

*Comparing self-determination theory and  
the L2 motivational self system and their relationships  
to L2 proficiency*

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Abstract

This study empirically compares two often-utilized motivation theories in L2 studies: self-determination theory and the L2 motivational self system. It also examines the relationships among their motivational constructs, learners' intended L2 learning effort, and L2 proficiency. While a number of studies have utilized these models in order to examine second language learners' motivation, there has not been a thorough comparison of the two. Furthermore, while many studies have demonstrated the structural relationships between the motivational constructs of the two theories and the learner's self-reported amount of effort, fewer studies have examined their L2 achievement. The results of this study indicated that the constituents in the two theories are correlated as predicted. Furthermore, while internalized types of motivation in self-determination theory predicted intended learning effort, which then led to L2 proficiency, the strength of the ideal L2 self was much weaker than the L2 learning experience, unlike what is argued in the theory.

*Keywords:* L2 motivation; self-determination theory; L2 motivational self system; L2 proficiency; structural equation modeling

## 1. Introduction

Learning a second language (hereafter L2) is a complex and arduous process involving various factors. Even individuals with a high aptitude for learning who benefit from having an excellent teacher are not guaranteed achievement because their individual difference factors play a role in how hard and how persistently they study, thus influencing the rate of attainment and its ultimate level. Among these factors, L2 motivation has consistently been shown to be related to learning effort (e.g., Kormos & Csizér, 2008; Taguchi, Magid, & Papi, 2009), and in some studies, it has been demonstrated to be related to L2 achievement/L2 proficiency (e.g., Yashima, Nishida, & Mizumoto, 2017).

The definition of L2 motivation varies among researchers, but they seem to agree that it is about the purposes or reasons for studying an L2 (directions) and how intensely we do so (magnitude) (Dörnyei & Ushioda, 2011, p. 4). To capture this multifaceted construct, researchers have proposed various models. The most frequently utilized ones include self-determination theory (SDT; Deci & Ryan, 2002; Ryan & Deci, 2017), which originated in psychology and has been applied in L2 studies, and the L2 motivational self system (L2MSS; Dörnyei, 2009), which was proposed specifically for L2 learning. Although independently these theories have been extensively employed in past research, few studies have attempted to systematically compare them (e.g., Konno, 2011; Yashima, 2009). Furthermore, in L2 motivation studies drawing on questionnaires, many researchers have employed intended learning effort as the criterion measure without including L2 proficiency/achievement (e.g., Kormos & Csizér, 2014; Ryan, 2009; Taguchi et al., 2009; You, Dörnyei, & Csizér, 2016). Thus, although the role of L2 motivation has been emphasized in the field, researchers have not always clarified the relationships between L2 motivation and L2 achievement. We certainly need a fuller understanding of what is captured (and what is not) by the constructs of the two theories, their similarities and unique characteristics, and how the constructs relate to learners' achievement. This can be achieved by comparing the two major theories. Thus, the present study aims to fill the research gap by empirically comparing SDT and L2MSS, and examining their relationships to L2 proficiency as measured by the Global Test of English Communication (GTEC), a standardized English test, with a sample of first-year Japanese university students.

## 2. Literature review

### 2.1. Self-determination theory

As described above, SDT originated in psychology and has been applied in various fields such as education, sports, and health (Self-Determination Theory,

2020). What is unique in the theory is that distinct types of motivation are postulated to lie along a continuum depending on the degree of self-determination or the perceived locus of causality. When an action is self-determined, the locus of causality is perceived to be internal to ourselves, whereas when it is not self-determined, it is external to ourselves. Motivation is postulated to be self-determined by satisfying the three basic psychological needs “that are inherent in human life” (Deci, Vallerand, Pelletier, & Ryan, 1991, p. 327): autonomy, competence, and relatedness.

The most self-determined of the types is intrinsic motivation, which is considered “the prototype of motivation” (Deci et al., 1991, p. 328). When human beings are intrinsically motivated, they engage in an activity because it is inherently enjoyable. The purpose of devoting one’s effort to an activity lies inside the activity itself; hence, it is “intrinsic.” In contrast, when we are extrinsically motivated, we engage in an activity because of some outcomes that are contingent upon it. Extrinsic motivation is further categorized from the least self-determined (i.e., external regulation) to the most self-determined (i.e., integrated and identified regulations), with one in between (i.e., introjected regulation). In addition to these two types of motivation, amotivation is postulated in the theory, referring to the lack of intentionality and motivation. However, in this study, it is not further dealt with because it is not a form of intentional action (Ryan & Deci, 2017, p. 16).

When we have external regulation in L2 learning, we study the L2 “to satisfy an external demand or a socially constructed contingency” (Deci & Ryan, 2002, p. 17). For example, some might study the L2 only because they do not want to fail a course. They might start to internalize their motivation and begin to feel that they need to study this language because not doing so will make them feel ashamed or guilty (i.e., introjected regulation). At this point, the pressure comes not from outside sources but from within. A more self-determined learner will study the L2 in order to achieve a goal that is personally important to him/her (i.e., identified regulation). At this point, although the purpose of studying the L2 lies outside the activity, it is more a part of himself or herself (i.e., internal perceived locus of causality). Lastly, integrated regulation is the most autonomous form of extrinsically motivated behavior. It shares some features with intrinsic motivation, but the action is still driven by a personally important goal that is separable from the action itself. It should be noted that in past studies it has not always been “easily discernable from identified regulation” (Noels, 2001, p. 111) and that in many questionnaire studies, the variable of integrated regulation is omitted (e.g., Hiromori, 2006; Noels, 2001).

## 2.2. L2 motivational self system

This model was developed specifically for L2 learning (Dörnyei, 2009) and is currently one of the most influential in the field. It is based on the theories of the

possible selves (Markus & Nurius, 1986) and self-discrepancy theory (Higgins, 1987). It is comprised of three dimensions: the ideal L2 self, the ought-to L2 self, and the L2 learning experience.

