2017年3月　関西大学審査学位論文

Investigating L2 Learning Motivation of Japanese University Students: Self-determination Theory and its Applications

---

A Dissertation Submitted to
The Graduate School of Foreign Language Education and Research,
Kansai University

In Partial Fulfillment of the Requirements for the Degree
Doctor of Philosophy in Foreign Language Education and Research

---

by

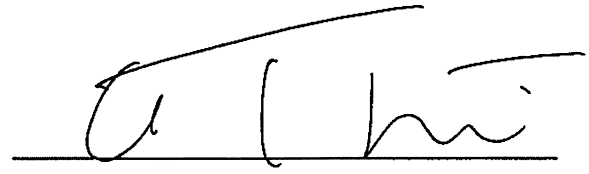
AGAWA, Toshie

March 31, 2017

This dissertation of AGAWA, Toshie is approved.

Doctoral Committee:

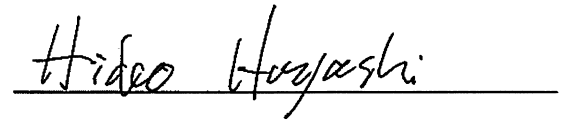
Professor Osamu Takeuchi, Ph.D. (Chair)



Professor Tomoko Yashima, Ph.D.

Professor Atsushi Mizumoto, Ph.D.

Professor Hideo Hayashi, Ph.D. (External)



The Graduate School of Foreign Language Education and Research

Kansai University, Osaka, Japan

2017

論文要旨

本博士学位請求論文 *Investigating L2 Learning Motivation of Japanese University Students: Self-determination Theory and its Applications.*（日本人大学生外国語学習者の動機づけ研究–自己決定理論の検討と応用）は、５つの研究を中核として、以下の８章から成り立っている。

第１章：Introduction（序章）

第２章：Literature Review（先行研究の概観）

第３章：Study 1（研究 1　自己決定理論と質問紙の量的アプローチによる検証）

第４章：Study 2（研究 2　欲求充足と動機づけの関係の質的アプローチによる検証）

第５章：Study 3（研究 3　質問紙の開発）

第６章：Study 4（研究 4　質問紙の検証）

第７章：Study 5（研究 5 自己決定理論にもとづいた教育介入の影響）

第８章：Conclusion and Implications（結論と示唆）

References（参考文献、111 編）

Appendices (A-H)（付録）

第二言語習得 (second language acquisition: 以後 SLA) の分野において、第二言語・外国語（L2）学習者の動機づけについては様々な研究が行われている （詳細については、Dörnyei & Ushioda, 2011; 廣森, 2015; Lasagabaster, Doiz, & Sierra, 2014 を参照)。この際、いくつかの理論的枠組みが使用されているが、その 1 つが自己決定理論（Self-determination theory: 以後 SDT) (Deci & Ryan, 1985, 2000, 2002) と呼ばれる理論

である。SDT は様々な国々において、そして多岐にわたる研究分野（たとえば、スポーツ、健康、医療など）でその妥当性が示されている （詳細については、Deci & Ryan, 2008 を参照）が、日本における外国語としての英語 (English as a Foreign Language: 以後 EFL) への動機づけを調査した SDT 研究では、理論に沿ったものと、理論と一致しないものの、両方の結果が得られている (e.g., Dei, 2011; Hiromori, 2006a, 2006b; Maekawa & Yashima, 2012; Otoshi & Heffernan, 2011; Sakai & Koike, 2008; Shirono, 2009; Tanaka & Hiromori, 2007)。このような現状を踏まえ、日本の EFL 環境における SDT 研究で一貫した結果が得られていない原因を明らかにし、（１）SDT 理論への理解を深めること、（２）日本人大学生 EFL 学習者の動機づけをより良く理解すること、そして （３）日本人大学生 EFL 学習者の動機づけを高める提案をおこなうことを目的として、本博士論文は執筆された。

第１章では、まず本研究のきっかけとなった、日本の EFL 環境での SDT 研究の現状、ならびに問題点が簡潔に提示されており、続いて問題点の解決のための具体的ステップ（本博士論文全体の研究デザイン）および各章の概要が述べられている。

第２章では、先行研究の文献調査と、それに基づく問題点の指摘を行い、本博士論文の研究課題を提示している。具体的には、まず、SLA 分野における SDT 研究の理論的背景を概観し、続いて EFL 環境での SDT 研究の問題点について指摘を行っている。SDT では、人は生得的に３つの心的欲求（自律性、有能性、関係性）を持ち、それらが充足されることによって、より内発的に動機づけられるという因果関係（因果律）を提唱している。しかし、日本の EFL 環境における SDT 研究の結果をみると、この因果律が必ずしも実証的に確認されない。この、理論と実証データの不一致に対しては様々な説明が可能であるが、筆者は特に日本の EFL 環境における SDT 研究で使用されている質問紙に問題点がある可能性を指摘し、その検証の必要性を説いている。

続く第３章（Study 1）では、（１）日本の EFL 環境における SDT 理論の検証なら

びに、（2）日本の EFL 環境における SDT 研究において広く使用されている質問紙（廣森, 2006a）を検証した。検証方法としては、質問紙調査を実施し、回答データを共分散構造分析 (Structural Equation Modeling: 以後 SEM) で分析して検討するという方法をとっている。調査にあたっては、複数の大学の異なる学部からデータを収集し、様々な特徴をもつ日本人大学生 EFL 学習者からの回答を得た。検証の結果、理論と質問紙の妥当性は充分に確認できず、理論の提唱する因果律のさらなる検討と、質問紙の改訂の必要性が提示された。

第4章（Study 2）では、前章の議論を踏まえ、SDT の提唱する因果律をより詳細に検討し、その検討結果を質問紙項目へ反映させる方向づけをおこなった。量的手法を用いた Study 1 とは異なるアプローチを採用し、面接調査を実施して学習者の心的欲求の充足と L2 動機づけの関係を詳しく調査した。その結果、日本人大学生の EFL 学習者の中には、自律性への欲求充足（従来の日本の EFL 環境での SDT 研究の定義では、自由裁量を与えられること）によって、動機づけが高まる学生がいる一方で、自由裁量を与えられるとかえって英語学習への動機をなくしてしまう学生がいることが示された。有能性への欲求充足が動機づけに与える影響については、理論どおりの因果関係が確認された。また関係性への欲求充足と動機づけについては、理論に沿った傾向が確認できたものの、関係性の欲求充足が動機づけに与える影響は限定的であることが示された。調査の結果を受けて筆者は、日本の EFL 環境における SDT 研究においては、自律性の欲求を「自由裁量を得たいという欲求」だと定義づけることに問題があるとし、定義の見直しと、改訂した定義に基づいた質問紙の開発を提案した。また関係性の欲求充足度合いを問う項目に、既存の質問紙にある、学生間の関係を問うものに加え、教員と学生の間の関係を問うものを加えることを提案した。

第5章（Study 3）では、Study 2 の結果をうけて、まず SDT の構成概念の定義を原典（Deci & Ryan, 1985; 2002）や SDT の先行研究に拠って見直し、SDT を日本の EFL 環境に応用した場合の定義を再考した。次に改訂された定義に基づき、新しい質問紙項目を提案した。この新項目を含む質問紙（新質問紙）に対しては、専門家によるチ

ェック、探索的因子分析 (Exploratory Factor Analysis: EFA)、内的信頼性の検討が行われた。その結果、新質問紙は従来のものに比べ、妥当性・信頼性がより高いことが示された。しかしながら著者は、新質問紙にはさらなる検証が必要であること（つまり異なるサンプルでの結果検証の必要性）を指摘し、これを今後の研究課題とした。

続く第6章（Study 4）では、Study 3の議論にもとづき、新質問紙の異なるサンプルでの検証をおこなった。この研究では、複数の大学の様々な学部・学科において収集されたデータを確認的因子分析 (Confirmatory Factor Analysis: CFA) ならびにSEMを用いて検証したところ、ここでも理論に沿った結果を得ることができ、新質問紙の妥当性を示すことに成功した。さらに、SEMによってSDTの提唱する関係性が確認されたことで、日本のEFL環境でのSDTの妥当性に関しても、これを支持するデータを提示することができた。Study 4で新質問紙の検証がなされたことで著者は、次なる研究の方向性として、SDTにもとづく教育介入を実施し、その影響を新質問紙で測定することを提案した。

第7章（Study 5）では、Study 4での提案をうけ、SDTにもとづいた教育介入の影響を調査した。また、新質問紙を用いてEFL学習者の動機づけの変化を測定することにより、その感度を検証した。ここでは2つのグループ (treatment group: 以後TGとcontrast group: 以後CG) を設け、それぞれのグループに対して別々の方法で資格試験対策授業を実施した。具体的には、TGにはSDTにもとづいて3つの心的欲求を充足させるような教育介入を行い、CGには教師中心型の伝統的な試験対策授業を行った。9カ月の授業期間の前後で両グループの心的欲求の度合いと動機づけの強さを測定したところ、SDTにもとづいた教育介入を受けたTGでは、心的欲求の度合いが向上し、内発的動機づけなどの自己決定度合いの高い動機づけが高まったことが示された。一方でCGでは、心的欲求の度合い、動機づけ共に有意な変化は見られなかった。これらのことから、SDTにもとづく教育実践は、日本人大学生英語学習者の心的欲求を充足して、動機づけを高めることが確認された。また、Study 3で開発した新質問紙の感度が十分に高く、日本人大学生EFL学習者の動機づけ変化を捉えること

ができることも確認された。

本博士論文の最終章である第８章では、これまで報告した５つの研究が持つ限界点と、本論文で報告された研究結果の要約が記述されている。それによると、（１）SDT に沿った教育介入によって、日本人大学生 EFL 学習者の動機づけを高めることができること、（２）新質問紙が日本人大学生 EFL 学習者の動機づけを従来のものよりも正確に測定できること、そして（３）日本の EFL 環境においても SDT の枠組みが妥当性を有しており、利用可能であるという結果であった。最後に、今後の研究の方向性として、(a) 自律性と関係性の相互作用について調査する必要があること、(b) 関係性の欲求充足が L2 動機に与える影響についてミクロの視点から検討する必要があること、および、(c) Study 5 で実施した教育介入の効果について、対象者を変えてさらに追試をおこなう必要性があることを指摘し、本論文を締めくくっている。

Acknowledgements

Completing this dissertation would have never been possible for me if I had not met many teachers and friends who kindly assisted me in my research projects. I would like to express a few words of appreciation to them. First and foremost, I am deeply indebted to my Ph.D. supervisor and mentor, Professor Osamu Takeuchi, for his patience, constant help, and inspiration throughout the writing of this dissertation. His thorough and constructive comments have greatly contributed to enriching this dissertation in terms of both content and format.

I am also grateful to the three professors on my doctoral committee. Professor Tomoko Yashima and Professor Atsushi Mizumoto of Kansai University spared no words of advice and encouragement to me along the way, and Professor Hideki Hayashi at Kumamoto Gakuen University kindly accepted the external examiner position. It was a great honor for me to receive their expert comments.

I have been fortunate to have had many good colleagues and friends who gave me detailed suggestions on how to improve this dissertation. My sincere gratitude is due to Dr. Rie Koizumi, a colleague of my university, who provided me with invaluable support for the statistical data analysis. I am also grateful for Ms. Yukie Hara, who gave me useful comments and suggestions on the draft of the questionnaire that I developed as part of the research project. I am very fortunate to have met many wonderful fellow students at the graduate school, whose advice, suggestions, and support were of great help in various aspects of my study. They are too numerous to mention by name, but I am grateful to all of them.

Cooperation from the students and the instructors at the universities where the data collection was carried out is greatly appreciated. In alphabetical order, my thanks are due to Ms. Emika Abe, an instructor at Daito Bunka University; Ms. Aiko Furuya, an instructor at Tamagawa University; Ms. Aya Hagiwara, an instructor at Toyo Eiwa University; Mr. Jun

Harada, an instructor at Rikkyo University; Mr. Quock Ted, a Professor at Keisen University; Ms. Chie Shiramizu, an instructor at Kyoei University; Ms. Hiromi Tanaka, an instructor at Juntendo University; Dr. Mami Ueda, a former Professor at Tokyo University of Technology; Ms. Yoko Wakui, an instructor at Aoyama Gakuin University; Dr. Tomoko Watanabe, a lecturer at Showa Women's University; and Mr. Matthew Willemsen, an instructor at Juntendo University.

On a personal note, I wish to extend my gratitude to my parents, Motonori and Tokiko Hara, who supported me for many years. Their generous and continued endorsement of my academic quest helped to bring about the completion of my Ph.D. thesis.

Lastly, I would like to extend my thanks to my family. To my husband, Hiroki Agawa, for his understanding, support, and encouragement throughout my study; and to our canine daughter, Peachy, who spent so many hours alone at home but still gave me unconditional trust and love. This journey would not have been possible without them.

Table of Contents

1. Introduction

In second language acquisition (SLA) research, second/foreign language (L2) learners' motivation is one of the most abundantly investigated topics (for a review, see Dörnyei, 1994; Dörnyei & Ushioda, 2011; Hiromori, 2015; Lasagabaster, Doiz, & Sierra, 2014). In the 1950s, Robert Gardner and his associates initiated investigations into the role of attitude and motivation in L2 learning within socio-educational framework research (e.g., Gardner, 1985; Gardner & Lambert, 1972). This line of research focused primarily on general motivational components of integrative and instrumental motivations. Integrative motivation is characterized by learners' willingness to integrate into the target language community and culture. By contrast, instrumental motivation refers to a more practical reason for learning an L2—namely, to gain social and/or economic rewards through L2 achievement. Although 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; Yashima, 2000) raised the issue that integrative motivation might not be relevant for EFL learners, because they have little direct exposure to a community or culture of native speakers of the L2 and, therefore, are unlikely to have a clear target language community or culture.

In response to the question posed to the conceptualization of L2 motivation in the socio-educational framework, some L2 researchers suggested alternative motivational models (e.g., Clément & Kruidenier, 1983). Self-determination theory (SDT) (Deci & Ryan, 1985, 2000, 2002) was one theory used to complement the socio-educational model (e.g., Noels, 2001), which turned out to be a very influential theory in the L2 motivational research field to date. SDT was originally a large-scale theory used to explain human motivation and personality in general. The versatile nature of the theory has allowed researchers in various domains (e.g., education, health care, sports and physical activity, organizations and work, religion, and virtual environments and video games) to use SDT to look into people's

motivation in different situations. In addition to being versatile, SDT is one of the most empirically tested motivational theories and has been verified in various contexts (for a review, see Deci & Ryan, 2008).

As mentioned above, one research domain to which SDT has been applied is SLA research. Many SLA researchers have applied the framework to the language-learning context, thereby helping illuminate L2 motivation processes. For example, Noels (2001a) proposed combining motivational constructs described in SDT with ones in the socio-educational model, aiming to grasp language learners' motivation and orientations more comprehensively. Other studies have been conducted to validate SDT and/or SDT-based scales (e.g., Noels, Pelletier, Clément, & Vallerand, 2000; Vallerand, 1997). Many researchers, with a view toward uncovering the process of L2 motivation, which in turn might contribute to L2 acquisition, have probed L2 learner motivation within the SDT(-based) framework (e.g., Comanaru & Noels, 2009; Jones, Llacer-Arrastia, & Newbill, 2009; McEown, Noels & Saumure, 2014; Noels, 2001b, 2003, 2013; Wu, 2003).

SDT studies have been carried out in many countries, including Japan. The vast majority of SDT studies conducted in the language-learning context in Japan have used or adapted one particular questionnaire (Hiromori, 2006a), yielding results both in line and out of line with SDT. Amongst the motivational research conducted in the Japanese EFL context, some studies corroborated the relationship between the psychological needs satisfaction and different types of motivation/regulations (e.g., Dei, 2011; Hayashi, 2011; Hiromori, 2006a, 2006b; Sakai & Koike, 2008; Tanaka & Hiromori, 2007), indicating the applicability of SDT in the Japanese EFL setting. However, the results of other studies did not support the model, failing to identify significant causality between autonomy and/or needs fulfillment and self-determined forms of motivation of Japanese EFL learners (e.g., Maekawa & Yashima, 2012; Otoshi & Heffernan, 2011; Shirono, 2009). These mixed outcomes pose several areas to look into, including: (1) evenness and fairness of sampling; (2) the validity of SDT in the

Japanese EFL context; and (3) the validity of the commonly used SDT-based questionnaire in the Japanese EFL context.

As a researcher and teacher at a university, the author claims the need to define the cause(s) of the inconsistent results obtained in previous SDT studies conducted in the Japanese EFL context. She argues that doing so may help (a) deepen the understanding of SDT and (b) promote the understanding of Japanese university EFL learners' motivation. Furthermore, with the acquired understanding of the theory and the learners, one could (c) contribute to the improvements of Japanese university EFL learners' motivation. Setting forth the above three as the objectives of this dissertation, the author embarks on the search for the cause(s) of alternating results obtained in past SDT studies in the Japanese EFL context.

This dissertation consists of eight chapters. For the sake of clarity, a flowchart of the chapters is illustrated in Figure 1-1.

Chapter 1, the current chapter, presents the background of the investigation and an outline of the dissertation. Chapter 2 provides a literature review of SDT and SDT-based research. The first part of the chapter reviews the SDT theory, describing its constructs and what the theory postulates. The second part of Chapter 2 focuses on SDT research conducted in the Japanese EFL setting. In this part, the author reiterates that mixed results, both in line and out of line with the theory, have been shown in previous SDT studies in the Japanese EFL setting. Then the author explains the reason why there is need to identify the cause(s), which leads to the achievement of the dissertation's objectives. Next, the author proposes four concrete steps to attain them:

1. Collecting data from a varied population and validating the questionnaire and SDT in the Japanese university EFL setting (Study1).
2. Re-examining how Japanese university EFL learners' needs for autonomy, competence, and relatedness are defined (Study 2).

3. Drawing upon the findings of Study 2, developing a new questionnaire (Study 3), and validating it (Study 4).
4. Devising pedagogical intervention to satisfy the three needs, which are redefined in Study 2, implement it, and report the results (Study 5).

Chapter 3 presents Study 1, in which the data were collected from a more varied population than previous studies by using the commonly used questionnaire. In order to validate SDT in the Japanese university EFL setting and verify the commonly used questionnaire, two kinds of analyses were conducted. First, a confirmatory factor analysis (CFA) was run on the collected data to examine the factor/subscale of the questionnaire. Second, structural equation modeling (SEM) was used to determine whether cause-and-effect relationships exist between three basic psychological needs—autonomy, competence, and relatedness—and motivation. The results did not fully validate SDT or the questionnaire; rather, they indicated the need for (i) further examination of the relationship between needs fulfillment and Japanese university EFL learners' motivation and (ii) amendments to the commonly used questionnaire.

Following the results of Study 1, Chapter 4 deals with an interview study (Study 2) to further investigate the causality between the psychological needs—autonomy, competence, and relatedness—and Japanese university EFL learners' motivation. In addition, the study specified modification points to the commonly used questionnaire. The analysis of the interview data presented three main results. First, it was found that, whereas some Japanese EFL learners might be motivated by gaining learner discretion in English classes, others might lose their motivation. Second, it was indicated that the teacher–student relationship may affect, both positively and negatively, learners' motivation to learn English. Third, it was confirmed that the fulfillment of competence needs can function as a powerful motivator of Japanese university EFL students. The results of Study 2, together with those of Study 1,

suggested the need for a new questionnaire to be developed. The chapter concludes by (1) proposing the development of an SDT questionnaire to assess Japanese EFL learners' motivation at the tertiary level and (2) illustrating the directions for further research, which will be made possible with the new questionnaire.

Chapter 5 describes the development of a questionnaire designed to measure Japanese university EFL learners' motivation (Study 3). The development required several steps: verifying the constructs' definitions, developing the item pool, selecting items, piloting the scales consisting of selected items, and administering a field test as a final plotting. Study 3 also examined the validity and reliability of the new questionnaire. Three main methods were employed for this purpose: an expert review, an exploratory factor analysis, and reliability computation. The results of the examinations indicated that the new questionnaire had higher validity and reliability than the conventional one.

This chapter also provided directions for future research. First, further examinations and refinement of the new questionnaire were called for. Although Study 3 tested and affirmed the instrument's validity and reliability, it used one sample from the population. Therefore, the instrument needs to be further verified by using different samples to check its validity. A future study was proposed to examine the questionnaire by using a different sample, reported in Chapter 6 (Study 4). Second, an intervention study was proposed to test the effects of SDT-based pedagogical intervention. Once the new questionnaire is developed, it can be used to evaluate the effects of the treatment. This issue is considered in Chapter 7 (Study 5).

Chapter 6 reports further verification of the newly developed questionnaire (Study 4). A different sample from Study 3 was used. Two types of analyses were conducted in the study: a CFA and an SEM analysis. The CFA was used to examine the factor structure of the two scales—the English Learning Motivation Scale and the Psychological Needs Scale—of the questionnaire. The SEM analysis was used to verify the regressive relationships among

the factors. The results of the analyses showed that the new questionnaire was valid in a different sample from the one used for developing the instrument, suggesting that the new instrument may enable one to obtain results consistently in line with SDT. The study concluded that the new questionnaire may better gauge the motivation of Japanese EFL learners with various characteristics than the commonly used conventional questionnaire.

As was also proposed in Study 3, as reported in Chapter 5, Study 4 reiterated that, with the new questionnaire provided, the (in)effectiveness of pedagogical intervention should be examined. In addition, Study 4 suggested that the sensitivity of the new questionnaire be tested. Chapter 7 (Study 5) deals with these issues.

Chapter 7 discusses a study targeting two points (Study 5). First, the study aimed to investigate the influence of SDT-based pedagogical intervention on the motivation of Japanese university EFL learners. Second, it aimed to examine the sensitivity of the new questionnaire to changes in the needs fulfillment degrees and L2 motivation intensities among Japanese university students. A quasi-experimental study was conducted to compare two types of instructions: conventional instructions used in test-preparation courses (contrast group) and instructions designed based on SDT (treatment group). The new questionnaire was administered to both groups before and after the instruction period. The results suggested that fulfilling the needs may help enhance Japanese EFL learners' motivation. The results also demonstrated a high sensitivity of the new questionnaire in measuring changes in the needs fulfillment degrees and L2 motivation intensities among Japanese university students.

Chapter 8, the final chapter, addresses the limitations of the studies and then summarizes the findings and implications of the five studies in the dissertation. On a final note for the dissertation, the author puts forth suggestions for future research.

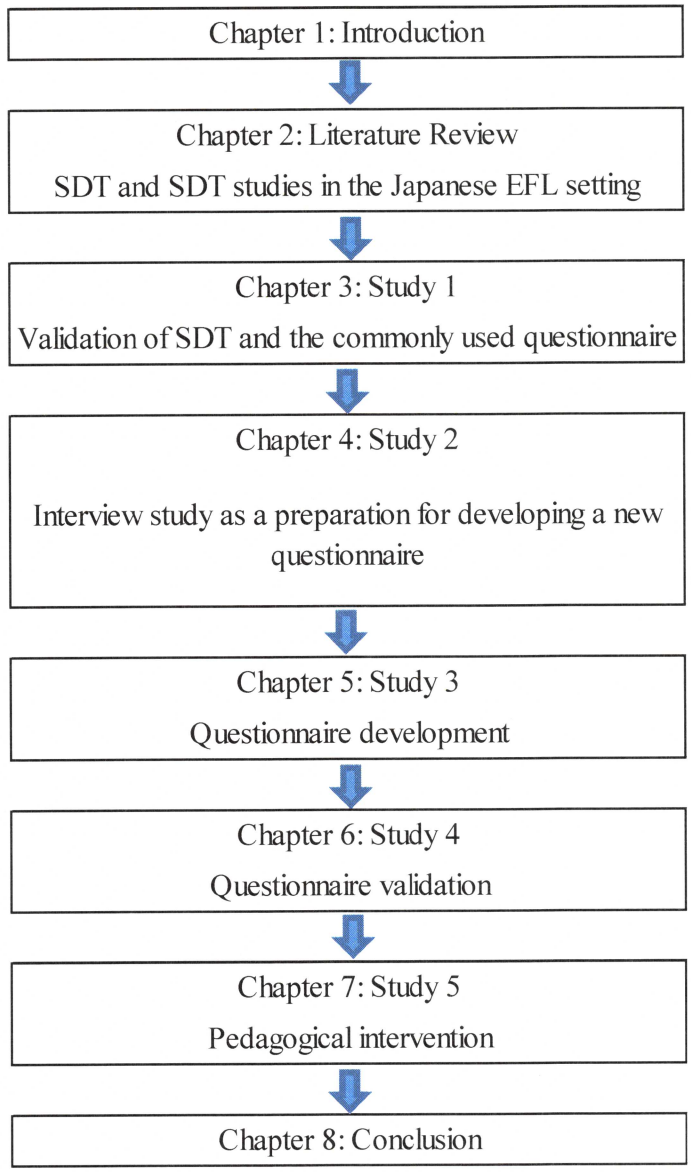


Figure 1-1. Flowchart of the eight chapters in this dissertation.

2. Literature Review

2.1 Self-Determination Theory

SDT is a macro theory that offers a framework for research on human motivation and personality. The theory embraces the assumption that people have natural tendencies to be curious, vital, and self-motivated, aiming at psychological growth and unified self (Deci & Ryan, 2002; Ryan & Deci, 2000, 2002). Such an assumption is based on studies conducted by humanistic psychologists (e.g., Horney, 1991; Maslow, 1968; Rogers, 1961) who grasped human nature from a positive, rather than negative, point of view and put forth the concept of self-actualization. For example, Maslow (1968) categorized needs into specific groups from the lowest level to the highest—namely, the needs for safety, belongingness, love, respect, self-esteem, and self-actualization. He argued that healthy people have their lower hierarchy needs (i.e., needs for safety, belongingness, love, respect, and self-esteem) satisfied and are motivated from within to grow—to actualize their potentials, capacities, and talents. This higher-order, intrinsic motivation is not necessarily externally rewarded or supported; nevertheless, it is more stable and enduring than lower-order, extrinsic motivation, because "growth is, *in itself*, a rewarding and exciting process" (p. 30).

SDT, which simultaneously includes the concept of self-actualization in its framework, recognizes that people's spirit for growth and integration can be diminished and people sometimes reject development and responsibility (Deci & Flaste, 1995; Ryan & Deci, 2000, 2002). SDT further asserts that many people, both children and adults, can act passively and be moved by external factors, such as rewards, grades, and evaluations.

Covering the two seemingly contradicting perspectives in its framework, SDT points out that the natural developmental tendencies do not operate automatically; rather, social environments catalyze individual differences in motivation and personal development (Deci & Flaste, 1995; Ryan & Deci, 2000, 2002). The theory suggests that, in order for individuals to be motivated from within, social nutrients are required. SDT has identified the existence of

three innate psychological needs that seem to function as social nutrients that support and sustain people's natural developmental tendencies—the need for autonomy, competence, and relatedness. According to SDT, in contexts where these three needs are supported, people tend to be oriented autonomously where they act out of their interests and what they value, which is associated with well-being. Conversely, in contexts where the needs are thwarted, people tend to be oriented by outside forces and focus on the outcomes of their action, such as rewards, grades, and evaluation, rather than the action itself.

2.1.1 Autonomy Needs

The need for autonomy is defined as individuals' desire for "being the perceived origin or source of one's own behavior" (Deci & Ryan, 2002, p. 8). SDT postulates that the needs for autonomy as well as the other two—the needs for competence and relatedness—are universal; thus, the causality between the needs fulfillment and well-being apply across different cultures. However, some researchers have questioned this assertion and suggested that autonomy is not as cherished in collectivist cultures as in individualistic cultures (Diener, Oishi, & Lucas, 2003; Iyengar & DeVoe, 2003; Markus & Kitayama, 1991). According to this view, people in a collectivist culture, such as in Asia, often value choices and decisions made by others so that they can fit in with a group and keep their traditions; therefore, autonomy may not play a role as a nutrient to intrinsically motivate them or promote their well-being.

Ryan and Deci (2006) pointed out that, in such an argument, autonomy is confused with independence. In SDT, autonomy is not defined as acting "entirely independent" of the environment as it is elsewhere (Bandura, 1989, p. 1175). Instead, in SDT, autonomy pertains to acting from interest and integrated values; thus, "when autonomous, individuals experience their behavior as an expression of the self, such that, even when actions are influenced by outside sources, the actors concur with those influences, feeling both initiative and value with regard to them" (Deci & Ryan, 2002, p. 8). Therefore, autonomy is not limited to independent

initiatives, but also refers to total endorsement to external input. Importantly, Ryan and Deci also noted that people can be forced to be independent as well as autonomously interdependent.

2.1.2 Competence Needs

The need for competence refers to a person's desire to feel "effective in one's ongoing interactions with the social environment" and to experience "opportunities to exercise and express one's capacities" (Deci & Ryan, 2002, p. 7).

2.1.3 Relatedness Needs

The need for relatedness is expressed in the desire to feel connected to other people, care for and be cared for by those others, and have a sense of belongingness with others and one's community (Deci & Ryan, 2002, p. 7).

2.1.4 Types of Motivation and Regulations

SDT offers different types of motivation and degrees of regulations to show how human beings can be motivated, depending on the degree of the needs satisfaction. In other words, the more individuals' innate psychological needs of autonomy, competence, and relatedness are fulfilled, the more their behavior is intrinsically motivated.

According to the theory, different types of motivation reside along a continuum, with intrinsic motivation and amotivation at opposite ends and extrinsic motivation in the middle (see Figure 2-1). 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. In other words, when intrinsically motivated, people undertake activities in a free manner and continue to engage in them because doing so is interesting and enjoyable. On the other hand, when extrinsically motivated, people undertake

activities due to the consequence of the action on which extrinsically motivated people focus more than the action itself (Deci & Ryan, 2000).

Deci and Ryan (2002) postulated four regulations within extrinsic motivation, depending on the degree of internalization involved in the action: integrated, identified, introjected, and external. In other words, these subtypes of extrinsic motivation reside along the continuum of internalization. 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 is amotivation—a state of no regulation/motivation (see Table 2-1 for the definitions of the different motivation types and regulations).

Self-determination theory: SDT

Quality of Behavior	Nonself-determined					Self-determined
Type of Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Type of Regulation	Non-regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Perceived Locus of Causality	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal

Figure2-1. The Self-determination continuum, with types of motivation, types of regulations and locus of causality. Adapted from Deci, E. L., and Ryan, R. M., (Eds.), 2002, *Handbook of self-determination research,* p.16.

Table 2-1

Definitions of Motivational Types and Regulations of SDT

Motivation/Regulation	Definition
intrinsic motivation	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).
integrated regulation	The most autonomous form of of extrinsic motivation. Integration results when identifications have been fully assimilated to the self. Actions characterized by integrated regulation share many qualities with intrinsic motivation, but they are done to attain separate outcomes rather than for the inherent enjoyment of taking the actions themselves (Deci & Ryan, 2000, 2002).
identified regulation	A self-determined form of extrinsic motivation. Identified regulation involves a conscious valuing of a behavioral goal or regulation, an acceptance of the behavior as personally important (Deci & Ryan, 2002).
introjected regulation	A form of internalized regulation that is theorized to be quite controlling. Introjection-based behaviors are performed to avoid guilt and shame or to attain ego enhancements and feelings of worth (Deci & Ryan, 1985).
external regulation	The least autonomous form of extrinsic motivation and includes the classic instance of being motivated to obtain rewards or avoid punishments. Externally regulated person's reason for doing a behavior is to satisfy an external demand or a socially constructed contingency (Deci & Ryan, 2002).
amotivation	A state of no motivational regulation. It lacks the intention to act (Deci & Ryan, 2002).

2.2 Research Based on SDT in Different Domains

SDT's versatile nature has allowed researchers in various domains to use the theory to look into people's motivation in different situations (e.g., education, health care, sports and physical activity, organizations and work, religion, and virtual environments and video games). Ample research has shown that, with basic psychological needs of autonomy, competence, and relatedness supported, individuals tend to be more intrinsically motivated and thus feel free to act from within. In this section, the author provides some example studies in a few domains.

In the health and medicine fields, many studies have tested SDT-based models and

their effects so that health professionals can promote people's healthier behaviors, such as quitting smoking (e.g., Williams, Cox, Kouders, & Deci, 1999; Williams, Gagné, Ryan, & Deci, 2002), controlling alcohol consumption (e.g., Ryan, Plant, & O'Malley, 1995), and losing and maintaining weight (e.g., Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams et al., 2014). The overall findings of such studies consistently demonstrated that, when participants perceived their needs, especially autonomy, to be supported by health professionals, their self-determined forms of motivation for healthier behavior increased, which also predicted healthier actions.

Another vigorously investigated area that applies SDT is exercise and sport. Many researchers have examined the relationship among psychological needs (especially autonomy) satisfaction, motivational regulations, and exercise behavior. For example, Edmunds and Duda (2006) conducted cross-sectional questionnaire studies and showed that, when the participants perceived class-exercise leader supported the participants' autonomy, participants were more autonomous in their exercise behaviors. Similar results were demonstrated elsewhere, such as in Pelletier, Dion, Slovenic-D'Angelo, and Reid (2001), where the relationship between elite swimmers' perceived autonomy support from their coaches and swimmers' motivation was investigated, and Wilson, Mack, Muon, and LeBlanc (2007), where the relationship between university students' psychological needs satisfaction and their motivation to exercise was examined.

It is worth mentioning that research in the domain of sport and exercise validated the universality of SDT based on research conducted in multiple countries in both cross-sectional studies (e.g., Quested et al., 2013) and intervention studies (e.g., Fortier, Duda, Guerin, & Teixeira, 2012).

