

Validating Self-Determination Theory in the Japanese EFL Context: Relationship between Innate Needs and Motivation

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Abstract

The purpose of this study is to verify self-determination theory (SDT) (Deci & Ryan, 2002) in the Japanese EFL context, particularly focusing on the relationships between the innate psychological needs and motivation. In this study, 317 Japanese students responded to a questionnaire on their basic needs fulfillment and L2 motivation. As preliminary analyses, parallel analysis and factor analysis were run on the obtained data, the results suggested some modifications to the factor structure of the scale. Using the amended factor structure, structural equation modeling (SEM) was applied to evaluate the fit between the theoretical expectation and actual data. The SEM model demonstrated that (1) the fulfillment of competence needs has considerable, positive influence on Japanese EFL learners' motivation; (2) the sufficiency of relatedness needs might have a similar, albeit weaker, influence on learner motivation; but (3) autonomy needs fulfillment has a negative impact on both intrinsic and extrinsic motivation of Japanese L2 learners, and, furthermore, might even demotivate them. Drawing on previous studies as well as the findings of this study, the authors suggest a review of the current definitions of autonomy and relatedness adopted in the questionnaire and further investigation into the motivational processes of Japanese EFL learners.

Keywords: EFL learners' motivation, self-determination theory, structural equation modeling

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Introduction

Second/foreign language (L2) learners' motivation is one of the most extensively investigated areas in second language acquisition (SLA) research (for a review, see Dörnyei, 2001; Uebuchi, 2004). Initiated by Robert Gardner and his associates in the 1950s, much research has been conducted to investigate the role of attitude and motivation in learning an L2 in a socio-educational framework (e.g., Gardner, 1985; Gardner & Lambert, 1972), focusing primarily on general motivational components of integrative and instrumental motivation. Integrative motivation is characterized by learners' eagerness to integrate into the target language community and culture. Instrumental motivation, in contrast, refers to a more practical reason for learning an L2—namely, to gain social and/or economic rewards through L2 achievement. While Gardner and his associates argued that integrative motivation was a predictor of L2 acquisition (e.g., Gardner, 2000; Gardner, Lalonde, & Moorcroft, 1985), some researchers (e.g., Dörnyei, 1990; Kurahachi, 1994; Lamb, 2004; Yahima, 2000) pointed out that integrative motivation may not be relevant for EFL learners because they have little direct exposure to a community or culture of native speakers of English and thus tend not to have a clear target language community or culture.

In subsequent motivation research, self-determination theory (SDT) (Deci & Ryan, 1985, 2000, 2002) became one of the most influential theories. SDT was originally a large-scale theory used to explain human motivation in general. Many SLA researchers have applied the framework to the language-learning context, which has helped shed light on L2 learners' motivation (Noels, 2003). SDT studies have been conducted in Japan, the United States, Canada, and elsewhere. Such studies in Japan yielded results both in line and out of line with the theory (e.g., Dei, 2011; Hiromori, 2006a; Maekawa & Yashima, 2012; Ootshi & Heffernan, 2011), thus posing a question regarding the applicability of the theory to the Japanese EFL setting and/or how it is applied to this setting.

The importance of adding the cross-cultural perspective in motivational theories, including SDT, has been recently identified by researchers in North America (Sugita McEown et al., 2014), who argued that motivational constructs of theories were postulated in Western countries, suggesting the need to verify SDT in different cultural settings. They claimed that a considerable amount of research indicated that motivational processes differ in different cultural contexts. In this study, SDT in the Japanese EFL setting is examined to see whether and how it can account for university students' motivation.

Background of the Study

Self-Determination Theory

In SDT, motivation resides along a continuum with intrinsic motivation at one end, extrinsic motivation in the middle, and amotivation at the other end (see Figure 1). Intrinsic motivation refers to the motivation to engage in something because the action itself is enjoyable and satisfying whereas extrinsic motivation is a drive to do something for an independent outcome (Deci & Ryan, 2000). Deci and Ryan postulated four regulations within extrinsic motivation, depending on the degree of internalization involved in the action: integrated, identified, introjected, and external regulations. As their labels suggest, integrated regulation is the most self-determined form of regulation whereas external regulation is the least autonomous. Placed at the opposite end of the scale from intrinsic motivation, amotivation is a state of no regulation/motivation.

SDT presupposes the existence of three basic psychological needs: the needs for autonomy, competence, and relatedness. Needs for autonomy are defined as people's desire to determine their behavior and take responsibility for consequential outcomes (Deci & Ryan, 1985; Little, 1991). Needs for competence refer to people's desire to feel confident in achieving and expressing one's capacity (Ryan & Deci, 2002). Finally, needs for relatedness are people's desire to connect with others and their community; care for, be cared for, and be respected by others; and have a sense of unity (Ryan & Deci, 2002; Uebuchi, 2004).

SDT offers different types of motivation and degrees of regulation to show how we can be motivated, depending on how much our needs are satisfied. Thus, the more the individuals' innate psychological needs of autonomy, competence, and relatedness are fulfilled, the more their behavior is intrinsically motivated.

In non-EFL settings, SDT applied research has been conducted in many parts of the world, such as Belgium, Israel, Singapore, and the United States. Such research has focused on psychotherapy, organizational behavior, religious internalization, and motivation in sport. Ample findings have indicated that SDT is applicable to different socio-cultural settings (e.g., Chirkov, Kim, Ryan, & Kaplan, 2003; Yamauchi & Tanaka, 1998).

Research Based on SDT in the Japanese EFL Context

Strong emphasis is put on English in formal education in Japan; it is one of the three main subjects in junior and senior high schools, and almost all universities require compulsory English courses for at least first- and second-year students, regardless of their majors. However, students are not always willing to learn English; some students even experience demotivation when learning English (Agawa & Ueda, 2013; Yamamori, 2004). Under such

circumstances, EFL learners' motivation is of great interest to many researchers and practitioners in Japan, and more knowledge on this matter has been actively sought. Several motivational studies have dealt with SDT in the Japanese EFL setting, as this theory is one of the most influential ones in motivation research.