The first constituent is the ideal L2 self, which is defined by Dörnyei (2009) as “the L2-specific facet of one’s ideal self” (p. 29). It is one’s idealized future self-image regarding an L2, and it corresponds to “traditional integrative and internalized instrumental motives” (Dörnyei, 2009, p. 29). It is concerned with “hopes, aspirations, advancements, growth and accomplishments” (2009, p. 28) and is about what we want to become (i.e., promotion focus). The model postulates that when we perceive a gap between our current L2 self with limited L2 competence and our ideal L2 self as a proficient speaker of an L2, we try to close the gap between the two self-images and make an effort to study the L2.

The second constituent, the ought-to L2 self, is an instrumental type of motivation with a prevention focus. When we have a strong ought-to L2 self, we study an L2 because we try to avoid the negative consequence of not becoming a proficient L2 speaker (trying to avoid what we do not want to become). It is the attributes that L2 learners believe they ought to possess “to meet expectations and to *avoid* possible negative outcomes” (Dörnyei, 2009, p. 29, emphasis in the original). Learners might study an L2 out of fear of not meeting societal pressure or expectations from others, for example. It is described by Dörnyei (2009) as less internalized types of instrumental motives than the ideal L2 self.

In addition to these future-oriented constituents, the L2 learning experience is included in the model, representing a more situated motive related to the immediate learning context, such as one’s teachers, peers, and learning materials (see Dörnyei, 2019).

### 2.3. Overview of studies applying SDT and L2MSS

There have been numerous studies that have employed SDT and LSMSS as theoretical frameworks. Quantitative studies have persistently demonstrated that internalized types of motivation in SDT (i.e., intrinsic motivation and/or identified regulation) are related to intended learning effort (e.g., Konno, 2011; Noels, Clément, & Pelletier, 1999; Noels, Pelletier, Clément, & Vallerand, 2000) and persistence (e.g., Noels et al., 2000; Vallerand & Bissonnette, 1992). Those utilizing the L2MSS have also shown that the ideal L2 self and/or the L2 learning experience are related to the criterion measure of intended learning effort (e.g., Kong et al., 2018; Papi, 2010; Ryan, 2009; Taguchi et al., 2009; Ueki & Takeuchi, 2012; You et al., 2016). Fewer studies have examined the relationships between the constructs in the two theories and L2 achievement/L2 proficiency. These studies have demonstrated that the motivational constructs in the two theories might

lead to L2 proficiency, in some cases via intended learning effort (e.g., Pae, 2008; Shaikholeslami & Khayyer, 2006; Wong, 2018; Yashima et al., 2017).

One of the conflicting results from the past studies concerns the relationships between the ought-to L2 self and intended learning effort. In some studies, the ought-to L2 self variable had low reliability, as shown by Cronbach alpha coefficients (e.g., Csizér & Lukács, 2010; Kormos & Csizér, 2008), and its relationship to intended learning effort was negligible (e.g., Kormos & Csizér, 2008; Kormos, Kiddle, & Csizér, 2011). In other studies, however, the ought-to L2 self did have motivational power, particularly in Asian contexts (e.g., Taguchi et al., 2009; Ueki & Takeuchi, 2012; Yashima et al., 2017). An example in the Asian context is Yashima et al. (2017), in which the researchers examined the relationships not only between the L2 motivational construct within the L2MSS framework and intended effort, but also between intended effort and L2 proficiency through the Test of English as a Foreign Language (TOEFL), in addition to the L2 learning experience, as measured by L2 learner beliefs. The results indicated that both the ideal L2 self and the ought-to L2 self predicted intended effort (standardized coefficient = .55 and .38, respectively), which then predicted L2 proficiency (.15). The authors described “what appears to be context-driven differences” (p. 701), explaining that the ought-to L2 self might play motivational roles in Asian contexts because of “exam-related, other- or self-imposed pressure to do well” (p. 701) in such contexts.

Given the conflicting results, there have recently been proposals to overcome the conceptual difficulties of the ought-to L2 self (e.g., Papi, Bondarenko, Mansouri, Feng, & Jiang, 2019; Teimouri, 2017). For example, Teimouri (2017) proposed that, depending on the degree of internalization, the ought-to L2 self might be differentiated into two types: the ought-to L2 self/own and the ought-to L2 self/others. The ought-to L2 self/own reflects “externally imposed obligations and duties by significant others for learning an L2 that are ultimately internalized or shared by the learners for their personal meaning and value” (2017, p. 700), and it represents the “shared L2 self” (p. 701). The ought-to L2 self/others is less internalized and reflects such factors as parental pressures or course requirements “projected on the learners for learning a second language” (2017, p. 700), thus representing the “projected L2 self” (p. 701). The study empirically showed that the constructs can indeed be differentiated into two types and that these variables were positively correlated with prevention-focused motivational orientations.

Regarding the two theories, there have only been partial comparisons between their constructs (e.g., Konno, 2011; Nishida, 2013; Sugita McEown, Noels, & Chaffee, 2014; Yashima, 2009). Theoretically speaking, Dörnyei (2009) argued that the L2 learning experience is “a close match” for intrinsic motivation (p. 30) and the ought-to L2 self for extrinsic motivation. However, as described above,

extrinsic motivation is further categorized depending on the degree of self-determination. Thus, considering the degree of internalization, the ideal L2 self seems to match identified regulation. They both include promotion-focused instrumentality, and learners with strong ideal L2 self/identified regulation arduously study an L2 because it is needed for a future purpose that is personally important to them. In contrast, the ought-to L2 self might be closely related to introjected regulation since Sugita McEown et al. (2014) argue that “the ought-to L2 self and introjected regulation would seem to be definitionally congruent” (p. 26). If we consider the degree of internalization of the newly proposed constructs of the ought-to L2 self/own and the ought-to L2 self/others (Teimouri, 2017), the ought-to L2 self/own might correspond to introjected regulation and the ought-to L2 self/others to external regulation. The ought-to L2 self/own represents the “shared L2 self” (Teimouri, 2017, p. 701), which resembles “internal coercion” (Deci et al., 1991, p. 329) in introjected regulation. In contrast, when learners have a strong ought-to L2 self/others, they study an L2 because of external factors such as pressure from parents or requirements of a specific course (cf. Teimouri, 2017). They feel that the locus of causality is external to themselves, which corresponds to external regulation.