2.3 SDT Research on L2 Learning

Previous SLA research has acknowledged the importance of motivation as a driving

force in the process of L2 acquisition (Ellis, 1994). Research on L2 learning motivation had been led by researchers in social psychology and education for decades (see Gardner, 1985, for a review). However, as the socio-educational model's universality was questioned (i.e., the integrative orientation appeared relevant only in a multicultural context consisting of a dominant group), some L2 researchers have suggested alternative motivational models. For example, Noels (2001a) proposed combining motivational constructs described in SDT with existing ones to grasp language learners' motivation and orientations more comprehensively.

Other studies conducted to validate SDT and/or SDT-based scales (Noels, Clément, & Pelletier, 2001; Noels, Pelletier, Clément, & Vallerand, 2000) indicated the highly applicable nature of SDT in the L2 motivational research field. It should be noted, however, their scales did not include intrinsic regulation items, because the study previous to theirs (Vallerand, Blais, Briére, & Pelletier, 1989 as cited in Vallerand et al. 1992, 1993) pointed out the difficulty of distinguishing integrated regulation from identified regulation, the adjacent construct on the motivational/regulation continuum.

Many researchers conducted studies to shed light on L2 learner motivation by using the SDT(-based) framework. For example, Noels et al. (1999) and Noels (2001b) examined the relationship between language teachers' communication style and learners' motivation. The results of both studies showed that, when learners perceived their teachers' communication style as being autonomy supportive, rather than controlling, learners were more intrinsically motivated to learn the language. Likewise, several studies have illustrated a positive relationship among perceived teacher support of autonomy, competence, and relatedness of more internalized orientations to learn an L2 through correlational analysis (Noels, Clément, & Pelletier, 2001; Noels, Pelletier, Clément, & Vallerand, 2001) and regression and correlational analyses (McEown, Noels, & Saumure, 2014). Moreover, some research—albeit a much smaller portion—used SDT-based pedagogical interventions in actual language classrooms and demonstrated that the satisfaction of autonomy, competence, and relatedness

needs could enhance L2 learners' motivation (Jones, Llacer-Arrastia, & Newbill, 2009; Wu, 2003).

2.4 Research Based on SDT in the Japanese EFL Context

Strong emphasis has been put on English in formal education in Japan; it is one of the three main academic 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; Kikuchi & Sakai, 2009; Sakai & Kikuchi, 2009; 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 empirically tested widely and has been verified in various contexts (Deci & Ryan, 2008).

Tomohito Hiromori is a pioneering researcher who applied SDT in the Japanese EFL context. He developed a questionnaire to measure EFL learners' psychological needs fulfillment and motivation (Hiromori, 2006a) has been widely used and adapted in SDT studies in the Japanese EFL setting. In the English learning context, both inside and outside the classroom, the three psychological needs are interpreted into more concrete concepts so that they would fit in the context. First, autonomy needs generally include learners' need for opportunities to choose and determine various aspects of English classes and learning (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011). In other words, it has been interpreted as the learners' desire to determine their actions regarding English learning and take responsibility for their own studies. This understanding is reflected in Hiromori's questionnaire items to measure the degree of Japanese EFL learners' autonomy needs fulfillment, which include "I am free to express my ideas and opinions on English learning,"

"My feelings are taken into consideration in English classes," "My teacher asks for the opinions of students about the content and/or procedure of the class," and "My teacher always decides what to study in the English course" (reversed item) (originally written in Japanese; English translation by the author) (Hiromori, 2006a, 2006b; Tanaka & Hiromori, 2007).

Second, the competence needs in the Japanese EFL setting are understood as the 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 (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011). The definition is the basis of Hiromori's questionnaire items to measure the degree of competence needs satisfaction of Japanese EFL learners, such as "I think I can get a good grade in English," "I am satisfied with my effort in English classes," and "I feel a sense of achievement in the English course".

Third, relatedness needs include wanting to connect with other classmates and the teacher, have a sense of unity, and be liked and respected (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011). Questionnaire items reflecting this definition include "I work hand-in-hand with my friends on a group activity" and "I get along with my friends during an English class". Table 2 -2 shows the comparison of the needs in the original SDT and those in the Japanese EFL context. (For the comparison of the motivation types and regulations in the original SDT and those in the Japanese EFL context, see Appendix A).

Using his questionnaire, Hiromori (2006a) collected data from students at one university. He then used an SEM analysis to confirm the causal relationship between the fulfillment of innate needs and motivation as hypothesized in the theory. Yet the model's goodness of fit was poor (GFI = .75, AGFI = .70, CFI = .82, RMSEA = .09)[1]. In another study, Otoshi and Heffernan (2011), who adapted Hiromori's questionnaire, collected data from business and English majors at two universities. The results yielded a somewhat acceptable

Table 2-2

Definitions of the Three Phycological Needs of SDT

Need	Definition	Definition Interpreted in the Japanese EFL Context
autonomy	Individuals' desire for "being the perceived origin or source of one's own behavior" (Deci & Ryan, 2002, p. 8) Autonomy pertains to acting from interest and integrated values; thus, "when autonomous, individuals experience their behavior as an expression of the self, such that, even when actions are influenced by outside sources, the actors concur with those influences, feeling both initiative and value with regard to them" (Deci & Ryan, 2002, p. 8).	Learners' need for opportunities to choose and determine various aspects of English classes and learning (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011). In other words, it has been interpreted as the learners' desire to determine their actions regarding English learning and take responsibility for their own studies.
competence	A person's desire to feel "effective in one's ongoing interactions with the social environment" and to experience "opportunities to exercise and express one's capacities" (Deci & Ryan, 2002, p. 7).	the 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 (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011).
relatedness	The desire to feel connected to other people, to care for and be cared for by those others, and to have a sense of belongingness with others and one's community (Deci & Ryan, 2002, p. 7).	Wanting to connect with other classmates and the teacher, have a sense of unity, and be liked and respected (Dörnyei, 2001; Hiromori, 2006a; Otoshi & Heffernan, 2011).

Note. For types of motivation/regulation and their definitions in SDT and in the Japanese EFL context, see Appendix A.

level of fit indices of the model (GFI = .87, AGFI = .83, CFI = .89, RMSEA = .04); however, the sufficiency of autonomy needs did not display a causal relationship with intrinsic motivation as SDT posits.

From a more pedagogical point of view, some studies have sought to determine if interventions to fulfill English learners' three basic needs improve their intrinsic motivation. A few studies demonstrated that satisfying the innate needs could generally enhance English

learners' motivation. For example, Hiromori (2006a, 2006b) designed educational intervention to fulfill the needs and gave it to 100 first-year students at a university. He administered a questionnaire, before and after the three-month intervention period, and compared the participants' degrees of needs fulfillment and intensities of motivation at the beginning and end. The results showed that the intervention had a significant positive influence on both the fulfillment of the needs and enhancement of self-determined forms of L2 motivation.

Tanaka and Hiromori (2007) used educational intervention called "Group Presentation Activity"[2] and examined its influence on university students' intrinsic motivation toward English learning. Seventy-eight sophomore students who were enrolled in an English language course participated. The results of the pre-and post- questionnaire, in which several of Hiromori's (2006a) items were included, showed that the Group Presentation Activity had a significant positive effect on students' intrinsic motivation. Tanaka and Hiromori also found that, in general, satisfaction of the need for autonomy had a strong relationship with students' motivational development.

Dei (2011) also gave pedagogical intervention which was designed to fulfill the three needs of 146 students attending a junior high school. Dei, like many other researchers, used a questionnaire from Hiromori (2006a) to gauge his participants' needs and motivation. After the eight-month treatment, the fulfillment of learners' autonomy, competence, and relatedness needs were significantly higher. The results also showed that the learners' intrinsic and identified motivation increased significantly after the treatment period.

Conversely, Maekawa and Yashima (2012) did not find a causal relationship between the needs and self-determined forms of motivation. They investigated the effect of a presentation-based course on a group of engineering students at a university. Using Hiromori's (2006a) questionnaire, they measured the changes in the participants' needs fulfillment and motivation. Unlike the studies mentioned above, Maekawa and Yashima did

not observe an increase in their participants' self-determined regulations in their L2 study, although their psychological needs were successfully satisfied.

Shirono (2009) used strategies to support students' autonomy, competence, and relatedness needs in English reading classes at a high school. Seventy second-year students participated in the study. As was often the case, Shirono adapted the questionnaire from Hiromori (2006a). He also took items from a few other researchers' questionnaires such as Connell and Wellborn (1991) and Isoda (2008). The questionnaire was conducted before and after the treatment period to measure changes in participants' needs satisfaction and L2 motivation. The results showed that whereas their needs satisfaction for relatedness was increased, neither the needs satisfaction for competence or autonomy did. All types of learner motivation which were assessed—intrinsic, identified, introjected, and external—stayed at the same level.

The mixed results presented by previous research are confusing for researchers and practitioners. For researchers, they are confusing because a poor fit of the actual data to the theory could indicate a few possible causes. For example, the inconsistency may lead researchers to question the applicability of SDT in the Japanese EFL context. This question could facilitate researchers to probe the theory and/or characteristics of Japanese EFL learners' motivation. Other causes may include the question of evenness and fairness of sampling and validity of the questionnaire. For practitioners, the mixed results are confusing because they do not provide conclusive suggestions on how to successfully motivate Japanese EFL learners. The inconsistency may prompt teachers to look for a more reliable way to encourage their students in English classes.

2.5 The Objectives of the Dissertation

As a researcher and teacher at a university, the author claims the need for finding out the cause of the inconsistency, because doing so may settle the confusion and help researchers,

practitioners, and most importantly, Japanese EFL learners. This leads to the objectives of the dissertation which are to:

(a) expand the understanding of SDT in the Japanese EFL setting at a tertiary level;

(b) promote the understanding of Japanese university EFL learners' motivation; and

(c) contribute to the improvements of Japanese university EFL learners' motivation.

The attainment of the objectives requires several areas to look into. As mentioned earlier, when a theory and actual data do not fit well in a questionnaire study, it is generally difficult to pin down the cause of it. This forces researchers, who would try to reveal the cause(s) of the poor fit, to look into different possibilities, such as the theory, questionnaire, and sample. Regarding the selection of a sample, it should be noted here that almost all the previous SDT studies in the Japanese EFL context collected data from only one or two schools. In such a case, one can easily argue that the results were affected by their samples' characteristics which may have represented a particular group in the population. In order to draw any general conclusion on the theory, a sample should be collected from different types of learners which better reflects the variety of the general population. Therefore, the author decided to start with collecting data from a varied population to verify SDT and the commonly used questionnaire, which is reported in the next chapter.

Notes

1. Based on Asano, Suzuki, and Kojima (2005), an adequate model fit is indicated by GFI values $\geq .90$, CFI $\geq .90$, and RMSEA $\leq .10$.
2. Group Presentation Activity is a classroom activity where students cooperate in a group to make a presentation in English. In the Group Presentation Activity, students chose a presentation topic, collect information about the topic, write a manuscript for the presentation, and deliver it (Tanaka & Hiromori, 2007, p. 63).

3. Study 1

3.1 Purposes

In the preceding chapter, the author reviewed literature on SDT studies in the Japanese EFL context and pointed out that, whereas some studies found the causality between the needs satisfaction and English learners' motivation, others did not. Thus, the need exists to determine the cause(s) of these mixed results. Related to this issue, the author pointed out that previous studies collected questionnaire data from one or two schools; therefore, data from various populations were necessary to examine possible causes of the inconsistency.

Thus, Study 1 was conducted to:

- verify SDT in the Japanese EFL setting, and
- validate the commonly used questionnaire (Hiromori, 2006a, 2006b) in the Japanese EFL setting.

For these purposes, this study investigated the goodness of fit of the theoretical model to the actual data using a more varied population than previous samples. In addition, this study probed cause-and-effect relationships between the innate psychological needs (i.e., autonomy, competence, and relatedness) and L2 learning motivation.

3.2 Method

3.2.1 Participants

Hiromori's (2006a, 2006b) 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, the author conducted an a priori power analysis 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, the author of this dissertation 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., University A, an extremely competitive school; University B, a middle-range school; and University C, an easy-to-get-into school). Of the 317 participants, 94 were at University A, 116 were at University B, and 106 were at University C. One hundred thirty-three (42%) were males and 182 (57%) females; the gender of the remaining 2 was 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.

3.2.2 Questionnaire

Hiromori's (2006a, 2006b) questionnaire was used to measure L2 learners' motivation and the degree of their psychological needs satisfaction. The questionnaire consisted of two scales: the Psychological Needs Scale and the English Learning Motivation Scale. It was the first one to be developed within the SDT framework to measure Japanese EFL learners' motivation. In developing the questionnaire, Hiromori took some steps in trying to make the instrument valid and reliable. For example, 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. The internal reliability values obtained by the EFA were at acceptable to adequate levels (Cronbach's alpha ranged from .74-.78 for the Psychological Needs Scale and .74-.89 for the English Learning Motivation Scale). 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. Moreover, Hiromori's (2006a) questionnaire has been the most tested one by being used or adapted by different researchers. 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 used, or adapted, the questionnaire.

The questionnaire was carefully developed and validated, but might or might not be flawless. As the author discussed in Chapter 2, some studies that used or adapted the questionnaire yielded results out of line with the theory (Maekawa & Yashima, 2012; Otoshi & Heffernan, 2011; Shirono, 2009). Needless to say, this does not automatically mean a problem with the instrument. Some other points to consider before drawing any conclusions include the evenness and fairness of sampling[1] and the validity of the theory. In this study, all three points were taken into account: sampling, the theory, and the instrument. This study used a sample that contained a much more varied population than those used in previous studies; therefore, the sample better reflected the diversity of Japanese EFL learners to obtain higher evenness and fairness of sampling. Given a better sample, the author proceeded to verify SDT in the Japanese EFL setting and test the content validity of the instrument.

The questionnaire was originally written in Japanese and the original version was used to administer the survey in this study. Japanese was used so that the participants, whose English abilities varied, could fully understand and respond to all the questions. The following subsections describe the scales, constructs, and items of the questionnaire which were translated into English by the author.

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

(1) **Autonomy**: Four items gauged the degree to which learners thought they act out of interest and from integrated values toward English learning:

- I have freedom of choice on assignments in English classes.
- I have opportunities to express my ideas and opinions on English learning.
- My instructor asks for the opinions of students about the content and/or procedure of classes.
- My instructor always decides what to study in English classes (reversed item).

(2) Competence: Four items assessed participants' perceived sense of confidence and efficacy in English learning:

- I think I can get a good grade in English.
- I often feel incompetent in English [reversed item].
- I am satisfied with my efforts in English classes.
- I feel I can do well in English classes if I try.

(3) Relatedness: Four items measured how participants perceive their relationship with their classmates:

- I think I have been able to work together with my friends on a group activity.
- I think I get along with my friends who are in the same English course.
- I think there is an atmosphere where we learn from each other in English classes.
- I think I have been able to cooperate in a group activity in the English class.

English Learning Motivation Scale. The second part of the questionnaire, immediately following the demographic section, asked participants to indicate their strength of motivation to learn English. As the questionnaire was based on SDT, it asked about the strength of participants' motivation in five types of regulations (i.e., intrinsic, identified, introjected, external, and non-regulations). When Hiromori (2006a) developed the questionnaire, he drew on the results of previous studies pertinent for ESL (Noels, Pelletier, Clement, & Vallerand, 2000) and Canadian tertiary, secondary, and elementary education (Vallerand et al. 1992, 1993)—Noels et al. developed and validated a SDT-based scale to gauge L2 motivation and Vallerand et al. validated a SDT-based scale to measure academic motivation. Both scales did not include intrinsic regulation items, because the study previous to theirs (Vallerand, Blais, Briére, & Pelletier, 1989 as cited in Vallerand et al. 1992, 1993) pointed out the difficulty of distinguishing integrated regulation from identified regulation, the adjacent construct on the motivational/regulation continuum. Along this line of research, Hiromori's scale did not include integrated regulation.

English Learning Motivation 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.

(1) Intrinsic motivation: Four items estimated the participants' intensity of intrinsic motivation to learn English. 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. The items used to assess intrinsic motivation were:

- (I study English) because studying English is fun.
- (I study English) because I get a satisfied feeling when I find out new things.
- (I study English) because I enjoy English classes.
- (I study English) because it is enjoyable to gain English knowledge.

(2) Identified regulation: Four items inspected the degree of identified regulation of the participants. This type of regulation is categorized in extrinsic motivation, but it is the highly self-determined form of it. English learners with identified regulation understand and accept the importance of learning English. The items used to measure identified regulation were:

- (I study English) because I think it is good for my personal development.
- (I study English) because I choose to be the kind of person who can speak more than one language.
- (I study English) because I would like to acquire English skills that I can use in the future.
- (I study English) because English is necessary for me.

(3) Introjected regulation: Three items gauged how much the participants were regulated through introjection. Introjected regulation involves external regulation with internalization, albeit to a limited extent. English learners with this regulation study English to avoid guilt or to build self-esteem. The items used to gauge introjected regulation were:

- (I study English) because I would feel bad about myself if I didn't.
- (I study English) because it is common for one to have a good command of English.
- (I study English) because it is kind of cool to be able to speak in English.

(4) External regulation: Three items assessed the degree of which participants were externally regulated. External regulation is the least autonomous form of extrinsic motivation and is closely related with an external demand. Externally motivated English learners study English to obtain rewards (e.g., academic credits) or to avoid punishments (e.g., failing a class). The items used to evaluate external regulation were:

- (I study English) because that is the rule.
- (I study English) because I want to get a good grade.
- (I study English) because we live in a society where learning English is high in demand.

(5) Amotivation: Four items measured the participants' intensity of amotivation to learn English. Amotivation is a state of motivation without regulation. Amotivated English learners do not study English at all or go through the actions of studying without intending to learn anything. The items used to rate amotivation were:

- I have the impression of wasting my time when studying English.
- I cannot understand what I am getting from studying English.
- I do not think I can make progress in English, even if I study it.
- I am not interested in understanding the reason for learning English.

3.3 Data Cleaning

Before the collected data were subjected to any analyses, each response was checked. Fifteen cases that did not seem to include sincere responses (e.g., choosing one and five on the scale in turn) were excluded, leaving the author 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 number 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.

3.4 Data Analyses

Two types of analyses were conducted in this study: a factor analysis and an SEM analysis.[2] There are two types of factor analyses: an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). An EFA is a procedure used to uncover underlying sets of constructs by clustering variables into homogenous assortments. As its name suggests, an EFA's fundamental feature is exploratory; thus, it is used when little, or no, past evidence or theory exists. On the other hand, a CFA is hypothesis-driven; therefore, it must be run based on past research outcome and theory (Brown, 2006). A CFA was chosen for this study,

because the study aimed to verify the existing theory and questionnaire. In addition, previous to this study, some research outcomes, albeit inconsistent, were available. The data collected for this study were first submitted to a CFA to evaluate the relationship between the questionnaire items and factors. With the obtained factor structure, an SEM analysis was then conducted to verify the regressive relationships among the factors.

3.4.1 Confirmatory Factor Analysis

Before conducting a CFA (maximum likelihood method with Promax rotation), a couple of prerequisites (Brown, 2006) were checked. First, a good number of participants (i.e., more than 180 as indicated by Hair et al., 2008) were available for the analysis. Second, the normality of distribution was examined by checking Mardia's multivariate kurtosis. 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 SEM software (EQasionS [EQS] Version 6.1) was used, as it allows for coping with non-normal data and reliably infers the model (Bentler, 2006). In the CFA, the author used a number of fit indices to evaluate the goodness of fit of the model. Following Brown (2006), the author used three indices provided in EQS: (1) comparative fit index (CFI); (2) root mean square error of approximation (RMSEA); and (3) standardized RMR (SRMR)

Based on SDT theory and previous SDT studies (e.g., Hiromori, 2006a; Noels, et al. 2000), three- and five-factor structures were assumed in the Psychological Needs Scale and the English Learning Motivation Scale, respectively. The validation of the factor structure was performed in gradual increments. First, a CFA was run to evaluate the structure of each factor/subscale (e.g., how well autonomy items are related to the autonomy factor). After the initial run on the data, the goodness of fit was checked. If the model had a poor fit, items with low loading and/or high residual were eliminated. The analysis was repeated until the model

of each subscale presented a decent to good fit. Then, a CFA was run again on the overall structure of each scale. The fit was examined again to complete any combination of overlapped factors, additional elimination, and/or exchange of items, as necessary.

3.4.2 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 the power analysis) were available for the analysis. Second, 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 univariate skewness and kurtosis were checked before the CFA; thus, the process was not repeated here. By the same token, the process employed to examine multivariate kurtosis was not repeated here either. Because the examination of multivariate kurtosis suggested the sample's non-normality, the maximum likelihood robust option of EQS was chosen for the SEM analysis, just like it was for the CFA.

The author then conducted the SEM analysis using the maximum likelihood method. In the SEM analysis, she used a number of fit indices to evaluate the goodness of fit of the model. Referring to Asano, Suzuki, and Kojima (2005), In'nami and Koizumi (2011), and Takeuchi and Muzumoto (2012), the author selected to use three indices provided in EQS: (1) CFI, (2) RMSEA, and (3) SRMR.

3.5 Results and Discussion

3.5.1 Results of CFA

Psychological Needs Scale. Table 3-1 shows the selected fit indices of the CFA's Psychological Needs Scale model. All indices are adequate, indicating that the sets of

question items within each factor/subscale well represent the construct's concept, and the set of factors/subscales are well structured to form the scale.

Figure 3-1 illustrates the CFA model of the Psychological Needs Scale. It shows that the factors/subscales had moderate positive correlations to each other. This is in line with Hiromori's (2006a) study, in which positive correlations were found among the three needs. Hiromori pointed out that these three needs may be closely related to each other to form EFL learners' perception toward their learning environment.

English Learning Motivation Scale. As was described in the Data Analyses section, the questionnaire data were submitted to a CFA to evaluate the structure of each factor/subscale (e.g., how well intrinsic motivation items are related to the intrinsic motivation factor). As for the models that have positive degrees of freedom (*df*) (i.e., intrinsic motivation and amotivation), the goodness of fit was checked after the initial run on the data. Both the one-factor and subscale models presented a good fit and thus were confirmed ready for further analysis: the validation of the overall structure of the English Learning Motivation Scale.

For the just-identified/saturated models identified (i.e., identified, introjected, and external regulations), none of the fit indices selected for this study were applicable due to their *df* value (i.e., zero). For the same reason, item residuals were not available for the items in those models either. One thing that was available for assisting in evaluation of such models was examination of the parameter estimates (Brown, 2006). The author checked and confirmed that all the path coefficients were significant.

After completing these procedures, a CFA was conducted again on the overall five-factor structure of the scale. The first run of the English Learning Motivation Scale in its entirety resulted in a poor fit, overtly signaling the need for alterations. The outcome is displayed in Figure 3-2. The fit indices are indicated in Table 3-2. The following subsection describes the modification process of the model and provides the rationale for the alterations.

Table 3-1

Selected Fit Indices for the CFA Model of Psychological Needs Scale

Index	Obtained value	Acceptable value	Evaluation
CFI	.97	close to .95 and higher	Adequate
RMSEA	.06	close to .06 and lower	Adequate
SRMR	.05	close to .08 and lower	Adequate

Note. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The fit evaluation is based on Brown (2006).

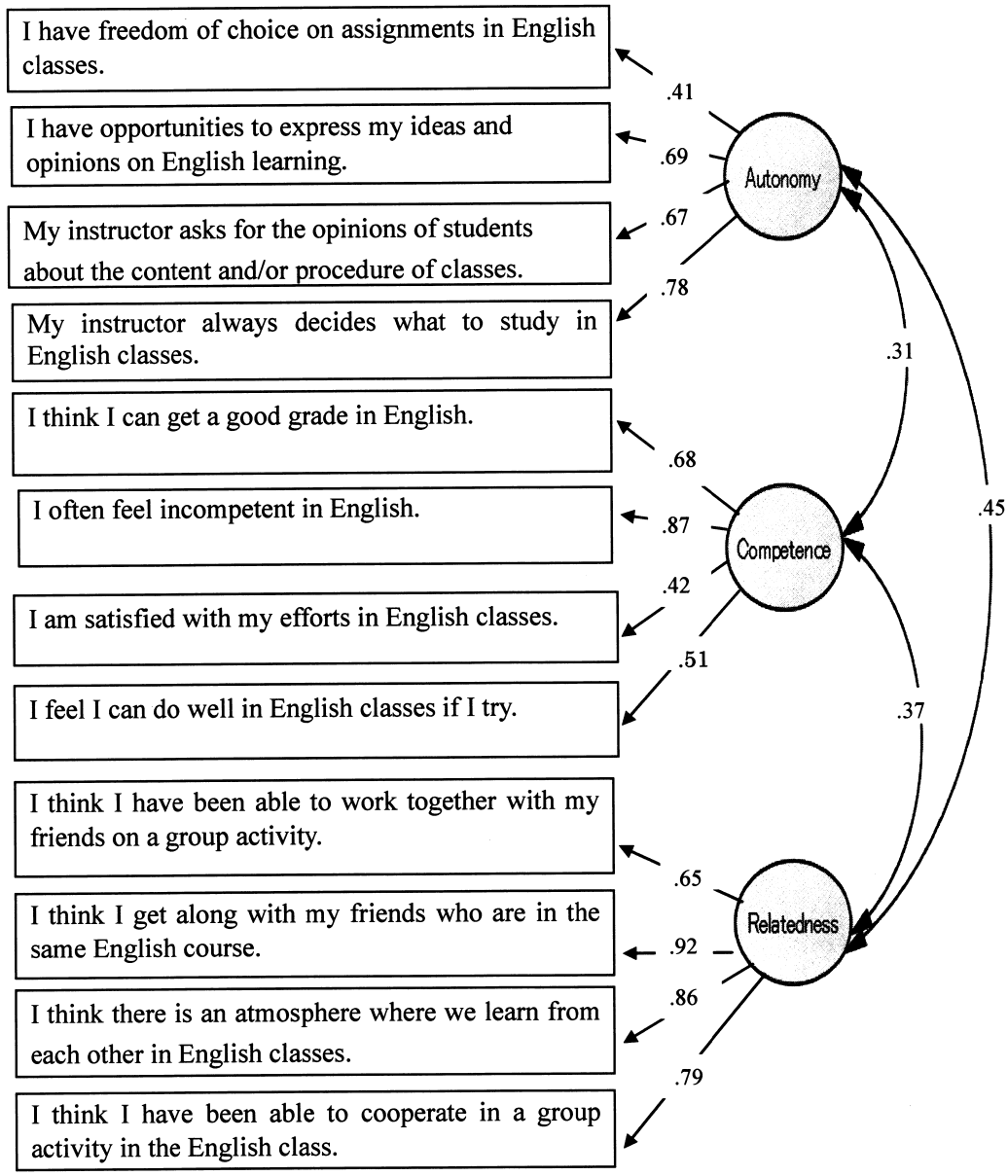


Figure 3-1. CFA model of the Psychological Needs Scale.

Note. N = 302.

In making modifications to the English Learning Motivation Scale model, the author first examined the residuals of the items that had not been applicable due to the saturated model of the one-factor structure. The examination revealed that item number 12 had high standardized residual covariances, with 10 out of 12 covariances larger than ±2. The elimination of item number 12 left only two items remaining under the external regulation factor. As it is recommended that latent factors be defined by at least three observed variables (Brown, 2006), the external regulation factor was eliminated from further analyses. The author then examined the relationship between factors and found very strong correlations between identified regulation and introjected regulation (r = .89). According to Brown (2006), a factor correlation of .85 or higher is often considered to be a cutoff point for poor discriminant validity, and combining the two factors is recommended so that a more parsimonious solution can be acquired. Furthermore, the correlation coefficient in question was very close to the value that may cause multicollinearity to occur (r = .90 and higher) (Tabachnick & Fidell, 2012). Because of these reasons, identified and introjected factors were combined into one. The altered model without the external factor and with identified and introjected factors combined were submitted to CFAs again. Items with low loading and/or high residual were further eliminated. The analysis was repeated until the model reached a good fit.

Figure 3-3 illustrates the final CFA model of the English Learning Motivation Scale. The combined factor was renamed identified, because three out of the four items that remained in the factor were originally under the identified regulation factor. As Table 3-3 shows, all indices were acceptable, indicating that the sets of question items within each factor well represented the construct's concept. Also, the set of factors/subscales were well structured to form the English Learning Motivation Scale.

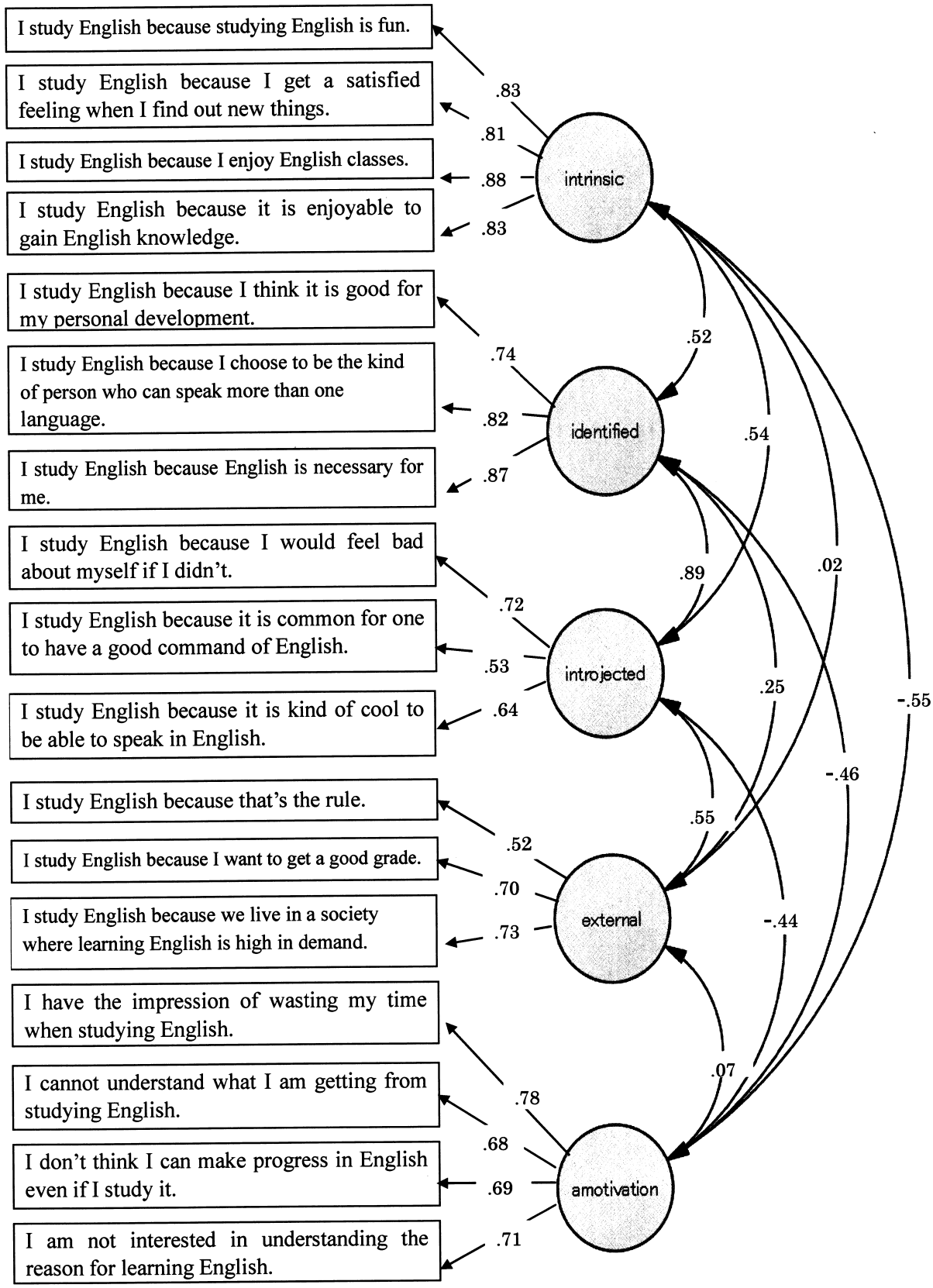


Figure 3-2. Initial CFA model of the English Learning Motivation Scale.

Note. $N = 302$.

Table 3-2

Selected Fit Indices for the initial CFA Model of English Learning Motivation Scale

Index	Obtained value	Acceptable value	Evaluation
CFI	.89	close to .95 and higher	Poor
RMSEA	.09	close to .06 and lower	Poor
SRMR	.09	close to .08 and lower	Poor

Note. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The fit evaluation is based on Brown (2006).