In the English learning context, both inside and outside the classroom, the three psychological needs are generally interpreted as follows: Autonomy needs include learners' needs for opportunities to choose and determine various aspects of English classes and learning. Competence needs are their desire to be able to understand and make themselves understood in English, have the capability and confidence to successfully complete English assignments and tasks, and have opportunities to display competence. Finally, relatedness needs include wanting to connect with other classmates and the teacher, having a sense of unity, and being liked and respected (Dörnyei, 2001; Hiromori, 2006a; Otschi & Heffernan, 2011).

Tomohito Hiromori is a pioneering researcher who examined EFL learner motivation in Japan using the SDT framework. Hiromori (2006a) developed the first questionnaire based on the theory to measure Japanese EFL learner motivation. Using the questionnaire, he collected data from university students and used a structural equation modeling (SEM) analysis to confirm the causal relationship between the fulfillment of innate needs and motivation as hypothesized in the theory. Yet the model's fitness goodness of fit was relatively poor.¹ Otschi and Heffernan (2011) subsequently adopted Hiromori's questionnaire and collected data at two universities; participants were either business or English majors. The results suggested that the model was acceptable to a certain degree; however, the sufficiency of autonomy needs did not display a causal relationship with intrinsic motivation. Some studies that have used or adapted the questionnaire, such as Dei (2011), Hiromori (2006b), and Tanaka and Hiromori (2007), have demonstrated that satisfying the innate needs could generally enhance English learners' motivation. Conversely, Maekawa and Yashima (2012) did not observe an increase in their participants' self-determined regulations in their L2 study although their psychological needs were successfully satisfied. Literature in the Japanese EFL context suggests the need for model verification in two ways. First, the barely acceptable—if not poor—goodness of fit indicators obtained in the previous studies call for the verification of the model. The model is based on the SDT, which is a large-scale human motivation theory. When validating the model in the university EFL context in Japan, a sample should be taken from various types of students to reflect the population's diversity. As previous studies have collected data from only one or two universities, the significance of using a varied sample in

this study is obvious. Second, the relationship between psychological needs satisfaction and motivation should be investigated again.

Purpose of the Study

The objective of this study is to validate SDT in the Japanese EFL context. The fit of the model to the actual data will be investigated using a more varied population than previous samples. For the local level of the model, the focus will be placed on the causal relationships between the innate psychological needs (i.e., autonomy, competence, and relatedness) and motivation.

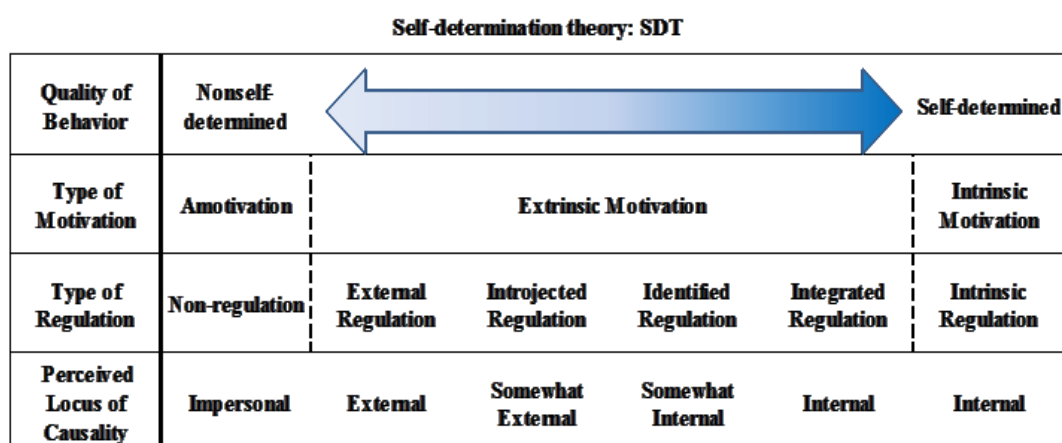


Figure 1. The self-determination continuum, with types of motivation, types of regulation, and locus of causality. Adapted from Deci, E. L., and Ryan, R. M., (Eds.), 2002, *Handbook of self-determination research*, p.16

Method

Participants

A questionnaire was administered to 317 students in Japan, with their consent. The number of participants was determined to be a desirable sample size for the analyses planned later (i.e., factor analysis and SEM). Regarding the factor analysis, Hair, Black, Babin, and Anderson (2008) indicated that, as a general rule, the sample size should be 10 times (or greater) the number of variables, which makes 180 the minimum number of participants for this study. Hirai (2012) claimed that a sample size of 300 or more is preferable for the reliable calculation of the correlation coefficient. Regarding SEM, an a priori power analysis was conducted using G*power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the minimum number of participants required. The results showed that at least 231 participants would be required. To be safe, it was decided to collect data from at least 300 participants; the final number was 317.

In order to ensure participants' diversity, data were collected from several different departments (i.e., Business, Economics, Engineering, English, Law, Japanese, Medicine, Sociology, and Trans-Culture) at three academically varied universities (i.e., an extremely competitive school: University A; a middle-range school: University B; and an easy-to-get-into school: University C). Of the 317 participants, 94 were at University A, 116 were at University B, and 106 were at University C. One hundred thirty-three were males and 182 females, with the gender of the remaining 2 unknown. University A students' English proficiency was the highest of the three, with an average TOEFL ITP score of around 510, followed by that of University B, with an average TOEIC (not TOEFL) score of about 450, and University C, with an average TOEIC score of 340. Students were in their first, second, or third year of university studies.

Questionnaire

Hikomori's (2006a, 2006b) questionnaire was used to measure L2 learners' motivation and the degree of their psychological needs satisfaction. This was considered to be the most effective questionnaire based on SDT and designed to measure Japanese EFL learners' motivation.

Hikomori's (2006a) questionnaire was the first one to be developed within the SDT framework to measure Japanese EFL learners' motivation. In developing the pioneering questionnaire, he was careful to make it valid and reliable. After writing questionnaire items based on the SDT theory, he conducted a pilot study, during which a group of students responded to the questionnaire. He ran an exploratory factor analysis (EFA) on the collected data to determine which factors were extracted and how. Then, using a modified questionnaire, he conducted a confirmatory factor analysis (CFA) to confirm that the factors were structured in accordance with the theory. In this way, he was able to obtain valid and stable constructs for his sample. In this study a sample that contains a much more varied population than Hikomori's will be used. It could be said that his survey instrument is being used for a different sample, but it is believed that our sample can better reflect the diversity of Japanese EFL learners and thus offers a better condition to verify SDT in the Japanese EFL setting.