Although the ought-to L2 self/others and external regulation share some similarities, they also seem to differ in one important respect. Learners who have a strong ought-to L2 self/others are prevention-focused. In contrast, external regulation includes both promotion and prevention foci, as indicated by Deci et al.'s (1991) example of “a student who does an assignment for teacher's praise or to avoid parental confrontation” (p. 329). In this sense, the defining characteristic of the ought-to L2 self/others, the prevention focus, may represent only part of external regulation.

Empirical studies, as explained above, have been limited thus far. For example, Yashima (2009) demonstrated that the ideal L2 self is more closely related to identified regulation ( $r = .47$ ) than to intrinsic motivation ( $r = .44$ ). Nishida (2013) also investigated the relationships between the ideal L2 self and the ought-to L2 self, on the one hand, and subtypes of motivation within SDT, on the other. It is noteworthy that the ought-to L2 self showed the highest positive correlation ( $r = .41$ ) with introjected regulation and the second-highest positive correlation with external regulation ( $r = .28$ ), although the distinction between the ought-to L2 self/own and the ought-to L2 self/others was not addressed. The correlations of the ideal L2 self with subtypes of SDT motivation are difficult to interpret, however, because they correlated as highly as .63 with intrinsic motivation, .54 with identified regulation, and .55 with external regulation. In their exploratory factor analysis that included scales from SDT, L2MSS, and the socio-educational model (Gardner, 1985), Sugita McEown et al. (2014) demonstrated that intrinsic motivation, identified regulation, integrated regulation, and the ideal L2 self were included in one

component, whereas introjected regulation, external regulation, and the ought-to L2 self were part of another component. None of these studies, however, has made a distinction between the ought-to L2 self/own and the ought-to L2 self/others, although this distinction might help clarify inconsistent results in past research (e.g., Kormos & Csizér, 2008; Yashima et al., 2017). Given the partial empirical results, a more thorough comparison of the two theories is surely warranted because it might help clarify the theoretical nature of each construct.

### 3. The present study

#### 3.1. Aims and research questions

Taken together, the past studies point to the importance of the motivational constructs of SDT and L2MSS, because they have been shown to predict important variables such as learning effort and persistence in learning. However, these constructs have not been thoroughly compared, and their relationships to L2 proficiency remain unclear. Therefore, the purpose of the study is twofold: (1) to empirically investigate the relationships among the constructs of SDT and the L2MSS, and (2) to examine their causal relationships, including both intended learning effort and L2 proficiency. For that purpose, the following two research questions (RQs) were posed:

1. How are the constructs in self-determination theory and the L2 motivational self system related?
2. Do internalized types of motivation in self-determination theory and the three constituents in the L2 motivational self system predict learners' effort. Does this effort in turn predict L2 proficiency as measured by GTEC?

#### 3.2. Participants

A total of 545 (323 males and 222 females) first-year Japanese university students took part in the study. The university was located in a small city in western Japan, where students do not have daily opportunities to communicate in English. Furthermore, because they were all freshman students who had just finished entrance examinations, their ought-to L2 selves might have had some motivational power in a society where "socio-educational factors put a great pressure on students' achievement and where foreign language education is highly exam-oriented" (Kormos, Kiddle, & Csizér, 2011, p. 508). The participants came from various departments, including education, law and letters, agriculture, engineering, and medical science. Their GTEC scores varied from 87 to 315, with 500 being the full score (see more descriptions below).

### 3.3. Materials

An online questionnaire was administered using Survey Monkey ([www.surveymonkey.com](http://www.surveymonkey.com)). Three types of questions were asked. First, there were the background questions inquiring about their major, gender, and whether they had any experience staying overseas for more than three months. Second, the participants were asked for their student ID number in order to obtain their GTEC scores through the university. GTEC is an English proficiency test administered by the Benesse Corporation in Japan. There are several editions of the test, and the participants in the present study took part in the College Test Edition (GTEC CTE), which measured their listening and reading skills. The scores for each skill vary from 0 to 250.

Table 1 Scale descriptions

Scale	Descriptions
Intrinsic motivation	Captures the inherent enjoyment in the learning of English
Identified regulation	Measures the extent to which learners are studying English for a purpose that is personally important to them
Introjected regulation	Focuses on the internal coercion a learner feels when studying English, such as feeling guilty for not studying, etc.
External regulation	Captures non-internalized external contingencies for studying English
L2 learning experience	Focuses on situation-specific motives that are related to immediate learning environment and experience
Ideal L2 self	Captures the English-related ideal self image that one envisions in future
Ought-to L2 self	Captures the English-related ought-to self image that one envisions in future
Ought-to L2 self/own	Focuses on English-related prevention-focused instrumentality involving external factors that learners have managed to internalize
Ought-to L2 self/others	Focuses on English-related prevention-focused instrumentality involving external factors that are projected on learners
Intended learning effort	Measures learners' intended learning effort for studying English

Third, items intended to measure the four constructs within SDT (i.e., intrinsic motivation, identified regulation, introjected regulation, and external regulation) were included, as well as the three constructs within the L2MSS (i.e., the ideal L2 self, the ought-to L2 self, and the L2 learning experience), the newly proposed ought-to L2 self/own and ought-to L2 self/others, and intended learning effort. It should be noted that in the present study, external regulation items mainly touched on prevention-focused instrumentality so that a systematic comparison between the two theories would be possible. The items were adapted from past studies focusing on these theories (Hiromori, 2006; Noels et al., 2000; Ryan, 2009; Taguchi et al., 2009; Teimouri, 2017). This questionnaire was first piloted with 136 university students who did not participate in the main study. After analyzing the data with principal component analyses and checking for reliability, eight items were revised/replaced. Each Likert-type question was



on a 6-point scale, with 1 being *strongly disagree* and 6 being *strongly agree*. For each construct, five items were asked, totaling 50 questions. Descriptions of the scales are presented in Table 1 (also see Appendix for all questionnaire items).

