécal, 2007; Vansteenkiste et al., 2009; Wormington, Corpus, & Anderson, 2012). In a similar elementary school setting, three profiles were found (Corpus & Wormington, 2014). Students in this sample did not show a low quantity of motivation.

Only one study of motivational profiles has been conducted in a Japanese setting (Fryer et al., 2016). Though working from a slightly different theoretical framework, this survey of Japanese university students in compulsory language learning classes found three profiles, roughly contiguous with the low quality, high quantity, and good quality groups. At the same time, no studies of students in elementary school settings has yet been forthcoming. Given the national curricular efforts to improve students' motivation to learn a foreign language (MEXT, 2008; Oga-Baldwin & Nakata, 2014), this represents a gap in our knowledge of students' motivation to learn a foreign language in the Japanese EFL context.

Foreign Language Motivation in Japanese Elementary Schools

Foreign language motivation problems are well documented throughout the Japanese school system (Berwick & Ross, 1989; Sakai & Kikuchi, 2009). Although there are a myriad of potential reasons for this, one that is often cited is a lack of communicative teaching in Japanese secondary schools (Sakai & Kikuchi, 2009). Even as early as elementary school (Carreira, 2011), motivation both for school and for foreign language has been shown to decrease across school years.

In response to these criticisms and issues, as well as to Japan's well-documented low rank in international comparisons of foreign language (Education First, 2016), MEXT has implemented a national curriculum designed to improve students' interest and attitudes toward English as a foreign language. At the same time, the theoretical and empirical grounding and outcomes of the new Course of Study have not been made clear.

Prior research has employed SDT to explore Japanese elementary students' motivation. Carreira (2012) illustrated how Japanese children's needs for autonomy, competence, and relatedness relate to their internally regulated motivation. Later studies demonstrated how the learning environment may influence students' needs and motivation (Carreira,

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Ozaki, & Maeda, 2013). Recent work has demonstrated how gender and in-class engagement may predict students' motivation over the course of a semester (Oga-Baldwin & Nakata, 2017).

Although SDT has been posited to apply to the Japanese elementary school setting (Oga-Baldwin & Nakata, 2014), a number of studies and commentaries question the validity of theories developed in North American settings when applied to non-North American settings (Furtak & Kunter, 2012; Iyengar & Lepper, 1999; Markus & Kitayama, 1991). Although many of the surface features of different theories may indeed differ across cultures, given proper localization, these theories may find applicability in Asian settings (King & McInerney, 2014). By applying SDT instruments through appropriate localizations, the universal elements of the theory may show appropriate intercultural validity (Oga-Baldwin & Nakata, 2017; Oga-Baldwin et al., 2017).

As a first step in the process of understanding how elementary school students develop motivation during the course of their studies, in the current pilot study we aimed to explore students' motivational profiles at the beginning of their formal foreign language education, looking at the effects of gender on students' motivation. By doing so, we hoped to show that person-centered approach may offer insights into students' motivation. Secondarily, we hoped to demonstrate the cross-cultural validity of SDT in the Japanese context.

The Study

In order to investigate the empirical and theoretical effects of the new national curriculum, we sought to answer the research question: What motivational profiles do elementary school students display? Working from an SDT perspective, we used a survey to investigate elementary school students' motivation in order to develop a baseline model of students' motivation for future studies. As a subgoal of the research, we sought to demonstrate the applicability of profile analyses to show the cross-cultural validity of profiles found in previous studies. We hypothesized, similar to Corpus and Wormington (2014) in their primary school study, that a 3-cluster solution would offer the best fit to Japanese elementary school data. This study is a small-scale pilot taken from a larger data set and intended to demonstrate the feasibility of future profile studies.

Sample

Public elementary students in western Japan ($N = 100$, aged 10-11; female $n = 46$) agreed to participate in the research. Students were young beginner English learners, with

little or no substantial prior English learning experience. English classes were primarily listening and speaking classes, in line with the MEXT guidelines (MEXT, 2008). Research participation was coordinated through meetings with the board of education, school principals, and teachers. Six schools located in a suburban area answered the call to participate in the study. The municipality was largely representative of Japan as a whole (Japan Statistics Bureau, 2016). Surveys were administered at the beginning of the 2013-2014 school year. Ethical permission to conduct this research was granted by the Fukuoka University of Education Ethics Review Board.

Instruments

Students completed a Japanese translation of the Self-Regulation Questionnaire—Academic (Ryan & Connell, 1989). This survey measured students' intrinsic and external regulations. Internal reliabilities were acceptable ($> .70$; DeVellis, 2012). Surveys were completed in April of 2013.

To test how the students' motivation influenced their in-class behavior, we measured engagement 6 months later in October 2013. We measured engagement using cognitive, behavioral, and emotional engagement scales developed by Jang and colleagues (2012). This 11-item instrument was piloted and translated by the authors (for a review of the instrument see Oga-Baldwin & Nakata, 2017). Internal reliability for these scales was good (Cronbach's $\alpha = .92$). Instrument descriptive statistics and correlations are presented in Table 1.