As for internal consistency of the questionnaire, the alpha values in all constructs reached an acceptable level (Cronbach's alpha = .74–.89). Moreover, Hikomori's (2006a) questionnaire has been the most tested one by being used or adapted by different researchers. Since Hikomori's (2006a, b) research is highly influential, his questionnaire has been, by far, the most widely used one in the Japanese L2 motivation studies based on SDT. Indeed, all of the aforementioned SDT-based research in the Japanese EFL context (i.e., Dei, 2011; Maekawa & Yahima, 2012; Otoshi & Heffernan, 2011; Tanaka & Hikomori, 2007) used or adapted the

questionnaire, as did Hayashi (2011) and Sakai and Koike (2008). The current study will administer the questionnaire using a more varied population than previous studies, which will not only verify the theory but also further test the content validity of the instrument.

The questionnaire included two parts: the English Learning Motivation Scale and the Psychological Needs Scale (Hiromori, 2006b).

English Learning Motivation Scale

The first part of the questionnaire, immediately following the demographic section, asked participants to indicate their intensity of motivation to learn English. As the questionnaire was based on SDT, it asked about the intensity of participants' motivation in five regulations (i.e., intrinsic, identified, introjected, external, and non-regulations). The scale contained 18 items, with three or four questions under each regulation/subscale. Participants were asked to rate each item on a five-point Likert scale by selecting the point that most closely matched their feelings (1 = strongly disagree; 5 = strongly agree). The regulations and sample items are as follows.

Intrinsic motivation (four items)

People with this type of motivation perform a certain task because of their internal desire. Thus, these English learners are intrinsically motivated to study English because they enjoy it. Sample items to assess the motivation included "(I study English) because studying English is fun" and "(I study English) because I get a satisfied feeling when I find out new things."

Identified regulation (four items)

This regulation is categorized in extrinsic motivation, but is the highly self-regulated form of it. English learners with identified regulation understand and accept the importance of learning English. In order to measure identified motivation, items such as "(I study English) because I think it is good for my personal development" and "(I study English) because I choose to be the kind of person who can speak more than one language" were presented.

Introjected regulation (three items)

This involves external regulation with internalization, albeit to a limited extent. English learners regulated through introjection study English to avoid guilt or attain self-esteem. Items included "(I study English) because I would feel bad about myself if I didn't" and "(I study English) because it is common for one to have a good command of English."

External regulation (three items)

This regulation is the least autonomous form of extrinsic motivation and is closely related with an external demand. English learners with this type of regulation study English to obtain rewards (e.g., academic credits) or avoid punishments (e.g., failing a class). External

motivation items included “(I study English) because that’s the rule” and “(I study English) because I want to get a good grade.”

Amotivation (four items)

This is a state of no motivational regulation. Amotivated English learners do not study English at all or go through the actions of studying without intending to learn anything. The items measuring amotivation included “I have the impression of wasting my time when studying English” and “I cannot come to understand what I am doing studying English.”

Psychological Needs Scale

The second part of the questionnaire asked how much participants felt their basic psychological needs were fulfilled. This part included 12 items with three subscales. As with the English Learning Motivation Scale, a five-point Likert scale (1 = strongly agree; 5 = strongly disagree) was used. The subscales and items are as follows.

Autonomy

Four items measured the degree to which learners thought they act from interest and integrated values toward English learning: “I have freedom of choice on assignments in English classes,” “My feelings are taken into consideration in English classes,” “My teacher asks for the opinions of students about the content and/or procedure of classes,” and “My teacher always decides what to study in English classes” (reversed item).

Competence

Four items assessed participants’ perceived sense of confidence and efficacy in English learning (e.g., “I think I can get a good grade in English” and “I often feel incompetent in English” [reversed item]).

Relatedness

Four items measured how participants perceive their relationship with their classmates (e.g., “I think I’ve been able to work together with my friends on a group activity” and “I think I get along with my friends who are in the same English course”).

Data Cleaning

Before the collected data were subjected to any analyses, each response was checked; 15 cases that did not seem to include sincere responses (e.g., choosing one and five on the scale in turn) were excluded, leaving me with 302 responses. In addition, the distribution patterns of the data were examined by looking through the skewness and kurtosis values of each item. The kurtosis value of item 5 on the motivation scale was high (i.e., 2.2), signaling the non-normality of the item score distribution. Therefore, it was excluded from further analyses.

Data Analyses

As preliminary analyses, a parallel analysis (PA) (Hayton, Allen, & Scarpello, 2004) and EFA were run on the data collected. A PA is used to determine the number of factors to retain for a factor analysis by comparing eigenvalues generated based on random, uncorrelated data and those generated on observed data. An EFA is a procedure used to uncover underlying sets of constructs by clustering variables into homogenous assortments. SPSS Statistics Version 20 was used for the analyses. The extracted factors' scores were then converted to usable data input to run the SEM analysis using Structural Equation Modeling Software (EQS) Version 6.2. It was decided to conduct a PA and EFA because the sample of this study was different from Hiromori's (2006a), where the participants were students at one university in a city in Japan, whereas data for this study were taken from several departments at three universities with different characteristics in the Tokyo area. Therefore, Hiromori's sample and our sample are quite different, and the two data sets can have different patterns, thereby yielding dissimilar factor structures. The following subsections detail the PA, EFA, and SEM analysis procedures.

Parallel Analysis

The PA was run on the first and second parts of the questionnaire separately. Figure 2 shows the results of the PA run on the 18 question items in the first part of the questionnaire (i.e., English Learning Motivation Scale), indicating that the retention of the first four factors is appropriate. This is actually one factor less than the original questionnaire construct of this part. However, it was decided to follow the PA results because the samples used to develop the original version and this study were not the same; therefore, a different pattern in the data could emerge. To reiterate, the objective of the study is to verify SDT by using a varied sample that better reflects the population of Japanese EFL learners than previous studies.

Another round of PA was run on the 12 question items in the second section of the questionnaire (i.e., Psychological Needs Scale). The results indicated that the retention of three factors was appropriate (see Figure 3), which was in line with the theory as well as the number of factors that the original questionnaire intended to include.