### 3.4. Procedures

First, instructors of first-year learners of English were invited to cooperate in the administration of the questionnaire. Those who agreed extended the invitation to their students just after they entered the university; the instructors distributed a paper flyer that contained a QR code, which granted the consenting students access to the online questionnaire. Then, the participants accessed the web page that informed them of their anonymity, the questionnaire's non-relationship to their grades, and the fact that their GTEC scores would be included in the analyses. Those who agreed to participate were instructed to click on the button that confirmed their consent, which then took them to the main questionnaire page. At the end of the questionnaire, their intent to participate was re-confirmed so that only those who agreed to allow their data to be used for analyses could complete the questionnaire. These procedures were also approved by the Research Ethics Committee of the university where the study took place. It took approximately ten minutes to complete the questionnaire. To examine the relationships between the participants' L2 motivation and their L2 proficiency, their GTEC scores were obtained through the English Education Center of the university using their student ID numbers. Both the questionnaire and the GTEC were administered in April/May, which was right after the participants entered the university.

### 3.5. Hypothesized models

To investigate the causal relationships among motivational variables, intended learning effort, and L2 proficiency, three models were tested, as shown in Figure 1. As the less internalized types of motivational constructs were weaker predictors of intended effort in past studies, (e.g., Papi et al., 2018), external regulation and the ought-to L2 self/others were excluded from the models. On the other hand, introjected regulation, the ought-to L2 self, and the ought-to L2 self/own were included in addition to the most internalized types of motivation. This is because, in a context like Japan, where the social pressures on students' achievements are strongly felt and students generally have exam-oriented attitudes, these types of motivation were considered to exert motivational power, as shown in past studies in this context (e.g., Yashima et al., 2017). Together, these types of motivation were hypothesized to predict intended learning effort. Intended learning effort was then hypothesized to predict L2 proficiency as measured by GTEC.

Furthermore, two models were tested utilizing the L2MSS: one with the original ought-to L2 self scale, which did not distinguish between its own and other perspectives, and the other, which only included the ought-to L2 self/own.