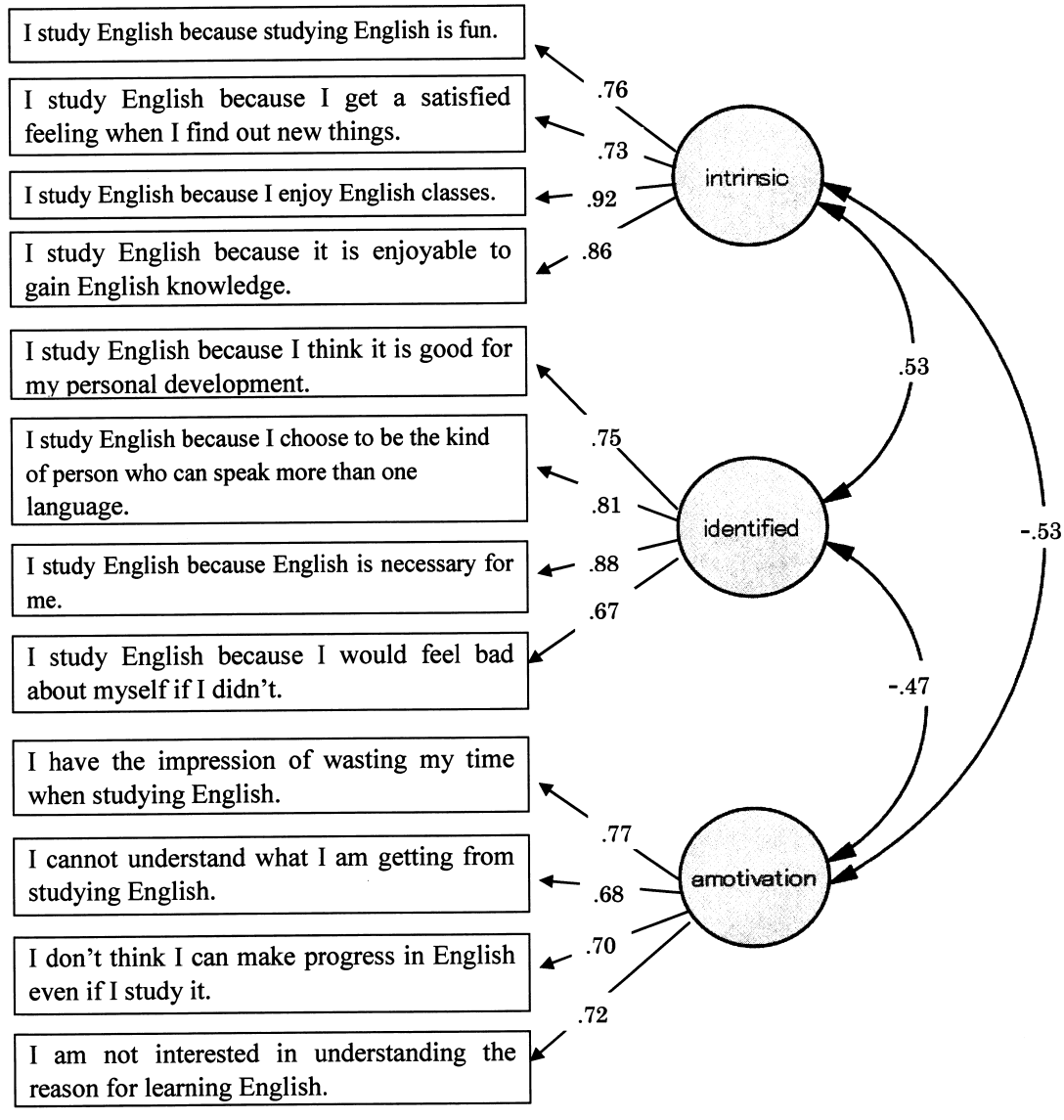


Figure 3-3. Modified CFA model of the English Learning Motivation Scale.

Note. $N = 302$.

Table 3-3
Selected Fit Indices for the modified CFA Model of English Learning Motivation Scale

Index	Obtained value	Acceptable value	Evaluation
CFI	.97	close to .95 and higher	Adequate
RMSEA	.06	close to .06 and lower	Adequate
SRMR	.05	close to .08 and lower	Adequate

Note. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The fit evaluation is based on Brown (2006).

3.5.2 Results of SEM

Descriptive statistics. Tables 3-4 and 3-5 show descriptive statistics based on data collected using the Psychological Needs Scale and English Learning Motivation Scale, respectively. They contain the correlation coefficients between items as well as the mean and standard deviations of each questionnaire item.

General outcome. Table 3-6 shows the selected fit indices of the model. All indices were acceptable, indicating that the model is an acceptable representation of the data collected for this study. Figure 3-4 depicts the model with standardized path coefficients.

Specific findings. This study focused on the relationships between the innate psychological needs and motivation; therefore, the author listed the results demonstrated by relevant paths only. They 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, n.s.), identified regulation (.21), and amotivation (-.09, n.s.).

Table 3-4

Correlations between Items in the Psychological Needs Scale

	item 1	item 2	item 3	item 4	item 5	item 6	item 8	item 9	item 10	item 11	item 12
item 1	—	.41**	.19**	.32**	.05	.09	-.01	-.04	.08	.11	-.01
item 2		—	.45**	.51**	.16**	.20**	.07	.17**	.31**	.33**	.20**
item 3			—	.55**	.19**	.10	.11	.20**	.32**	.35**	.24**
item 4				—	.30**	.23**	.08	.19**	.32**	.32**	.19**
item 5					—	.60**	.31**	.19**	.26**	.25**	.27**
item 6						—	.43**	.20**	.27**	.26**	.23**
item 8							—	.22**	.18**	.29**	.26**
item 9								—	.62**	.53**	.51**
item 10									—	.79**	.72**
item 11										—	.70**
item 12											—
M	2.22	2.44	2.69	2.33	2.61	2.61	3.11	3.37	3.15	3.08	3.30
SD	1.09	1.20	1.11	1.17	1.05	1.14	1.05	.99	1.03	1.09	1.02

Note. $N = 302$. $^{**}p < .001$ (two-tailed).

Table 3-5

Correlations between Items in the English Learning Motivation Scale

	item 1	item 2	item 3	item 4	item 6	item 7	item 8	item 9	item 15	item 16	item 17	item 18
item 1	—	.79**	.70**	.64**	.26**	.40**	.31**	.22**	-40	-0.37	-0.32	-.24**
item 2		—	.64**	.63**	.27**	.36**	.27**	.20**	-.42**	-.32**	-.31**	-.25**
item 3			—	.80**	.39**	.42**	.40**	.32**	-.38**	-.36**	-.36**	-.27**
item 4				—	.35**	.43**	.42**	.32**	-.35**	-.34**	-.34**	-.24*
item 6					—	.58**	.67**	.52**	-.28**	-.26**	-.27**	-.36**
item 7						—	.72**	.53**	-.27**	-.18**	-.25**	-.31**
item 8							—	.58**	-.30**	-.21**	-.23**	-.37**
item 9								—	-.23**	-.12*	-.25**	-.39**
item 15									—	.56**	.52**	.53**
item 16										—	.44**	.47**
item 17											—	.55**
item 18												—
M	3.13	2.93	3.56	3.43	4.14	4.08	4.12	4.08	2.41	2.39	2.05	1.65
SD	1.13	1.11	1.04	1.07	.93	1.06	.94	.97	1.02	1.13	1.02	.83

Note. $N = 302$. *$p < .05$; **$p < .001$ (two-tailed).

Table 3-6

Selected Fit Indices for the SEM Model

Index	Obtained value	Threshold value	Evaluation
CFI	.91	≧.90	Adequate
RMSEA	.06	≦.10	Adequate
SRMR	.10	≦.10	Adequate

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).

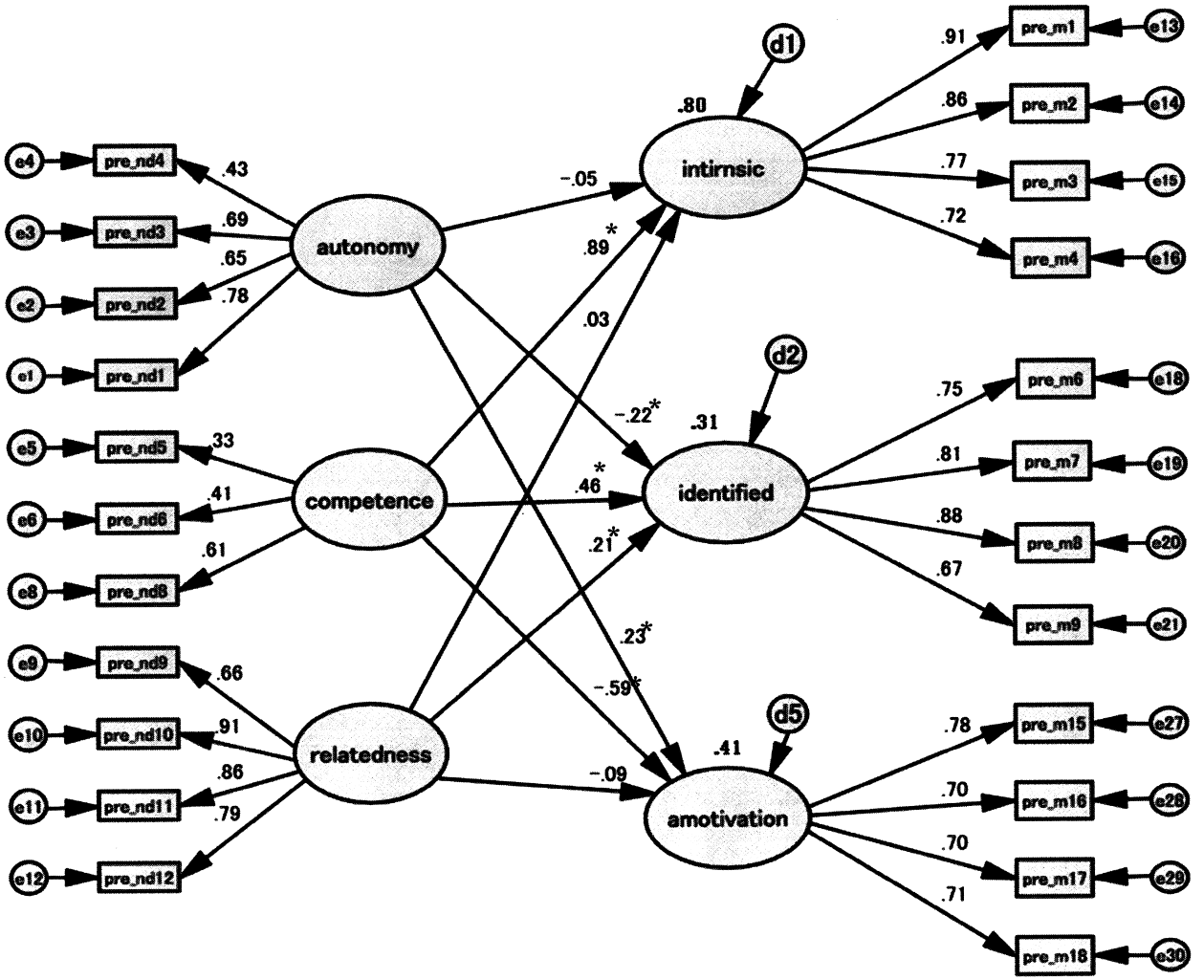


Figure 3-4. SDT model with standard estimates.

Note. $N = 302$. The path coefficients with an asterisk are significant at $p < .05$.

Unexpected results emerged in the relationship between autonomy and learner motivation. The path from autonomy toward intrinsic motivation was not significant, suggesting that the fulfillment of autonomy needs marginally affects Japanese EFL learners' intrinsic motivation. In addition, the second path from autonomy—the one toward identified regulation—also had a negative and significant value (-.22), 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.

The aims of the present study were to (1) validate SDT in the Japanese EFL context by using a more varied population than previous studies and (2) examine the causal relationship between the innate psychological needs and motivation. Thus, the following sections discuss the results of the specific findings of the model obtained from the SEM analysis.

Sense of competence and motivation. The study's results confirmed that the sufficiency of competence needs has a considerable, positive influence on Japanese university 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 specific findings 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. The relatedness items 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 instructor, 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 instructors 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-determined forms of motivation, such as intrinsic motivation and

identified regulation, and a negative influence on external regulation and amotivation. However, in this study, quite a contrary result was revealed.

The concept of autonomy has actually been controversial amongst some psychologists; some 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. For example, Iyengar and Lepper (1999) pointed out that autonomy could be bound by culture. They examined the relationship between motivation and the degree of self-determination in a non-ESL/EFL setting, comparing American children from an Anglo-Saxon background to those from an Asian background. Children in both groups were grade-schoolers who were seven to nine years old. In the experiment, the children engaged in a task that (a) they chose, (b) their mothers chose, (c) their classmates chose, and (d) 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. Based on the results, Iyengar and Lepper suggested the unimportance of autonomy for Asian American children who were raised in a non-individualistic cultural context. They concluded 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.

Ryan and Deci (2006) refuted Iyengar and Lepper's (1999) argument that the importance of autonomy is dependent of the cultural context. Ryan and Deci pointed out that Iyengar and Lepper had confused autonomy with independence and individualism. Unlike some theorists who depict autonomy as being entirely independent of any extra influences (e.g., Bandura, 1989; Skinner, 1971), SDT theorists view autonomy as seeing the self as the origin or source of his/her own behavior (Deci & Ryan, 2002). In other words, autonomy in SDT does not exclude the influence from outside sources as long as the prompted action is

endorsed by the actor and, thus, in accordance with his/her values and interests. Referring to this concept of autonomy, Ryan and Deci argued that Iyengar and Lepper's Asian American participants might have been fully autonomous by endorsing their mothers' choices and acting in accordance with their own values.

In a non-ESL/EFL setting in Japan, Uebuchi (2004) shed light on the relationship between choice and autonomy. He pointed out that being given a choice could be perceived differently by the individual, depending on his/her sense of competence. 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 is supported by simply being given a choice; they might feel forced into independence. Rather, they may appreciate and accept choices made by others, for they can be autonomously dependent.

Azuma's (1994) work supported Ryan and Deci's (2006) standpoint by showing the Japanese people's tendency of accepting and internalizing choices made by others. 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 not only to accept an assignment that is boring in nature and given by someone else, but also 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.

In the ESL/EFL setting, Littlewood (1999) introduced the 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" (1999, p. 75). Expanding this conventional concept, he proposed reactive autonomy, an additional form of autonomy that 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 studies reported thus far have suggested that East Asian learners tend to internalize choices made by others and act autonomously. It can also be argued that university students in East Asia may not be willing to exercise what Littlewood (1999) called proactive autonomy. As such, it is unlikely that choices given in university English classes are cherished by students or enhance their L2 motivation.

Gaining this insight, one can clearly see two possible causes that may explain this study's SEM results, which did not go along with what SDT has postulated. First, the way autonomy was defined and interpreted in the Japanese EFL context may have caused the result where autonomy needs fulfillment did not have a positive influence on the participants' self-determined forms of motivation to learn English. As explained in Chapter 2, in the Japanese EFL context, SDT's original definition of autonomy has been interpreted as the learners' desire to determine their actions regarding English learning and take responsibility for their own studies. However, as this study has suggested, having the freedom of choice may not necessarily help achieve Japanese EFL learners' autonomy needs. Further inquiry to examine the relationship between autonomy needs and motivation is called for.

Second, the autonomy items created based on the aforementioned definition of autonomy may have caused the confusing results. A review of the questionnaire showed that all the items in the autonomy subscale ask for the degree of discretion that learners are given. This may explain the negative link between autonomy needs fulfillment, which means giving learners choices, and identified regulation. It may also explain the "positive" link between

autonomy needs satisfaction and amotivation described in this study. When learners do not understand the value or rationale of having discretion over their English learning, their identified regulation will not increase because identified regulation pertains to an acceptance of the action as personally important. Rather, some learners may feel they are forced to make choices, which may cause a decrease of identified regulation and even an increase of amotivation. As giving the freedom of choice would not equate supporting autonomy, amendments of the question items is required in future research.

3.6 Conclusion and Issues for Further Study

This study aimed to verify SDT in the Japanese EFL context and the commonly used SDT-based questionnaire to measure Japanese EFL learners' needs fulfillment and motivation. For these purposes, statistical approaches—the CFA and SEM— were taken to examine the goodness of fit of the theoretical model to the actual data using a more varied population than previous samples. The study also sought to determine whether causal relationships exist among three innate psychological desires—namely, autonomy, competence, and relatedness—and motivation.

The CFA confirmed the well-formed factor structure of the Psychological Needs Scale. However, the CFA conducted to examine the English Learning Motivation Scale revealed some problems. Modifications of the model resulted in three factors—intrinsic, identified, and amotivation—in the scale. In the future study, improved questionnaire items for the external regulation construct should be introduced. In addition, further research is required to find out the cause(s) of the high correlation between identified and introjected regulation factors.

In the SEM 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 closer examination of the relationship between needs satisfaction and motivation and of the questionnaire.

Based on the discussion herein, the author posed objectives for subsequent studies (Study 2 and Study 3):

- Closer examination of the relationship between the needs fulfillment and Japanese university EFL learners' motivation, with a special focus on the causality between autonomy and motivation (Study 2)
- Amendment of the SDT questionnaire, to tackle the problems presented in this study and also to reflect the result of Study 2 (Study 3)

For a close investigation of the link between the needs satisfaction and Japanese university EFL learners, a qualitative rather quantitative approach is appropriate. In the following study, the author will conduct an interview study to probe the relationship between needs fulfillment and motivation. In the interviews, the author will use the definition of needs used in the Japanese EFL setting in order to be able to specify modification points to the questionnaire. The points will be taken into consideration in Study 3, where the author modifies items in the questionnaire.

Notes

1. If a study collects data from a particular group of sample, it may or may not reflect the population, and thus one can argue that the results of the study is attributed to the way the sample was chosen.
2. A type of analysis that evaluates the regressive relationships among the latent variables is commonly called SEM. To avoid confusion, a CFA, which is also a type of SEM, is simply called a CFA in this dissertation.

4. Study 2

4.1 Purposes

The results of Study 1 showed the need to more closely investigate the causality between the psychological needs and Japanese university EFL learners' motivation. In addition, a review of the widely used questionnaire developed by Hiromori (2006a, 2006b) suggested the need for modification of the autonomy items. To this end, this study pursued two objectives—namely, to:

- closely examine the relationship between the needs fulfillment and Japanese university EFL learners' motivation, with a special focus on the causality between autonomy and motivation; and
- list specific points of modification of the commonly used questionnaire.

4.2 Method

4.2.1 Participants

Eighteen university students in Japan participated in the interview study after providing written consent. All of them were provided with the background to and summary of the research, possible demands on participants,[1] and the researcher's contact information. They agreed to participate in an interview and to allow the content of their interview to be audio recorded. In an effort to ensure that participants represented the population of Japanese university EFL learners, they were chosen from academically varied universities (i.e., University A, extremely competitive schools; University B, middle-range schools; and University C, easy-to-get-into schools). Their majors also varied (i.e., English, law, Japanese, medicine, and psychology). Reflecting the different degrees of academic and English proficiency demanded by their universities and/or majors, the interviewees' English proficiency levels varied as well, with the most proficient student falling in the B2 (Independent User) level of the Common European Framework of Reference for Languages:

Learning, Teaching, Assessment (CEFR) (Council of Europe, 2001) and the least falling in the A2 (Basic User) level of CEFR. In seeking participants, the author asked the candidate students and/or their instructors to inform the author of the applicants' level of L2 motivation so that she could make sure to interview highly motivated, moderately motivated, and marginally motivated English learners from each level of the universities. Of the 18 participants, nine were males and nine were females. To ensure anonymity, all participants were assigned codes and were referred to by these codes thereafter. The codes indicate participants' university, L2 motivation level, and gender. The first letter in the code (A, B, or C) shows the characteristics of the participant's university; the second one (H, M, or L) illustrates the level of his/her L2 motivation; and the last letter in the parentheses indicates gender (see Table 4-1).

Table 4-1
Participants' Characteristics and Their Codes

Motivation	Participant Code		
	University A	University B	University C
High	AH (m)	BH (m)	CH (f)
	AH (f)	BH (f)	CH (m)
Moderate	AM (m)	BM1 (m)	CM1 (f)
	AM (f)	BM2 (m)	CM2 (f)
Low	AL (m)	BL (m)	CL (m)
	AL (f)	BL (f)	CL (f)

Note: A = University A; B = University B; C = University C; H = highly motivated; M = moderately motivated; L = little motivated; m = male; f = female.

4.2.2 Interviews

Semi-structured interviews were conducted with the 18 participants to examine the connection between needs fulfillment and motivation. All the interviews were carried out by

the author and participants' native language (i.e., Japanese). Japanese was used so that all the participants could fully understand the questions and express their opinions and feelings in the interview. Four questions were asked of all participants. The first question was used to gradually introduce the three main topics (i.e., Questions 2–4 below) to the participants, rather than abruptly shifting to narrowly focused points at the very beginning of the interview. The second to fourth questions probed the relationship between L2 motivation and the autonomy needs, relatedness, and competence fulfillment, respectively. If the participants responded to the first question with answers to the questions planned to be asked later, the interviewer did not subsequently ask those questions to avoid redundancy. The participants were encouraged to elaborate on their answers with explanations and examples. The translations of the four questions are as follows:

1. What motivates or demotivates you to learn English?
2. When/If you have more choices in English class, how does/will it influence your motivation to learn English?
3. When/If you have a good relationship with your classmates in group work in English class, how does/will it influence your motivation to learn English?
4. When/If you feel competent in English, how does/will it influence your motivation to learn English?

Each interview, which took approximately 30–40 minutes, was administered in a face-to-face manner in a quiet room, and all the contents were audio recorded for later analysis.

4.3 Data Analysis

The audio-recorded interview data were transcribed by a professional transcriptionist

who was instructed to transcribe the audio-files verbatim. The transcribed data were then coded by the author who classified elements of the data into three categories: autonomy, competence, and relatedness. When coding, she went through the transcription carefully, looking for elements/variations of the participants making comments and/or expressing opinions on the relationship between the needs satisfaction and L2 motivation. When relevant elements/variations were found, she color-coded them into one of the three different colors—blue, pink, or yellow—depending on whether the variation concerned autonomy, competence, or relatedness needs fulfillment. After color-coding, the author re-read and reviewed the coding a few times. The variations were then organized on a worksheet where the author added her interpretation to the variations. Following Seale (1999), these coding and interpretations were returned to the informants for member validation (i.e., participants checked that the researcher's coding and interpretations accurately represented what they meant in the interview) (for the sample worksheet, see Appendices B and C).

After completing the interactive process, the excerpts were translated into English for a presentation of the results. The author translated the excerpts; the translations were then verified by a native speaker of English who had basic knowledge of SLA and the Japanese language. In the process of translation, it became clear that some implicit information given in Japanese needed to be articulated in the English version. This was mainly due to the structural features of the Japanese language, where a speaker often omits the subject, object, and/or other parts of a sentence. In order to obtain message clarity and flow in the English version, some supplementation was given, which is noted within parentheses at the beginning and end of the statements.

4.4 Results and Discussion

4.4.1 Overall findings

The interview results showed that (1) the fulfillment of autonomy needs, which has been understood as giving freedom of choice to students, could motivate some L2 learners whereas it could demotivate other students; (2) a good relationship with the instructor might motivate learners, and a good relationship with other classmates could have a positive or marginal impact on L2 motivation, depending on the learner; and (3) competence needs satisfaction is most likely to motivate Japanese university EFL learners.

In the following subsections, the interview study's main results are presented. The results matched the motivational factors expressed in the interviews to their corresponding psychological needs in SDT. The author then added interpretations to the excerpts that had been validated by respondents. Previous studies were referred to in the discussion, where relevant.

4.4.2 Autonomy needs fulfillment and motivation

The definition of autonomy needs used in the interview included learners' need for opportunities to choose and determine various aspects of English classes and learning. Both positive and negative feelings and opinions were expressed about participants having more discretion in English classes.

Positive impact of giving choices on L2 motivation. Some interviewees expressed positive attitudes toward more discretion being given in their English classes:

> *I think it is quite difficult to match what the instructor would like us to do and what students would like to do. Then if the instructor and students can decide what to do in class by, for example, the instructor giving us some suggestions which we students can choose from, students' motivation will probably increase.* [AH(f)]

Everyone would agree that people make better progress when they are doing what they like. So I think it's better if we can learn about what we are interested in using English. It's better than when we do what is decided (by someone else). [BL(m)]

(My motivation) will go up (if I'm given choices) because, when I choose a task by myself, I know why I am doing it. Then I will take responsibility for the outcome. [CL(f)]:

AH, BL, and CL explained that, by being involved in decision-making, they can engage in English learning tasks that are matched to their values and interests. To them, obtaining the freedom of choice enables them to work on tasks that they understand and accept their values.

Negative impact of giving choices on L2 motivation. Some informants responded negatively to the idea of English instructors letting students make their own choices when learning English:

I'm not the kind of person who would like to come up with some kind of idea by myself. I feel more motivated when I'm given a task by the instructor. If I am told to think (what I should do to learn English), I will feel it is too much hassle. [AM(f)]

If the instructor asks us how and what we want to learn, I won't be able to come up with an idea because I don't even know much about the subject matter. [CM1(f)]

AM is satisfied with and motivated by the condition where choices are made by the instructor. She does not like to make choices and feels it is bothersome when she is told to do

so. In her case, making a choice is something she would do when imposed. CM1 does not feel competent enough to make choices regarding English learning.

Similar to CM1, AL feels it is difficult to make his own choices to successfully improve his English grade. He does not believe that being able to make his own choice is a condition for enhancing his English learning motivation; rather, the condition is likely to lower his motivation. He explicitly explained why he would feel that way by comparing mathematics, which he is very good at, and English, which he does not feel very competent in:

> *Math has a limited number of things to remember... English doesn't work that way. The grammar changes over time, some verbs are irregular, and there are countless numbers of words to remember. It would be painful to decide what to study myself, because there's no clear line between what I must remember and what I don't have to. The first step, deciding what I need to cover, is a pain already.* [AL(m)]

To CM1 and AL, making choices in English learning is something that would be forced by others. In Study 1, while discussing the SEM results referring to previous studies (e.g., Azuma, 1994; Littlewood, 1999; Uebuchi, 2004), the author suspected that some Japanese students may not feel that their autonomy is being supported by simply being given a choice. The interview results presented above confirm this inference.

In Study 1, the author also suggested that some Japanese university EFL students might appreciate and accept choices made by others. One of the interviewees repeatedly expressed his preference to instructors' instructions rather than freedom of choice, supporting the idea that the author put forward:

I want the instructor to set a goal for us so that I can push myself to achieve that. I'd like the instructor to show small steps to get to the goal. [BH(m)]

I get more motivated when everything that will be covered in class is decided (by the instructor). If I'm told I can do whatever I want, I'll lose my competitive mind completely and I tend to think like "working this much is enough, because I'm told I can work at my own pace" or "I can work slower today because I didn't do my homework." Then my study workload will decrease rapidly. [BH(m)]

It has been clearly shown that some Japanese university EFL learners do not value having their own choices about English learning and rather appreciate choices made by the instructor. This again brings up the points to be considered that were suggested in Study 1: (1) the original definition of autonomy proposed in SDT (e.g., Deci & Ryan, 2002) and (2) how the concept of SDT's autonomy is interpreted in the Japanese EFL setting.

As for the first point, it must be noted that, in discussing what autonomy entails, Deci and Ryan (2002) did not exclude actions influenced by others:

> When autonomous, individuals experience their behavior as an expression of the self, such that, even when actions are influenced by outside sources, the actors concur with those influences, feeling both initiative and value with regard to them. (p. 8)

Following the above definition, as long as students understand and accept the value, the instructor making choices for them does not contradict autonomy support. In fact, having students make choices when they do not understand the rationale might be considered to be discouraging their autonomy. This brings up the second point: how the SDT's definition of autonomy is applied in the Japanese EFL setting. As the author mentioned in Study 1, the

needs for autonomy are interpreted as the needs for determining their actions themselves and for taking responsibility for their own studies. Reflecting the definition, Hiromori's questionnaire in the EFL setting is designed to measure autonomy needs fulfillment exclusively by the degree of freedom of choice students are given. This raises a serious question of the instrument's validity. The redefinition of autonomy needs in the Japanese EFL setting and amendment of the questionnaire items based on the redefinition should be carried out.

Suggested modification for the current questionnaire. The preceding discussion on autonomy needs fulfillment and motivation suggests the need to redefine autonomy needs in the Japanese EFL setting and amend the questionnaire items according to the redefinition. As the analysis of the interview data revealed, although some Japanese EFL learners might be motivated by having greater learner discretion in English classes, others might lose their motivation. For those who lose their L2 motivation, being given choices does not support their autonomy needs, as they do not see the rationale or value of making choices for their English learning. Therefore, the revised definition should remove choice as the key concept and should not exclude influence by others. As students' autonomy is supported as long as they understand and accept the value of other-made choices, the revised definition of autonomy should be learners' desire to engage in tasks and activities for which they appreciate and accept the values.

Regarding a questionnaire for future studies, it should not include items that ask the degree of freedom students have because such items do not necessarily gauge their autonomy needs fulfillment. Instead, there needs to be new items to measure how much students understand and accept the value of English learning tasks in which they engage, which reflects the redefinition of autonomy needs.

4.4.3 Relatedness needs fulfillment and motivation

The interview question that asked about the relatedness needs fulfillment and motivation (i.e., the third question) covered only the relationship among classmates because all the relatedness items in Hiromori's questionnaire had been designed to ask how well a respondent felt connected to other students in an English course. In the interviews, some informants volunteered to share their experience about which relationships with their instructors had an impact on their L2 motivation. Thus, this section presents and discusses the interview excerpts concerning instructor–student as well as student–student relationships.

Impact of the instructor–student relationship on learner motivation. The first interview question, which asked about participants' source of L2 motivation in general, revealed that students' relationships with their instructors influenced learner motivation:

> *I think the impact from my English teachers in junior and senior high school was big. The English teachers, both Japanese and non-Japanese, talked to me more actively than teachers of other subjects. That was maybe because I kind of liked English and often asked the teachers questions. Then the teachers treated me kindly by, for example, giving me English learning materials. I think the junior and senior high school teachers who paid me that kind of attention influenced me a lot. If I had met fewer friendly teachers, I wouldn't have liked English so much.* [AH(f)]

> *My motivation to learn English was the highest when I was a freshman. That might be because the instructor was charismatic and I admired her, so I didn't want her to think I was no good.* [AL(f)]

In some cases, an instructor could negatively influence students' motivation:

Teachers have an influence on students' motivation for sure. Students sometimes lose motivation to study because of an instructor. [BM(m)]

Needs for relatedness in the Japanese EFL setting are commonly understood as wanting to connect and engage in English learning activities cooperatively with other classmates and the instructor. Dei's (2011) study, which was conducted in the Japanese junior high school setting, endorsed the value of the teacher–student relationship in the English classroom, finding a medium correlation (r = .37) between the intrinsic motivation of Japanese EFL learners and the satisfaction of the need for relatedness with the teacher. In his study, the teacher paid attention to each and every learner, making time for individual guidance and providing positive and supportive feedback on students' assignments. AH's comments in this study confirm that the teacher's attention and encouragement to students help increase L2 learner motivation.

Impact of the relationship among classmates on L2 motivation. A good relationship with other classmates can have a positive impact on L2 motivation:

[CL(f)]: *You can't learn English by studying it alone. I think learning it through group work is more effective.*

[Interviewer]: *Do you think your motivation to learn in an English class will increase if you get along with your group mates?*

[CL(f)]: *Yes, I think so. If the group members are not bad, I would feel like learning English more.*

If we get to know each other well—for example, if I find a classmate has the same hobby as me through an activity in an English class, and we get closer out of class through the hobby—then I will probably enjoy studying English with that friend as well. [CH(m)]

CH also mentioned the effectiveness of learning English with other students.

> *When I study English with my fellow students, we discuss the meaning of parts of our task. When my friend explains something to me, I understand it better. In that way, learning with friends has a kind of synergetic effect compared with studying alone.* [CH(m)]

CL and CH seem to enjoy learning English with someone with whom they get along well. To them, studying with friends might be a pleasant activity, thereby improving their L2 motivation. Another aspect worth mentioning here is that, when they have an opportunity to work cooperatively with others, it leads to successful learning, which in turn improves their motivation.

Some other students are more focused on the effectiveness of working in a successful group than for the pleasure of it:

> [Interviewer]: *Do you think having a good relationship with other group members might improve your motivation to learn English?*
>
> [BL(m)]: *Yes, it has a pretty good chance (of motivation improvement). (When preparing a group presentation,) we need to have a deep understanding of English. So, in the process of trying to understand English better, we tend to get interested in the language.*
>
> [Interviewer]: *Do you mean you might get interested in the language because you and your group members have a good relationship and help each other prepare the presentation?*
>
> [BL(m)]: *That's right.*

Therefore, having a positive relationship among classmates might improve some EFL learners' motivation. The effects are twofold. First, L2 motivation of some learners might be increased through a good relationship with other classmates. Second, motivation to learn English might be enhanced through learning success, which is the by-product of a good member relationship.

However, for some other EFL learners, a good relationship with other classmates might have little impact on their motivation:

> [AM(m)]: *I think I put my efforts into English learning when I work with friends or people who I enjoy working with. But, well, when a task is set, I work on it regardless of whether I am alone or with other people.*
>
> [Interviewer]: *A relationship with other classmates might not influence your motivation?*
>
> [AM(m)]: *I think a good relationship in a group has a lot to do with working efficiency, but to me, it might have little to do with my motivation to learn English.*

> [AL(m)]: *(When I was in high school,) I made myself learn English words when I was on the train. But some people would like to learn words at their desk at home. If I work with that kind of person in a group, we might not be able to work as a good team.*
>
> [Interviewer]: *Do you mean your learning styles are different?*
>
> [AL(m)]: *Yes.*

It is clear that both AM and AL have already developed their own learning styles, which involve working alone. It should also be noted that both of these students attend an exclusive university and they are likely quite confident with their learning styles. For such students,

having a good relationship with others does not seem to be a very efficient way to learn something and, thus, does not influence their motivation to learn English.

Suggested addition to the current questionnaire. The original purpose of probing the link between the relatedness needs satisfaction and L2 motivation was to confirm the causality between the two. However, the results of the current study, which are also supported by Dei's (2011) study, suggested that a good teacher–student relationship might contribute to enhancing Japanese EFL learners' motivation. As Hiromori's questionnaire includes only items that concern relationships among students, the addition of items to measure the instructor–student relationship is called for. The preceding discussion showed that a instructor's attention, support, and encouragement of individual learners can successfully improve the instructor–student relationship; therefore, questions to gauge learners' perception of these factors should be added.