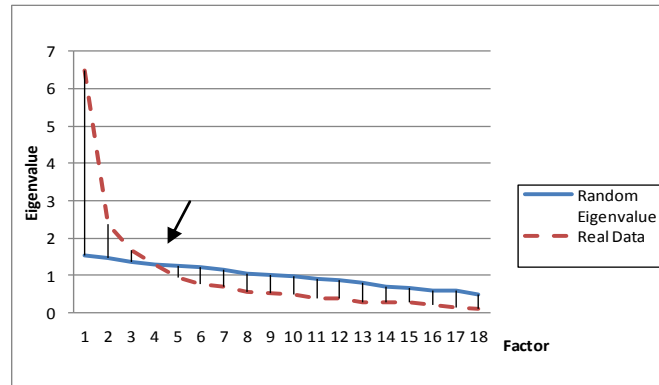


Figure 2. Plot of the actual versus randomly generated eigenvalues for English Learning Motivation Scale. The arrow indicates that eigenvalues from random data exceed the eigenvalues from research data after the fourth factor.

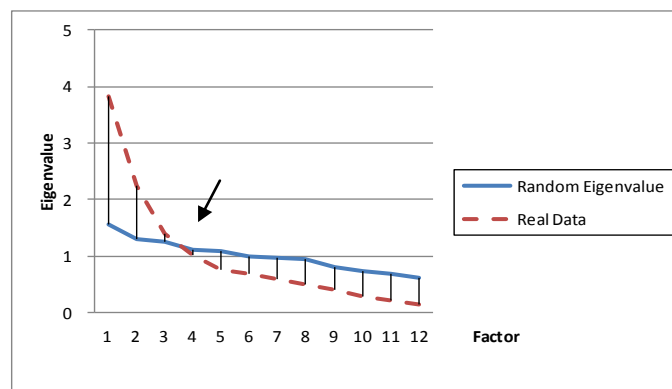


Figure 3. Plot of the actual versus randomly generated eigenvalues for Psychological Needs Scale. The arrow indicates that eigenvalues from random data exceed the eigenvalues from research data after the third factor.

Exploratory Factor Analysis

Based on the results of the PA, a four-factor structure was assumed when the EFA analysis (maximum likelihood method with Promax rotation) was performed on the data. After the initial run on the data, communality for each item was checked. As shown in Table 1, the value of the tenth item (motivation_10) was very low, signaling that the item relates little to all other items. Brown (2006) listed two characteristics of each item that behaved poorly and should thus be eliminated: (1) an item with high loadings on more than one factor and (2) an item with small loadings on all factors. As small loadings on all factors are reflected by low communalities, the tenth item was excluded from further analyses. After re-running the EFA, items with loadings smaller than .40 were eliminated. The analysis was repeated on the remaining items until all items had a loading larger than .40. The same procedure was used for the Psychological Needs Scale.

SEM Analysis

Before conducting the SEM analysis, some major prerequisites (In'nami & Koizumi, 2011; Takeuchi & Mizumoto, 2012) were checked. First, a good number of participants (i.e., more than 231 as indicated by power analysis) were available for the analysis. Second, the normality of distribution was examined by checking Mardia's multivariate kurtosis.² Bentler (2006) suggested that values greater than 5.00 indicate that data are non-normally distributed. The data for this study had the standardized estimate of 25.06, suggesting a high level of non-normality in the sample. To tackle the problem, the maximum likelihood robust option of EQS was used, as it allows for coping with non-normal data and a reliable inference of the model (Bentler, 2006). Third, no value was missing in any of the participants' data. Finally, multicollinearity was checked by computing variance inflation factors (VIF), whose values ranged from 1.28 to 1.42, confirming that no strong correlation existed among the predictor variables.

The SEM analysis was then conducted using the maximum likelihood method. In the SEM analysis, a number of fit indices were used to evaluate the suitability of the model. Referring to Asano, Suzuki, and Kojima (2005), In'nami and Koizumi (2011), and Takeuchi and Muzumoto (2012), three indices were used provided in EQS: (1) comparative fit index (CFI); (2) root mean square error of approximation (RMSEA); and (3) standardized RMR (SRMR).

Table 1

Communalities for Items in English Learning Motivation Scale

item	Communalities	
	Initial	Extraction
motivation_1	.72	.77
motivation_2	.68	.72
motivation_3	.74	.72
motivation_4	.68	.67
motivation_6	.52	.55
motivation_7	.61	.68
motivation_8	.65	.76
motivation_9	.49	.51
motivation_10	.33	.29
motivation_11	.39	.40
motivation_12	.40	.40
motivation_13	.44	.66
motivation_14	.43	.48
motivation_15	.50	.57
motivation_16	.42	.46
motivation_17	.44	.50
motivation_18	.50	.62

Results and Discussion

Results of Factor Analysis

English Learning Motivation Scale

The EFA on the English Learning Motivation Scale items yielded the pattern matrix shown in Table 2. Reliability coefficients (Cronbach's alpha), also shown in Table 2, indicate sufficient internal consistency in the first, second, and third factors. The value for the fourth factor was lower ($\alpha = .68$). Dörnyei (2010) claimed that internal consistency estimates for scales used in L2 research tend to be low because short scales are typically used. Generally, L2 researchers want to measure various aspects of L2 learning, which is highly complex, in one questionnaire. They use short scales so that participants do not have to spend an unrealistically long time to complete them. However, this means lower reliability coefficients in a construct. Dörnyei pointed out that a researcher should be alarmed if the Cronbach's alpha does not reach .60 in a scale. As the factor in question had a larger value than .60 and was theoretically important, it was decided to keep it.

In the current study, items originally placed in identified motivation and introjected motivation were clustered together in the second factor of the English Learning Motivation Scale. A closer examination of the pattern matrix showed that the first three of the five items (i.e., the three items with higher loadings) were originally in Hiromori's (2006a) identified motivation subscale. Therefore, the second factor was named *identified motivation*.

All of the items in the first factor were in the intrinsic motivation subscale in the original questionnaire. Likewise, all the items in the third factor were in Hiromori's (2006a) amotivation subscale. Furthermore, the same was found in the fourth factor, with all items from the original extrinsic motivation subscale being included. Therefore, it was naturally decided that the first, third, and fourth factors would be named *intrinsic motivation*, *amotivation*, and *extrinsic motivation*, respectively.