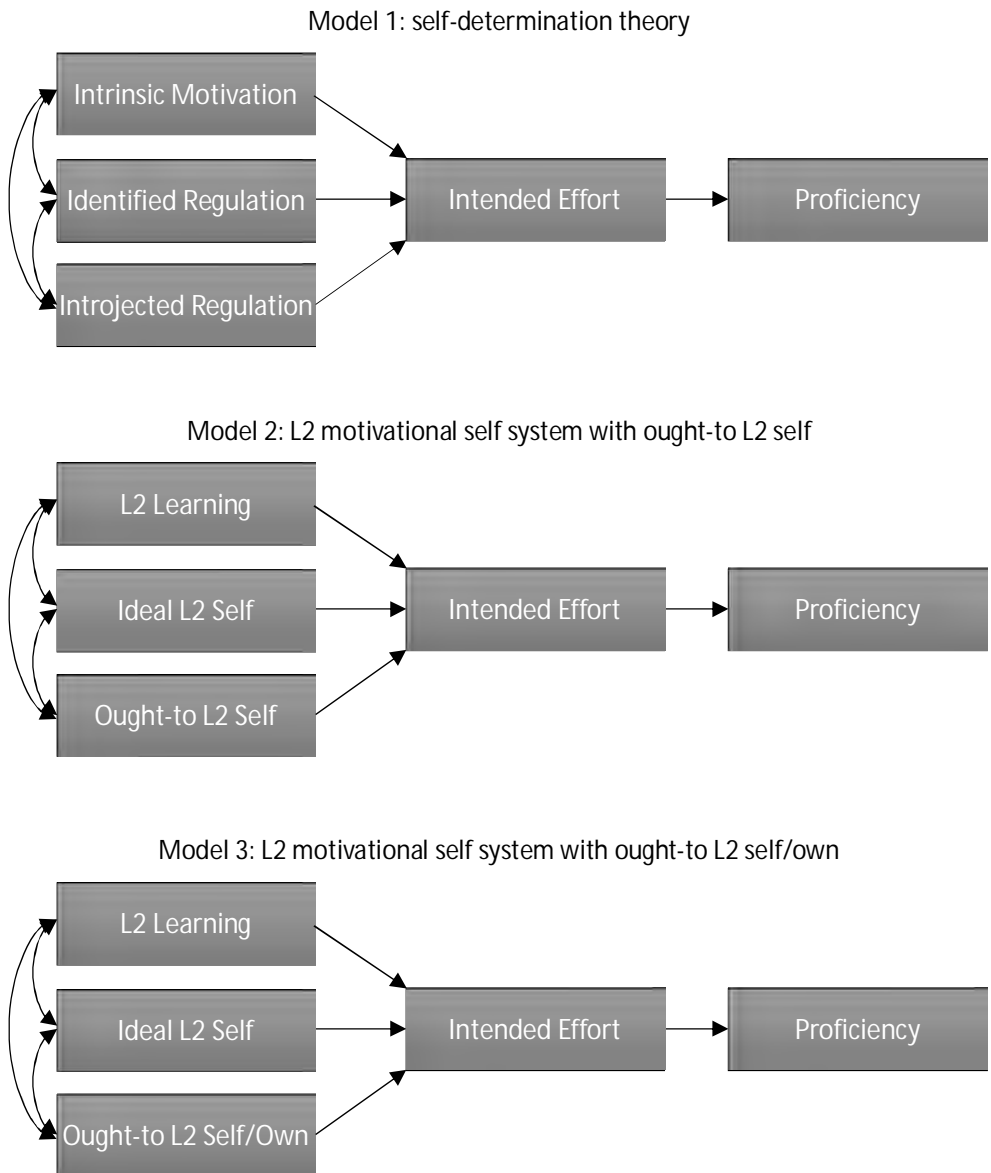


Figure 1 Hypothesized models to be tested

### 3.6. Data analysis

The Pearson bivariate correlation coefficients among the ten subscale scores and the Cronbach's alpha coefficients for each of the scales were calculated using SPSS version 23. For confirmatory factor analysis and structural equation modeling, the latent variable modeling program AMOS version 22 (Arbuckle, 2014) was employed to investigate the constructs of L2 motivation based on the two theoretical frameworks in relation to their L2 proficiency using the maximum likelihood estimation. As the item data composed of 50 polytomous item responses presented a slight non-normality, the bootstrap method was adopted to correct for  $p$ -values of the  $\chi^2$  test and the standard errors of the parameter estimates (Arbuckle, 2014; Bollen & Stine, 1993). Several goodness-of-fit statistics were used to specify how well the hypothesized models fit the data. The goodness of fit of the models includes the (a)  $\chi^2$  test, (b) normed  $\chi^2$ , (c) Comparative Fit Index (CFI), (d) Standardized Root Mean Square Residual (SRMR), and (e) Root Mean Square Error of Approximation (RMSEA). A model typically provides a good fit with the data when the  $p$ -value associated with a *chi*-square test is non-significant. However, the  $\chi^2$  statistic may lead to rejection of the model in large samples even when the actual fit is regarded as good (Bentler & Bonett, 1980). Thus, the normed  $\chi^2$  value adjusted for the degrees of freedom ( $\chi^2/df$ ) was additionally reported. A normed value of less than 5 can be considered a reasonable fit (Marsh & Hocevar, 1985). A CFI value greater than 0.92 indicates an adequate fit, and values greater than 0.95 indicate a good fit. SRMR and RMSEA values of less than 0.06 indicate a satisfactory fit, and values of less than 0.08 indicate an acceptable fit (Hu & Bentler, 1999).

## 4. Results

### 4.1. Descriptive statistics, reliability and validity of the scales

Of the 545 students who completed the questionnaire, those who did not provide a valid ID number or did not take the GTEC were eliminated from the analyses. Furthermore, those who answered that they had stayed overseas for longer than three months were also removed, for this might have had some influence on their GTEC scores. This left 532 participants. Table 2 presents descriptive statistics of the scales.

Prior to the main data analysis, both univariate and multivariate outliers were checked and deleted, leaving 511 participants in the final data set. As the questionnaire site did not allow participants to skip questions, there was no missing value. Then, Cronbach alpha coefficients were checked for reliability of

the scales. As seen in Table 3, most of the scales except for external regulation had acceptable Cronbach alpha coefficients. Then, confirmatory factor analyses (CFAs) were performed in order to investigate the validity of the scales. The first item in introjected regulation (Q5) and the first and the fourth items in external regulation (Q1 and Q28, see Appendix) that had standardized coefficients lower than .40 were deleted, and then the Cronbach alpha coefficients were checked again with the remaining items. After deleting two items in external regulation, the remaining three external regulation items had an acceptable Cronbach alpha coefficient of .71.

Table 2 Descriptive statistics of scales

	<i>M</i>	<i>SD</i>	95% CI	SKW	KUR
IM	3.61	1.12	[3.51, 3.70]	-.21	.06
IDR	4.24	.94	[4.16, 4.32]	-.32	.04
ITJ	3.24	.89	[3.17, 3.32]	-.36	.24
EXT	3.68	.75	[3.61, 3.74]	-.36	.64
L2LE	3.59	1.06	[3.50, 3.68]	-.29	.29
ILS	3.16	.97	[3.08, 3.24]	.23	.12
OLS	2.81	.88	[2.73, 2.88]	.04	-.41
OLSW	4.03	.84	[3.95, 4.10]	-.38	.62
OLST	2.55	.96	[2.47, 2.63]	.22	-.25
Effort	3.40	.86	[3.33, 3.48]	-.08	.73
GTEC listening	107.74	22.57	[105.82, 109.66]	-.21	1.09
GTEC reading	101.66	22.15	[99.78, 103.55]	-.31	.39

*Note.* IM = intrinsic motivation; IDR = identified regulation; ITJ = introjected regulation; EXT = external regulation; L2LE = L2 learning experience; ILS = ideal L2 self; OLS = ought-to L2 self; OLSW = ought-to L2 self/own; OLST = ought-to L2 self/others

Table 3 Cronbach alpha coefficients before and after item deletion

Variables	Before deletion		After deletion	
	No. of items	Cronbach alpha	No. of items	Cronbach alpha
IM	5	.94	5	.94
IDR	5	.88	5	.88
ITJ	5	.80	4	.82
EXT	5	.62	3	.71
L2LE	5	.92	5	.92
ILS	5	.84	5	.84
OLS	5	.75	5	.75
OLS-own	5	.79	5	.79
OLS-others	5	.86	5	.86
Effort	5	.84	5	.84

*Note.* IM = intrinsic motivation; IDR = identified regulation; ITJ = introjected regulation; EXT = external regulation; L2LE = L2 learning experience; ILS = ideal L2 self; OLS = ought-to L2 self; OLSW = ought-to L2 self/own; OLST = ought-to L2 self/others

#### 4.2. Relationships between SDT and L2MSS variables

To examine the relationships between SDT and L2MSS variables, their inter-correlations were checked. As seen in Table 4, in general, the variables were correlated in accordance with the theories. For example, in SDT, those that are closer in nature have higher correlations than those that are farther apart (e.g., .75 between intrinsic motivation and identified regulation, and .37 between intrinsic motivation and introjected regulation). These results confirm the simplex pattern postulated by the theory in that “the kinds of motivation that are more self-determined would be inversely related to those that are less self-determined” (Noels et al., 2000, p. 71), and that “correlations among adjacent scales would be positive and higher than those with the more theoretically distant scales” (p. 71). An exception is the relationship between introjected regulation and external regulation, which were not correlated. With regard to the L2MSS variables, the relationships were similar, that is, the ideal L2 self correlated highly with the L2 learning experience, it correlated to a lesser degree with the ought-to L2 self/own, and it did not significantly correlate with the ought-to L2 self/others. Furthermore, when comparing the two theories, the L2 learning experience and intrinsic motivation strongly correlated, as did the ideal L2 self and identified regulation. The ought-to L2 self/own was more closely related to introjected regulation than to external regulation. Regarding the relationship between introjected regulation and the L2MSS variables, the highest correlation coefficient was revealed for the ought-to L2 self/own, as expected, rather than with other variables in the L2MSS. Lastly, an unexpected pattern is the relationship between identified regulation and the L2 learning experience: identified regulation correlated with the L2 learning experience as strongly as with the ideal L2 self ( $r = .75$ ).