4.4.4 Competence needs fulfillment and motivation

The interview results confirmed that competence needs satisfaction can be a powerful motivator of Japanese EFL learners:

> *(I came to like English because,) compared with other subjects like math and science, I was clearly better at English.* [AH(f)]

> *Sometimes I get interested in a subject matter a bit and I get into studying it for a while. Then I find my grade in the subject has gone up. I like the subject more because it is interesting, and my grade goes up when I study it. I think this is the cycle I have when I come to like a subject.* [AH(f)]

(What is important is) a sense of achievement. For example, if I read a passage in English and if I understand the meaning well, I would feel a sense of achievement. If there are questions related to the passage and if I can answer them correctly, I would feel even happier. In such cases, I would feel like continuing my English study. [CH(m)]

When I can do (a task) successfully, I begin to like the course itself. Once I grasp the technique to do well in the course, I like to be a bit creative and try a slightly different technique at the next opportunity. [CM(f)]

The other side of the picture is that, when learners feel less competent in English—for instance, they feel that they are falling behind in class or are overwhelmed by the amount of work—they are more likely to begin disliking English:

(As we advanced to higher grades, English) questions got more difficult and my grades went down. Then I tended to pay more attention to other subjects that I was good at and enjoyed studying those subjects rather than English. At high school, the amount of things that we needed to remember increased dramatically... The amount was outrageous, and I felt it was basically impossible (to remember all of them). [AL(m)]

My motivation to work on English goes down when I can't read some words that I don't know and, in addition to that, I find I don't understand some grammar items in the passage. [BM(m)]

I studied little in every English class and I increasingly understood less, and then I started to hate English. [CL(f)]

As the results of the interviews clearly demonstrate, the satisfaction of competence needs help increase Japanese university students' motivation to learn English. This finding is in line with SDT. In addition, the results support the ones acquired in Study 1 and some other previous studies (e.g., Dei, 2011; Hiromori, 2006a; 2006b), confirming the importance of students' competence needs satisfaction in English classes.

4.4.5 Summary of suggested modification points to the commonly used questionnaire

The results and discussion of the current study as well as those of Study 1 presented four points to be covered in modifying Hiromori's questionnaire. This section lists all the modification points suggested thus far and discusses the direction of further studies. The points of amendments are:

1. Redefinition of autonomy needs (based on the results of Studies 1 and 2);
2. Revision or replacement of autonomy items in the questionnaire according to the redefinition (based on the results of Studies 1 and 2);
3. Addition of items to measure the instructor–student relationship (based on the results of Study 2).
4. Revision or replacement of external regulation items (based on the results of Study 1); and
5. Review, revision, or replacement of identified and introjected regulation items (in response to the problem revealed in Study 1).

Regarding the first to fourth points above, Studies 1 and/or 2 specifically indicated the necessity of the areas to work on. As for the fifth point, however, it has not been made clear what had caused the extremely strong correlation (r = .89) between the identified and introjected factors. Possible causes include the applicability of the theory in the Japanese

university context, problematic questionnaire items, or both. The subsequent study, where the questionnaire will be modified, would be a reasonable starting point for trying to uncover the source of the problem, and thus the review, revision, or replacement of the items in the factors should be conducted in the ensuing study.

Some researchers claim that, when using—let alone revising—questionnaire items, one should have a clear and deep understanding of the constructs and their working definitions, which are the basis for questionnaire items (e.g., Sakai & Koizumi, 2014). Sakai and Koizumi recommended that, for examining construct definitions and questionnaire items, one should review previous studies as well as the theory. Following this recommendation, the review of every construct and item in the commonly used questionnaire seemed appropriate. It did more so in this case, where more than half (i.e., five out of eight) of the constructs in the questionnaire had signaled (possible) points for improvement. Yet can it still be called "modification" of the questionnaire? Or should it rather be called the development of a new questionnaire? As far as the author understood, no clear line exists between the major modification and the development of a questionnaire. Actually, the development of a new questionnaire often involves "borrowing questions from established questionnaires" (Dörnyei, 2010, p. 40); thus, the line between modification and development is blurry. Taking into account the large scale of modification that will be made to the existing questionnaire, the author decided to consider it as the development of a new questionnaire.

4.5 Conclusion and Issues for Further Study

This study aimed to scrutinize the causality between fulfilling EFL learners' needs for autonomy, competence, and relatedness. The other purpose of the study was to specify modification points to Hiromori's questionnaire in the Japanese EFL setting.

The results of this interview study present some interesting points. First, the analysis of the interview data uncovered that, whereas some Japanese EFL learners might be

motivated by obtaining greater learner discretion in English classes, others might lose their motivation. For those who lose their L2 motivation, being given choices does not support their autonomy needs because they do not see the rationale or value of making choices for their English learning. This called for the redefinition of autonomy needs in the Japanese EFL setting and the amendment of questionnaire items according to the redefinition.

Second, it was found that a good instructor–student relationship might contribute to enhancing learner motivation. Furthermore, whereas some students can be motivated by being connected to other classmates, other students do not see the rationale or have the desire to work with others in English classes. As the widely used questionnaire did not include items asking how learners perceive their relationship with their instructor, the addition of items to gauge the instructor–student relationship was suggested.

Finally, it was confirmed that the satisfaction of competence needs could function as a strong motivator of Japanese university EFL students.

Based on the suggestions made in this study as well as those in Study 1, it was confirmed that a new questionnaire should be developed. This was proposed as the research focus of the subsequent study: Developing a new questionnaire to assess Japanese university EFL learners' motivation. In the following study, the author will describe the development of a questionnaire designed to assess Japanese EFL learners' motivation at the tertiary level. In order to demonstrate the validity of the instrument, some measures should be taken in the process of questionnaire development. The validation methods and their results, therefore, will be reported as well.

The development of the new instrument will pave the way for further research in the pursuit of a better understanding of the motivation of Japanese university EFL learners. This could be done by taking several steps. First, by using the new questionnaire, one can proceed to validate SDT in the Japanese EFL context. A similar procedure should then be undertaken in different contexts to test the versatility of the new questionnaire and SDT. Upon

verification of the theory, pedagogical implications for enhancing L2 learners' motivation could be proposed, which can be examined in an actual classroom. Although taking all these steps sounds like a lot of work, it could serve as a concrete step toward expanding the opportunity to improve L2 learners in various settings.

Note

1. Time demands and possible discomforts that might be caused in the interview were outlined.

5. Study 3

5.1 Purposes

The results of Studies 1 and 2 clearly indicated that the commonly used questionnaire to gauge L2 motivation in the Japanese EFL context needed improvement. In Study 2, the author summarized the points discussed in Studies 1 and 2 and listed five areas that were required consideration when improving the questionnaire. The points were: (1) a redefinition of L2 learners' autonomy need; (2) an amendment of autonomy-related items based on the redefinition; (3) an addition of items to measure the instructor–student relationship; (4) a revision or replacement of external regulation items; and (5) a review, revision, or replacement of identified and introjected regulation items. Bearing these five points in mind, this study aimed to:

- develop a new version of the questionnaire that reflects the points listed in Study 2; and
- validate the new instrument.

5.2 Method

5.2.1 Overall procedure

The procedure of developing a new version of the questionnaire and verifying it was as follows: In response to the results of Studies 1 and 2, as well as following the criteria presented by Dörnyei (2010) and Sakai and Koizumi (2014), the author started with a careful scrutiny of the relevant literature. She examined definitions of all of the conventionally used SDT constructs in the ESL/EFL context[1]—the needs for autonomy, the needs for competence, the needs for relatedness, intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. The author then developed an item pool for all the constructs. Based on the refined definitions, she selected items to include in the first draft of the new questionnaire. At this point, she used expert judgment to review the items for redundancy, content validity, clarity, and readability. The author then administered the draft

to three university students to obtain feedback, based on which the draft was amended. The revised draft of the questionnaire was presented to 210 Japanese university students and their reactions were collected. The author conducted a parallel analysis (PA) (Hayton, Allen, & Scarpello, 2004) on the collected data to determine the number of factors to retain for a factor analysis. After that, an EFA was performed to extract the emerging factors. Finally, the author verified the internal consistency of the questionnaire. In the following sections, the procedure is described in a step-by-step manner.

5.2.2 Verifying the definitions of the constructs

When developing a questionnaire within a framework of a theory, examining definitions of constructs in light of the theory is an important step for ensuring the content validity of the instrument (Dörnyei, 2010; Sakai & Koizumi, 2014). Therefore, the author began the development process by examining the definitions of the SDT's constructs. First, the author reviewed SDT studies conducted in the Japanese EFL setting (e.g., Dei, 2011; Hayashi, 2011; Hiromori, 2006a; Otoshi & Heffernan, 2011; Sakai & Koike, 2008; Tanaka & Hiromori, 2007) and listed their working definitions of the constructs. Then, she compared their working definitions with Deci and Ryan's (2002) original set. The definition of each construct was carefully checked to determine if they matched the original definition and, at the same time, fit in the Japanese university EFL setting. This careful comparison enabled us to decide on whether to redefine, refine, or use the working definition as is. When redefining and refining the existing definitions, the author referred to—in addition to Deci and Ryan—the results of Study 2, the interview study in which the author probed the relationship between needs satisfaction and L2 motivation of Japanese university students. The process yielded a new set of working definitions of the SDT constructs applied to the Japanese EFL context (Table 5-1).

It should be noted here that, of all the existing definitions, autonomy need required the most consideration and a major revision. In the Japanese EFL context, the need for autonomy had been understood as learners' desire to determine their actions and take responsibility for the learning outcome. This, compared with the SDT's original definition, lacks the aspect that the concept does not exclude influence from others as long as the actor concurs with it. Furthermore, results presented in earlier chapters (Chapters 3 and 4) indicated that, although giving choices may motivate some L2 learners, it may demotivate others. Thus, the definition which had been used in the Japanese EFL setting may not have reflected Japanese EFL learners' actual autonomy need. Therefore, the author rewrote the autonomy need definition so that it (1) did not exclude influence from outside sources and (2) did not focus only on learners having discretion.

Table 5-1

Working Definitions of SDT Constructs in the Japanese EFL Setting

Construct	Definition
The need for autonomy	The desire to engage in learning in and outside of classes upon understanding and concurring on the value of learning.
The need for competence	The desire to understand the contents of English classes and to become good at English.
The need for relatedness	The desire to build and maintain a good relationship with the teacher and other classmates.
Intrinsic motivation	Motivation that involves behavior performed for its own sake—for the genuine interest in engaging in the action or for the pleasure and satisfaction entailed in the action.
Identified regulation	The state in which people take an action because they acknowledge and understand the value and importance of the behavior.
Introjected regulation	The state in which an action is caused by the feeling of guilt or pride. Introjection-based behaviors are performed to avoid anxiety, shame, or guilt.
External regulation	The state in which the source of a person's action is external pressure. Externally motivated people do not accept the value of the action.
Amotivation	The state of lacking motivation, intrinsically or extrinsically. When people are amotivated, people refuse to take an action.

5.2.3 Developing the item pool

The item pool was developed by collecting items from the relevant literature and creating new items. Most items were taken from previous SDT studies that used a questionnaire in the Japanese EFL setting (e.g., Dei, 2011; Hayashi, 2011; Hiromori, 2006a; Otoshi & Heffernan, 2011; Sakai & Koike, 2008; Tanaka & Hiromori, 2007). Some items were written by the author based on the interview study conducted in Chapter 4 and other previous studies that offered explanation and/or support for her findings (e.g., Deci, Vallerand, Pelletrier & Ryan, 1991; Reeve & Jang, 2006; Uebuchi, 2004). The newly added items were created to reflect the modified construct definitions and to add greater variety in some of the constructs. The original item bank contained 132 items. Dörnyei (2010) suggested that the original item pool should include one and a half to four times more items than the final scales. As his suggestion implies, a larger item bank allows a researcher to be more selective in the process of questionnaire development. As a result, the author collected and/or created as many items as possible at this point. All of the items were written in prospective participants' native language (i.e., Japanese). They were reviewed by the author to ensure that they were succinctly worded, with each item containing one construct. Revisions were made where deemed necessary.

5.2.4 Selecting items and piloting

The refined item pool was subjected to expert judgment. A professional editor of government authorized English textbooks for junior and senior high schools was asked to cooperate in this study as an expert. She was chosen because she (a) had superior sensitivity to the Japanese language and (b) had expertise in English education in Japan. The expert was given explanations and definitions of the SDT constructs before she was asked to judge if the items included under each factor (1) reflected the definition of the factor, (2) were expressed clearly, and (3) were written in plain and easy-to-understand Japanese. After the expert

examined all the items, she and the author collaborated to select items for inclusion in the first draft of the questionnaire.

The first draft of the questionnaire contained three sections: one for measuring the basic needs (i.e., the Psychological Needs Scale), another for measuring English learning motivation (i.e., the English Learning Motivation Scale), and the other for asking demographic questions. The Psychological Needs Scale contained 20 question items, and the English Learning Motivation Scale contained 26. Following Dörnyei (2010), the author placed the demographic section at the end of the questionnaire; this section asked respondents to indicate their gender, nationality, age, year in university, experience abroad, and English proficiency level.

The draft was piloted with a few university students for additional feedback; three students of the author volunteered to take on the task. They were asked to respond to the questionnaire and provide feedback on the clarity of the layout, instructions, and the question items. They were also asked to report any questions that were difficult and/or awkward for them to answer. Furthermore, they were asked to let the author know of any issues that they noticed. The students received a worksheet listing these points and were asked to write down their comments. Reflecting their comments, the author further refined the instrument.

5.2.5 Final piloting

Questionnaire respondents. Using the revised draft of the questionnaire, the author administered a field test with 210 university EFL learners in Japan, with their written consent. All of the participants were provided with the background to and summary of the research and the author's contact information. The author intentionally collected data from students with various characteristics such as academic interests and English proficiency level, because, as pointed out in the Literature Review section (Chapter 2), testing a questionnaire with a homogenous sample might result in producing a highly context-dependent instrument. To

avoid such a problem, the questionnaire was administered at five academically varied universities; the participants' majors also varied (e.g., business administration, economics, English, engineering, Japanese, medicine, nursing, sociology, and sports science). Reflecting the varieties of the students, their English levels (self-reported) varied as well, with the most proficient student falling in the B2.2 or higher level of the CEFR-based framework for EFL in Japan (CEFR-J)[2] and the least proficient falling in the A1.1 level of CEFR-J (for the descriptors of CEFR-J, see Appendices E & F). Table 5-2 illustrates the breakdown of the participants after data cleaning *(N* =203).

Table 5-2

Participants to the Final Piloting

Level (*Hensachi*) of University	Department	*N*
High (70-)	Arts and Sciences, Medicine	54
Middle (51-62)	English, Nursing, Sports Science	81
Low (- 50)	English Communication, International Society, Japanese, Trans-Culture	68
	Total	203

Note. Hensachi = A scale that gives a measure of the difficulty for entering a university. It is an indicator that shows a university's position among others; the 50 of Hensachi means average; above 50 means higher than average; and below 50 means lower than average. Hensachi has been most commonly used for university ranking in Japan. The Hensachi values for this table were taken from Benesse® Manavision: http://manabi.benesse.ne.jp/.

Data analyses. The author employed three main methods to obtain information about the validity and reliability of the questionnaire: an expert review, an EFA, and reliability values. First, as previously described, to ensure the content validity of the constructs of the scales, the author carried out an expert review of all question items during the questionnaire's development. Second, to empirically illustrate the construct-related validity of the

questionnaire, she conducted a Parallel Analysis (PA) (Hayton, Allen, & Scarpello, 2004) and an EFA on the data collected from the respondents.

PA is a preliminary analysis conducted prior to an EFA. It 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. Hayton et al. (2004) claimed that PA is one of the most accurate factor retention methods. They discussed two major factor retention methods: Kaiser or mineigen greater than 1 criterion (K1) and Cattell's (1966) scree test. Hayton et al. offered evidence that K1 criterion tends to overestimate the number of factors, which can lead to several problems, such as a creation of factor structures that are difficult to interpret and are poorly replicable. As for the scree test, they pointed out that there is often no clear breaks or two or more breaks in the scree plot of the eigenvalues, and thus the scree test tend to suffer from subjectivity and ambiguity, which inevitably cause inaccuracy in factor retention. Based on the review of the previous research that evaluated the accuracy of factor retention methods, Hayton. et al (2004) concluded that the PA approach should be chosen to specify the number of factors retain in an EFA. Given the evidence, the author decided to use PA, rather than one of the major factor retention methods.

An EFA is a procedure often used in questionnaire development to examine if a group of items cluster together to form a construct. This procedure can also be used to find out whether or not the items are successfully put together as they are intended in the processes of item selection and expert judgement. In other words, an EFA can—albeit somewhat weakly—confirm the content validity of the instrument. Finally, Cronbach's alpha index was computed to examine the internal reliability of each construct in the scales. SPSS Statistics Version 20 was used for the EFA and when computing the reliability coefficients. In the following section, the author presents the results of the EFA and reliability values and discusses the validity and reliability of the modified questionnaire.

Before the collected questionnaire data were subjected to a PA and an EFA, each response was checked; seven cases that did not seem to include sincere responses (e.g., choosing five on the scales throughout) were excluded, leaving 203 responses. In addition, the distribution patterns of the data were examined by looking through the skewness and kurtosis values of each item. The kurtosis values of items 11 and 13 on the motivation scale were larger than ±2, signaling the non-normality of the item score distribution (Takeuchi & Mizumoto, 2012). Therefore, they were excluded from further analyses.

5. 3 Results and Discussion

At the beginning of this section, the results regarding the Psychological Needs Scale are shown and discussed, which are followed by those of the English Learning Motivation Scales. After that, the author describes and discusses the further modifications added to the questionnaire.

5.3.1 Psychological Needs Scale

Parallel analysis. A PA was run on the two scales in the questionnaire separately. Figure 5-1 shows the results of the PA run on the question items in the Psychological Needs Scale. The results indicated that the retention of three factors was appropriate, which was in line with the theory as well as the number of factors that the questionnaire intended to include at the time of development.

Factor structure. Upon determination of the number of factors to retain, an EFA (maximum likelihood method with promax rotation) was performed on the questionnaire data. After the initial run of the EFA on the data, items with loadings smaller than .40 were eliminated, following Shigemasu, Yanai, and Mori (1999). In addition, if items had loadings larger than .40 on more than two factors at the same time, they were eliminated. The factor analysis was repeated on the remaining items until all the items had loadings larger than .40 and none

of them had similar loadings on two or more factors. The resulting pattern matrix for the Psychological Needs Scale is shown in Table 5-3. For the actual questionnaire items retained, see Table 5-5.

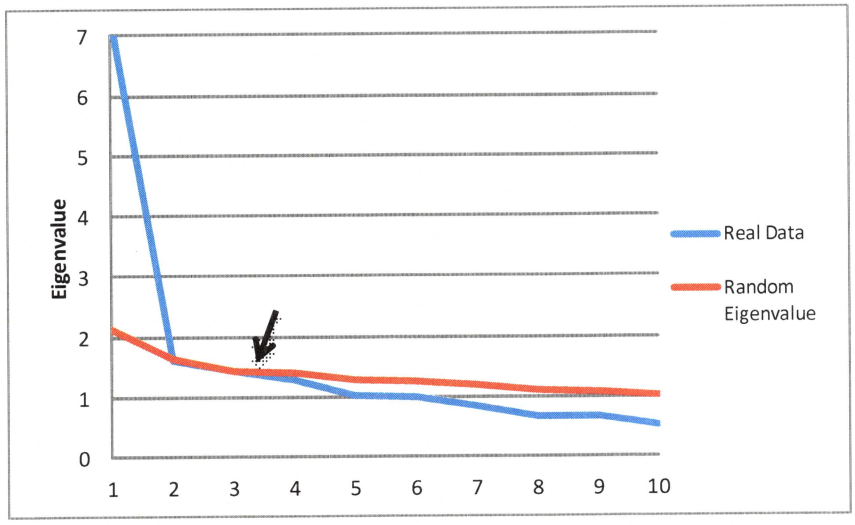


Figure 5-1. Plot of the actual versus randomly generated eigenvalues for Psychological Needs Scale. The arrow indicates that eigenvalues from random data exceeded the eigenvalues from research data after the third factor.

Two of the items for measuring the relationship between the instructor and students—namely, item 3, "I think my English instructor's demeanor makes it easy for students to ask questions", and item 2, "I think my English instructor understands students' feelings"—were placed in the first factor of the Psychological Needs Scale, together with the other four items intended to be in autonomy. As the number and total of the loadings of the autonomy items surpassed those of the instructor–students relatedness ones, the first factor was named *autonomy*.

In light of this result, the author reexamined the items designed to gauge relationships between the instructor and students and those intended to measure autonomy. One possible reason why items 2 and 3 (i.e., items originally written for the instructor–student relationship) and autonomy ones were clustered together was that these items were close in meaning. For

Table 5-3

Results of Exploratory Factor Analysis for Psychological Needs Scale (Maximum Likelihood Method with Promax Rotation, N = 203)

	I	II	III
Factor 1. Autonomy (Alpha = .86)			
needs_19	**.77**	.07	-.10
needs_15	**.71**	-.07	-.05
needs_3	**.71**	-.18	.10
needs_4	**.68**	.12	-.06
needs_2	**.60**	.14	.12
needs_8	**.54**	.10	.19
Factor 2. Competence (Alpha = .75)			
needs_17	-.05	**.97**	-.06
needs_7	.09	**.64**	.05
needs_16	-.04	**.57**	.04
Factor 3. Relatedness (Alpha = .80)			
needs_10	.02	-.09	**.90**
needs_6	.01	-.03	**.71**
needs_12	-.05	.20	**.65**
Inter-factor correlations	I	II	III
I	—	.64	.67
II		—	.49
III			—

Note. Factor loadings > .40 are in boldface.

example, the instructor–students item "I think my English instructor understands students' feelings" and the autonomy item "My instructor takes students' viewpoints in consideration in class" are similar in that the instructor pays attention to students' sentiments. As for the other instructor–students item "I think my English instructor's demeanor makes it easy for students to ask questions" (item 3), one can easily say that an approachable instructor is an instructor to whom students can easily express their thoughts and feelings. Teachers who are open to students' opinions and questions are considered more autonomy-supportive than controlling (Reeve & Jang, 2006); therefore, it can be argued that item 3 measures instructors' autonomy-supportiveness. Indeed, when an instructor wants to support students' autonomy, the instructor needs to trust them and respect their feelings and thoughts, which inevitably

entails a good relationship between the instructor and students. Given that a good instructor–student relationship is closely linked to supporting learner autonomy, it is legitimate that these items which were originally thought to belong to two different constructs (i.e., items 2, 3, and four others under Factor 1 in Table 5-3) clustered together.

All of the items in the second factor were originally designed to be in the need for competence. Likewise, all the items in the third factor were prepared to gauge the relatedness fulfillment among students, signaling that item selection and expert judgment were successfully conducted and thus achieved content validity. In addition, the fact that the EFA results were in line with the theory suggests that construct validity of these two subscales were effectively obtained. It was decided that the second and third factors would be named *competence* and *relatedness*, respectively.

Internal reliability. Cronbach's alpha was computed to examine each factor's internal reliability. As shown in Table 5-3, the value for all three factors—autonomy, competence, and relatedness—reached quite a high level (i.e., α = .86, .75, and .80 respectively), representing sufficient internal consistency of the scale. In addition, the alpha values obtained in this study were higher than those in Hiromori's (2006a), where the commonly used questionnaire was developed, signaling the successful development of the new scale.

5.3.2 English Learning Motivation Scale

Parallel analysis. Another PA was run on the question items in the English Learning Motivation Scale. The results indicated that the retention of four factors was appropriate (see Figure 5-2).

Factor structure. The same procedure as the one used with the Psychological Needs Scale was adapted for the English Learning Motivation Scale. The pattern matrix for the motivation scale is shown in Table 5-3 (see Table 5-6 for the actual questionnaire items retained). In the current study, items originally intended to be in identified regulation and introjected

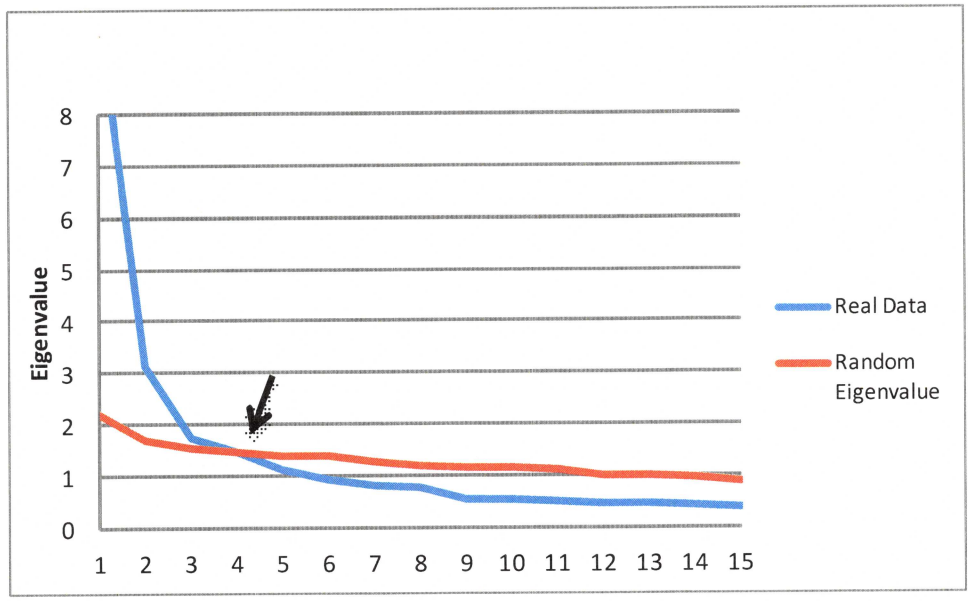


Figure 5-2. Plot of the actual versus randomly generated eigenvalues for English Learning Motivation Scale. The arrow indicates that eigenvalues from random data exceeded the eigenvalues from research data after the fourth factor.

regulation were clustered together in the third factor of the English Learning Motivation Scale. A closer examination of the pattern matrix showed that all but the third item were originally intended as an identified regulation subscale. Therefore, the third factor was named *identified motivation*. Previously, the same phenomenon appeared in Study 1. This could suggest that distinguishing identified regulation and introjected regulation, which are adjacent to each other on the motivation continuum, might be difficult for Japanese university EFL learners.

All other groups of items were combined to form factors as anticipated and in line with SDT, which indicated the content and construct validity of the subscales. All of the items in the first factor were designed for inclusion in the intrinsic motivation subscale. Likewise, all the items in the second factor were intended to be in the amotivation subscale. Furthermore, the same was found in the fourth factor, with all items prepared for the external motivation subscale being included. Therefore, it was naturally decided that the first, second, and fourth factors would be named *intrinsic motivation*, *amotivation*, and *extrinsic motivation*,

respectively.

Table 5-4

Results of Exploratory Factor Analysis for English Learning Motivation Scale (Maximum Likelihood Method with Promax Rotation, N =203)

	I	II	III	IV
Factor 1. Intrinsic (Alpha = .87)				
motivation_9	**.76**	.14	.14	.06
motivation_7	**.75**	.07	-.06	.11
motivation_11	**.72**	-.06	.01	-.09
motivation_20	**.65**	-.10	.10	.06
motivation_18	**.60**	-.16	.00	.01
motivation_13	**.65**	-.10	.10	-.32
Factor 2. Amotivation (Alpha = .86)				
motivation_5	-.07	**.99**	.11	-.15
motivation_14	.28	**.79**	-.19	.05
motivation_12	-.02	**.72**	.04	-.09
motivation_22	.02	**.61**	-.13	.14
motivation_4	-.42	**.55**	.14	.03
Factor 3. Identified (Alpha = .88)				
motivation_23	-.06	-.02	**.90**	.11
motivation_24	.02	-.03	**.75**	.14
motivation_3	.04	.06	**.76**	.20
motivation_15	.06	-.06	**.64**	-.17
motivation_1	.06	.05	**.63**	-.22
motivation_21	.23	-.04	**.59**	.03
Factor 4. External (Alpha = .82)				
motivation_25	-.04	-.14	.20	**.85**
motivation_26	.09	.24	.07	**.74**
motivation_19	.00	.17	-.07	**.70**
Inter-factor correlations	I	II	III	IV
I	—	-.42	.65	-.58
II		—	-.56	.69
III			—	-.58
IV				—

Note. Factor loadings > .40 are in boldface.

Internal reliability. Reliability coefficients (Cronbach's alpha) for the English Learning Motivation Scale are shown in Table 5-4. As with the Psychological Needs Scale, the results for this scale were satisfactory for all the factors, with all values being higher than .80. In addition, as was the case with the needs scale, the reliability coefficients attained in the

current study exceeded those in Hiromori's (2006a), where the commonly used questionnaire was developed, indicating the successful development of the scale.

5.3.3 Further modification

The administration of the "final revision" of the questionnaire yielded feedback from the students who responded to the questionnaire and instructors who cooperated in the piloting. This resulted in the further modification of the questionnaire. In particular, three areas were revised. First, it was pointed out that one item in the competence construct in the needs scale that was considered verbose: "I think I sometimes gain a sense of fulfillment when the results of my efforts are achieved in English class" (in Japanese, English translation by the author). In response to the feedback, the author decided to shorten it to "I think I sometimes gain a sense of fulfillment when my efforts bear fruit in English class."

Second, the author decided to add the phrase "I think" to the items in the Psychological Needs Scale unless doing so made the sentence redundant, awkward or unnatural. One instructor who helped us administer the survey pointed out that, as the scale is designed to measure students' perceptions rather than actual conditions, the items should read "I think" to clearly indicate they are asking about participants' perceptions. After considering the comment, the author decided to follow the advice.

Finally, the author changed "major" in the demographic section to "department" because she discovered that, at some universities, students choose their department when entering the university, but do not choose their major until they advance to the third year. As participants in this study included first- and second-year students, some of them could not answer the original question. The resulting new questionnaire items, which were translated from Japanese into English by the author, are presented in Table 5-5 and 5-6 (for the Japanese version, see Appendix D).

Table 5-5

Psychological Needs Scale

Factor	Question Item
Autonomy	I think my English instructor respects our opinions about class.
	My English instructor explains the value and/or meaning of activities and assignments.
	I think my English instructor understands students' feelings.
	My English instructor supports us in learning English.
	My instructor takes students' viewpoints into consideration in class.
	I think my English instructor's demeanor makes it easy for students to ask questions.
Competence	I think I sometimes gain a sense of fulfillment when my efforts bear fruit in English class.
	I think I sometimes feel a sense of achievement in English class.
	I think I can get a satisfying grade in English.
Relatedness	I think there is a cozy atmosphere in my English class.
	I get along with my friends who are in the same English course.
	I think my English class has a cooperative atmosphere during pair and group work.

Table 5-6

English Learning Motivation Scale

Factor	Question Item
Intrinsic	I study English because I like to get exposed to English itself.
	I study English because I get feeling of satisfaction when finding out new things.
	I study English because I get stimulated by learning English.
	I study English because I feel happy when I understand something that I did not before.
	I study English because listening to someone speaking English makes me feel good.
	I study English because speaking the language makes me feel good.
Identified	I study English because I think it will be useful in various situations.
	I study English because I want to become a person who can use English.
	I study English because a lack of mastery of English can get me in trouble in the future.
	The reason why I study English is that I think English ability will benefit my growth.
	English is important for my future.
	I study English because it is an important subject for my career path.
External	If I did not need to learn English, I would not.
	I study English out of necessity to pass exams.
	I study English because I am told to do so.
Amotivation	I feel that learning English is a waste of time.
	I see no point in learning English.
	I don't understand why I need to study English.
	I simply don't want to study English anymore.
	I don't understand the purpose of learning English.

5.4 Conclusion and Directions for Further Studies

The current study described the development and validation of a new instrument for assessing Japanese EFL learners' motivation at the tertiary level. The SDT-based questionnaire was developed carefully by taking several steps. The validity and reliability of the instrument were also examined. The results of the expert judgement, EFA, and reliability computation show that the new questionnaire has higher validity and reliability than the questionnaire that is widely used in the field.

This study facilitates efforts in future studies to achieve further refinement of the instrument and its verification in the Japanese EFL setting. As a next step, the new questionnaire needs to be tested using a different sample to check its content validity. The instrument's further verification will be sought in Chapter 6 (Study 4).

Notes

1. In addition to the constructs used in this study, SDT proposes integrated regulation which is the most autonomous form of extrinsic motivation. However, earlier studies in education and ESL/EFL had difficulty distinguishing integrated regulation from identified regulation, the adjacent construct on the motivational/regulation continuum (Noels, Pelletier, Clément, & Vallerand, 2000; Vallerand, 1997). For this reason, integrated regulation was not included in this study.
2. CEFR-J Wordlist Version 1.1 (2013). Tono Laboratory, Tokyo University of Foreign Studies. The CEFR-J is based on the Common European Framework of Reference for Languages (CEFR). The CEFR-J is adapted from the CEFR and modified to suit the Japanese EFL context. The CEFR-J has 12 levels, from Pre-A1 to C2—with Pre-A1, being the most novice, and C2, being the most advanced. These levels are described by sets of

descriptors/can-do statements. In the new questionnaire, the descriptors were used to identify the respondents' (self-reported) English abilities.

6. Study 4

6.1 Purpose

In Study 3, a new questionnaire was developed to assess Japanese university EFL learners' motivation. The study also examined the validity and reliability of the new instrument using experts' judgement, EFA, and reliability computation. The results showed that the new questionnaire had higher validity and reliability than the questionnaire which had previously been widely used in the field. Nevertheless, the author pointed out that the new instrument required more tests by using different samples to further check its validity. In view of this, the current study was conducted. The objective of this study was to:

- validate the newly developed questionnaire by using a different sample from that of Study 3.

The fit of the model to the actual data, which was taken from a varied population, was evaluated. At the local level of the model, the causal relationships between the innate psychological needs and motivation were investigated. Special attention was placed on the relationship between autonomy needs satisfaction and Japanese EFL learners' motivation because the autonomy subscale was extensively revised in the process of developing the new questionnaire.