Table 2
Results of Exploratory Factor Analysis for English Learning Motivation Scale (Most Likelihood Method with Promax Rotation, N = 302)

Question Item	I	II	III	IV
Factor 1. Intrinsic Motivation (Alpha = .91)				
motivation_1	.88	-.01	.00	-.13
motivation_2	.87	-.10	-.04	.01
motivation_3	.80	.10	-.01	.00
motivation_4	.75	.09	-.02	.12
Factor 2. Identified Motivation (Alpha = .86)				
motivation_8	-.03	.93	.05	-.05
motivation_7	.14	.80	.11	-.06
motivation_6	-.03	.73	-.07	-.01
motivation_9	-.06	.63	-.10	.15
Factor 3. Amotivation (Alpha = .80)				
motivation_18	.19	-.18	.78	.01
motivation_17	-.05	.05	.70	-.06
motivation_15	-.12	.01	.68	.07
motivation_16	-.14	.11	.65	.00
Factor 4. External Motivation (Alpha = .68)				
motivation_13	-.02	-.14	.04	.87
motivation_14	-.08	.10	-.03	.64
motivation_12	.20	.21	.01	.45
Inter-factor correlations	I	II	III	IV
I	—	.48	-.49	.00
II		—	-.46	.25
III			—	.07
IV				—

Note. Factor loadings > .40 are in boldface. The scale was taken from Hiromori, T., (2006a). “Gaikokugo gakushusya no doukizuke wo takameru riron to jissen [Theory and practice to improve foreign language learners]”.

Psychological Needs Scale

The pattern matrix for the Psychological Needs Scale is shown in Table 3, which also shows a sufficient to moderate level of reliability values, indicating acceptable internal consistency in each factor.

Table 3
Results of Exploratory Factor Analysis for Psychological Needs Scale (Most Likelihood Method with Promax Rotation, N = 302)

	I	II	III
Factor 1. Relatedness (Alpha = .87)			
needs_10	.90	.04	-.01
needs_11	.80	.11	.01
needs_12	.76	-.08	.04
needs_9	.68	-.09	.05
Factor 2. Autonomy (Alpha = .73)			
needs_4	.01	.76	.02
needs_2	.00	.66	.08
needs_3	.09	.64	-.10
needs_1	-.13	.52	.02
Factor 3. Competence (Alpha = .71)			
needs_6	-.02	-.02	.97
needs_5	.02	.09	.60
needs_8	.09	-.04	.44
Inter-factor correlations			
I	—	.40	.31
II		—	.24
III			—

Note. Factor loadings > .40 are in boldface. The scale was taken from Hiromori (2006a).

Outcome of the SDT Model

The SEM analysis of the SDT model revealed a few problems. First, the expected values based on the theory and the actual data did not match well. Table 4 shows the selected goodness-of-fit indices for the model. As indicated in the evaluation column, two of the three indices suggest that the model poorly represents the actual data collected for this study. Second, external regulation might not be linked with the three innate needs fulfillment factors. As presented in Figure 4, the coefficient of determination for external regulation is extremely low ($R^2 = .05$), suggesting that fulfillment of autonomy, competence, and relatedness needs cannot explain participants' external regulation, leading to a question about the causal relationship between the needs satisfaction and this type of regulation.

Discussion of the SDT Model

External motivation is closely related to an external demand; a person with this motivation acts to obtain rewards or avoid punishments. As external demands come from other people and/or the community, when looking into a person's external motivation, we need to consider how the person perceives his/her relationship with others and the community. In the EFL context, "others and community" can include the teacher, classmates, friends, parents, and the learner's society. However, the study's questionnaire concerned only the relatedness with the learner's classmates. As classmates do not usually give rewards or punishments to other learners, they play a potentially limited role in promoting peers' external motivation. Moreover, the items in the external motivation subscale (i.e., "(I study English because) I want to get a good grade," "(I study English because) that's the rule," and "(I study English because) the society requires it") are linked to the teacher and society rather than classmates, which strongly suggests the cause of the weak relationship between relatedness and external regulation shown in this study.

Competence needs satisfaction and external motivation obviously have an indirect relationship with each other. A learner with a lower sense of competence might study English because of an external demand, but such a situation occurs only when external pressure exists. Therefore, it is not surprising that (the lack of) competence played a more distal role in affecting external motivation.

The lack of autonomy needs fulfillment suggests an increase in control by others, which might result in elevated external regulation. However, this was not the case in this study. Hiromori (2006a) reported the impact of autonomy deficiency on external regulation at the level of .10 or below, which was a bit weak to claim significance.

Considering the results, neither competence nor autonomy plays a major role in affecting the external regulation of Japanese university EFL learners. Instead, adding items or component(s) to relatedness can help better explain external regulation. As a preparatory step toward the modification (i.e., adding items or components under relatedness), it was decided to temporarily exclude the external regulation from the path diagram to see whether other parts of the model have any points to consider for modification.

Table 4
Selected Fit Indices for the SDT Model

Index	Obtained value	Threshold value	Evaluation
CFI	.87	$\geq .90$	Poor
RMSEA	.06	$\leq .10$	Good
SRMR	.12	$\leq .10$	Poor

Note: CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The threshold levels are based on Asano, Suzuki, and Kojima (2005).

Outcome of the Altered Model

General outcome

Table 5 shows the selected fit indices of the model without external motivation (hereafter referred to as the altered model). Unlike this study's original model, all indices were acceptable, indicating that the altered model is an acceptable representation of the data collected for this study. Figure 5 depicts the altered model with standardized path coefficients.

Table 5
Selected Fit Indices for the Altered Model

Index	Obtained value	Threshold value	Evaluation
CFI	.91	$\geq .90$	Good
RMSEA	.06	$\leq .10$	Good
SRMR	.10	$\leq .10$	Good

Note: CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The threshold levels are based on Asano et al. (2005)

Specific findings.

This study focuses on the relationships between innate psychological needs and motivation; therefore, only the results demonstrated by relevant paths will be listed. These paths start from needs (competence, relatedness, and autonomy) and move toward motivation (intrinsic, identified, and amotivation). All paths starting from competence were significant at .005 or below, indicating that the satisfaction of needs for competence has a considerable desirable impact on English learners' intrinsic motivation (.89), identified regulation (.46), and amotivation (-.59). The same tendency was found for relatedness, except that the coefficient

values indicated quite a small impact of need satisfaction on intrinsic motivation (.03), identified regulation (.21), and amotivation (-.09).