Table 1. Descriptive Statistics

Variable	1	2	3
1. Intrinsic regulation	-		
2. External regulation	-0.23*	-	
3. Engagement	.35***	-0.15	-
Mean [95% CI]	3.41 [3.22, 3.60]	2.55 [2.35, 2.75]	3.89 [3.73, 4.04]
SD	1.02	1.06	0.77
Cronbach's α	0.83	0.72	0.92

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

Analyses

All statistical analyses were performed in Stata 14 (StataCorp, 2014). First, in order to test for gender differences, we performed a two-sample *t* test with equal variances. Gender balance and standard errors in the sample were roughly equal. Gender was included in these analyses because substantial research (e.g., Meece, Glienke, & Burg, 2006; Voyer & Voyer, 2014) has found gender differences in students' motivational trajectories during formal education. Research in the Japanese context at both the university (Fryer, Ginns, & Walker, 2016) and elementary school level (Oga-Baldwin & Nakata, 2017) has indicated that boys and girls may differ in their motivation and resulting engagement with school studies.

In order to compare different profiles, we used the commonly applied *k*-mean cluster analysis to generate three and four profiles of students. Clusters were generated based on students' self-reported intrinsic and external regulations. In order to choose the most accurate number of clusters, we compared the clusters generated by the overall sample with those generated by two random subsamples (subsamples A and B). We then compared the clusters generated by each subsample with the clusters generated by the overall sample, then compared the agreement with the original using Cohen's kappa. In order to determine the best fit, the cluster solution with the higher kappa score was chosen to represent the data (Breckenridge, 2000). Based on previous theory (Corpus & Wormington, 2014; Vansteenkiste et al., 2009), we generated both 3- and 4-cluster solutions. Finally, we standardized the data in order to show differences between groups' motivation and engagement in order to show how the different groups compared.

Results

Gender comparisons showed no significant differences in boys' and girls' intrinsic or extrinsic motives. The results of the *t* test were nonsignificant for intrinsic regulation (male $M = 3.38$ [95% CI = 3.12, 3.63], female $M = 3.43$ [95% CI = 3.12, 3.75]), $t(98) = .30$, $p = .76$, Cohen's $d = .05$, and for external regulation (male $M = 2.49$ [95% CI = 2.23, 2.77], female $M = 3.47$ [95% CI = 2.30, 2.92]), $t(98) = .41$, $p = .68$, Cohen's $d = .05$. Engagement showed a small difference between boys' and girls' activity levels in class (male $M = 3.75$ [95% CI = 3.53, 3.97], female $M = 4.05$ [95% CI = 3.84, 4.25]), $t(98) = 1.87$, $p = .03$, Cohen's $d = .19$. Results indicate that the boys and girls did not differ significantly in their starting motivational profiles but that they may engage differently in class.

The table of correlations showed a significant negative correlation between intrinsic and external regulations, $r = -.23$, $p = .02$. Engagement and intrinsic regulation positively

correlated, $r = .35$, $p < .001$, but engagement and external regulation showed no significant correlation, $r = -.15$, $p = .14$. Table 1 presents the complete descriptive statistics and correlations.

The *k*-means clustering algorithm produced the best fit for a 3-cluster solution. This solution accounted for 65% of the variance for intrinsic regulation and 52% of the variance for external regulation. The 4-cluster solution accounted for 66% of the variance for intrinsic regulation and 41% of the variance for external regulation. The 4-cluster solution showed poor reliability in the kappa comparisons: kappa = $-.16$ with roughly 10% agreement. Kappa scores for the 3-cluster solution were better: kappa = $.37$ with roughly 59% agreement. Based on these results, we selected the 3-cluster score as superior for this sample. Consistent with previous theory, we labeled these clusters as (a) high quantity motivation, (b) good quality motivation, and (c) poor quality motivation. These clusters are presented along with the engagement covariate in order to demonstrate the differences between the three groups in Figure 1. The *z* score composition of each cluster is presented in Table 2. The high quantity group showed relatively moderate engagement 6 months later. The good quality group was the most engaged. The poor quality group had the lowest engagement.