6.2 Method

6.2.1 Sample size

Before collecting data, the number of participants was determined to be a desirable sample size for the analyses planned later (i.e., a factor analysis and SEM). First, an a priori power analysis using *G*Power* 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) was conducted to calculate the minimum number of participants required for SEM. The results showed that

at least 231 participants would be required. The required sample size for a factor analysis was then determined based on previous studies. 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 200 the minimum number of participants for this study. Hirai (2012) claimed that a sample size of 300 or more is preferable for a reliable calculation of the correlation coefficient. To be safe, the author made sure to collect data from at least 300 participants; the final number was 486.

6.2.2 Participants

The questionnaire was administered to 486 students in Japan, with their written consent. The consent form included an explanation of the study and the author's contact information. In addition, the introduction to the questionnaire clarified that the questionnaire was not a test and, thus, participants' responses to the questionnaire would not be considered when determining their course grade.

The author intentionally collected data from students with various characteristics so that the sample could better represent the population of Japanese university EFL learners. In order to ensure participants' diversity, data were collected from several different departments (i.e., agriculture, economics, science and engineering, literature, nursing, medicine, and sports science) at four academically varied universities. Of the 486 participants, 280 (58%) were males and 202 (42%) females, with the gender of the remaining 4 not being indicated and, therefore, marked as unknown. Reflecting the varieties of the students, their (self-reported) English levels varied as well, with the most proficient student falling in the B2.2 or higher level of the CEFR-based framework for EFL in Japan (CEFR-J)[1] and the least proficient falling in the A1.1 level of CEFR-J (for the descriptors of CEFR-J, see Appendices D & E). Table 6-1 illustrates the breakdown of the participants of the current study, after data cleaning (N =444).

Table 6-1
Participants to Study 4

Level (*Hensachi*) of University	Department	*N*
High (63-)	Economics, Literature, Medicine, Science and Engineering	255
Middle (51-62)	Agriculture, Nursing, Sports Science	136
Low (- 50)	Literature	53
	Total	444

Note. Hensachi = A scale that gives a measure of the difficulty for entering a university. It is an indicator that shows a university's position among others; the 50 of Hensachi means average; above 50 means higher than average; and below 50 means lower than average. Hensachi has been most commonly used for university ranking in Japan. The Hensachi values for this table were taken from Benesse® Manavision: http://manabi.benesse.ne.jp/.

6.2.3 Questionnaire

The questionnaire developed in Study 3 was used. It included three parts: the English Learning Motivation Scale, the Psychological Needs Scale, and the demographic information section. At the beginning of the questionnaire, a brief explanation was given about the questionnaire, followed by instructions with an example illustrating how to respond to the questions. 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). Tables 5-5 and 5-6, in Chapter 5, list the items in the questionnaire, and the whole questionnaire, including the instructions and demographic information section, is provided in Appendices D (the Japanese version) and E (the translated version).

6.2.4 Data cleaning

Before the collected data were subjected to any analyses, each response was checked. Some participants chose one and five on the scale in turn; others chose five on the scale

throughout the questionnaire. These responses were considered invalid and therefore excluded from analyses; 42 cases were excluded, leaving 444 responses.

6.2.5 Data analyses

Two types of analyses were conducted in this study: a CFA and a SEM analysis.[2] A CFA analysis deals with measurement models; it is effective for evaluating the factor structure of a psychometric instrument and, therefore, is often used during the process of scale validation (Brown, 2006). An SEM analysis deals with the relationship between latent variables, evaluating how the latent factors/constructs are interrelated (Brown, 2006); thus, it is often used to verify theory against measured data.

Brown (2006) argued that a CFA should be conducted prior to a SEM analysis, because the poor fit of an SEM model is more likely to stem from misspecification in the measurement model (i.e., in the manner of how question items and latent factors are related) rather than from that in the regression model (i.e., in the manner of how latent factors are interrelated). In this study, a CFA was run on the collected data to validate the factor structure. Then, with the polished factor structure, an SEM analysis was conducted to verify the regressive relationships among factors.

Confirmatory factor analysis. Before conducting a CFA (maximum likelihood method with Promax rotation), a couple of prerequisites (Brown, 2006) were checked. First, a good number of participants (i.e., more than 180, as indicated by Hair et al., 2008) were available for the analysis. Second, the normality of distribution was examined by checking Mardia's multivariate kurtosis. 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 48.22, suggesting a high level of non-normality in the sample. To tackle the problem, the maximum likelihood robust option of Structural Equation Modeling Software (EQasionS: EQS) Version 6.1 was used, as it is able to cope with non-normal data and reliably infer the model (Bentler,

2006; Byrne, 2006). In the CFA, the author used a number of fit indices to evaluate the goodness of fit of the model. Following Brown (2006), this study used three indices provided in EQS: (1) comparative fit index (CFI); (2) root mean square error of approximation (RMSEA); and (3) standardized RMR (SRMR), similar to Study 1.

Based on the results of Study 3 and other previous SDT studies in the ESL/EFL setting (e.g., Noels, Pelletier, Clément, & Vallerand, 2000; Vallerand, 1997), a three- and a four-factor structures were assumed in the Psychological Needs Scale and the English Learning Motivation Scale, respectively. The validation of the factor structure was performed in gradual increments. First, a CFA was run to evaluate the structure of each factor/subscale (e.g., how well autonomy items are related to the autonomy factor). After the initial run on the data, the goodness of fit was checked. If the model had a poor fit, items with low loading and/or high residual were eliminated. The analysis was repeated until the model of each subscale presented a decent to good fit. Then, a CFA was run again on the overall structure of each scale (i.e., the four-factor structure in the English Learning Motivation Scale and the three-factor structure in the Psychological Needs Scale). The fit was examined one last time, and any additional elimination or exchange of items was done, as necessary.

SEM analysis. As with the CFA, some major prerequisites (In'nami & Koizumi, 2011; Takeuchi & Mizumoto, 2012) were checked before conducting the SEM analysis. First, a good number of participants (i.e., more than 231, as indicated by the power analysis) were available for the analysis. Second, no value was missing in any of the participants' data. Finally, multicollinearity was checked by computing variance inflation factors (VIF), whose values ranged from 1.99 to 2.36, confirming that no strong correlation existed among the predictor variables. The author then conducted the SEM analysis using the maximum likelihood method. As previously mentioned, the sample collected for this study was non-normal; therefore, the maximum likelihood robust option of EQS was used. As in Study 1, in order to evaluate the goodness of fit of the model, the author selected to use CFI,

RMSEA, and SRMR, referring to Asano, Suzuki, and Kojima (2005), In'nami and Koizumi (2011), and Takeuchi and Muzumoto (2012).

6.3 Results and Discussion

This section presents and discusses results of the CFA and SEM analysis. As for the CFA results, how well the scales are structured and how well the structures of the scales go along with the theory are discussed. Regarding the results of the SEM, the cause–effect relationships between the psychological needs and motivation are evaluated and discussed.

6.3.1 Descriptive Statistics

Tables 6-2 and 6-3 display descriptive statistics based on data collected using Psychological Needs Scale and English Learning Motivation Scale, respectively. They contain the correlation coefficients between items as well as the mean and standard deviations of each questionnaire item.

Table 6-2
Correlations between Items in the Psychological Needs Scale

	ND1	ND2	ND3	ND4	ND5	ND6	ND7	ND8	ND11	ND12
ND1	—	.35**	.29**	.44**	.41**	.31**	.41**	.28**	.36**	.17**
ND2		—	.49**	.32**	.28**	.56**	.42**	.49**	.19**	.11*
ND3			—	.26**	.45**	.51**	.28**	.47**	.31**	.15**
ND4				—	.26**	.29**	.52**	.29**	.23**	.13**
ND5					—	.45**	.29**	.36**	.59**	.32**
ND6						—	.46**	.53**	.36**	.24**
ND7							—	.48**	.24**	.19**
ND8								—	.26**	.21**
ND11									—	.40**
ND12										—
M	3.51	3.70	3.27	3.78	3.19	3.48	3.68	3.43	3.21	2.89
SD	1.046	.918	.996	.901	.987	.877	.907	.853	.972	.896

Note. $N = 444$. **$p < .001$ (two-tailed).

Table 6-3

Correlations between Items in the English Learning Motivation Scale

	Mtv 1	Mtv 4	Mtv 5	Mtv 6	Mtv 7	Mtv 8	Mtv 9	Mtv 10	Mtv 11	Mtv 12	Mtv 14	Mtv 15	Mtv 16	Mtv 17	Mtv 18	Mtv 21
Mtv 1	—	-.41**	-.32**	.25**	.31**	.32**	-.35**	.35**	-3.4**	.55**	-.42**	.28**	.42**	-.32**	.36**	-.33**
Mtv 4		—	.32**	-.66	-.13**	-.20**	.51**	-.19**	.59**	-.43**	.43**	-.24**	-.34**	.56**	-.36**	.27**
Mtv 5			—	-.32**	-.36**	-.50**	.32**	-.43**	.24**	-.34**	.54**	-.30**	-.29**	.25**	-.18**	.35**
Mtv 6				—	.78**	.61**	-.18**	.54**	-.04	.26**	-.30**	.38**	.23**	-.09	.17*	-.20**
Mtv 7					—	.70**	-.22**	.62**	-.13**	.37**	-.37**	.45**	.29**	-.15**	.15**	-.25**
Mtv 8						—	-.34**	.72**	-.20**	.36**	-.50**	.55**	.31**	-.19**	.12**	-.38**
Mtv 9							—	-.30**	.55**	-.37**	.53**	-.32**	-.34**	.50**	-.28**	.32**
Mtv 10								—	-.16**	.36**	-.48**	.57**	.31**	-.14**	.15**	-.32**
Mtv 11									—	-.42**	.41**	-.22**	-.34**	.53**	-.35**	.26**
Mtv 12										—	-.49**	.35**	.54**	-.44**	.44**	-.38**
Mtv 14											—	-.38**	-.40**	.40	-.25**	.51**
Mtv 15												—	.40**	-.19**	.20**	-.27**
Mtv 16													—	-.48**	.49**	-.34**
Mtv 17														—	-.45**	.45**
Mtv 18															—	-.24
Mtv 21																—
M	4.15	1.89	3.44	2.36	2.46	2.69	1.99	2.73	1.68	3.90	2.80	3.30	3.70	2.01	4.11	2.68
SD	.807	.882	1.276	1.075	1.135	1.213	.939	1.081	.807	.956	1.126	.989	.971	.948	.894	1.126

Note. $N = 444$. $^{**}p < .001$ (two-tailed).

6. 3. 2 Confirmatory factor analysis

English Learning Motivation Scale. Table 6-4 shows the selected fit indices of the CFA model of the English Learning Motivation Scale. All indices are acceptable, indicating that the sets of question items within each factor/subscale represent the construct's concept well and the set of factors/subscales are well structured to form the scale. As shown in Figure 6-1, the factors/subscales supposed to have similar characteristics had positive correlations in the model. For example, intrinsic and identified, both of which are self-determined forms of motivation/regulation, had moderate positive correlations (r = .52). On the contrary, factors supposed to have different characteristics had negative correlations. For instance, identified, a self-determined form of motivation, and external, the least autonomous form of extrinsic motivation, had a strong negative correlation to each other (r = -.70). In addition, the factors located further from each other had negative correlations. These results are in line with SDT, in which different types of motivation/regulations are placed along a continuum depending on the degree of self-determination involved in actions.

Table 6-4

Selected Fit Indices for the modified CFA Model of English Learning Motivation Scale

Index	Obtained value	Acceptable value	Evaluation
CFI	.91	close to .95 and higher	Adequate[3]
RMSEA	.07	close to .06 and lower	Adequate
SRMR	.06	close to .08 and lower	Adequate

Note. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The fit evaluation is based on Brown (2006).

Psychological Needs Scale. Table 6-5 shows the selected fit indices of the CFA's Psychological Needs Scale model. All indices are acceptable, indicating that the sets of question items within each factor/subscale represent the construct's concept well and the set

of factors/subscales are well structured to form the scale.

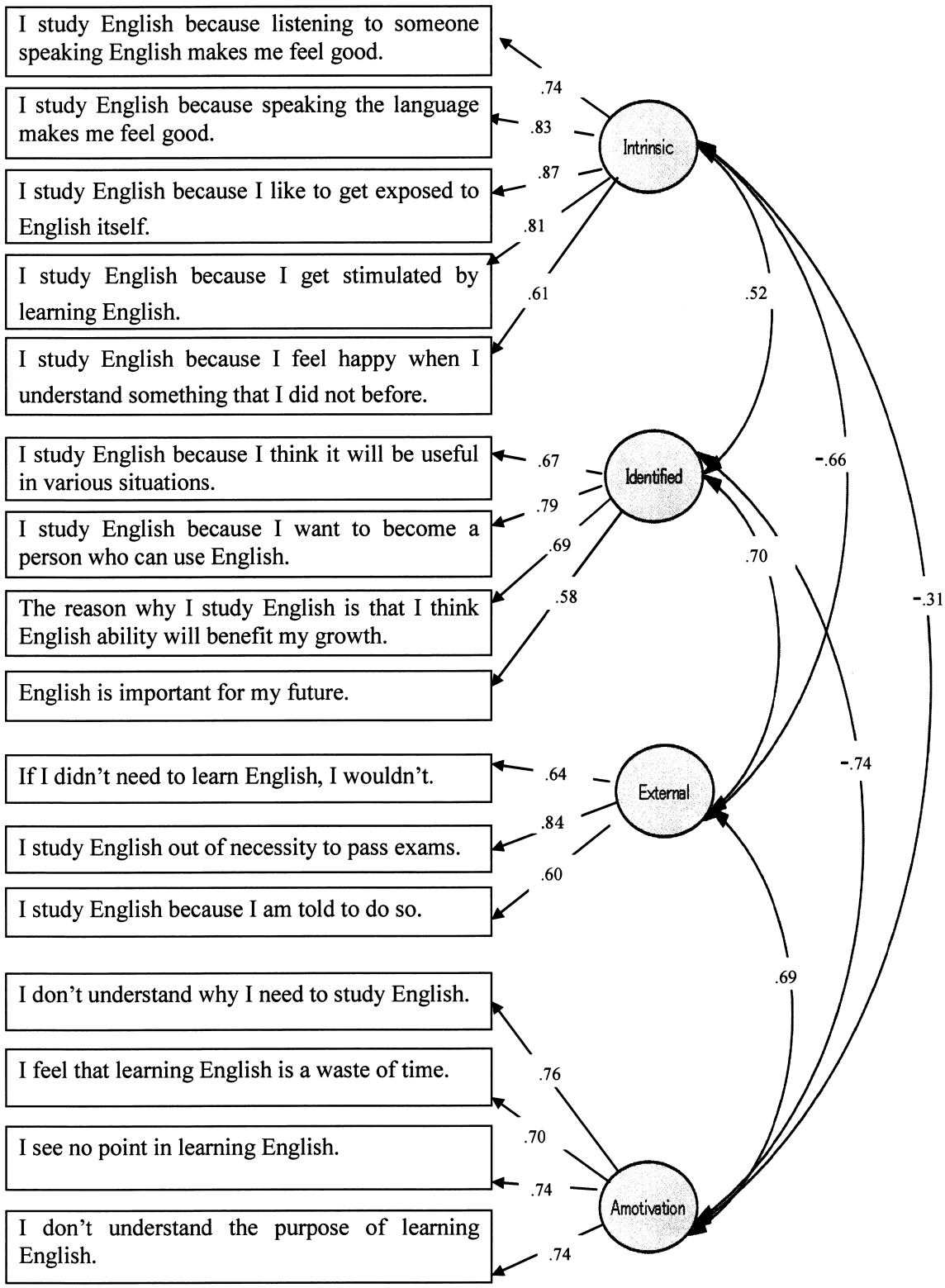


Figure 6-1. CFA model of the English Learning Motivation Scale.
Note. $N = 444$.

Figure 6-2 illustrates the CFA model of the Psychological Needs Scale. It shows that the factors/subscales had moderate to strong positive correlations to each other. For example, the correlation coefficient between autonomy and competence showed a moderate correlation (r = .62). One can easily understand that it is difficult to feel a sense of achievement in English class (i.e., competence need fulfillment) without understanding the value of learning activities and assignments (i.e., autonomy need fulfillment).

Autonomy and relatedness presented a strong correlation (r = .71). This may be because, when students perceive the instructor as approachable and open rather than authoritative (i.e., autonomy supportive), it is likely that the class atmosphere is cozy and pleasant. Furthermore, in cooperative classrooms where students are expected to work in cohesive groups to learn together, students tend to feel greater autonomy because cooperative learning is more learner-centered in nature than an instructor-fronted lecture (Crandall, 1999).

A cooperative classroom is closely related to students' higher sense of competence as well, because the peer acceptance and support that exist in a cooperative atmosphere tend to enhance learners' self-efficacy (Johnson, Johnson, & Taylor, 1993; Nichols & Miller, 1994). Similar to findings in this study, Hiromori (2006a) found a strong correlation among the three needs. He pointed out that these three needs may be closely related to each other to form EFL learners' perception toward their learning environment.

Table 6-5

Selected Fit Indices for the CFA Model of Psychological Needs Scale

Index	Obtained value	Acceptable value	Evaluation
CFI	.94	close to .95 and higher	Adequate
RMSEA	.06	close to .06 and lower	Adequate
SRMR	.05	close to .08 and lower	Adequate

Note. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized RMR. The fit evaluation is based on Brown (2006).

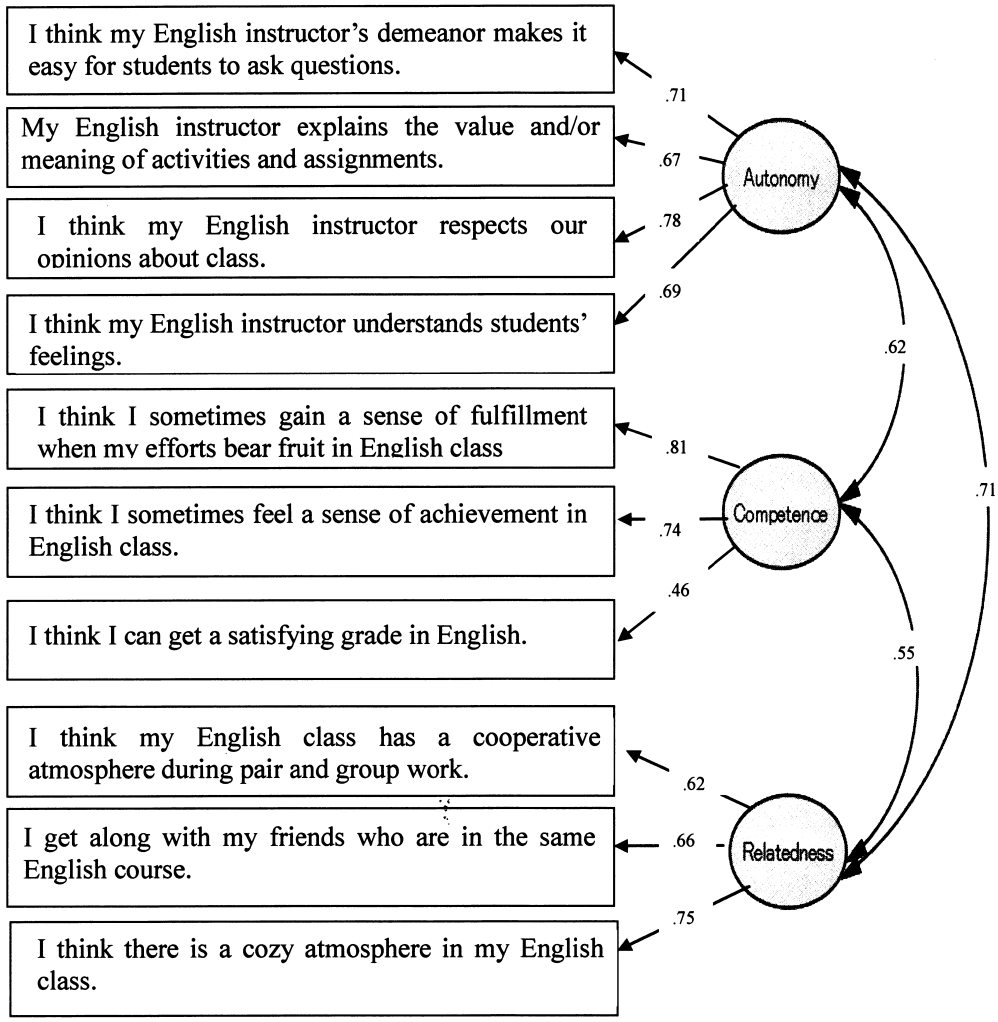


Figure 6-2. CFA model of English Learning Motivation Scale.
Note. $N = 444$.

6.3.3 SEM analysis

Using the factor/subscale structure obtained as the results of the CFAs, the SEM analysis was conducted to validate the SDT model (i.e., the regressive relationships between independent and dependent factors based on SDT). The outcome of the SEM analysis is described and discussed in this section.

General outcome. Table 6-4 shows the selected fit indices of the SDT model. All of them were at an adequate level, indicating that the SEM model is an acceptable representation of the data collected for this study and that SDT is applicable to the Japanese university EFL context. Provided that the theory can be applied in the Japanese university EFL setting, the

results support the validity of the newly developed questionnaire.

Table 6-4

Selected Fit Indices for the SEM Model

Index	Obtained value	Threshold value	Evaluation
CFI	.93	≧.90	Adequate
RMSEA	.06	≦.10	Adequate
SRMR	.10	≦.10	Adequate

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).

Sense of competence and motivation. Figure 6-1 depicts the model with standardized path coefficients. All paths starting from competence were significant at .005 or below, indicating that the satisfaction of needs for competence has a substantial and desirable impact on English learners' intrinsic motivation (.71), identified regulation (.73), external regulation (-.94), and amotivation (-.65). These outcomes, combined with the results of Study 1 and other previous studies (e.g., Hiromori, 2006a; Tanaka & Hiromori, 2007), confirmed that competence needs fulfillment is a powerful motivator of Japanese university EFL learners.

From a pedagogical perspective, the result underscores the importance of enhancing learners' sense of competence in English classes. Teachers can take approaches to enhance learners' sense of competence, such as giving informative—as opposed to judgmental—feedback (Reeve & Jang, 2006), repeating the same kinds of tasks (Maekawa & Yashima, 2012), and implementing cooperative group work (Johnson & Johnson, 2003).

Sense of autonomy and motivation. The same tendency for competence was found in autonomy, except that the coefficient values indicated a substantially smaller impact of need satisfaction on intrinsic motivation (.16), identified regulation (.26), external regulation (-.09), and amotivation (-.19). All the paths except for external regulation reached a statistically

significant level.

It is worth mentioning that the autonomy needs fulfillment exerted a stronger influence on identified regulation than intrinsic motivation. SDT postulates that the more individuals' needs of autonomy (as well as competence and relatedness) are fulfilled, the more their behavior is intrinsically motivated. Therefore, the result, which signaled that autonomy needs satisfaction might arouse identified motivation more than intrinsic motivation does, is not strictly in line with the theory. This phenomenon may be caused by some questionnaire items added to the new scale, such as "My English instructor explains the value and/or meaning of activities and assignments" and "I think my English instructor's demeanor makes it easy for students to ask questions." These items reflect the new working definition of autonomy needs (i.e., learners' desire to engage in English learning upon understanding and concurring on the value of learning the language). This new definition reflects the Japanese university learners' perception of autonomy needs better than the definition used for the last 10 years, which focused exclusively on students' choices (for a detailed discussion, see Studies 1 and 3). It should be natural, if not obvious, to understand that when learners' autonomy needs are being fulfilled, they learn English because they understand and accept the importance of doing so (i.e., identified regulation).

The discussion on identifying the value of English learning raises another important point: Many Japanese university students are enrolled in an English course because they need the credit to graduate. It is still common that English classes are compulsory at Japanese universities (MEXT, 2005); therefore, many students need to enroll in an English course whether they like it or not. This means some students may end up learning English without understanding or even considering the value of it. Together with the reactive nature of autonomy that Japanese EFL learners tend to have (Azuma, 1994; Littlewood, 1999), helping learners understand and accept the value of learning English is a reasonable and practical starting point to enhance their self-determined form of motivation. Some approaches that

English instructors can take for this purpose include explaining the value of tasks and activities (Reeve, 1996; Reeve & Jang, 2006), creating opportunities where students can express their feelings and opinions by, for example, filling out a reflection sheet (Murphey & Jacobs, 2000; Reeve & Jang, 2006), and having students create a learner portfolio (Murphey & Jacobs, 2000; Nakata, 2007, 2010).

Sense of relatedness and motivation. With respect to the paths starting from relatedness, the one to intrinsic motivation was significant (.13), albeit limited, considering the value of the path coefficient. The other paths starting from relatedness did not reach a statistically significant level, signaling that the relatedness has a marginal impact on Japanese EFL learners' motivation. This result was expected because similar results have been obtained in Studies 1, 2, and other past studies (e.g., Hiromori, 2006b). As explained in Study 3, items in the new relatedness subscale focused on learners' relationships with others in the English class. The learner-to-instructor relationships were assessed using items under the autonomy factor, because the results of Study 3 indicated that instructor–student relationships are closely linked with the instructor's autonomy supportiveness. As a result, the new relatedness subscale, as with the conventional one, covers student-to-student relationships, which account for an important part of the needs for relatedness but not all of them.

Another reason for the trivial influence of relatedness needs satisfaction on L2 motivation may be the sample's mixed population. As pointed out in Studies 1, 2, and Hiromori (2006b), although some EFL learners' motivation increases by having a good relationship with their classmates, other learners do not see the necessity or value of collaborating with other classmates when learning English. Hiromori, whose study revealed a negative correlation between relatedness and intrinsic motivation among highly motivated learners, claimed that learners who have already developed motivation can engage in learning on their own; thereby, they do not need to collaborate with others (p. 10). Study 2 pointed out that some university English learners have already developed their own learning styles that

involve working alone. For such students, having a good relationship with others is not appealing as an effective way of learning English and, thus, does not influence their L2 motivation. As such, instructors should use different types of learning activities (i.e., individual and group work) to accommodate students with different motivation and/or learning styles.

The results and discussion call for a microscopic rather than macroscopic approach to examining the relationship between relatedness needs satisfaction and motivation of Japanese EFL learners. Investigating the characteristics of different clusters of L2 learners may be useful for shedding light on the complex interplay among classroom group dynamics, learning styles, and motivation.

6.4 Conclusion

This study aimed to verify a newly developed questionnaire based on SDT using a mixed sample in the Japanese EFL context. The results of the CFA and SEM analysis indicated that the new questionnaire was valid in a different sample from the one used for developing the instrument, suggesting that, by using the new instrument, one may be able to obtain results consistently in line with SDT. Therefore, the new questionnaire may better gauge the motivation of Japanese EFL learners with various characteristics. As discussed in preceding chapters, the conventional questionnaire may have been one of the reasons for the mixed results obtained in previous studies investigating whether a pedagogical intervention to fulfill English learners' three basic needs improve their self-determined forms of motivation. With the new questionnaire, the (in)effectiveness of SDT-based pedagogical intervention should be examined again. This brings up two research issues for further investigation: (1) the influence of SDT-based pedagogical intervention on L2 motivation of Japanese university students and (2) the sensitivity of the new instrument to changes of the needs fulfillment degrees and L2 motivation intensity in Japanese university students. The next chapter examines these two

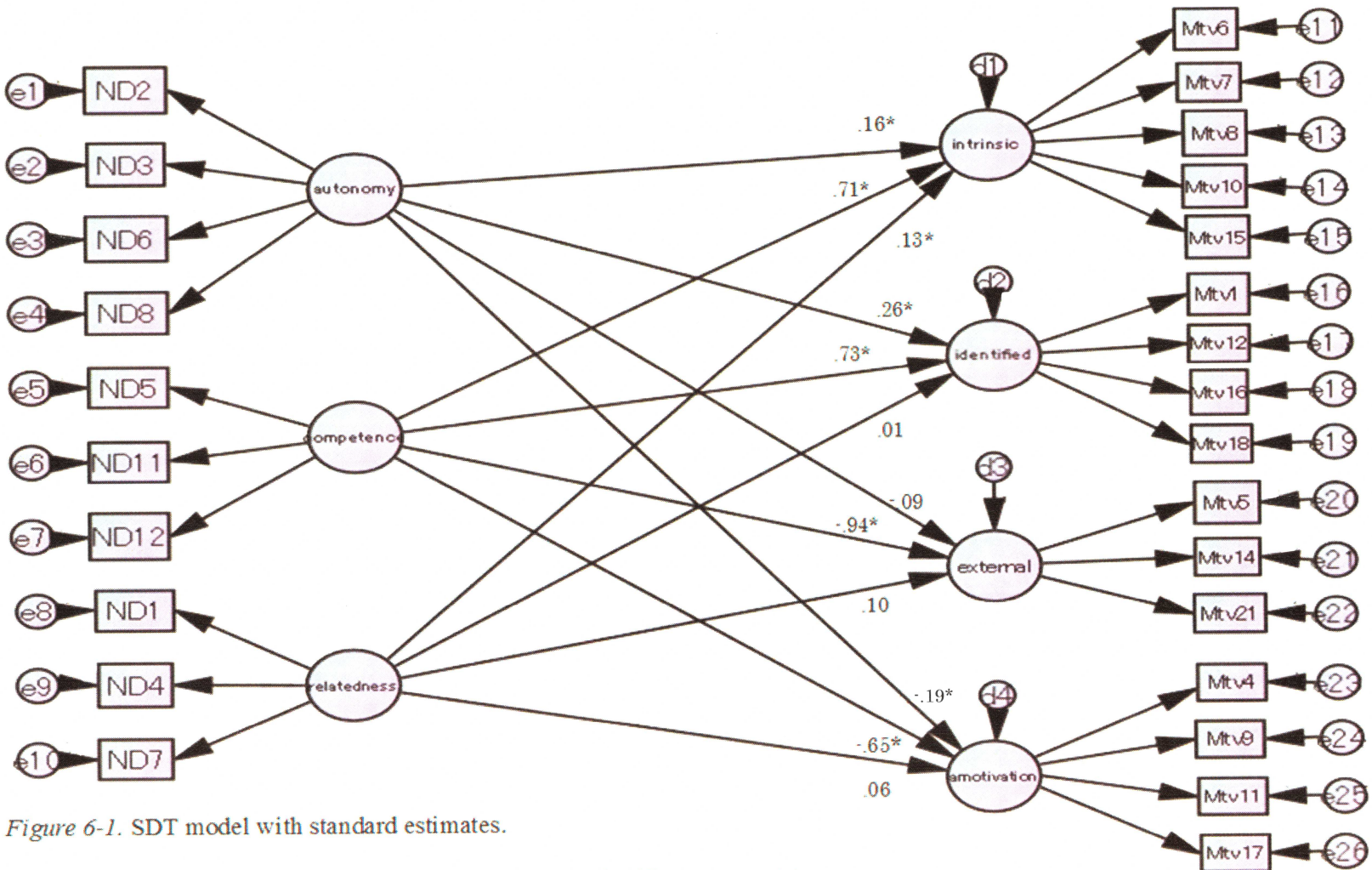


Figure 6-1. SDT model with standard estimates.

Note. N =404. The path coefficients with an asterisk are significant at $p < .05$.

issues.

In addition to the findings showing the instrument's versatility, the investigation of the regressive relationship between independent and dependent variables brought some insightful results. First, the fulfillment of competence needs strongly indicated higher intrinsic and identified motivation as well as lower external motivation and amotivation, confirming that competence needs satisfaction is a powerful motivator for Japanese university EFL students. Second, the model demonstrated that the relationship between autonomy and motivation was in line with the theory, which suggests that the amendment of the definition of autonomy needs and questionnaire items for the subscale was successful. However, the influence of the autonomy needs satisfaction on motivation was not as large as that of competence needs satisfaction. Third, the link between the relatedness needs fulfillment and motivation was trivial, showing a limited effect of the needs fulfillment on EFL motivation of Japanese university students. One of the reasons for this result is that relatedness fulfillment and L2 motivation may have different relationships with each other, depending on the learner's characteristics, such as learning styles and motivational intensities. As the dissertation focused on Japanese EFL motivation at a tertiary level in general, it inevitably failed to shed light on the complex relationships between relatedness needs fulfillment and L2 motivation. For future research, the author suggests conducting microscopic investigations to reveal the intricate links between these factors.

Notes

1. See Note 2 in Chapter 5.
2. A type of analysis that evaluates the regressive relationships among the latent variables is commonly called SEM. To avoid confusion, a CFA, which is also a type of SEM, is simply called CFA in this study.
3. According to Brown (2006), a CFI value in the range of .90–.95 may be an indication of an

acceptable model fit. He stated that a model with a CFI value below .90 should be rejected.

7. Study 5

7.1 Purposes

Study 4 in Chapter 6 showed that SDT was valid in the Japanese university EFL context; furthermore, the new questionnaire was valid in a sample different from the one used for developing the instrument. The results suggested that the new questionnaire is more stable across different populations than the conventional questionnaire, and therefore, by using the new instrument, one may be able to obtain results which are consistently in line with SDT. The study concluded that the new questionnaire better assesses L2 motivation of Japanese university students with various characteristics. As discussed in preceding chapters, the conventional questionnaire may have been one of the causes behind the mixed results obtained in previous studies which investigated if pedagogical intervention to fulfill English learners' three basic needs improve their self-determined forms of motivation. Now that the new questionnaire has been developed, the (in)effectiveness of pedagogical intervention should be examined again by using the new instrument. To this end, this study aimed to:

- investigate the influence of SDT-based pedagogical intervention on L2 motivation of Japanese university students, and
- examine the sensitivity of the new instrument to changes of the needs fulfillment degrees and L2 motivation intensities in Japanese university students.

7.2 Method

7.2.1 Participants

This study was conducted in the author's classes at a private undergraduate medical school located in the greater Tokyo area. The participants were selected for the intervention study, because the author, a practitioner as well as researcher, was deeply interested in enhancing her own students' motivation to learn English.