Unexpected results emerged in the relationship between autonomy and learner motivation. The path from autonomy toward intrinsic motivation was negative and statistically significant, albeit quite small in value (-.05), suggesting that the fulfillment of autonomy needs could negatively affect Japanese EFL learners' intrinsic motivation. In addition, the second path from autonomy—the one toward identified regulation—also had a negative and significant value (-.23), signaling that autonomy support might actually inhibit learners' regulation through identification. Furthermore, the path from autonomy to amotivation turned out to be positive and significant (.23), implying that giving Japanese EFL learners' discretion might even demotivate them.

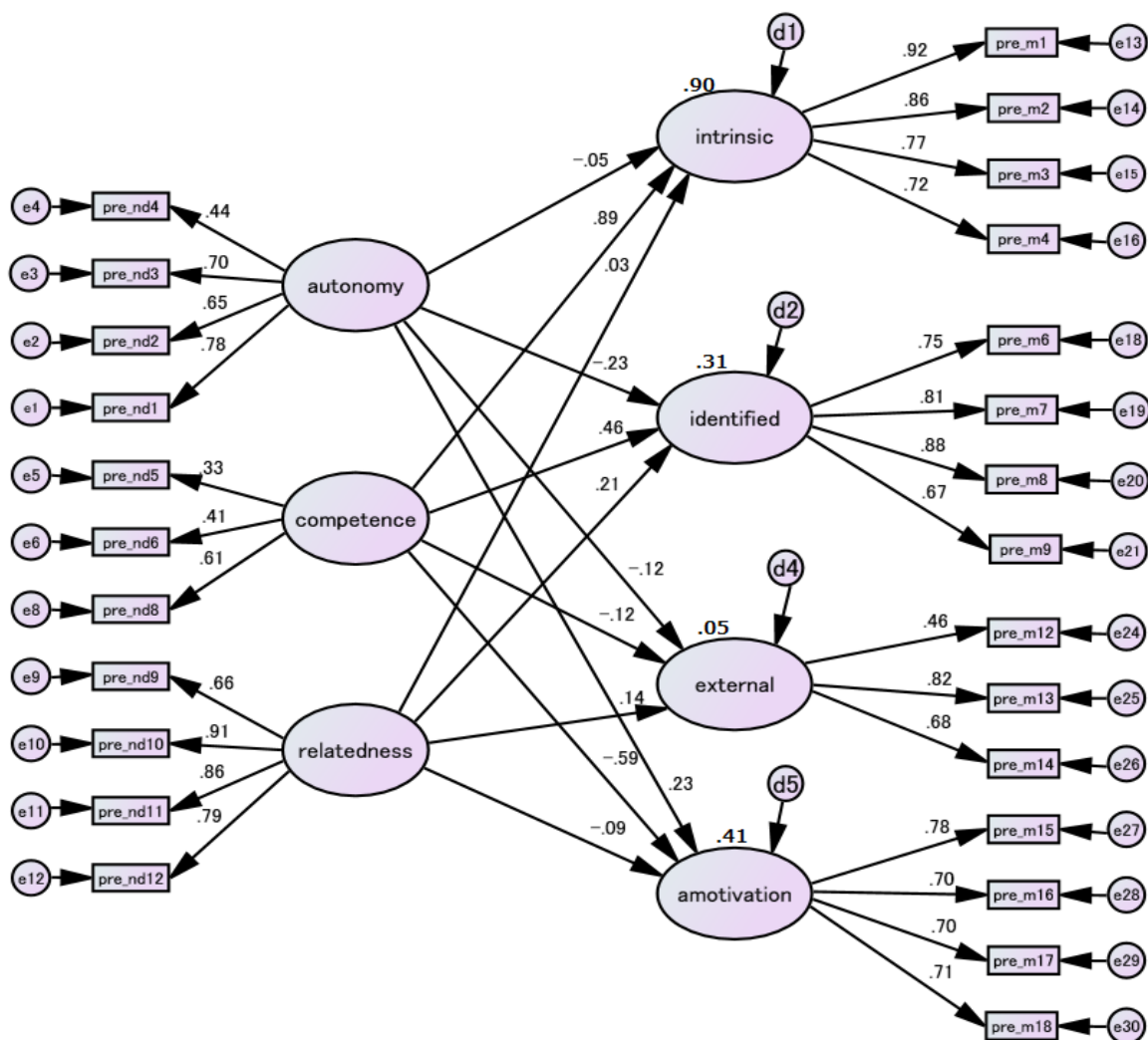


Figure 4. SDT model with standard estimates

Note. $N = 302$. All the path coefficients are significant at $p < .005$.