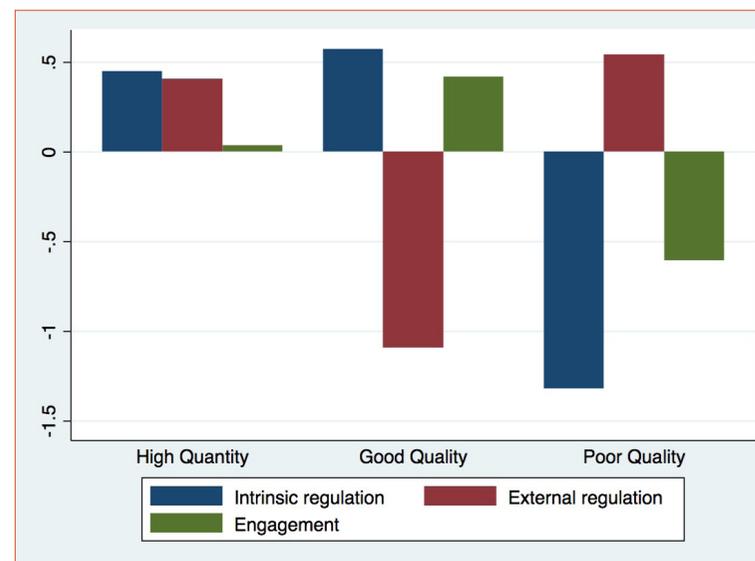


Figure 1. Standardized z score comparison of the three profiles.

The gender balance of the three groups was roughly equal, but with some small differences. The high quantity cluster had 19 girls and 25 boys. The good quality cluster contained a nearly equal ratio of 15 girls and 14 boys. The poor quality cluster included 12 girls and 17 boys. The proportion of students in each group roughly mirrored the gender distribution of the sample as a whole.

Table 2. Z Scores of the Dependent Variables for the Three Extracted Clusters with F Values and Effect Sizes

Variable	High quantity motivation (<i>n</i> = 44)	Good quality motivation (<i>n</i> = 29)	Poor quality motivation (<i>n</i> = 27)	<i>F</i> (2, 97)	η^2
Intrinsic regulation	.43	.53	-1.31	90.15***	.65
Extrinsic regulation	.41	-1.09	.64	51.67***	.52
Engagement	.04	.42	-.60	8.61***	.15

*** $p < .001$

Discussion

The results indicate that boys' and girls' motivation to learn English in elementary school differed little at the beginning of the fifth grade. The *t* test showed no significant differences between boys' and girls' internally or externally regulated motivation. At the same time, the boys' motivation was weakly but significantly lower 6 months later in the fall semester. These results confirm that boys may engage differently with their studies (Oga-Baldwin & Nakata, 2017).

The cluster analysis results were consistent with the 3-cluster solution previously indicated by Corpus & Wormington (2014). The 3-cluster solution converged on the high quantity, good quality, and poor quality motivation groups from Vansteenkiste and colleagues (2009). High quantity motivation was moderately related to motivation. The good quality motivation group showed the strongest relationship with engagement. The poor quality motivation group had the most negative relationship with engagement. The largest group of learners was highly motivated, both internally and externally. The two smaller groups were roughly equal in size but opposite in their engagement and motivational profiles.

Implications

Cluster analyses confirm the 3-cluster hypothesis. These results corroborate the previous patterns found in North American elementary school settings (Corpus & Wormington, 2014). Thus, despite numerous voices questioning the validity of theories (such as SDT) to explain motivation in non-Western settings (e.g., Markus & Kitayama, 1991), these results from a Japanese sample show a pattern consistent with findings in North America. This corroborates the cross-cultural applicability of motivational theories.

Second, these findings hint that although boys and girls traditionally diverge in their motivations to learn a foreign language over time (Oga-Baldwin & Nakata, 2017), the overall pattern of their motivation at the beginning of their studies differs little. This, combined with the engagement data, corroborates the idea that engagement may play a pivotal role in priming future motivation (Oga-Baldwin et al., 2017). In line with the national push toward greater engagement with foreign language (MEXT, 2008), these findings indicate that better quality motives may lead to the desired results.

Limitations and Future Directions

The current study was a small-scale pilot with a limited sample. Furthermore, *k*-mean clustering is a relatively old person-centered technique that is quickly being replaced by more advanced tools such as latent profile analysis. Future studies will need to employ latent person-centered analyses in order to demonstrate the robustness and validity of the findings using larger populations. Further, in order to show true developmental trends, longitudinal modeling is necessary and yet desperately lacking within much of language education research (Fryer, Larson-Hall, & Stewart, in press). To extend the exploration presented here beyond subgroup comparisons and examine how students move between subgroups across their school experience a longitudinal person-centered technique like latent profile transition analysis will be necessary (see Fryer, 2017, for a recent application in Japan).

Conclusion

The current study indicated broad patterns of how Japanese elementary students are motivated under EFL contexts. Students in this sample showed a trend toward high quantity motivation, though these students did not necessarily engage more with the learning material. Boys and girls showed little difference in their motivation at the start of their English studies but differed slightly in their engagement. From this pilot study, we conclude that elementary school students begin positively motivated but may gradu-

ally begin to diverge along lines based both on their gender and engagement. In order to achieve the curricular goal of promoting lifelong motivation to learn (MEXT, 2008), care must be taken to promote intrinsic motivation to learn a foreign language.

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