At the school where the author taught English, compulsory test-preparation courses are

offered to first- and second-year students as part of the university's efforts to develop students' English skills in order to produce graduates active in the global community. The school focuses on TOEFL and IELTS because certain scores are necessary if students intend to engage in clinical clerkships and/or research activities abroad. Approximately 20 percent of undergraduate students participate in a program abroad. For example, in 2015, five second- and third-year students participated in a medical program offered at a university in the United States. More students participate in clerkships abroad when they are in their fifth year; approximately 20 students join such a program every year. Most of the programs are two to four weeks long.

Two of the author's compulsory test-preparation classes were chosen for this study because the course objectives were virtually the same, and the student characteristics were similar to each other. One class (Contrast Group: CG), was a preparation course for TOEFL and IELTS. It contained 23 second-year students (16 males and 7 females; 19 to 22 years old). Their average TOEFL ITP score was 532 at the beginning of the 2015 academic year, when the author started to teach the class. The other class (Treatment Group: TG), was a compulsory preparation course for TOEFL and contained 24 first-year students (11 males and 13 females; 18 to 21 years old). Their average TOEFL ITP score was 553 at the beginning of the 2015 academic year.

All the medical students at the university, where the author taught, spend their first year on the campus in Chiba and then move to the one in central Tokyo; therefore, CGs' classes took place in Tokyo and TGs' in Chiba. Although they were studying on different campuses when the data was taken, students in both groups shared a lot of characteristics such as their general interests in health and wellness, active engagements in club activities, future goal to become a doctor, and most importantly, intensity of L2 motivation.

Before the pedagogical intervention were administered, the intensity of the four motivation types in SDT and the degree of the needs fulfillment were measured. The survey

was administered with their written consent. The consent form included an explanation of the study and the author's contact information. The questionnaire, which was developed in Study 3, consisted of the Psychological Needs Scale, English Learning Motivation Scale, and a section to ask participants' demographic information (see Appendices D & E). Two-tailed *t*-tests found no statistically or practically[3] significant differences between the two groups ($t(45) = .64$, $p = .53$, $r = .10$ for autonomy; $t(45) = -.91$, $p = .37$, $r = .14$ for competence; $t(45) = -.32$, $p = .76$, $r = .05$ for relatedness; $t(45) = -.41$, $p = .68$, $r = .06$ for intrinsic motivation; $t(45) = 1.41$, $p = .17$, $r = .21$ for identified regulation; $t(45) = -1.29$, $p = .21$, $r = .19$ for external regulation; $t(45) = .39$, $p = .70$, $r = .06$ for amotivation)[2]. The results indicated, in addition to the characteristics mentioned above, the groups were considered to be the same with regard to the needs and motivational characteristics.

7.2.2 Procedures

Both CG and TG received instructions from the author in a compulsory test-preparation course for TOEFL (for TG) and the one for TOEFL and IELTS (for CG). The courses were offered from April 2015 to January 2016, during which the students received different kinds of instructions.

CG received conventional test-preparation classes where students answered questions, checked the answers, and then the instructor explained the answers. This type of instructions for test-preparation has been widely employed in many universities in Japan. According to the author's previous study (Agawa, 2008), in which she asked university students' image toward an English test-preparation course, 74% of the participants responded that they associated a test-preparation course with instructor-fronted lecture style instruction. CG in this study, therefore, received what the vast majority of university students expect from a test-preparation course.

TG received instruction designed to satisfy their needs for autonomy, competence, and

relatedness. For example, following suggestions put forth by Reeve (1996) and Reeve and Jang (2006) on autonomy support, the instructor explained the rationale, value, and significance of tasks used in the classes. According to Reeve and Jang, teachers can promote students' perceived autonomy through instructional efforts to explain why a particular course of action might be useful, because providing a rationale allows students to internalize the value of actions. In other words, providing rationales can help students build their new integrated values (i.e., identified regulation) with which they can experience an inner locus of causality.

In TG's class, the instructor also used cooperative pair and group work, because cooperative learning (CL) can bring greater learner-centeredness and learner direction (Crandall, 1999), and thus fosters learner autonomy. CL can also help fulfill learners' needs for competence and relatedness, because in CL, students are placed in an environment where they need to accept and support each other to complete a task. In such an environment of mutual acceptance and support, learners tend to have higher self-efficacy (Johnson, Johnson, & Taylor, 1993; Nichols & Miller, 1994).

Another thing worth mentioning here is that the instructor asked students to fill out a reflection sheet at the end of each session. There were at least two benefits anticipated from this. First, based on the students' comments on the sheet, the instructor can learn what was easy and/or difficult for students each session, with which the instructor can promptly adjust the pacing and difficulty of tasks. Two approaches can be employed to mitigate the difficulty of a challenging task: making the task itself easier; and giving students an opportunity to engage in the same type of task later again. As for the second approach, Maekawa and Yashima (2012) successfully enhanced their participants' sense of competence by repeating a presentation task a few times over the course of nine months. Reflection sheet, therefore, can function as an important means to obtain useful information for instructors to better fulfill students' needs for competence.

Second, by filling out the sheet, students have an opportunity to practice monitoring their learning, which help develop their learner autonomy (Murphey & Jacobs, 2000). In the same vein, students were asked to create a learner portfolio. A learner portfolio, similar to a reflection sheet, is claimed to be useful for students to monitor their learning, and therefore, help develop their autonomy (Murphey & Jacobs, 2000).

The detailed characteristics of instructions given to CG and TG are shown in Table 7-1. The table includes the needs items to be enhanced next to the description of instructions given to TG. The needs items of the questionnaire (i.e., Psychological Needs Scale) are shown in Table 7-2, with a code assigned to each item. The sample reflections sheets are included in Appendices G and H.

7.2.3 Data collection and analysis

Data collection. The questionnaire, using five-point Likert scales, was administered to both CG and TG at the beginning (Time 1) and end (Time 2) of the academic year. Time 1 data were collected in April 2015, and Time 2 in January 2016. At the beginning of the questionnaire, the instructions clarified that the questionnaire was not a test, nor would it be included in participants' course grades.

Analysis. Questionnaire data taken at Time 1 and Time 2 were compared using a mixed two-way repeated analysis of variance (ANOVA) including two variables. The between-subjects factor was "group," which had two levels: Contrast Group (CG) and Treatment Group (TG). The within-subjects factor was "time," which also had two levels (i.e., Time 1 and Time 2). As mentioned in the Participants section, no significant differences were found between the two groups in terms of motivation and needs fulfillment before administering the intervention.

Table 7-1

Characteristics of Instructions of Contrast Group and Treatment Group

Contrast Group	Treatment Group	Questionaire Item Code
・Test preparation course (TOEFL/IELTS)	・Test preparation course (TOEFL)	
・One-year (two-semester) compulsory course	・One-year (two-semester) compulsory course	
・Met once a week, for a 90-minute session	・Met once a week, for a 90-minute session	
・Conventional test-prep instructions	・Instructions devised to fulfill the three needs	
Instructor-fronted style	**To fulfill the autonomy needs, the instructor...**	
Students answered the questions, checked the answers, then the instructor explained points.	explained the rationale, value and significance of tasks (Reeve, 1996)、(Reeve & Jang, 2006).	A-2
All four skills (i.e., reading, listening, writing, and speaking) were covered.	tried to accept students' feelings, including the negative ones towards English learning (Reeve, 1996)、(Reeve & Jang, 2006).	A-3
In most of the sessions, commercialized test-preparation textbooks were used.	considered the standpoint of students (Reeve, 1996)、(Reeve & Jang, 2006).	A-3
Sometimes, authentic reading and listening materials were used such as newspaper articles and TED talks.	asked for students opinions and listen to what students said (Reeve & Jang, 2006)	A-1, A-6
The rationale for doing a certain task was not given to students.	gave verbal encouragement to students (Reeve & Jang, 2006).	A-4
A reflection sheet was not used.	tried not to force a learning objective to students (Deci, Vallerand, Pelletrier & Ryan, 1991).	A-1, A-5
	asked students to create a learner portfolio (Murphey & Jacobs, 2000; Nakata, 2007, 2010).	A-2
	asked students to fill out a reflection sheet at the end of each session (Murphy & Jacobs , 2000) (for sample reflection sheets, see Appendix E)	A-5, A-6
	responded to students' comments and/or questions.	A-2, A-6
	To fulfill the competence needs, the instructor...	
	repeated the same type of tasks (Maekawa & Yashima, 2012).	C-1, C-2, C-3
No pair or group work except for speaking exercises.	used cooperative pair and group work (Johnson, D. W., & Johnson, R. T., 2003).	C-1, C-2, C-3
	adjusted the pacing and difficulty of tasks based on the feedback from the students as well as the instructor's instinct.	
	To fulfill the relatedness needs, the instructor...	
	used cooperative pair and group work (Johnson, D. W., & Johnson, R. T., 2003).	R-3
	used activities in which students could get to know with each other (Johnson, D. W., & Johnson, R. T., 2003)	R-1, R-2

Table 7-2

Psychological Needs Scale Items with Codes

Factor	Question Items	Item Code
Autonomy	I think my English instructor respects our opinions about class.	A-1
	My English instructor explains the value and/or meaning of activities and assignments.	A-2
	I think my English instructor understands students' feelings.	A-3
	My English instructor supports us in learning English.	A-4
	My instructor takes students' viewpoints into consideration in class.	A-5
	I think my English instructor's demeanor makes it easy for students to ask questions.	A-6
Competence	I think I sometimes gain a sense of fulfillment when my efforts bear fruit in English class.	C-1
	I think I sometimes feel a sense of achievement in English class.	C-2
	I think I can get a satisfying grade in English.	C-3
Relatedness	I think there is a cozy atmosphere in my English class.	R-1
	I get along with my friends who are in the same English course.	R-2
	I think my English class has a cooperative atmosphere during pair and group work.	R-3

7.3 Results and Discussion

7.3.1 Descriptive statistics

Table 7-3 shows the descriptive statistics based on the questionnaire data collected from CG and TG at Time 1 and Time 2. It also shows the Cronbach's alpha values for each factor included in the questionnaire. The values range between .98 and .67. The lowest value of the range (α = .67) may not seem to be acceptable for some researchers. However, Dörnyei (2010) claimed that internal consistency estimates for scales used in the 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 lowest alpha value in this study exceeded .60, all the constructs were considered to have adequate to acceptable internal reliability.

The means at Times 1 and 2 reveal the different motivation-related changes the two groups experienced during the academic year. As for CG, the degree of autonomy needs satisfaction seems to have stayed at the same level while that of competence and relatedness seems to have decreased. CG's self-determined forms of motivation tended to stay at the same level or decrease slightly. In addition, their external regulation as well as amotivation tended to increase. Meanwhile, regarding TG, the degree of all three needs fulfillment increased. TG's self-determined forms of motivation seem to have been enhanced while their external regulation and amotivation seem to have decreased.

In the following subsections, the results of the ANOVAs are presented to statistically compare CG and TG and discuss their motivation-related changes over time.

7.3.2 Psychological needs

Data collected by the Psychological Needs Scale were submitted to ANOVA. Table 7-4 presents the summarized results. A few types of effect sizes are available for ANOVAs, such as eta squared (η^2), partial eta squared (η_p^2), and generalized eta squared (η_G^2). The third one (η_G^2) was selected for this study because (a) it can provide more valid estimates of effect size for two-way, repeated measures designs than the other two indices (Hirai, 2012; Olejnik & Algina, 2003) and, (b) with η_G^2 values, a rule of thumb can be applied to evaluate the practical significance of ANOVA results (Bakeman, 2005; Hirai, 2012). For simple main effect, however, η^2 was used. This is because (1) a commonly used effect size for simple main effect is *r* (Mizumoto & Takeuchi, 2008), which is actually the same as η, and (2) by using η^2 (i.e., r^2) effect sizes across this study can be compared easily, as the same guidelines are adopted for evaluating η_G^2 and η^2. The guidelines for evaluating effect sizes using η_G^2 and $\eta^2$are shown in Table 7-5, which is based on Bakeman. Figures 7-1, 7-2, and 7-3 illustrate the changes in autonomy, competence, and relatedness needs fulfillment, respectively, of TG and CG.

Table 7-3

Descriptive Statistics of Questionnaire Data Collected before and after the Academic Year

		autonomy		competence		relatedness		intrinsic		identified		external		amotivation	
		Mean (*SD*)	α	Mean (*SD*)	α	Mean (*SD*)	α	Mean (*SD*)	α	Mean (*SD*)	α	Mean (*SD*)	α	Mean (*SD*)	α
Contrast	Time 1	3.61 (0.82)	.93	3.26 (0.95)	.88	3.74 (0.73)	.76	3.28 (0.96)	.90	3.94 (0.80)	.98	2.67 (0.94)	.70	1.80 (0.76)	.87
	Time 2	3.61 (1.02)		2.90 (1.03)		3.59 (0.93)		3.27 (1.00)		3.69 (1.05)		3.00 (0.97)		2.30 (1.01)	
Treatment	Time 1	3.73 (0.49)	.76	3.06 (0.80)	.68	3.68 (0.53)	.67	3.17 (0.73)	.83	4.22 (0.50)	.76	2.35 (0.75)	.69	1.73 (0.55)	.86
	Time 2	4.37 (0.39)		3.50 (0.55)		4.49 (0.46)		3.99 (0.69)		4.60 (0.41)		2.35 (1.16)		1.49 (0.52)	

Table 7-4

Selected Results of ANOVAs Evaluating the Effects of Group (CG and TG) and Time (Time 1 and Time 2) Variation on Psychological Needs

Need	Interaction (Time × Group)	Simple Main Effect		
autonomy	$p < .05, \eta^2 = .058$	Contrast	Time 1 vs. Time 2	*n.s.*, $\eta^2 = .000$
		Treatment	Time 1 vs. Time 2	$p < .001, \eta^2 = .562$
		Time 2	contrast vs. treatment	$p < .001, \eta^2 = .232$
competence	$p < .05, \eta^2 = .056$	Contrast	Time 1 vs. Time 2	*n.s.*, $\eta^2 = .060$
		Treatment	Time 1 vs. Time 2	$p < .05, \eta^2 = .182$
		Time 2	contrast vs. treatment	*n.s.*, $\eta^2 = .100$
relatedness	$p < .05, \eta^2 = .106$	Contrast	Time 1 vs. Time 2	*n.s,.* $\eta^2 = .016$
		Treatment	Time 1 vs. Time 2	$p < .001, \eta^2 = .539$
		Time 2	contrast vs. treatment	$p < .001, \eta^2 = .282$

Note. p = significance level; *n.s.* = nonsignificant; η^2 = eta squared.

Table 7-5

Effect Size Evaluation for Two-way Repeated Measures ANOVAs

ηG^2 or η2value	Evaluation
.020	small
.130	medium
.260	large

Note. The evaluation is based on Bakeman (2005).

Autonomy. The interaction of group by time was significant for autonomy needs fulfillment ($F(1, 45) = 6.14$, $p < .05$, $\eta_G^2 = .058$). Further analysis showed a significant simple main effect of time on the satisfaction of autonomy needs for TG with a large effect size ($\eta^2 = .562$). This caused a significant difference, between the two groups at Time 2 with a quite large effect size ($\eta^2 = .232$). As for CG, no significant simple main effect of time existed on the fulfillment of the needs. Based on the results, it can be argued that, on one hand,

TC—who received pedagogical intervention to fulfill the needs for autonomy—could understand and accept the value of English learning better. On the other hand, CG—who did not receive instructions to fulfill the basic needs—did not increase their understanding of the value of learning English.

Competence. For competence, the interaction of group by time was significant ($F(1, 45) = 5.02$, $p < .05$, $\eta_G^2 = .053$). Further research indicated a significant simple main effect of time on the satisfaction of competence needs for TG; however, no significant differences were found between CG and TG at Time 2. In addition, no significant simple main effect of time existed on the fulfillment of competence needs for CG. The results suggested that, through the instructions designed to reinforce their sense of achievement, students in TG were able to feel more competent in English. On the contrary, CG did not gain their confidence in English; in fact, some might have lost it. Yet, the difference between the two groups did not reach significance at Time 2.

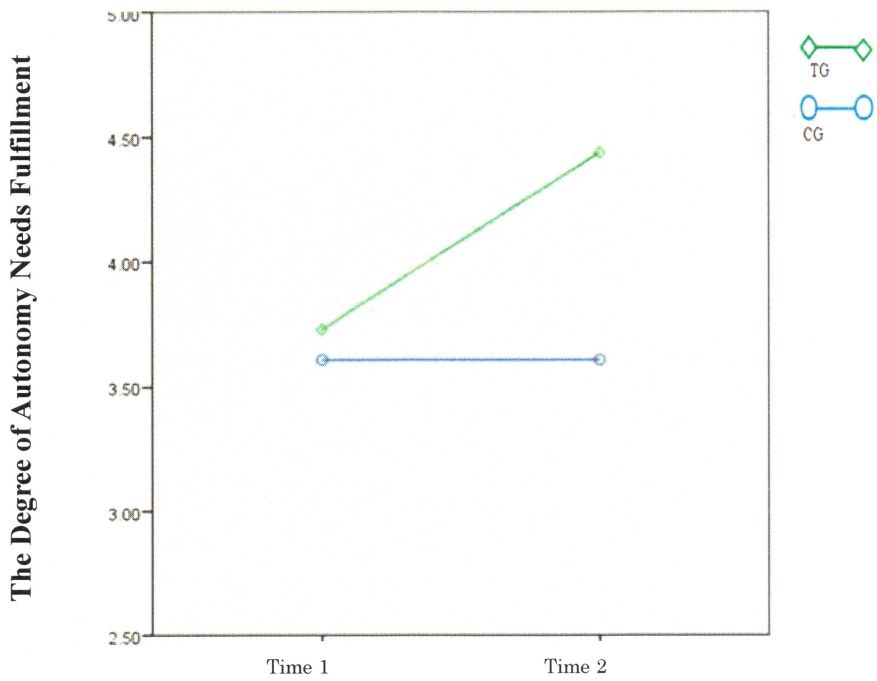


Figure 7-1. Group means of autonomy items at Time 1 and Time 2.

Table 7-5

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on autonomy (A)

Source	*SS*	*df*	*MS*	*F*	*p*	η_G^2
			Between Subjects			
Group	5.292	1	5.292	10.298	.002	.100
Error	23.123	45	.514			
			Within Subjects			
Time	2.946	1	2.946	6.141	.017	.053
Time× Group	2.946	1	2.946	6.141	.017	.058
Error (Time)	21.590	45	.480			
Total	55.898	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

This may be because TG's needs fulfillment was slightly lower than CG's at the beginning and thus required more increase in TG or more decrease in CG to make the gap significant.

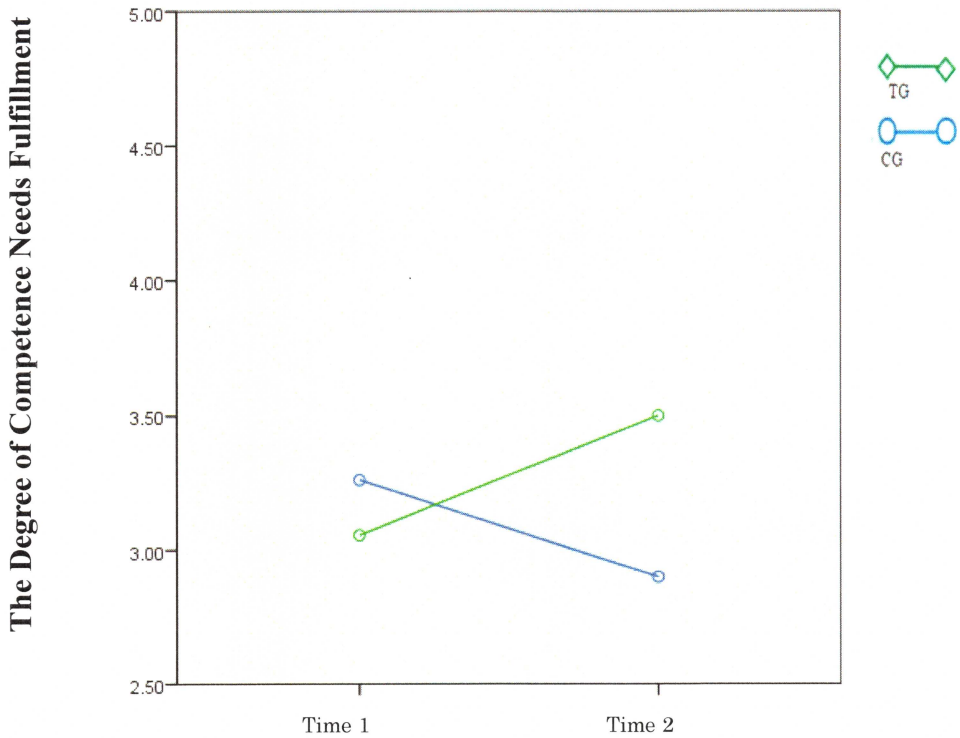


Figure 7-2. Group means of competence items at Time 1 and Time 2.

Table 7-6

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on competence (C)

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta_G 2$
			Between Subjects			
Group	.922	1	.922	1.354	.251	.013
Error	30.615	45	.680			
			Within Subjects			
Time	.040	1	.040	.052	.821	.000
Time× Group	3.822	1	3.822	5.016	.030	.053
Error (Time)	34.287	45	.762			
Total	69.685	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

Relatedness. The interaction of group by time was also significant for relatedness needs ($F(1, 45) = 11.09$, $p < .05$, $\eta_G^2 = .101$). In terms of the satisfaction of relatedness needs for TG, the simple main effect of time was significant, with a large effect size of $\eta^2 = .539$. This contributed to a significant difference between the two groups at Time 2. There was no significant simple main effect of time on the fulfillment relatedness needs for CG. The results indicated that the cooperative pair and group work, which were used throughout the course for TG, successfully tightened the bond among the classmates in TG. Regarding CG, because they studied individually most of the time during the course, they might not have ever considered learning English by working together with others.

7.3.3 English learning motivation

Mixed two-way repeated measures ANOVAs were also applied to data collected via the English Learning Motivation Scale. The selected results are summarized in Table 7-8. The figures presented in this section illustrate the changes in intrinsic motivation (Figure 7-6), identified regulation (Figure 7-5), external regulation (Figure 7-6), and amotivation (Figure 7-7) of TG and CG.

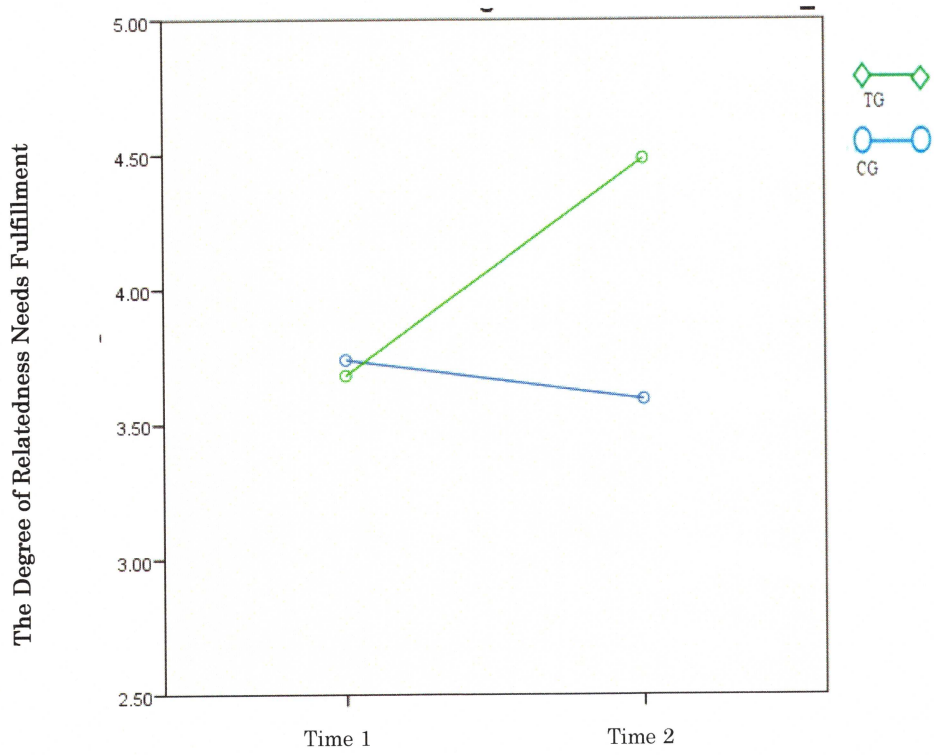


Figure 7-3. Group means of relatedness items at Time 1 and Time 2.

Table 7-7

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on relatedness (R)

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta_G 2$
			Between Subjects			
Group	4.078	1	4.078	8.928	.005	.079
Error	20.556	45	.457			
			Within Subjects			
Time	2.563	1	2.563	5.357	.025	.047
Time× Group	5.305	1	5.305	11.090	.002	.101
Error (Time)	21.527	45	.478			
Total	54.029	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

Table 7-8

Selected Results of ANOVA Evaluating the Effects of Group (Contrast and Treatment) and Time (Time 1 and Time 2) Variation on Motivation

Motivation /Regulation	Interaction (Time × Group)	Main Effect	Simple Main Effect		
intrinsic	$p < .05, \eta_G^2 = .054$		Contrast	Time 1 vs. Time 2	*n.s.*, $\eta^2 = .004$
			Treatment	Time 1 vs. Time 2	$p < .001, \eta^2 = .453$
			Time 2	contrast vs. treatment	*n.s.*, $\eta^2 = .156$
identified	*n.s.*	Group $p < .00, \eta_G^2 = .032$			
external	*n.s.*	Group $p < .05, \eta_G^2 = .061$			
amotivation	$p < .05, \eta_G^2 = .035$		Contrast	Time 1 vs. Time 2	*n.s.*, $\eta^2 = .113$
			Treatment	Time 1 vs. Time 2	*n.s.*, $\eta^2 = .099$
			Time 2	contrast vs. treatment	$p < .001, \eta^2 = .211$

Note. p = significance level; *n.s.* = nonsignificant; η_G^2 = generalized eta squared; η^2 = eta squared

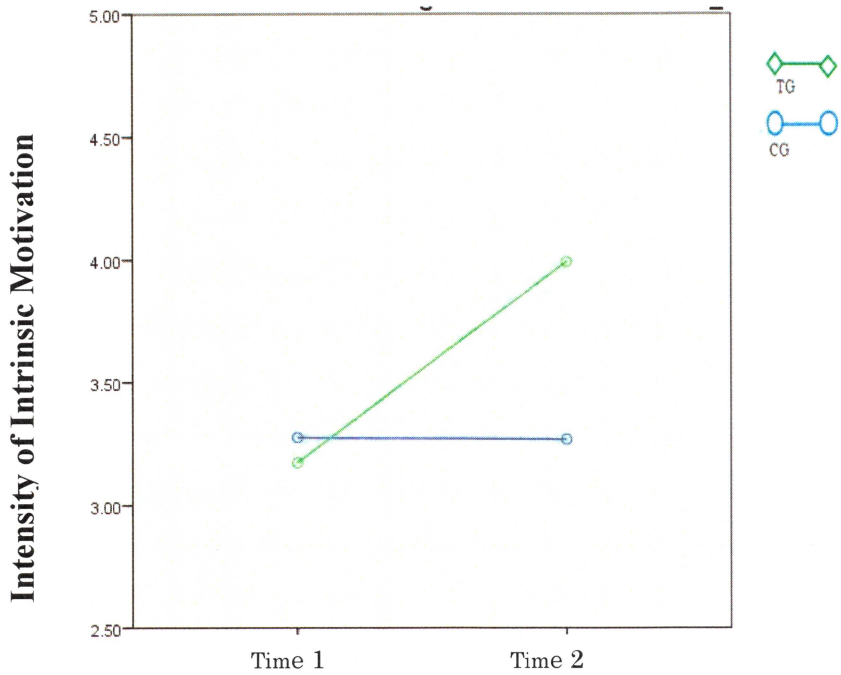


Figure 7-4. Group means of intrinsic motivation at Time 1 and Time 2.

Table 7-9

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on intrinsic motivation (IM)

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta_{G}2$
			Between Subjects			
Group	2.281	1	2.281	3.455	.070	.032
Error	29.700	45	.660			
			Within Subjects			
Time	3.874	1	3.874	4.807	.034	.051
Time× Group	4.013	1	4.013	4.980	.031	.054
Error (Time)	36.261	45	.806			
Total	76.129	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

Intrinsic motivation. The interaction of group by time was statistically significant (F(1, 45) = .498, $p < .05$, η_G^2 =.054) for intrinsic motivation. Further analysis revealed a significant simple main effect of time on TG, with a large effect size (η^2 =.453). Although no statistically significant differences were found between groups at Time 2, medium effect size

(η^2 =.156) indicated practical significance of the difference between CG and TG. No significant differences were found in CG over time. It can be inferred from the results that, although TG—whose needs were more fulfilled—increased intrinsic motivation and thus enjoyment of learning English, CG—whose needs fulfillment stayed at the same level—did not experience changes in intrinsic motivation to learn English.

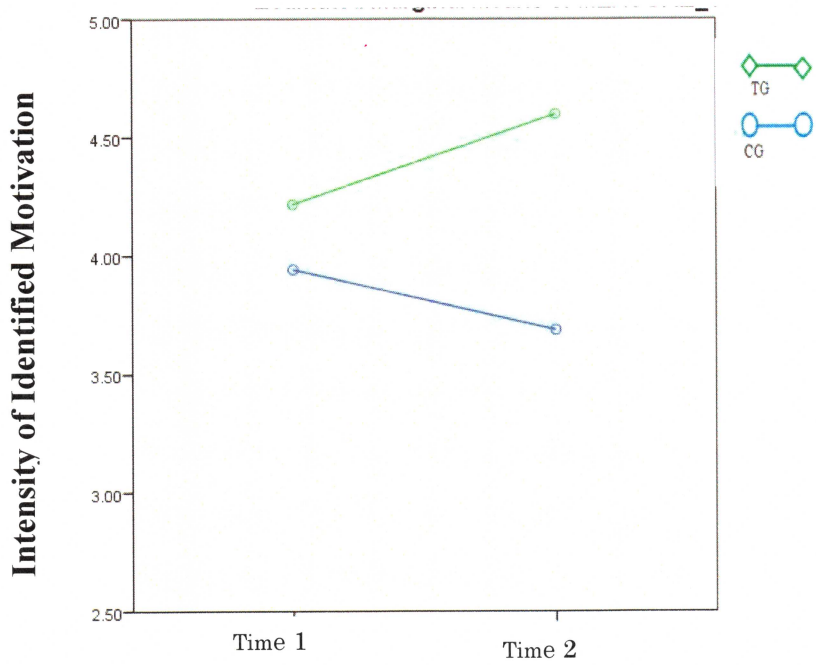


Figure 7-5. Group means of identified regulation at Time 1 and Time 2.

Table 7-10

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on identified regulation (ID)

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta_G 2$
			Between Subjects			
Group	8.205	1	8.205	20.729	.000	.140
Error	17.813	45	.396			
			Within Subjects			
Time	.097	1	.097	.144	.706	.002
Time× Group	2.372	1	2.372	3.534	.067	.045
Error (Time)	30.204	45	.671			
Total	58.691	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

Identified regulation. As for identified regulation, the interaction of group by time was not found. Further analysis with Tukey showed that differences between CG and TG reached a significant level ((F(1, 45) = 20.729, η_G^2 =.140) at Time 2, with a medium effect size. With descriptive statistics taken into account, it can be understood that the result was a result of the slight decrease in CG's identified regulation over time and the increase in TGs identified regulation, both of which occurred at the same time. Similar to what was discussed in the Intrinsic Motivation subsection, it is reasonable to argue that TG, whose needs were more fulfilled, acknowledged and accepted the importance of learning English and thus improved identified regulation to learn the language. On the contrary, CG—whose needs fulfillment stayed at the same level, if not decreased—did not gain their acceptance or understanding of the rationale for learning English.

External regulation. The interaction of group by time was not found for external regulation, either. Further analysis with Tukey indicated that, at Time 2, differences between CG and TG reached a significant level with a small to medium effect size (F(1, 45) = 7.835, $p < .05$, η_G^2 =.061). Figure 6 clearly illustrates that CG's external regulation increased, while that of TG's stayed the same. Also, CG's external regulation was slightly higher than that of TG's to begin with. These results contributed to the significant gap revealed between the two groups at the end of the year. By design, CG received few rationales for tasks they were asked to work on and with few opportunities offered by the instructor to express their feelings and opinions. Because of such instructions, CG may have felt pushed to study English.

Amotivation. The interaction of group by time was statistically significant with a small effect size (F(1, 45) = 5.004, $p < .05$, η_G^2 =.035). Further analysis revealed the significant simple main effect of group ($p < .001$, η^2=.211) at Time 2, with a medium to large effect size. CG's amotivation slightly increased over time, but the increase did not reach a significant level. TG's amotivation slightly decreased over time, but the decrease did not reach significance. The significant difference found between the two groups at Time 2 was because CG and TG

moved away from each other. Although the changes in both groups were statistically nonsignificant, with each group's scores changed in different directions, the gap between the two became significant. It might also be worth mentioning that the trend of the changes were in line with the findings in the other motivation/regulations, indicating that TG could have

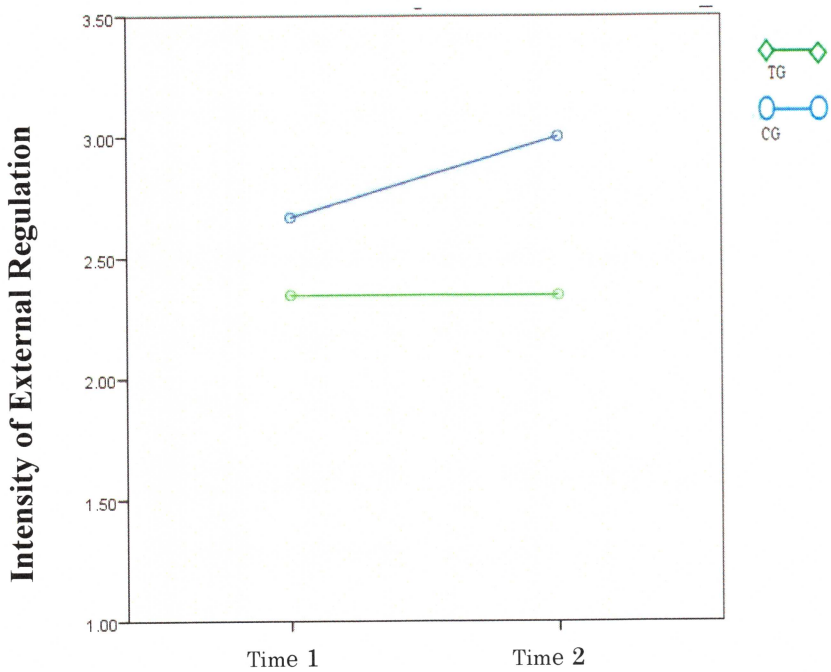


Figure 7-6. Group means of external regulation at Time 1 and Time 2.