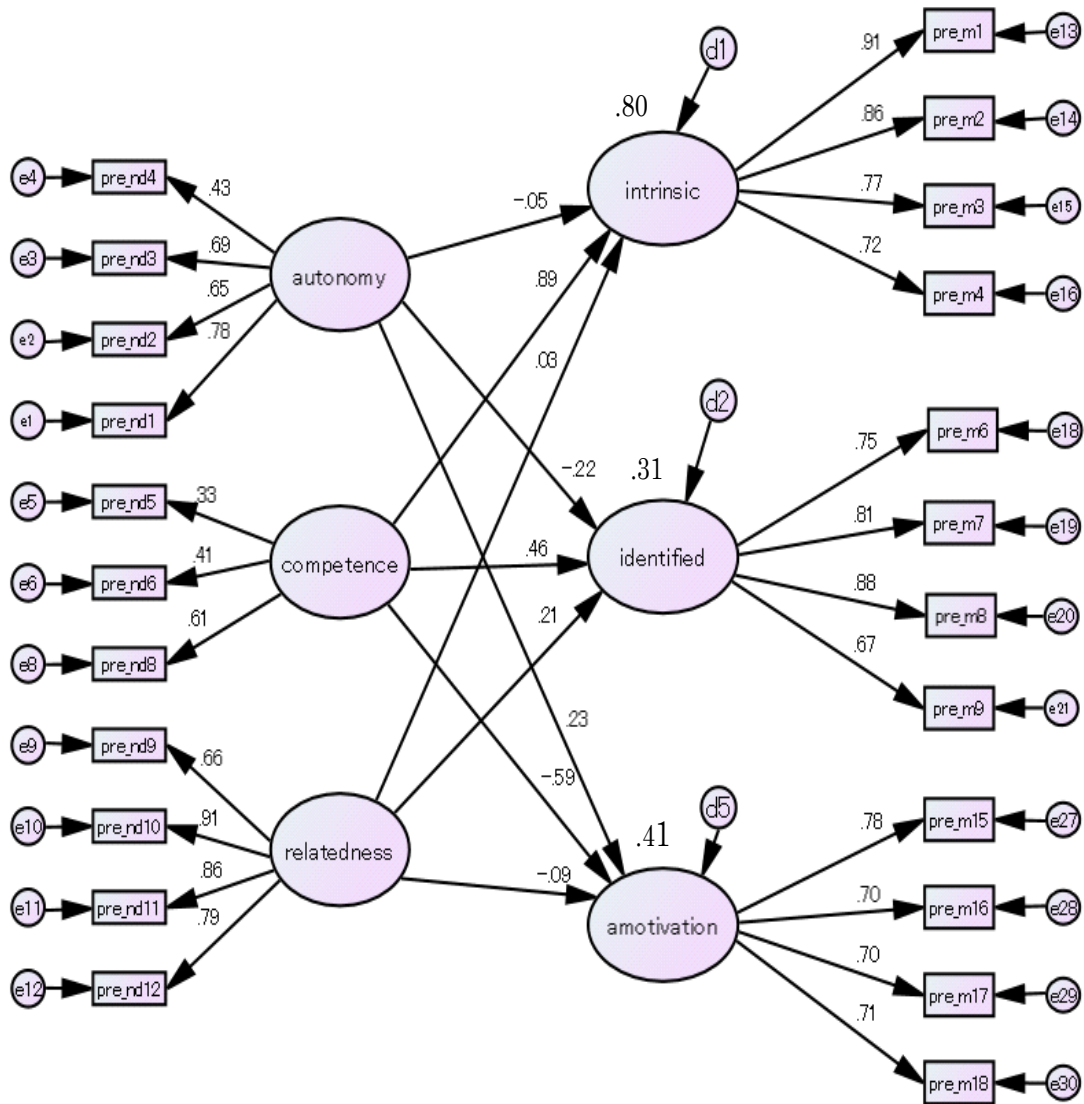


Figure 5. Altered model with standardized estimate

Note. $N = 302$. All the path coefficients are significant at $p < .005$.

Discussion of the Altered Model

The aim of the present study was to validate SDT in the Japanese EFL context, focusing on the causal relationship between innate psychological needs and motivation. Thus, the results of the specific findings of the modified model obtained from the SEM analysis are discussed in the following sections.

Sense of competence and motivation

The study's results confirmed that the sufficiency of competence needs has a considerable, positive influence on Japanese EFL learners' motivation. Thus, English learners at Japanese universities can be motivated by feeling that they can understand and use English. Research has suggested some ways to enhance students' sense of competence. For example, Elliot et al. (2000) found that positive feedback was effective in raising people's sense of competence, which in turn positively affected intrinsic motivation. In EFL classes in Japan, Dei (2011) and Tanaka and Hiromori (2007) used positive verbal and written comments to improve English learners' feelings of competence. In addition to positive feedback, Dei used challenging but achievable tasks to enhance his students' sense of achievement. In the Japanese EFL context, Maekawa and Yashima (2012) gave university students a few opportunities—not just one—in a year to present in English so that they could feel more accomplished and confident.

Feeling related and motivation

As described in the results section, the sufficiency of relatedness needs displayed a tendency to raise L2 motivation; however, the impact reached a significant level on identified regulation only. This could be due to the type of items served to measure participants' sense of relatedness in the questionnaire. As previously mentioned, relatedness in the scale considered a learner's relationship with others in English class only. Therefore, the questionnaire might have captured just a part of the picture rather than a general causal impact of relatedness needs satisfaction on L2 learner motivation. A wider range of aspects, such as the teacher, parents, and society, should be incorporated into the relatedness factor in the future.

Hiromori (2006b) suggested another possible cause for these results. His survey study revealed a negative correlation between relatedness and intrinsic motivation among highly motivated learners. In other words, being related to other classmates might negatively affect highly motivated learners' will to learn English. Combining the quantitative results with written comments from participants, Hiromori claimed that learners who have already developed motivation can engage in learning on their own and thus do not need to collaborate

with others. As such, he argued that teachers should use different approaches with students with different levels of motivation.

In the current study, participants were students with different majors at academically varied universities and, thus, naturally included learners with different levels of L2 motivation and proficiency. Due to the mixed levels, learners might have responded differently to being related to others in English class, neutralizing the impact of the relatedness needs fulfillment.

Autonomy and motivation

This study's results regarding the relationship between autonomy and motivation were far from what SDT postulates. In SDT, autonomy support has a positive impact on highly self-regulated forms of motivation, such as intrinsic motivation and identified regulation, and a negative influence on external regulation and amotivation. However, in this study, the results obtained were to the contrary.

Few people would question whether autonomous learners—who make decisions and choices for their own learning and take responsibility for the outcome—are motivated learners (see Dickinson, 1995, for a review). However, some researchers have challenged the assumption that autonomy precedes motivation. For example, Spratt, Humphreys, and Chan (2002) suggested that motivation might lead to autonomy. In their study, they administered a questionnaire to 508 university students in Hong Kong, followed by small- group interviews. The survey results revealed that the vast majority of the respondents saw their teachers as responsible for making decisions relating to formal instruction, and the interview data repeatedly indicated that motivation was a precondition for practicing autonomy.

Some other studies have questioned the idea that the more autonomy given to someone in the form of freedom of choice, the more intrinsically motivated the person would be. In a non-ESL/EFL setting, Iyengar and Lepper (1999) examined the relationship between motivation and the degree of self-determination, comparing American children from an Anglo-Saxon background to those from an Asian background. The children in both groups were grade-schoolers, age seven to nine years. In the experiment, the children engaged in a task that (1) they chose, (2) their mothers chose, (3) their classmates chose, and (4) the experimenter chose. The results showed that, whereas Anglo American children displayed the highest intrinsic motivation when they made their own choices, Asian American children were most intrinsically motivated when choices were made for them by their mothers (trusted authority figures) or peers. Iyengar and Lepper argued that motivating factors are reflective of the culture and, hence, varied in different societies, which might require modifying motivation theories rooted in a certain culture.