Table 4 Inter-correlations among SDT and L2MSS scales

	IM	IDR	ITJ	EXT	L2LE	ILS	OLS	OLSW	OLST
IM	1.00	.75**	.37**	-.41**	.94**	.65**	.16**	.23**	-.10*
IDR		1.00	.55**	-.30**	.75**	.75**	.26**	.48**	-.02
ITJ			1.00	.07	.37**	.50**	.63**	.69**	.54**
EXT				1.00	-.41**	-.30**	.18**	.13**	.31**
L2LE					1.00	.66**	.15**	.24**	-.09*
ILS						1.00	.31**	.37**	.08
OLS							1.00	.51**	.75**
OLSW								1.00	.42**
OLST									1.00

*Note.* IM = intrinsic motivation; IDR = identified regulation; ITJ = introjected regulation; EXT = external regulation; L2LE = L2 learning experience; ILS = ideal L2 self; OLS = ought-to L2 self; OLSW = ought-to L2 self/own; OLST = ought-to L2 self/others; \* $p < .05$ , \*\* $p < .01$

### 4.3. Structural equation modeling

Finally, in order to investigate the causal relationships among motivational variables, intended learning effort, and L2 proficiency, structural equation modeling (SEM) was performed for each of the theories. As the data were not normally distributed, we fit the model using the maximum likelihood and bootstrap methods to estimate the model parameters and correct for  $p$ -values and standard errors of the parameter estimates. The models showed an acceptable fit to the data, as shown by the fit indices in Table 5. The results of the SEM analyses are presented in Figures 2, 3, and 4. All path coefficients were significant. In addition to the originally hypothesized paths, covariances between some errors were added following the modification index.

Table 5 Structural equation modeling analyses model fit

Model	$\chi^2$	$df$	Normed $\chi^2$	CFI	SRMR	RMSEA
SDT	615.20	180	3.48	.94	.05	.07
L2MSS	683.50	198	3.45	.92	.06	.07
L2MSS-O	718.41	199	3.61	.92	.06	.07

Note. SDT = self-determination theory; L2MSS = L2 motivational self system; L2MSS-O = L2 motivational self system with ought-to L2 self/own; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation

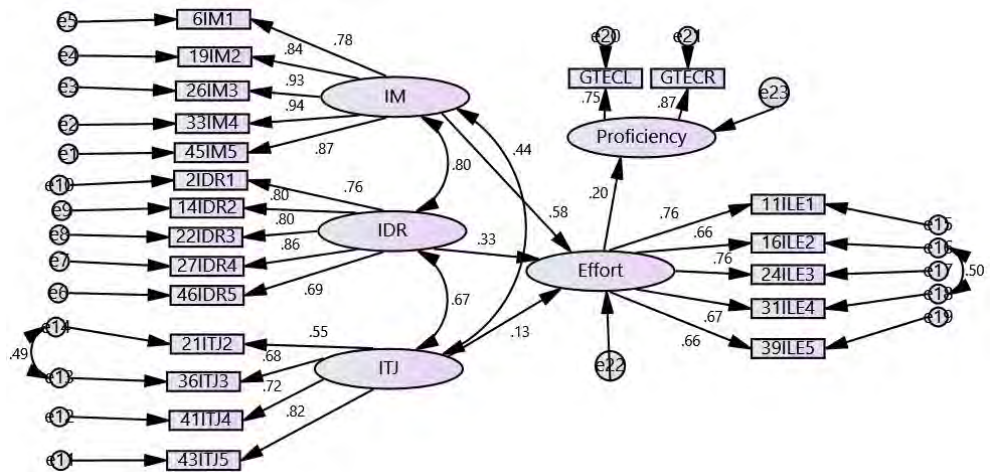


Figure 2 Results of structural equation modeling: Standardized SDT model (IM = intrinsic motivation; IDR = identified regulation; ITJ = introjected regulation; all path coefficients are statistically significant [ $p < .01$ ])

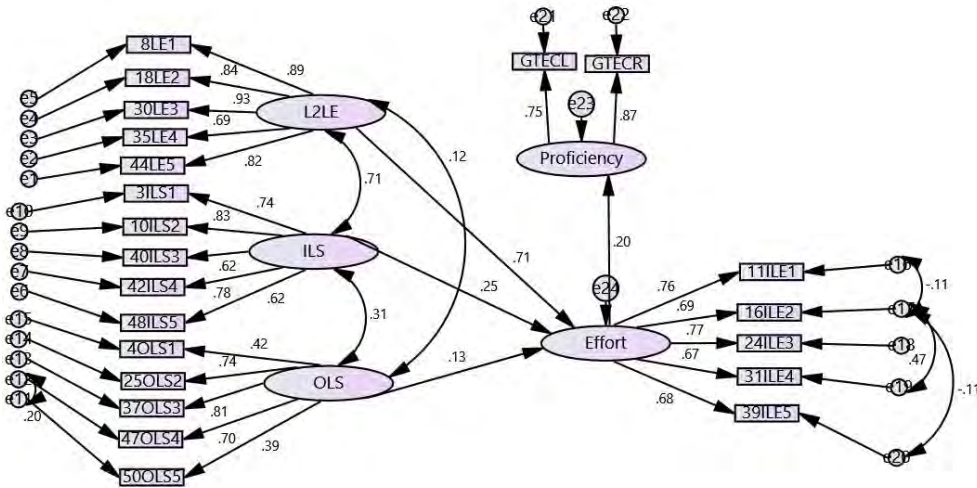


Figure 3 Results of structural equation modeling: standardized L2MSS model (L2LE = L2 learning experience; ILS = ideal L2 self; OLS = ought-to L2 self; all path coefficients are statistically significant [ $p < .01$ ])