Table 7-11

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on external regulation (EX)

Source	*SS*	*df*	*MS*	*F*	*p*	η_{G}^{2}
			Between Subjects			
Group	5.551	1	5.551	7.835	.008	.061
Error	31.880	45	.708			
			Within Subjects			
Time	.652	1	.652	.559	.459	.007
Time× Group	.652	1	.652	.559	.459	.008
Error (Time)	52.556	45	1.168			
Total	91.291	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

been able to decrease their amotivation while CG could have increased it slightly due to the instructions that they received.

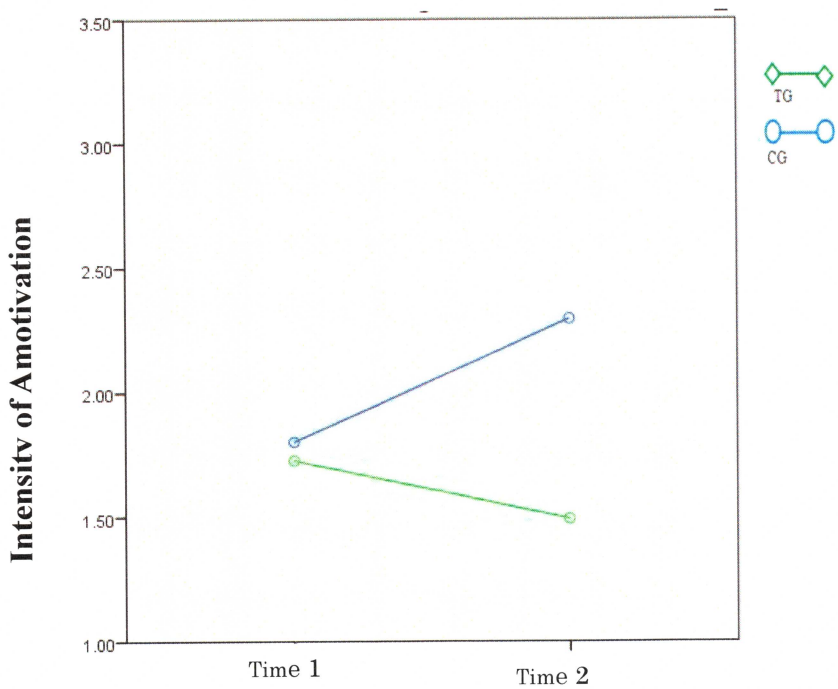


Figure 7-7. Group means of amotivation at Time 1 and Time 2.

Table 7-12

Summary of ANOVA Evaluating the Effects of Group (CG and TG) and Time (Time 1 and 2) Variation on SDT Constructs on amotivation (AM)

Source	*SS*	*df*	*MS*	*F*	*p*	η_G^2
			Between Subjects			
Group	4.537	1	4.537	10.132	.003	.081
Error	20.151	45	.448			
			Within Subjects			
Time	.404	1	.404	.648	.425	.007
Time× Group	3.121	1	3.121	5.004	.030	.035
Error (Time)	28.061	45	.624			
Total	56.275	93.000				

Note. *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square; *F* = F statistic; *p* = significance level, η_G^2 = generalized η squared.

7.4 Conclusion and Issues for Further Study

Given the results of pedagogical intervention based on SDT, the TG students' needs were more satisfied than those of the students who did not receive SDT-based instructions (i.e., CG). Furthermore, after the treatment period, TG's intrinsic motivation increased significantly and identified regulation showed an increasing trend. However, in CG, neither the degree of students' needs satisfaction nor motivation intensity marked a significant difference. The results also demonstrated that the new questionnaire is sensitive in measuring changes in the needs fulfillment degrees and of L2 motivation intensities among Japanese university students.

The findings of the study offer theoretical and practical implications. From a theoretical point of view, the current study further verified the applicability of SDT and the newly developed questionnaire in the Japanese university EFL setting. As the new questionnaire was based on the amended definitions of the constructs, the results of this study confirms the validity of the polished definitions as well. Especially, the definition of autonomy needs, which was majorly revised in the process of questionnaire development, seems to better reflect the Japanese university EFL learners' perception of autonomy support.

Regarding a practical aspect, this study has presented that SDT is indeed a useful framework for enhancing Japanese university EFL learners' motivation. Moreover, it provided some examples that language instructors can try in the classroom or use as a basis for finding new teaching ideas.

It should be noted, however, the current study used a limited number of participants at a single institution; thus, replication studies are necessary before generalizing the results. Possible future participants to such study include students with different academic interests and future career plans which may have an impact on the traits of their L2 motivation.

Notes

1. According to English Testing Service (2004), the standard error of TOELF ITP is 13 points. This means that with a probability of 95% a score of TOEFL can fluctuate by 25 points (1.96×13) without marking a significant difference, indicating that CG and TG's TOEFL scores (532 and 553, respectively) may vary from each other.
2. Mizumoto and Takeuchi (2008) offered the standard of r = .10, .30, and .50 as representing small, medium, and large effects, respectively.
3. A statistically significant difference shows that the mathematical probability of difference between two or more variables is higher than a certain level (usually .05), which means that the probability of a relationship due to random chance is a certain (usually 5) percent. A practically significant difference indicates the difference between variables is meaningful beyond the likelihood of chance and thus has a real-world application.

8. Conclusion and Implications

This chapter first addresses three limitations of the studies reported in this dissertation. It then presents the summary of the findings from each study as well as the implications. Finally, suggestions for further research are offered.

The author first acknowledges that the number of factors extracted for the English Learning Motivation Scale in Study 3 (Chapter 5) might lower the sensitivity in interpreting L2 motivation that SDT has made possible. In other words, with a fewer number of factors than the theory postulates, one can obtain a grainier picture of Japanese university EFL leaners' motivation. In Study 3, parallel analysis (PA), which was conducted prior to an EFA, indicated that four—rather than five—factors should be retained. In the EFA, the identified and introjected regulations were clustered into one factor. This factor structure was confirmed by the CFA in the subsequent study (Study 4). Given the highly accurate nature of PA and the adequate fit presented by the CFA, one can argue that, for Japanese EFL university students, it is difficult to distinguish identified regulation from introjected regulation. Previous SDT studies in the ESL/EFL settings had difficulty distinguishing two adjacent regulations (i.e., integrated and identified regulations) as well (Noels et al., 2000; Vallerand, 1997). Nevertheless, a fewer number of factors capture a less detailed image of L2 learners' motivation.

Second, as mentioned in Study 4 (Chapter 6), the dissertation focused on Japanese university students' EFL motivation in general; therefore, it lacked a microscopic point of view. In Study 4, the results of SEM showed a limited effect of relatedness needs fulfillment on L2 motivation of Japanese university students. This could be because relatedness satisfaction and L2 motivation have different relationships with each other, depending on the learners' characteristics. However, the examination of this issue was beyond the scope of this dissertation; thus, it inevitably failed to shed light on the complex relationships between

related needs fulfillment and L2 motivation.

Third, as was also mentioned, Study 5 (Chapter 7) used a relatively small number of participants at a single institution to examine the influence of SDT-based educational intervention. Therefore, generalizations cannot be drawn at this point. Replication studies, which use different types of participants, are necessary in the future.

Fourth, the dissertation focused merely on Japanese university students' motivation to learn English and did not assess changes of their English ability. Had Study 5 investigated the participants' changes in English ability, it could have strengthened the significance of the research. In a future intervention study, changes in English ability should be assessed and discussed in relation to motivational changes.

With those limitations in mind, the author would like to summarize major findings of this dissertation. The dissertation housed five studies to pursue three objectives: (a) expanding the understanding of SDT, (b) promoting the understanding of Japanese university EFL learners' motivation, and (c) contributing to the improvement of Japanese university EFL learners' motivation.

Study 1 (Chapter 3) presented some aspects of improvement in the conventional, commonly used questionnaire. The results of the study confirmed the well-formed factor structure of one of the two scales (i.e., Psychological Needs Scale). However, the study revealed some problems in the other scale (i.e., English Learning Motivation Scale) and suggested (1) the revision or replacement of external regulation items and (2) the review, revision, or replacement of identified and introjected regulation items. Study 1 also highlighted the need for a closer examination of the relationship between needs fulfillment and Japanese university EFL learners' motivation.

Following the results of Study 1, Study 2 (Chapter 4) conducted an interview study to probe the relationship between the needs fulfillment and Japanese university EFL learners' motivation. The results showed that (i) whereas the fulfillment of autonomy—meaning

freedom of choice—might motivate some L2 learners, it can demotivate others; (ii) a good relationship with the instructor might motivate learners, while a good relationship with other classmates can have a positive or marginal impact on L2 motivation, depending on the learner; and (iii) competence needs satisfaction is most likely to motivate Japanese EFL learners. The results suggest three aspects that should be considered to improve the commonly used questionnaire in the Japanese EFL setting: (1) a redefinition of L2 learners' autonomy needs; (2) an amendment of autonomy-related items based on the redefinition; and (3) the addition of items to gauge the instructor–student relationship.

Reflecting the points for improvement clarified in Studies 1 and 2, Study 3 (Chapter 5) developed a new SDT-based questionnaire to better gauge the Japanese university EFL learners' needs fulfillment and motivation. The study also tested the validity and reliability of the instrument. The data indicated that the new questionnaire has higher validity and reliability than the conventional one does.

In addition, Study 3 identified directions for future research. The study tested and affirmed the instrument's validity and reliability; however, it used one sample from the population. Further examinations using different samples to check its content validity were called for, which was dealt with in Study 4 (Chapter 6). The results of Study 4 showed that the new questionnaire was valid in a different sample from the one used to develop the instrument. This suggests that one could obtain results consistently in line with SDT by using the new questionnaire.

Study 3 yielded another research issue: a call for an intervention study to examine the influence of SDT-based pedagogical interventions on needs fulfillment and learner motivation. Having developed the new questionnaire, it could be used to evaluate the effects of the treatment. Study 5 (Chapter 7) was conducted for this purpose. The results showed that the SDT-based intervention could significantly increase the degree of participants' needs for autonomy, competence, and relatedness. The results also indicated that the self-determined

forms of participants' motivation were significantly enhanced. These results suggest that fulfilling the needs could help enhance Japanese university EFL learners' motivation. However, it should be noted that replication studies are required before generalizing the results. The other finding of the study related to the new questionnaire's sensitivity. It was demonstrated that the questionnaire was sensitive to measuring changes in the degree of needs fulfillment and of L2 motivation intensities among Japanese university students.

The author concludes this dissertation by suggesting three future research agendas to deepen the understanding of SDT and Japanese university EFL learners' motivation as well as to accumulate pedagogical insights on Japanese university students' L2 motivation.

First, the link between relatedness and autonomy should be investigated in future studies. As discussed in Study 1, decisions made by others play an important role in East Asian learners' internalized form of extrinsic motivation; thus, interplay between relatedness and autonomy might be formed differently between Asians and Westerners/collectivists and individualists. Examining whether and how Asian English learners internalize expectations from others could reveal a unique motivational process that operates within them.

Second, future research, by using a qualitative approach such as observation and interview, needs to look into the causal relationship between the relatedness needs fulfillment and L2 motivation from a microscopic viewpoint. Study 4 posed the possibility that the two factors may have different relationships with each other, depending on the leaner's features. A microscopic investigation may reveal the intricate interplay between the factors.

Third, as was already mentioned in the Limitations of the Studies section, replication studies of Study 5 are called for. By using different types of participants, evidence should be accumulated before generalizations are drawn about the effectiveness of the SDT-based intervention.

References

Agawa, T. (2008). Gakushusha chushin no shikakushikentaisaku kouza: Group work dounyu no teian [Bringing student-centeredness into test-preparation classrooms: Introducing group activities], *Keisen University Bulletin, 20,* 293–311. Retrieved from http:// ci.nii.ac.jp/naid/110006603042

Agawa, T., & Takeuchi, O. (2016a). Validating self-determination theory in the Japanese EFL context: Relationship between innate needs and motivation. *Asian EFL Journal Quarterly, 18,* 7–33. Retrieved from http://asian-efl-journal.com/2016/02/ volume-18-issue-1-march-2016-quarterly-journal/

Agawa, T., & Takeuchi, O. (2016b) Re-examination of psychological needs and L2 motivation of Japanese EFL learners: An interview study. *Asian EFL Journal Professional Teaching Articles, 89,* 74–98. Retrieved from http://asian-efl- journal. com/9482/teaching-articles/2016/01/volume-89-january-2016-teaching-article/

Agawa, T., & Takeuchi, O. (2016c) A new questionnaire to assess Japanese EFL learners' motivation: Development and validation. *ARELE (Annual Review of English Language Education in Japan), 27,* 1–16. Retrieved from https://www. researchgate. net/publication/300971681_A_new_questionnaire_to_assess_Japanese_EFL_learners'_ motivation_Development_and_validation

Agawa, T., & Ueda, M. (2013). How Japanese students perceive demotivation toward English study and overcome such feelings. *JACET Journal, 56,* 1–18. Retrieved from http://ci.nii.ac.jp/naid/110009597360/

Asano, H., Suzuki, T., & Kojima, T. (2005). *Nyumon kyobunsan kouzoubunseki no jissai* [Introduction guide: Practicals on structural equation modeling]. Tokyo: Kodansha.

Azuma, H. (1994). *Nihonjin no shitsuke to kyoiku: Hattatsu no nitibeihikaku ni motozuite* [Discipline and education of Japanese children, by comparison of Americans' cognitive development]. Tokyo: University of Tokyo Press.

Bakeman, R. (2005). Recommended effect size statistics for repeated measures designs. *Behavior Research Methods*, 37, 379–384. doi: 10.3758/BF03192707

Bentler, P. M. (2006). *EQS 6 structural equations program manual.* Encino, CA: Multivariate Software.

Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York, NY: Guilford.

Byrne, B. M. (2006). *Structural Equation Modeling with EQS: Basic concepts, applications, and programming* (2nd. ed). New York, NY: Routledge.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 245–276. doi:10.1207/s15327906mbr0102_10

Comanaru, R., & Noels, K. (2009). Self-Determination, motivation, and the learning of Chinese as a heritage language. *The Canadian Modern Language Review, 66,* 131–158 doi:10.3138/cmlr.66.1.131

Connell, J P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self Processes and Development: The Minnesota Symposia on Child Psychology* (pp. 43–77). Hillsdale, NJ: Lawrence Erlbaum Associates.

Council of Europe (2001). *The Common European Framework of Reference for Languages.* UK: Cambridge University Press.

Crandall, J. (1999). Cooperative language learning and affective factors. In J. Arnold (Ed.), *Affect in language learning* (pp. 226–245). UK: Cambridge University Press.

Deci, E. L., & Flaste, R. (1995). *Why we do what we do: the dynamics of personal autonomy.* New York: Putnam's Sons.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York, NY: Plenum Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and

the self-determination behavior. *Psychological Inquiry, 11,* 227–268. Retrieved from https://selfdeterminationtheory.org/SDT/documents/2000_DeciRyan_PIWhatWhy.pdf

Deci, E. L., & Ryan, R. M. (Eds.). (2002). *Handbook of self-determination research.* NY: University of Rochester Press.

Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology, 49,* 14–23. doi: 10.1037/0708-5591.49.1.14

Deci, E. L., Vallerand, R. J., Pelletrier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist 26,* 325–346. doi:10.1207/10.1207/s15326985ep2603&4_6

Dei, Y. (2011). Pedagogical intervention to enhance EFL students' motivation: An attempt based on self-determination theory. *Journal of Kansai University Graduate School of Foreign Language Education and Research, 10,* 1–19.

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54,* 403–425, doi: 10.1146/annurev.psych.54.101601.145056

Dörnyei, Z. (1990). Conceptualizing motivation in foreign-language learning. *Language Learning, 40,* 45–78. doi:10.1111/j.1467-1770.1990.tb00954.x

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal, 78,* 273–284.

Dörnyei, Z. (2001). *Teaching and researching motivation.* Harlow, UK: Longman.

Dörnyei, Z., & Taguchi, T. (2010). *Questionnaires in second language research: Construction, administration, and processing* (2nd ed.). London: Routledge.

Dörnyei, Z., & Ushioda, E. (2011). *Teaching and researching motivation* (2nd ed.). Harlow, UK: Longman.

Edmunds, J., & Duda, J. L. (2006). A test of self-determination theory in the exercise domain.

Journal of Applied Social Psychology, 36, 2240–2265.

Elliot, A. J., Faler, J., McGregor, A. H., Keith, W., Sedikides, C., & Harackiewicz, J. M. (2000). Competence valuation as a strategic intrinsic motivation process. *Personality and Social Psychology Bulletin, 26,* 780–794. doi:10.1177/0146167200269004

Ellis, R. (1994). *The study of second language acquisition.* UK: Oxford University Press.

Educational Testing Service (ETS). (2004). *Mapping TOEFL, TSE, TWE, and TOEIC on the Common European Framework: Executive summary.* Princeton, NJ: Author. Retrieved from http://www.besig.org/events/iateflpce2005/ets/CEFsummary March04.pdf

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149–1160. doi:10.3758/BRM.41.4.1149

Fortier, M. S., Duda, J., Guerin, E., & Teixeira, P. (2012). Promoting physical activity: Development and testing of self-determination theory-based interventions. *International Journal of Behavioral Nutrition and Physical Activity, 9,* 20–33. doi:10.1186/1479-5868-9-20

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation.* London: Edward Arnold Publishers.

Gardner, R. C. (2000). Correlation, causation, motivation and second language acquisition. *Canadian Psychology, 6,* 29–47. doi:10.1037/h0086854

Gardner, R. C., Lalonde, R. N., & Moorcroft, R. (1985). The role of attitudes and motivation in second language learning: Correlational and experimental considerations. *Language Learning, 35,* 207–227. doi:10.1111/j. 1467-1770. 1985.tb01025.x

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second language learning*. Rowley, MA: Newbury House.

Hair, J. F., Black, W. C. Babin, B. J., & Anderson, R. E. (2008). *Multivariate data analysis*

(7th ed.). London: Pearson Education.

Hayashi, H. (2011). *Doukizuke siten de miru nihonjin no eigo gakusyusya: naihatuteki gaihatuteki doukizuke wo jikuni* [Japanese English learners through motivational perspective: With intrinsic and extrinsic motivation at the core]. Tokyo: Kinseido.

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods, 7,* 191–205. doi:10.1177/1094428104263675

Hirai, A. (2012). *Kyoiku shinrikei kenkyu no tame no data bunseki nyumon* [Introduction to data analysis for educational and psychological research]. Tokyo: Tokyo Shoseki.

Hiromori, T. (2006a). *Gaikokugo gakushusya no doukizuke wo takameru riron to jissen* [Theory and practice to improve foreign language learners]. Tokyo: Taga Shuppan.

Hiromori, T. (2006b). The effect of educational intervention on L2 learners' motivational development. *JACET Bulletin, 43,* 1–14. Retrieved from http://ci.nii.ac.jp/ naid/ 110006388891

Hiromori, T. (2015). *Eigo gakusyu no mechanism: Dainigengo syutoku kenkyu ni motoduku koukateki na benkyouhou* [Mechanisms for learning English: Effective study methods based on second language acquisition research]. Tokyo: Taishukan Shoten.

Holec, H. (1981). *Autonomy in foreign language learning.* Oxford, UK: Pergamon.

Honda, K., & Sakyu, M. (2004). Multiple Models of Motivation for Japanese EFL Learners: An investigation into concepts in different paradigms. *ARELE (Annual Review of English Language Education in Japan), 15,* 41–50. Retrieved from http://ci.nii.ac.jp/naid/110008512262

Horney, K. (1950). *Neurosis and human growth.* New York, NY: W. W. Norton.

In'nami, Y., & Koizumi, R. (2011). Structural equation modeling in language testing and learning research: A review. *Language Assessment Quarterly, 8,* 250–276. doi: 10.1080/15434303.2011.582203

Isoda, T. (2008). Jugyou heno hannou wo toushite toraeru eigo gakushusha no douki zuke [Capturing English learners' motivation through their responses to classes]. Hiroshima: Keisuisha.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76,* 349–366. doi:10.1037/0022-3514.76.3.349

Iyengar, S. S., & DeVoe, S. E. (2003). Rethinking the value of choice: Considering cultural mediators of intrinsic motivation. In V. Murphy-Berman & J. J. Berman (Eds.), *Nebraska Symposium on Motivation: Cross-cultural Differences in Perspectives on Self, 49,* 129–174.

Johnson, D. W., & Johnson, R. T. (2003). Student motivation in co-operative groups: Social interdependence theory. In R. M. Gillies, & A. F. Ashman (Eds.), *Co-operative learning: The social and intellectual outcomes of learning in groups* (pp. 136–176). London: Routledge.

Johnson, D. W., Johnson, R. T., & Taylor, B. (1993). Impact of cooperative and individualistic learning on high-ability students' achievement, self-esteem, and social acceptance. *The Journal of Social Psychology, 133,* 839–844. doi:10.1080/00224545.1993.9713946

Jones, B. D., Llacer-Arrastia, S, & Newbill, P. B. (2009). Motivating foreign language students using self-determination theory. *Innovation in Language Learning and Teaching, 2,* 171–189. Retrieved from http:// www.tandfonline. com/doi/abs/10.1080/17501220802358210

Kikuchi, K., & Sakai, H. (2009). Japanese learners' demotivation to study English: A survey study. *JALT Journal, 31,* 183–204. Retrieved from http://jalt-publications.org/recentpdf/jj/2009b/art3.pdf

Kurahachi, J. (1994). Individual differences in second language learning.

[Dainigengoshyutoku ni okeru kojinsa]. *Japanese Journal of Educational Psychology, 42,* 227–239. Retrieved from http://doi.org/10.5926/jjep1953.42.2_227

Lamb, M. (2004). Integrative motivation in a globalizing world. *System, 32,* 3–19. doi: 10.1016/j.system.2003.04.002

Lasagabaster, D., Doiz, A., & Sierra, J. M. (2014). *Motivation and foreign language learning: From theory to practice*. Amsterdam: John Benjamins.

Littlewood, W. (1999). Defining and developing autonomy in East Asian contexts. *Applied Linguistics, 20,* 71–94. doi:10.1093/applin/20.1.71

Maekawa, Y., & Yahima, T. (2012). Examining the motivational effect of presentation-based instruction on Japanese engineering students: From the viewpoint of the ideal self and self-determination theory. *Language Education & Technology, 49,* 65–92.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98,* 224–253. Retrieved from http://dx.doi.org/10.1037/0033-295X.98.2.224

Maslow, A. (1968). *Toward a psychology of being.* New York, NY: Van Nostrand Reinhold.

McEown, M. S., Noels, K. A., Saumure, K. D. (2014). Students' self-determined and integrative orientations and teachers' motivational support in a Japanese as a foreign language context. *System, 45,* 227–241. Retrieved from http://dx.doi.org/10.1016/ j.system.2014.06.001

Mizumoto, A., & Takeuchi, O. (2008). Kenkyuronbun niokeru koukaryou no houkoku no tameni [Basics and considerations for reporting effect sizes in research papers] . Eigo Kyoiku Kenkyu (SELT), 31, 57-66. Retrieved from http://www.mizumot.com/ files/ EffectSize_KELES31.pdf.

MEXT. (2005). Kokuritsudaigakuni okeru kyouyou kyouiku ni kansuru jittai cyousa houkokusyo: soukatu, FD kankei bassui [The survey of general education at national

university: General overview of the results related to FD]. Retrieved from http://www.mext. go.jp/b_menu/shingi/chukyo/chukyo4/003/gijiroku/07012402/001/003.htm

Murphey, T., & Jacobs, G. M. (2000). Encouraging critical collaborative autonomy. *JALT Journal, 22,* 228–244.

Nakata, Y. (2007). Social-interactive tools for the development of learner autonomy: From reactive autonomy to proactive autonomy. In L. Miller (Ed.), *Autonomy 9: Autonomy in the classroom.* Dublin: Authentik.

Nakata, Y. (2010). Towards a framework of self-regulated language learning. *TESL Canada Journal, 27*(2), 1–10. doi:http://dx.doi.org/10.18806/tesl.v27i2.1047

Nichols, J. D., & Miller, R. B. (1994). Cooperative learning and student motivation. *Contemporary Educational Psychology, 19,* 167–178. doi:10.1006/ceps.1994.1015

Noels, K. A. (2001a). New orientations in language learning motivation: Towards a model of intrinsic, extrinsic, and integrative orientations and motivation. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 43–68). Honolulu, HI: Second language Teaching & Curriculum Center, University of Hawai ʻi.

Noels, K. A. (2001b). Learning Spanish as a second language: Learners' orientations and perceptions of their teachers' communication style. *Language Learning, 51,* 107–144.

Noels, K. A. (2003). Learning Spanish as a second language: Learners' orientations and perceptions of their teachers' communication style. In Z. Dörnyei (Ed.), *Attitudes, orientations, and motivation in language learning* (pp. 97–136). Oxford, UK: Blackwell.

Noels, K. A. (2013). Learning Japanese; learning English: Promoting motivation through autonomy, competence and relatedness. In M. T. Apple, D. Da Silva, & T. Fellner (Eds.), *Language learning motivation in Japan* (pp. 15–34). Bristol, UK: Multilingual Matters.

Noels, K. A., Clément, R., & Pelletier, L. G. (2001). Intrinsic, extrinsic, and integrative orientations of French Canadian learners of English. *The Canadian Modern Language Review, 57,* 424–442.

Noels, K. A., Pelletier, L. G., Clément, R., & Pelletier, L. G. (1999). Perceptions of teachers' communicative style and students' intrinsic and extrinsic motivation. *The Modern Language Journal, 83,* 23–34.

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning, 50,* 57–85. doi:10.1111/1467-9922.53223

Olejnik, S., & Algina, J. (2003). Generalized eta and omega squared statistics: Measures of effect size for some common research designs. *Psychological Methods, 8,* 434–447. doi:10.1037/1082-989X.8.4.434

Otoshi, J., & Heffernan, N. (2011). An analysis of a hypothesized model of EFL students' motivation based on self-determination theory. *The Asian EFL Journal Quarterly, 13,* 66–86. Retrieved from: http://www.asian-efl-journal.com/PDF/September-2011.pdf

Pelletier, L. G., Dion, S. C., Slovenic-D'Angelo, M., & Reid, R. (2001). Why do you regulate what you eat? Regulations between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion, 28,* 245–277. doi:10.1023/B:MOEM.0000040154.40922.14

Questeda, E, Ntoumanis, N, Viladrichb, C., Haugc, E., Ommundsend, Y., Van Hoyee, A., Mercéf, J., Hall, K. H., Zourbanosh, N., & Duda, J. L. (2013). Intentions to drop-out of youth soccer: A test of the basic needs theory among European youth from five countries. *International Journal of Sport and Exercise Psychology, 11,* 395–407.

Reeve, J. (1996). *Motivating others: Nurturing inner motivational resources.* Needham Heights, MA: Allyn & Bacon.

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during

a learning activity. *Journal of Educational Psychology, 98,* 209–218. doi: 10.1037/0022-0663.98.1.209

Rogers, C. (1961). *On becoming a person: A therapist's view of psychotherapy.* London, UK: Constable & Robinson.

Ryan, R. M. (2014) Self-determination theory. A special lecture given at Keio University on September 6, 2014.

Ryan, M. R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68–78. doi:10.1037110003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: All organisms' dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–27). Rochester, NY: University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality 74,* 1557–1585. doi:10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., Plant, R. W., & O'Malley, S. (1995). Initial motivations for alcohol treatment: Relations with patient characteristics, treatment involvement, and dropout. *Addictive Behaviors, 20,* 279–297. doi:10.1016/0306-4603(94)00072-7

Sakai, H. & Kikuchi, K. (2009). An analysis of demotivators in the EFL classroom. *System, 37,* 57–69. doi: 10.1016/j.system.2008.09.005

Sakai, H., & Koike, H. (2008). Changes in Japanese university students' motivation to learn English: Effects of volunteering in an international event. [Nihongowasha daigakusei no eigogakushudouki no henka: Kokusai event eno volunteer sanka no kouka]. *JALT Journal, 30,* 51–67.

Sakai, H., & Koizumi, R. (2014). How to collect data for English education research: Ways to measure what you want to measure. [Eigo kyoiku ni okeru data syusyu houhou:

hakaritai mono wo hakaru houhou] Paper presented at the 38th KATE conference, Chiba, Japan.

Seale, C. (1999). Quality in qualitative research. *Qualitative Inquiry, 5,* 465–478. doi: 10.1177/107780049900500402

Shigemasu, K., Yanai, H., & Mori T. (Eds.). (1999). *Q & A de shiru toukei data kaiseki* (dai 2han) [Statistical data analyses learning through Qs and As: Do's and don'ts (2nd ed.)]. Tokyo: Science-sha.

Shirono, H. (2009). *Koukousei no reading ni taisuru doukiduke kouyouto dokkairyoku no ikusei: gakusyuudouki wo takameru gakusyuusya shien no arikata wo motomete* [Enhancing high school students' reading motivation and comprehension: A search for means to support learners to improve their motivation]. *STEP Bulletin, 21,* 181–194. Retrieved from https:// www. eiken. or.jp/center_for_ research/pdf/ bulletin/vol21/vol_21_p181-p194.pdf

Skinner, B. F. (1971). *Beyond freedom and dignity*. New York, NY: Knopf.

Tabachnick, B. G., & Fidell, L. S. (2012). *Using multivariate statistics (6th ed.).* Boston, MA: Pearson Education.

Takeuchi, O., & Mizumoto, A. (Eds.). (2012). *Gaikokugo kyoiku kenkyu handbook: Kenkyu shuhou no yoriyoi rikai no tameni* [Handbook of educational research: For better understanding of research methods]. Tokyo: Shohakusha.

Tanaka, H., & Hiromori, T. (2007). Eigo gakushusha no naihatsuteki dokizuke wo takameru kyoikujissentekikainyu to sonokouka no kensho [The effects of educational intervention to enhance intrinsic motivation of L2 students]. *JALT Journal, 29*, 59–80. Retrieved from http://jalt-publications.org/jj/issues/2007-05_29.1

Uebuchi, H. (Ed.). (2004). *Dokizuke kenkyu no saizensen* [The forefront of motivation research]. Kyoto: Kitaoji Shobo.

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. *Advances in Experimental Social Psychology, 29,* 271–360. Retrieved from http://dx.doi.org/10.1016/S0065-2601(08)60019-2

Williams, G. C, Cox, E. M., Kouders, R., & Deci, E. L. (1999). Presenting the facts about smoking to adolescents: Effects of an autonomy-supportive style. *Archives of Pediatrics and Adolescent Medicine, 153,* 959–964. doi:10.1001/archpedi.153.9.959

Williams, G. C., Gagné, M., Ryan, R. M., & Deci, E. L. (2002). Facilitating autonomous motivation for smoking cessation. *Health Psychology, 21,* 40–50.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70,* 115–126.

Williams, G. C., Niemiec, C. P., Elliot, A., LaGuardia, J. G., Gorin, A. A., & Rigby, C. R. (2014). Virtual look AHEAD program: Initial support for a partly virtualized intensive lifestyle intervention in type 2 diabetes. *Diabetes Care, 37,* 169–170. doi: 10.2337/dc14-0831

Wilson, Mack, Muon, and LeBlanc (2007). What role does psychological need satisfaction play in motivating exercise participation? In L. A. Chiang (Ed.), *Motivation of exercise and physical activity* (pp. 35–52). Hauppauge, New York: Nova Science.

Wu, X. (2003). Intrinsic motivation and young language learners: The impact of the classroom environment. *System, 31,* 501–517. doi:10.1016/ j.system. 2003. 04.001

Yamamori, K. (2004) Durability of the will to learn English: A one-year study of Japanese seventh graders. [Chugaku 1nen no 4gatsuniokeru eigogakusyu ni taisuru iyokuwa dokomade jizoku surunoka]. *Studies in Educational Psychology, 52,* 71–82. Retrieved from http:// doi.org/10.5926/jjep1953. 52.1_71

Yashima, T. (2000). Orientations and motivation in foreign language learning: A study of Japanese college students. *JACET Bulletin, 31,* 121–133. Retrieved from

Appendix A. Definitions of Types of Motivation and Regulations in SDT

- **intrinsic motivation**

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).

→[EFL] Applied in the Japanese EFL setting, intrinsically motivated English learners study English because they enjoy it.

- **extrinsic motivation:**

  - **identified regulation**

A self-determined form of extrinsic motivation. Identified regulation involves a conscious valuing of a behavioral goal or regulation, an acceptance of the behavior as personally important (Deci & Ryan, 2002).

→[EFL] EFL learners with identified regulation understand and accept the importance of learning English.

  - **introjected regulation**

Introjection is a form of internalized regulation that is theorized to be quite controlling. Introjection-based behaviors are performed to avoid guilt and shame or to attain ego enhancements and feelings of worth (Deci & Ryan, 1985).