In a non-ESL/EFL setting in Japan, Uebuchi (2004) pointed out that being given autonomy could be perceived differently by the individual, depending on his/her sense of competence. He acknowledged that autonomy support means, in a nutshell, giving a choice. However, he argued that, if an individual lacks a certain level of perceived competence, being given a choice can be understood as being forced to make a choice. This suggests that some Japanese students would not feel their autonomy was being supported by simply being given a choice. Rather, they might appreciate and accept choices made by others.

Related to perception of choices made by the self and others in different cultural settings, Azuma's (1994) work is worth mentioning. Azuma, a developmental psychologist who compared child-raising and motivation in the United States and Japan, identified several distinctive characteristics of Japanese people. For example, he claimed that, compared to Americans, the Japanese have a tendency to accept an assignment that is boring in nature and given by someone else as well as work on it diligently (receptive diligence). In addition, they tend to value others' feelings and try to read them (emphasis on feelings). Given such tendencies, Azuma argued that the Japanese tend to sense people's expectations, especially those close to them (e.g., parents, spouse, and children), then internalize such expectations, which in turn become a driving force for their actions.

Such studies arguably imply that East Asians, including Japanese individuals, have different motivational processes from Westerners; therefore, in East Asia, obtaining choice might not be as cherished as it is in the West and might not function as a strong motivational factor. By the same token, in ESL/EFL settings, giving students support might be more appreciated and motivating than giving them discretion. Some research supports this. Wen (2009) conducted a survey at Ningxia University in China to investigate the autonomous ability (i.e., ability to make plans, meet overall objectives, effectively evaluate progress) of 120 English-major sophomores also enrolled in an out-of-class extensive reading program in which they were given opportunities to exercise their autonomy. The results indicated that the students did not have the skills necessary to work autonomously outside the classroom. In addition, many of them felt that they did not receive enough guidance from teachers. Wen suggested that teachers should provide support for the success of students in out-of-class, independent learning programs.

Similar to Wen's (2009) suggestion that Chinese students at the tertiary level have a low level of autonomy, Nakata (2006, 2010) claimed that—upon admission into a university—many Japanese students have a low degree of learner autonomy. In his explanation of this phenomenon, he pointed to the educational context in Japanese junior and senior high schools,

where most learners are exposed to exam-oriented learning with a teacher-centered approach in a large class (usually 35–40 students). A similar situation was presented by Puteh-Behak (2013), who tried to introduce a Western-based teaching approach called the "multiliteracies" approach to university English classes in Malaysia. The "multiliteracies" approach involved oral presentation, critical thinking, peer collaboration, active participation in designing their own learning, and the use of technology. For example, the approach utilized collaborative learning in which each of the group members was asked to contribute equally to the design of their project and reach a successful outcome as a group. As the descriptions of the approach and task suggest, the "multiliteracies" approach required a certain level of learner autonomy. When Puteh-Behak introduced the approach for the first time, it did not work very well. Analyzing her research notes and students' journal entries, she concluded that the main obstacle for implementing the approach was that, in Malaysia, the students were used to examination preparation in a teacher-centered classroom. Thus, she designed a modified module more sensitive to Malaysian learning experiences and culture.

Littlewood (1999) introduced concepts of proactive and reactive autonomy. Following Holec's (1981) definition, which is usually referred to when autonomy is discussed in the West, Littlewood defined proactive autonomy as the "ability to take charge of learning, determining objectives, selecting methods and techniques, and evaluating what has been acquired" (p. 75). Expanding this conventional concept, he proposed an additional form of autonomy: reactive autonomy, which he defined as "the kind of autonomy which does not create its own directions but, once a direction has been initiated, enables learners to organize their resources autonomously in order to reach their goal" (p. 75). Through his careful observation and discussion of learners in different cultures, Littlewood proposed that East Asian students would have a high level of reactive autonomy. The phenomena reported above confirm that Southeast and East Asian learners tend to have reactive autonomy.

Considering the previously mentioned environments for Southeast and East Asian learners, it can be argued that university students in Southeast and East Asia might not know how to exercise autonomy—or what Littlewood (1999) called proactive autonomy. As such, it is unlikely that choices given in university English classes are cherished by students in addition to enhancing their motivation.

A review of the questionnaire showed that all the items in the autonomy subscale ask for the degree of discretion that learners are given. As having the freedom of choice would not necessarily motivate Japanese EFL learners, a revision of the definition of autonomy needs and the replacement of the question items are necessary in future study.

The results and discussion call for further investigation into motivational processes in different educational, social, and cultural contexts from which SDT was developed. Given that previous studies focused on Asian cultures and educational environments, one can postulate that Asian—including Japanese—university students might not have a strong desire to obtain considerable autonomy in English classes; as a result, giving them discretion does not enhance their motivation to learn English. Furthermore, as decisions made by others play an important role in Southeast and East Asian learners' internalized form of extrinsic motivation, interplay between relatedness and autonomy might be formed differently between Asians and Westerners. Investigating whether and how Asian English students internalize expectations from others could reveal a unique motivational process that operates within them.

Conclusion

This study has aimed to verify SDT in the Japanese EFL context. The focus was on determining whether causal relationships exist among three innate psychological desires—namely, autonomy, competence, and relatedness—and motivation. The first round of SEM analysis revealed the model's poor representation of the actual data, with external regulation explaining very little. A closer examination suggested considering Japanese EFL learners' relationship with others and the society to grasp their external motivation. As a preparatory step toward the modification, external regulation was temporarily removed from the model to examine whether or not other parts of the model have any points to modify.

In the altered model, the fulfillment of competence needs strongly indicated higher intrinsic and identified motivation as well as lower amotivation, which was in line with the theory. As for the relationship between relatedness and motivation, the same tendency was shown, but the impact of the needs fulfillment on motivation was not as large as that of competence needs fulfillment. Analyses of the data on autonomy and motivation revealed that giving autonomy might not necessarily enhance Japanese EFL learners' motivation; rather, it could inhibit their motivation. These results call for a review of the current definitions of relatedness and autonomy adopted in the survey instrument as well as further investigation into motivational process in different cultural, social, and educational environments from which SDT is rooted.

Notes

¹ GFI = .75, AGFI = .70, CFI = .82, RMSEA = .90

² The univariate skewness and kurtosis were checked before the preliminary analyses; thus, the process was not repeated in this section.

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