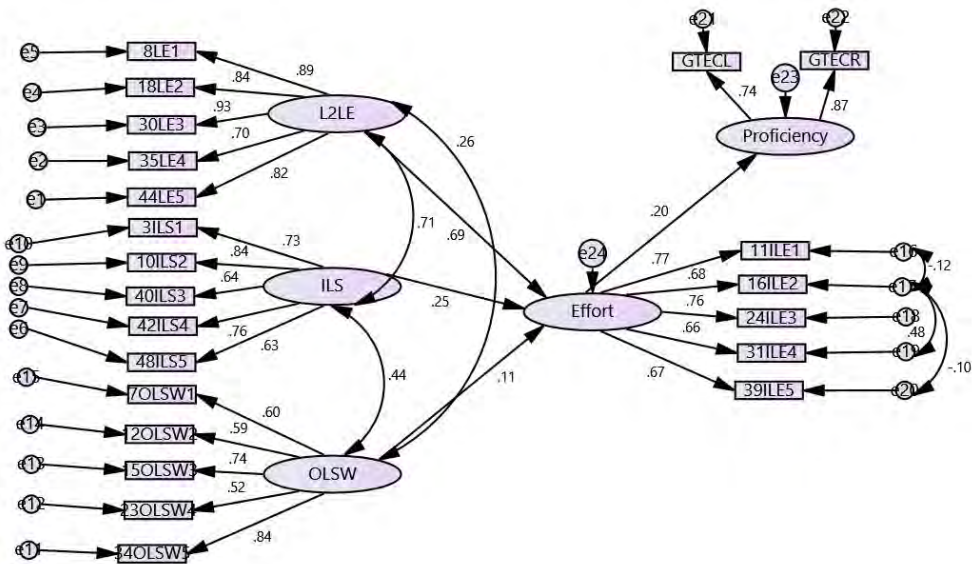


Figure 4 Results of structural equation modeling: standardized L2MSS with ought-to L2 self/own model (L2LE = L2 learning experience; ILS = ideal L2 self; OLSW = ought-to L2 self/own; all path coefficients are statistically significant [ $p < .01$ ])

The analyses showed that internalized types of motivational variables predicted intended learning effort, which in turn predicted L2 proficiency. The

strength varied in accordance with the theories. For example, for the SDT model, intrinsic motivation predicted intended effort most strongly (standardized coefficient = .58), followed by identified regulation (.33) and, to a much lesser extent, introjected regulation (.13). As for the L2MSS, the L2 learning experience predicted intended effort most strongly (.71). The ideal L2 self predicted intended effort, but the strength was weaker than expected (.25). The relationship was even weaker for the ought-to L2 self (.13). The trends were similar for the L2MSS model that includes the ought-to L2 self/own. For these models, intended learning effort led to L2 proficiency (.20). The value of this coefficient is understandable because, in addition to L2 motivation, various other factors play a role in predicting L2 proficiency.

## 5. Discussion

Regarding RQ 1, the constructs in self-determination theory and the L2 motivational self system were shown to correlate to different degrees in accordance with the theories. In this study, as in past investigations, the following constructs were demonstrated to be related to each other: intrinsic motivation and the L2 learning experience, identified regulation and the ideal L2 self (e.g., Yashima, 2009), and introjected regulation and the ought-to L2 self (e.g., Nishida, 2013). As expected, for the relationships among the constructs in SDT and those proposed in Teimouri (2017), introjected regulation correlated most strongly with the ought-to L2 self/own ( $r = .69$ ), followed by the ought-to L2 self ( $r = .63$ ) and the ought-to L2 self/others ( $r = .54$ ). In contrast, external regulation correlated with the ought-to L2 self/others most strongly ( $r = .31$ ), followed by the ought-to L2 self ( $r = .18$ ) and the ought-to L2 self/own ( $r = .13$ ).

In the present study identified regulation correlated with the L2 learning experience as strongly as with the ideal L2 self ( $r = .75$ ). This might have been because those who had “successful engagement with the actual language learning process, for example, because they discover that they are good at it” (i.e., aspects of the L2 learning experience; Dörnyei & Ushioda, 2011, p. 86) also understood the personal importance of studying English (i.e., aspects of identified regulation). Another possibility is that, because they felt that their English studies were personally important (i.e., aspects of identified regulation), they invested effort in studying the L2 and received positive feedback, which helped them accumulate positive learning experiences (i.e., aspects of the L2 learning experience). The relationship between these two variables should be further examined in future research.

As for RQ 2, although their strengths varied, motivational constructs postulated in the two theories predicted intended effort, which in turn led to L2 proficiency. This confirms the findings of past studies (e.g., Kong et al., 2018;



Yashima et al., 2017) and adds further validation to the two theories. First, internalized types of motivation in SDT led to learners' intended effort, which then predicted L2 proficiency. Relative motivational powers varied in accordance with the theory: Intrinsic motivation played the most substantial role leading to effort, followed by identified regulation. The strong motivational powers of intrinsic motivation and identified regulation are in accordance with past studies that demonstrated motivational powers of not only intrinsic motivation but also of identified regulation (e.g., Noels et al., 1999; Noels et al., 2000). Introjected regulation significantly predicted intended learning effort, but rather weakly. This points to the importance of the internalization of the activity in that a less internalized type of motivation, that is, introjected regulation, only plays a weak role in predicting motivated behavior. Second, with regard to the L2 motivational self system, the three constituents predicted intended learning effort, but again, to different degrees. It is not surprising that the L2 learning experience accounted for effort, but perhaps more surprising is a weak motivational power of the ideal L2 self (standardized coefficient = .25). Past studies have demonstrated substantial motivational power of this construct (e.g., Yashima et al., 2017), but in the present study, it was the L2 learning experience that played a substantial role. The results of the present study resemble those of You et al. (2016) with regard to the predictive power of the L2 learning experience and the ideal L2 self. Possible reasons for the weak predictive power of the ideal L2 self are discussed later. Furthermore, the ought-to L2 self played a significant role, although not strongly. It was expected that, in a society like Japan, the ought-to L2 self might have motivational power, but it had much weaker motivational power than in some past studies (e.g., Yashima et al., 2017). Because the ought-to L2 self items were intended to capture the participants' possible negative future consequences of not studying English, they might have been felt as too distant to exert motivational power.

Models 2 and 3 were both concerned with L2MSS, with one including the construct of the ought-to L2 self and the other including the ought-to L2 self/own. Both models showed similar fit indices. Their motivational powers were similarly weaker than those of the L2 learning experience or the ideal L2 self, although the paths were both significant. This indicates that, whether the focus is on only the shared L2 self (i.e., the ought-to L2 self/own) or on both the shared L2 self and the projected L2 self (i.e., the ought-to L2 self/others), these types of motivation need to be more internalized in order to exert stronger motivational power.

When we compare results across the two theories, we can observe that the patterns are similar. It was the participants' the L2 learning experience/enjoyment in learning the L2 that predicted intended learning effort most strongly. Compared to this factor, the ideal L2 self in particular played a less substantial role. Furthermore, the ought-to L2 self had an even weaker predictive power.

Although learners in Japan are characterized as being sensitive to societal pressure and thus their the ought-to L2 selves in some studies played a role in predicting effort (e.g., Yashima et al., 2017; Taguchi et al., 2009), this was not the case in the present study. As SDT postulates, the degree of internalization of L2 learning seems to play a powerful role in predicting behavior.

One of the puzzling results is the weak predictive power of the ideal L2 self. Why did the ideal L2 self not play a more significant role, and why was the strength of relationship between the ideal L2 self and intended learning effort much weaker than those between intrinsic motivation/the L2 learning experience and intended learning effort? Whereas the items intended to measure intrinsic motivation and the L2 learning experience were phrased so as to gauge the participants' current English learning experiences, the items measuring the ideal L2 self focused on future images as English users. What mattered for this sample might have been aspects of their current English studies (i.e., intrinsic motivation and the L2 learning experience) rather than possible future consequences of their English studies (i.e., the ideal L2 self). This also explains the strong predictive powers of intrinsic motivation and the L2 learning experience. Given that the participants took part in the study just after entering university, their visions of the future regarding English might still be distant and therefore might play a more important role in their later academic lives as they start to envision their future career- and other-related English selves.

This study has several limitations that should be mentioned. First, it is a questionnaire study that gauged learners' motivation to study English at one point in time. Given the current trends to capture the dynamic nature of L2 motivation, the present investigation could have been supplemented by more qualitative and longitudinal data, which would allow explaining the weak relationship between the ideal L2 self and L2 proficiency. Also, the differences between the L2MSS models, including the ought-to L2 self on the one hand and the ought-to L2 self/own and the ought-to L2 self/others on the other, were not made empirically clear because both models fit the data. It will thus be necessary to further validate the two models. Next, the questionnaire items used in the present study did not include the recent development of the ideal L2 self/own and the ideal L2 self/others (Papi et al., 2018). Relationships between the ideal L2 self/own and the ideal L2 self/others and the constructs in SDT should further be explored.

## 6. Conclusions

The present study empirically compared the two frequently utilized motivational theories, that is SDT and L2MSS, and investigated the relationships among the constructs included in the two. It demonstrated that internalized types of

motivation in the theories predict intended learning effort, which then leads to L2 proficiency. This adds further validation to the theories. In future research, it will be fruitful to track changes in L2 proficiency and examine whether these changes are related to the participants' future visions of English, for example, over the period of one year. Furthermore, explorations of the relationships between types of L2 motivation in the two theories and L2 proficiency, as well as more thorough investigations including mediating variables such as L2 anxiety, might add more insights into the role of L2 motivation. From a pedagogical perspective, the strong motivational powers of intrinsic motivation and the L2 learning experience indicate that learners' accumulated L2 learning experience and their enjoyment in L2 learning are crucial in motivating themselves. Teachers should be reminded of the importance of their students' own power in this regard.

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## APPENDIX

Questionnaire items (\*Items marked with an asterisk are the ones deleted after confirmatory factor analysis).

### Intrinsic motivation

1. I study English because I enjoy having more knowledge about English.
2. I study English because I get the satisfied feeling when I find out new things when studying English.
3. I study English because studying English is fun.
4. I study English because studying English is interesting.
5. I study English because I enjoy English classes.

### Identified regulation

1. I study English because it is necessary for me.
2. I study English because I would like to gain skills in English that I could use in the future.
3. I study English because I think acquiring English is important.
4. I study English because I think it is good for my personal development.
5. I study English because being able to speak it is related to my personally important goal.

### Introjected regulation

1. \*I study English because I think I would feel guilty if I didn't study English.
2. I study English because I think I would look absurd if I didn't speak English in the future.
3. I study English because I think I would feel ashamed if I didn't speak English in the future.
4. I study English because I would feel anxious if I didn't study English.
5. I study English because I think I would regret it if I didn't study English later on.

### External regulation

1. \*I study English so that adults around me will not tell me to.
2. I study English because I would be in trouble if I did not get a good grade.
3. I study English reluctantly because it is a required course.
4. \*I study English because I do not want to end up with a job with low salary later on.
5. I study English so that I will not fail a course.

### L2 learning experience

1. I find learning English really interesting.
2. I always look forward to English classes.
3. I really enjoy learning English.
4. I think time passes faster while studying English.
5. I enjoy gaining more knowledge of English.

### Ideal L2 self

1. I can imagine myself speaking English with international friends or colleagues.
2. Whenever I think of my future career, I imagine myself using English.
3. The things I want to do in the future require me to use/speak English.
4. I often imagine myself as someone who is able to speak English.
5. If I make more effort, I will use English effectively in future jobs.

Ought-to L2 self

1. I study English because close friends of mine think it is important.
2. I have to study English, because, if I do not study it, I think my parents will be disappointed with me.
3. Learning English is necessary because people surrounding me expect me to do so.
4. My parents believe that I must study English to be an educated person.
5. It will have a negative impact on my life if I don't learn English.

Ought-to L2 self/own

1. I must learn English to avoid problems or difficulties that I may face in the future for not knowing English.
2. I must learn English; otherwise I will encounter difficulties in my education (school or university) for not having knowledge of English.
3. I must learn English; otherwise I will have difficulties finding a job in the future.
4. I must learn English; otherwise I will be an illiterate.
5. I must learn English; otherwise I will be in trouble in the future.

Ought-to L2 self/others

1. I must learn English; otherwise people around me will have a negative image of me.
2. I must learn English; otherwise I will be reprimanded by my parents or teachers.
3. I must learn English; otherwise my parents/friends will be disappointed in me.
4. I must learn English; otherwise the others will think of me as a weak student.
5. I must learn English; otherwise people around me will tell me to.

Intended learning effort

1. If an English course was offered at university or somewhere else in the future, I would like to take it.
2. I am working hard at learning English.
3. I am prepared to expend a lot of effort in learning English.
4. I think that I am doing my best to learn English.
5. I would like to concentrate on studying English more than any other topic.