→[EFL] EFL learners regulated through introjection study English to avoid guilt or attain self-esteem.

  - **external regulation**

The least autonomous form of extrinsic motivation and includes the classic instance of

being motivated to obtain rewards or avoid punishments. Externally regulated person's reason for doing a behavior is to satisfy an external demand or a socially constructed contingency (Deci & Ryan, 2002).

→ EFL EFL learners with this type of regulation study English to obtain rewards (e.g., academic credits) or avoid punishments (e.g., failing a class).

- **amotivation**

A state of no motivational regulation. It lacks the intention to act (Deci & Ryan, 2002).

→ EFL Amotivated EFL learners do not study English at all or go through the actions of studying without intending to learn anything.

Appendix B. Sample Worksheets for Analysis of Interview Data (Study 2)

Positive Impact of Giving Choices on L2 Motivation

ヴァリエーション	解釈
先生がこういうことをしたいと思うというのと、生徒がこういうことをしたいというものの一致はなかなか難しいと思うので、それを考えると、いくつか選択肢を出してくださって、そこからこういうことがやりたいですと言って、生徒と先生で決めていって授業をやっていくほうが、生徒のモチベーションは上がるのではないかという気はします。(AHf2)	決定に自分達が関われることで、自分の価値観や興味と一致した活動に従事できている。納得したうえでの行動
何でそれをするのかも自分で決めるから、分かるじゃないですか。それでその結果も自分で責任をとるから。(CLf)	
自由度が高い方がやる気が出ると思いますね。英語力はそれぞれ違いますし、自分がやりたいなと思うことがなるべく反映される方がやりがいがあるというか。(AHm)	

Negative Impact of Giving Choices on L2 Motivation

ヴァリエーション	解釈
自分で考えるのとか、あんまりしたくないタイプなので、与えられてやっているほうがやる気は出ていると思います。考えろと言われたら、めんどくさいなと思っちゃうかなと思います。(AMf2)	選択することが外からの強制になっている。
[授業の、例えば内容とか、どういうふうに計画して、何を勉強するとか、そういうのを自分の好きにしていいよとか言われても、あんまり...？] 無理ですね。英語は文法は時代とともに変わっていき、動詞の活用は一部おかしいしみたいな、英語は無限でみたいな、きりがないんですよ。なので、自分で範囲を決めろと言われても、ここは覚えなくていいっていう線切りができないので。そうすると、やっぱりあれですね。うん、苦痛。そこの線切りの時点でまず苦痛ですね。(AL1)	有能性の認知があってはじめて自律性の認知が起こる。
（授業で先生から）どうしようかとか、何がやりたいとなると、まず、そのことに対しても分からないのに、もう、分からないやってなっちゃう。(CMf)	
自分で決められたりすると、やる気がでる？]決めるほどアイディアも持っていないので、それはそれで悩んで何も言えず。ちょっと困ると言う感じですね。(CLf)	「自律支援は端的には選択を与えることを意味するが、ある程度の有能感を伴わない段階では、選択を与える行為自体が強制と取られる可能性があるだろう」（上淵, 2004 p. 48）
(大学に)入ったばっかりだったら、やっぱり高校の授業が抜けていないから、ある程度、先生が与えてあげないと自分たちでディスカッションを起こすというのは難しいかもしれないです(BM1)	自律性支援のやり方に工夫が必要。 Autonomy and freedom are different things. When giving a person autonomy, you need to have a structure which is a framework to scaffold the person.(Ryan, 2014)

Appendix C. Translated Sample Worksheets for Analysis of Interview Data (Study 2)

Positive Impact of Giving Choices on L2 Motivation

Variation	Interpretation
I think it is quite difficult to match what the instructor would like us to do and what students would like to do. Then if the instructor and students can decide what to do in class by, for example, the instructor giving us some suggestions which we students can choose from, students' motivation will probably increase. (AHf)	These students can engage in activities which match their value and interests by having an opportunity to participate in decision making. They act upon understanding the value of tasks.
(My motivation) will go up (if I'm given choices) because, when I choose a task by myself, I know why I am doing it. Then I will take responsibility for the outcome. (CLf)	
I think my motivation will increase if I have more freedom of choice. Tasks would be more worthwhile if they were more reflective of more of something I would like to do.(AH1)	

Appendix C. (cont'd)

Negative Impact of Giving Choices on L2 Motivation

<table>
<tr><th>Variation</th><th>Interpretation</th></tr>
<tr><td>I'm not the kind of person who would like to come up with some kind of idea by myself. I feel more motivated when I'm given a task by the instructor. If I am told to think (what I should do to learn English), I will feel it is too much hassle.(AMf)</td><td>For her, making a choice about English learning is something she is forced to do.</td></tr>
<tr><td>If you are told that you can freely chose, say, what you learn in an English class, such as how you plan your study, or what you study, you wouldn't welcome that so much? (interviewer)</td><td rowspan="2">Until one has a sense of competence, one can not recognize autonomy needs .</td></tr>
<tr><td>(Making choices myself about English study is) unreasonable. English grammar changes over time, some verbs are irregular, and there are countless numbers of words to remember. It would be painful to decide by myself what to study, because there's no clear line between what I must remember and what I don't have to. The first step, deciding what I need to cover, is already a pain. (ALm)</td></tr>
<tr><td>[If the instructor asks us how and what we want to learn, I won't be able to come up with an idea because I don't even know much about the subject matter. (CM1f)]</td><td>Autonomy support, in a nutshell, means giving students a choice. However, if an individual lacks a certain level of perceived competence, being given a choice can be understood as being forced to make a choice (Uebuchi, 2004, p.48).</td></tr>
<tr><td>Do you think your motivation will go up if you can choose something yourself? (interviewer)
I don't have enough ideas to choose from, so (if I'm given the opportunity) I would't be able to say anything. I would be stumped.(CL2)</td><td></td></tr>
<tr><td>(Right after entering a university) students wouldn't be able to initiate discussion and the instructor needs to provide a certain amount (of structure), because they are still accustomed to the high school style of studying. (BMf)</td><td>Autonomy support requires sensitivity.
Autonomy and freedom are different things. When giving a person autonomy, you need to have a framework that provides scaffolding for the person.(Ryan, 2014)</td></tr>
</table>

Appendix D. The Newly Developed Questionnaire (Study 3)

英語学習者に関するアンケート

このアンケートは英語学習者の考えや気持ちをよりよく理解するためものです。これはテストではありませんので、「正解」も「不正解」もなく、名前を記入する必要もありません。回答内容は研究目的だけのために使われますので、正直にお答えください。よろしくお願いいたします。

Part 1　あなたが次の事柄にどの程度共感できるかを、1から5の番号の中からひとつ選んでお答えください。
記入もれのないようにお願いいたします。2つ以上英語の授業を受けている人は、総合して考えてください。

全く そう思わない	そう思わない	どちらでも ない	そう思う	非常に そう思う
1	2	3	4	5

(例)もしあなたの考えが次の内容に非常に共感できる場合、次のように記入します。

カレーが好きだ。	1	2	3	4	(5)

1	いろいろな場面で英語は役立つと思うから勉強している。	1	2	3	4	5
2	英語を使えないと、将来困りそうだから勉強している。	1	2	3	4	5
3	とにかく英語の勉強はもうしたくない。	1	2	3	4	5
4	なぜ英語を学ぶ必要があるのか、理解できない。	1	2	3	4	5
5	もし英語を学ぶ必要性がなければ、英語を学ばないだろう。	1	2	3	4	5
6	私が英語を学ぶのは、英語が話されているのを聞くのが心地よいからだ。	1	2	3	4	5
7	私が英語を学ぶのは、英語を話していると気持ちがよいからだ。	1	2	3	4	5
8	英語に接すること自体が好きなので勉強する。	1	2	3	4	5
9	英語の学習は時間の無駄であるという感覚がある。	1	2	3	4	5
10	英語を学ぶことに刺激を感じるので勉強する。	1	2	3	4	5
11	英語を学んでも何にもならないと思う。	1	2	3	4	5
12	英語を使える人になりたいから勉強している。	1	2	3	4	5
13	英語を勉強することで、初めて気づくことがあると嬉しい。	1	2	3	4	5
14	英語を勉強するのは、テストがあるので、しかたなく。	1	2	3	4	5
15	解らなかった英語が解るようになると嬉しいので勉強する。	1	2	3	4	5
16	私が英語を学ぶ理由は、英語が自分の成長にとって役立つと考えるからだ。	1	2	3	4	5
17	自分にとっての英語を学ぶ意義がわからない。	1	2	3	4	5
18	自分の将来のためには、英語は大切である。	1	2	3	4	5
19	自分の進路のためには大切な科目だから勉強する。	1	2	3	4	5
20	勉強しろと言われるので英語をやっている。	1	2	3	4	5

Appendix D. (cont'd)

Part 2　Part1 と同様にお答えください。

全く そう思わない	そう思わない	どちらでも ない	そう思う	非常に そう思う
1	2	3	4	5

1	英語の授業のグループ活動・ペアワークでは、協力し合う雰囲気があると思う。	1	2	3	4	5
2	英語の教師は、質問しやすい雰囲気を持っていると思う。	1	2	3	4	5
3	英語の授業で教師は、活動や課題の価値や意義を説明してくれる。	1	2	3	4	5
4	英語の授業では、同じ教室の仲間と仲良くやっていると思う。	1	2	3	4	5
5	英語の授業では、自分の努力が実ったという充実感が得られることがあると思う。	1	2	3	4	5
6	英語の授業では、先生は私たちの授業に関する意見を尊重してくれていると思う。	1	2	3	4	5
7	英語の授業では、和気あいあいとした雰囲気があると思う。	1	2	3	4	5
8	英語の教師は、学生の気持ちを理解していると思う。	1	2	3	4	5
9	英語の教師は、私たちの英語の学習について励ましてくれる。	1	2	3	4	5
10	英語の授業では、「できた」という達成感が得られることがあると思う。	1	2	3	4	5
11	英語の授業では、満足のいく成績がとれると思う。	1	2	3	4	5
12	英語の授業で教師は、私たちの視点を考慮してくれていると思う。	1	2	3	4	5

Appendix D. (cont'd)

Part 3　あなたについておたずねします。

次の項目の□にチェック(✓)を入れるか、空欄に回答を記入してお答えください。

性別: □女性　□男性

国籍: □日本人　□外国人

年齢: □18 □19 □20 □21 □22 □23 □24 □25 □その他:_____.

学年: □1年生　□2年生　□3年生　□4年生　□その他:_____.

学部・学科:_____.

海外経験: 旅行や勉強などで、英語圏に滞在したことがありますか？

□ はい ⇩ □いいえ

滞在場所と期間をお答えください: (場所)_____に合計 (期間)_____.

英語力: あなたの現在の英語力について次の中からひとつ選んでチェック(✓)してください。

□ B2.2レベルまたはそれ以上--	一般的な分野から、文化、学術などの専門的な分野まで、幅広いトピックの会話に積極的に参加し、自分の考えを正確かつ流暢に表現することができる。
	自分の専門分野や関心のある事柄であれば、複雑な内容を含む報告書や論文などを、原因や結果、過程的な状況も考慮しつつ、明瞭かつ詳細な文章で書くことができる。
	自然な速さで標準的な発音の英語で話されていれば、現代社会や専門分野のトピックについて、話者の意図を理解することができる。
	自分の専門分野の論文や資料から、辞書を使わずに、必要な情報や論点を読み取ることができる。
□ B1.2レベル--	病院や市役所といった場所において、詳細にまた自信を持って、問題を説明することができる。関連する詳細な情報を提供して、その結果として正しい処置を受けることができる。
	短い読み物か短い新聞記事であれば、ある程度の流暢さを持って、自分の感想や考えを加えながら、あらすじや要点を順序立てて伝えることができる。
	物事の順序に従って、旅行記や自分史、身近なエピソードなどの物語文を、いくつかのパラグラフで書くことができる。また、近況を詳しく伝える個人的な手紙を書くことができる。
	はっきりとなじみのある発音で話されれば、身近なトピックの短いラジオニュースなどを聞いて、要点を理解することができる。
□ A2.2レベル--	予測できる日常的な状況(郵便局・駅・店など)ならば、さまざまな語や表現を用いてやり取りができる。
	聞いたり読んだりした内容(生活や文化の紹介などの説明や物語)であれば、基礎的な日常生活語彙や表現を用いて、感想や意見などを短く書くことができる。
	スポーツ・料理などの一連の行動を、ゆっくりはっきりと指示されれば、指示通りに行動することができる。
	生活、趣味、スポーツなど、日常的なトピックを扱った文章の要点を理解したり、必要な情報を取り出したりすることができる。
□ A1.3レベル--	趣味、部活動などのなじみのあるトピックに関して、はっきりと話されれば、簡単な質疑応答をすることができる。
	趣味や好き嫌いについて複数の文を用いて、簡単な語や基礎的な表現を使って書くことができる。
	(買い物や外食などで)簡単な用をたすのに必要な指示や説明を、ゆっくりはっきりと話されれば、理解することができる。
	簡単な語を用いて書かれた、スポーツ・音楽・旅行など個人的な興味のあるトピックに関する文章を、イラストや写真も参考にしながら理解することができる。
□ A1.1レベル--	なじみのある定型表現を使って、時間・日にち・場所について質問したり、質問に答えたりすることができる。
	住所・氏名・職業などの項目がある表を埋めることができる。
	日常生活に必要な重要な情報(数字、品物の値段、日付、曜日など)をゆっくりはっきりと話されれば、聞き取ることができる。
	ファーストフード・レストランの、絵や写真がついたメニューを理解し、選ぶことができる。

ご協力ありがとうございました！！

Appendix E. Translated Version of the Newly Developed Questionnaire (Study 3)

English Learner Questionnaire

This survey is conducted to better understand the thought s and feelings of learners of English. This is not a test so there are no "right" or "wrong" answers and you do not even have to write your name on it. The results of this survey will be used only for research purpose so please give your answers sincerely. Thank you very much for your help.

Part 1 **Please tell how much you agree or disagree with the following statements by simply circling a number from 1 to 5. Please do not leave out any of items. If you take more than one English class, please consider all of them as one unit and answer accordingly.**

Strongly disagree	Disagree	Neither	Agree	Strongly agree
1	2	3	4	5

	(Ex.) If you strongly agree with the following statement, write this:					
	I like curry	1	2	3	4	(5)
1	I study English because I think it will be useful in various situations.	1	2	3	4	5
2	I study English because a lack of mastery of English can get me in troub	1	2	3	4	5
3	I simply don't want to study English anymore.	1	2	3	4	5
4	I don't understand why I need to study English.	1	2	3	4	5
5	If I did not need to learn English, I would not.	1	2	3	4	5
6	I study English because listening to someone speaking English makes me feel good.	1	2	3	4	5
7	I study English because speaking the language makes me feel good.	1	2	3	4	5
8	I study English because I like to get exposed to English itself.	1	2	3	4	5
9	I feel that learning English is a waste of time.	1	2	3	4	5
10	I study English because I get stimulated by learning English.	1	2	3	4	5
11	I see no point in learning English.	1	2	3	4	5
12	I study English because I want to become a person who can use English	1	2	3	4	5
13	I study English because I get feeling of satisfaction when finding out ne	1	2	3	4	5
14	I study English out of necessity to pass exams.	1	2	3	4	5
15	I study English because I feel happy when I understand something that	1	2	3	4	5
16	The reason why I study English is that I think English ability will benefit my growth.	1	2	3	4	5
17	I don't understand the purpose of learning English.	1	2	3	4	5
18	English is important for my future.	1	2	3	4	5
19	I study English because it is an important subject for my career path.	1	2	3	4	5
20	I study English because I am told to do so.	1	2	3	4	5

Appendix E. (cont'd)

Part 2 **Please answer the following questions the same way as you did in Part 1.**

Strongly disagree	Disagree	Neither	Agree	Strongly agree
1	2	3	4	5

1	I think my English class has a cooperative atmosphere during pair and group work.	1	2	3	4	5
2	I think my English instructor's demeanor makes it easy for students to ask questions.	1	2	3	4	5
3	My English instructor explains the value and/or meaning of activities and assignments.	1	2	3	4	5
4	I get along with my friends who are in the same English course.	1	2	3	4	5
5	I think I sometimes gain a sense of fulfillment when my efforts bear fruit in English class.	1	2	3	4	5
6	I think my English instructor respects our opinions about class.	1	2	3	4	5
7	I think there is a cozy atmosphere in my English class.	1	2	3	4	5
8	I think my English instructor understands students' feelings.	1	2	3	4	5
9	My English instructor supports us in learning English.	1	2	3	4	5
10	I think I sometimes feel a sense of achievement in English class.	1	2	3	4	5
11	I think I can get a satisfying grade in English.	1	2	3	4	5
12	My instructor takes students' viewpoints into consideration in class.	1	2	3	4	5

Appendix E. (cont'd)

Part 3 Please answer the following questions.

Please provide the following information by ticking (✓) in the box or writing your response in the space.

Gender: ☐Female ☐Male

Nationality: ☐Japanese ☐Non-Japanese

Age: ☐18 ☐19 ☐20 ☐21 ☐22 ☐23 ☐24 ☐25 ☐other:_____.

Year of study: ☐1st ☐2nd ☐3rd ☐4th ☐other:_____.

Faculty and/or department:_____.

Overseas experience: Have you stayed in English-speaking countries (e.g., traveling, studying)?

☐ Yes ☐No

⇩

Please specify the place and length of your stay: (place)_____(period in total)_____

English ability: Please rate your current overall proficiency in english by ticking one.

☐ B2.2 or higher	I can actively engage in conversations on a wide range of topics from the general to more specialised cultural and academic fields and express my ideas accurately and fluently.
	I can write clear, detailed reports and articles which contain complicated contents, considering cause/effect and hypothetical situations, provided they are in my specialised field and of personal concern.
	I can understand the speaker's point of view about topics of current common interest and in specialised fields, provided it is delivered at a natural speed and articulated in standard English.
	I can extract necessary information and the points of the argument from articles and reference materials in my specialised field without consulting a dictionary.
☐ B1.2	I can explain in detail and with confidence a problem which has arisen in places such as hospitals or city halls. I can get the right treatment by providing relevant, detailed information.
	I can give an outline or list the main points of a short story or a short newspaper article with some fluency, adding my own feelings and ideas.
	I can write narratives (e.g. travel diaries, personal histories, personal anecdotes) in several paragraphs, following the order of events. I can write personal letters which report recent events in some detail.
	I can understand the main points of short radio news items about familiar topics if they are delivered in a clear, familiar accent.
☐ A2.2	I can interact in predictable everyday situations (e.g., a post office, a station, a shop), using a wide range of words and expressions.
	I can write my impressions and opinions briefly about what I have listened to and read (e.g. explanations about lifestyles and culture, stories), using basic everyday vocabulary and expressions.
	I can understand and follow a series of instructions for sports, cooking, etc. provided they are delivered slowly and clearly.
	I can understand the main points of texts dealing with everyday topics (e.g. life, hobbies, sports) and obtain the information I need.
☐ A1.3	I can ask and answer simple questions about familiar topic such as hobies, club activities, provided people speak clearly.
	I can write a series of sentences about my hobbies and likes and dislikes, using simple words and basic expressions.
	I can understand instructions and explanations necessary for simple transactions (e.g. shopping and eating out), provided they are delivered slowly and clearly.
	I can understand texts of personal interest (e.g. articles about sports, music, travel, etc.) written with simple words supported by illustrations and pictures.
☐ A1.1	I can ask and answer questions about times, dates, and places, using familiar, formulaic expressions.
	I can fill in forms with such items as name, address, and occupation.
	I can catch key information necessary for everyday life such as numbers, prices, dates, days of the week, provided they are delivered slowly and clearly.
	I can understand a fast-food restaurant menu that has pictures or photos, and choose the food and drink in the menu.

Thank you for your cooperation!!

Appendix F. Items of the New Questionnaire (Study 3)

Psychological Needs Scale

Factor	Question Items
Autonomy	英語の授業では、先生は私たちの授業に関する意見を尊重してくれていると思う。
	英語の授業で教師は、活動や課題の価値や意義を説明してくれる。
	英語の教師は、学生の気持ちを理解していると思う。
	英語の教師は、私たちの英語の学習について励ましてくれる。
	英語の授業で教師は、私たちの視点を考慮してくれていると思う。
	英語の教師は、質問しやすい雰囲気を持っていると思う。
Competence	英語の授業では、自分の努力が実ったという充実感が得られることがあると思う。
	英語の授業では、「できた」という達成感が得られることがあると思う。
	英語の授業での自分の頑張りに満足している。
Relatedness	英語の授業では、和気あいあいとした雰囲気があると思う。
	英語の授業では、同じ教室の仲間と仲良くやっていると思う。
	英語の授業のグループ活動・ペアワークでは、協力し合う雰囲気があると思う。

Note. For the English version, see Table 5-5 in Chapter 5.

English Learning Motivation Scale

Factor	Question Items
Intrinsic	英語に接すること自体が好きなので勉強する。
	英語を勉強することで、初めて気づくことがあると嬉しい。
	英語を学ぶことに刺激を感じるので勉強する。
	解らなかった英語が解るようになると嬉しいので勉強する。
	私が英語を学ぶのは、英語が話されているのを聞くのが心地よいからだ。
	私が英語を学ぶのは、英語を話していると気持ちがよいからだ。
Identified	いろいろな場面で英語は役立つと思うから勉強している。
	英語を使える人になりたいから勉強している。
	英語を使えないと、将来困りそうだから勉強している。
	私が英語を学ぶ理由は、英語が自分の成長にとって役立つと考えるからだ。
	自分の将来のためには、英語は大切である。
	自分の進路のためには大切な科目だから勉強する。
External	英語を勉強するのは、テストがあるので、しかたなく。
	単位を取るために英語を勉強している。
	勉強しろと言われるので英語をやっている。
Amotivation	英語の学習は時間の無駄であるという感覚がある。
	英語を学んでも何にもならないと思う。
	なぜ英語を学ぶ必要があるのか、理解できない。
	とにかく英語の勉強はもうしたくない。
	自分にとっての英語を学ぶ意義がわからない。

Note. For the English version, see Table 5-6 in Chapter 5.

Appendix G. Reflection Sheet [Translation added]

Student No.:_____ Name:_____

今日の授業を振り返って、以下に記入してください。日付：2016年　　月　　日
[Please look back at today's class and fill out the form.] [Date: yy mm dd]

1．この授業で得たもの(新たに知った事、理解が深まった事、出来るようになった事等)
[What you have learned in today's class (e.g., what you have discovered; what you have understood more deeply; what you have become able to)]

_____

_____

2．理解しづらかったもの、難しいと感じたもの。
[What you felt was hard to understand. What you felt was difficult.]

_____

_____

3．自分で納得して取り組めたアクティビティー
[Activities which you engaged in upon understanding the rationale of why you were doing them.]

_____

_____

4．何故それをやるのか理解できなかったアクティビティー
[Activities whose rationale you did not understand.]

_____

_____

5．グループワーク、ペアワークでの学生同士の協力状況（自分は協力できたか。他のメンバーは協力してくれたか）[Cooperativeness of group and pair work (how you collaborated with others; how others collaborated in the activities.]

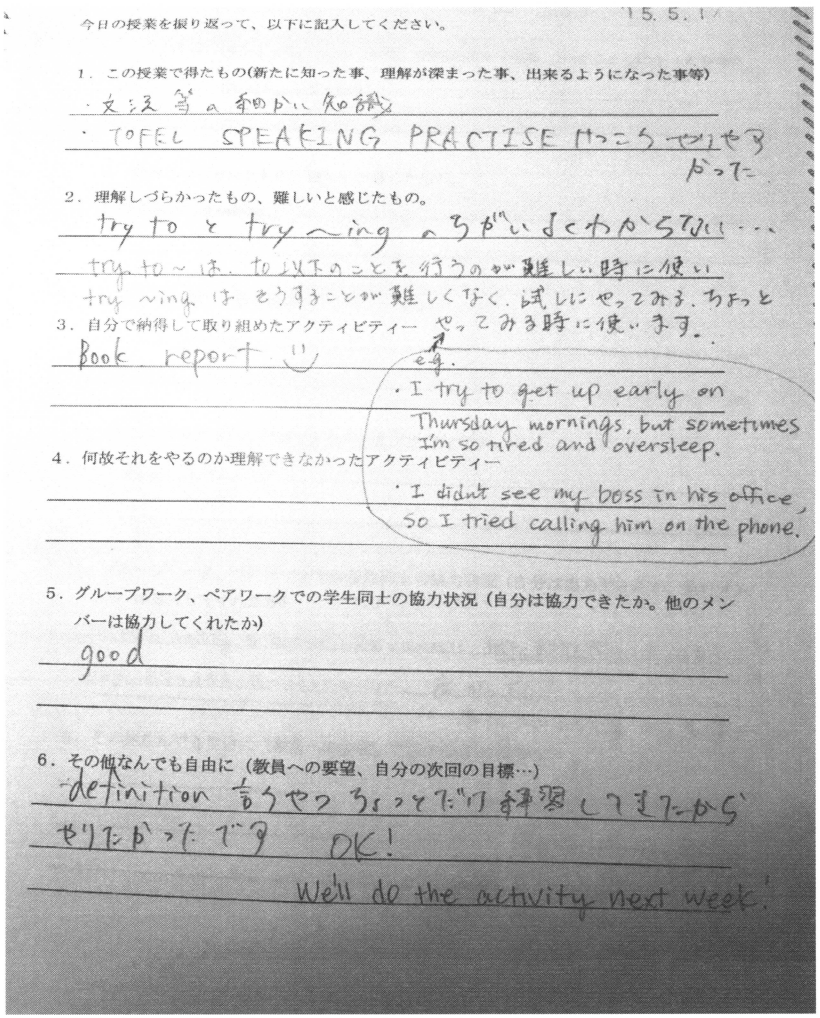
_____

_____

6．その他なんでも自由に（教員への要望、自分の次回の目標…）
[Additional comments; please write openly (e.g., request for the instructor; your objective(s) for the next class)]

_____

Appendix H. Reflection Sheets Filled Out by Students in the Treatment Group



今日の授業を振り返って、以下に記入してください。 15. 5. 1

1．この授業で得たもの(新たに知った事、理解が深まった事、出来るようになった事等)

・文法等の細かい知識。

・TOFEL SPEAKING PRACTISE はっこうやくやすかった。

2．理解しづらかったもの、難しいと感じたもの。

try to と try ～ing のちがいがよくわからない…

try to ～は、to以下のことを行うのが難しい時に使い try ～ing は そうすることが難しくなく、試しにやってみる、ちょっとやってみる時に使います。

3．自分で納得して取り組めたアクティビティー

book report ☺

e.g.

・I try to get up early on Thursday mornings, but sometimes I'm so tired and oversleep.

4．何故それをやるのか理解できなかったアクティビティー

・I didnt see my boss in his office, so I tried calling him on the phone.

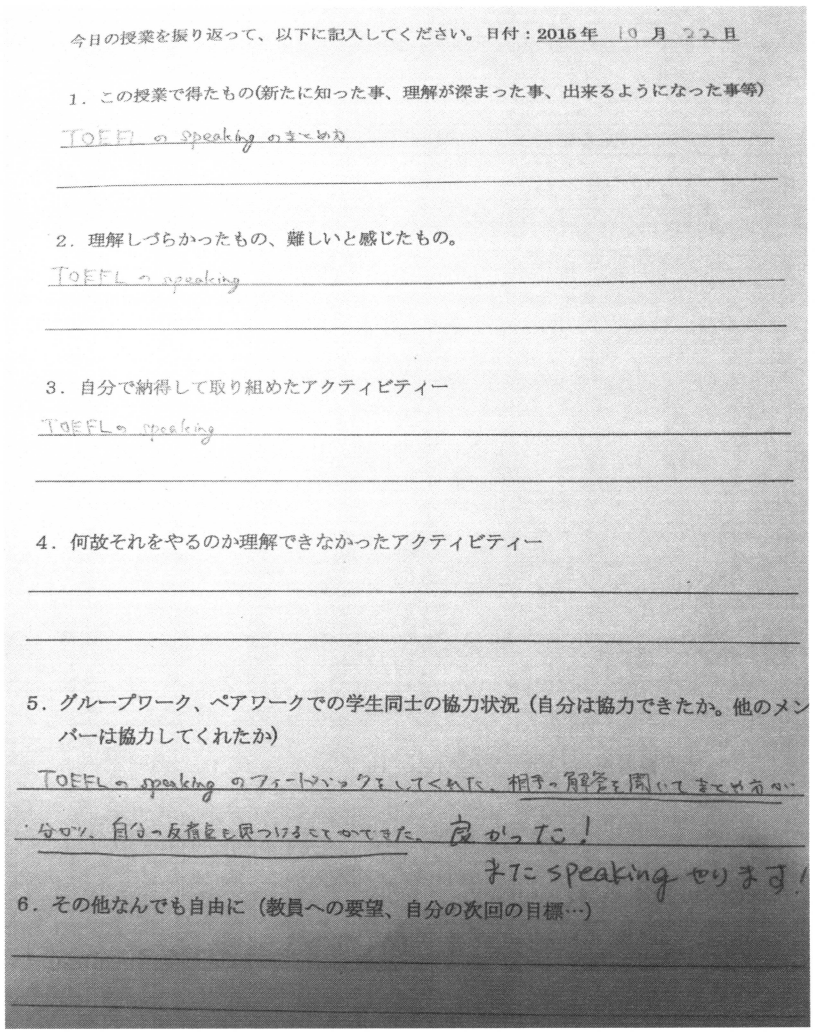
5．グループワーク、ペアワークでの学生同士の協力状況（自分は協力できたか。他のメンバーは協力してくれたか）

good

6．その他なんでも自由に（教員への要望、自分の次回の目標…）

definition 言うやつちょっとだけ練習してきたからやりたかったでOK!

We'll do the activity next week!



今日の授業を振り返って、以下に記入してください。日付：2015年 10月 22日

1．この授業で得たもの(新たに知った事、理解が深まった事、出来るようになった事等)

TOEFL の speaking のまとめ方

2．理解しづらかったもの、難しいと感じたもの。

TOEFL の speaking

3．自分で納得して取り組めたアクティビティー

TOEFL の speaking

4．何故それをやるのか理解できなかったアクティビティー

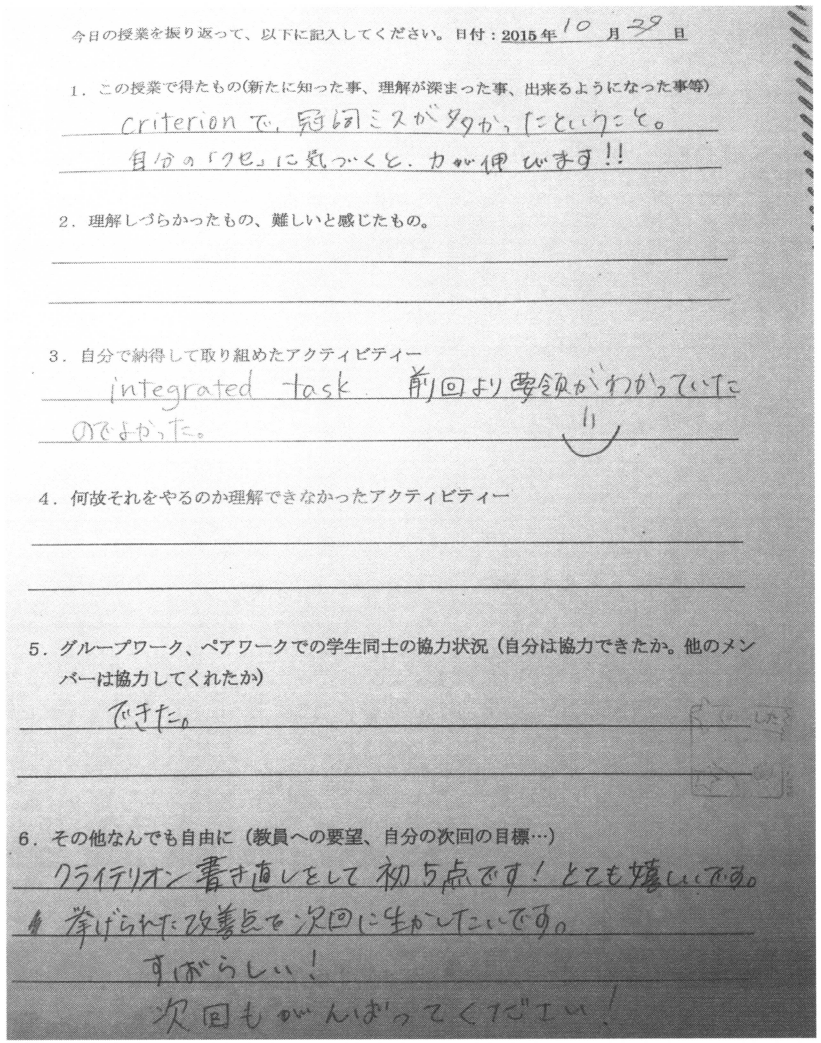
5．グループワーク、ペアワークでの学生同士の協力状況（自分は協力できたか。他のメンバーは協力してくれたか）

TOEFL の speaking のフィードバックをしてくれた。相手の解答を聞いてまでや方や、なぜ？、自分の反省点も見つけることができた。良かった！

また speaking やります！

6．その他なんでも自由に（教員への要望、自分の次回の目標…）

Appendix H. (cont'd)



今日の授業を振り返って、以下に記入してください。日付：2015年10月29日

1．この授業で得たもの(新たに知った事、理解が深まった事、出来るようになった事等)

criterionで、冠詞ミスが多かったということ。
自分の「クセ」に気づくと、力が伸びます!!

2．理解しづらかったもの、難しいと感じたもの。

3．自分で納得して取り組めたアクティビティー

integrated task. 前回より要領がわかっていたのでよかった。 :)

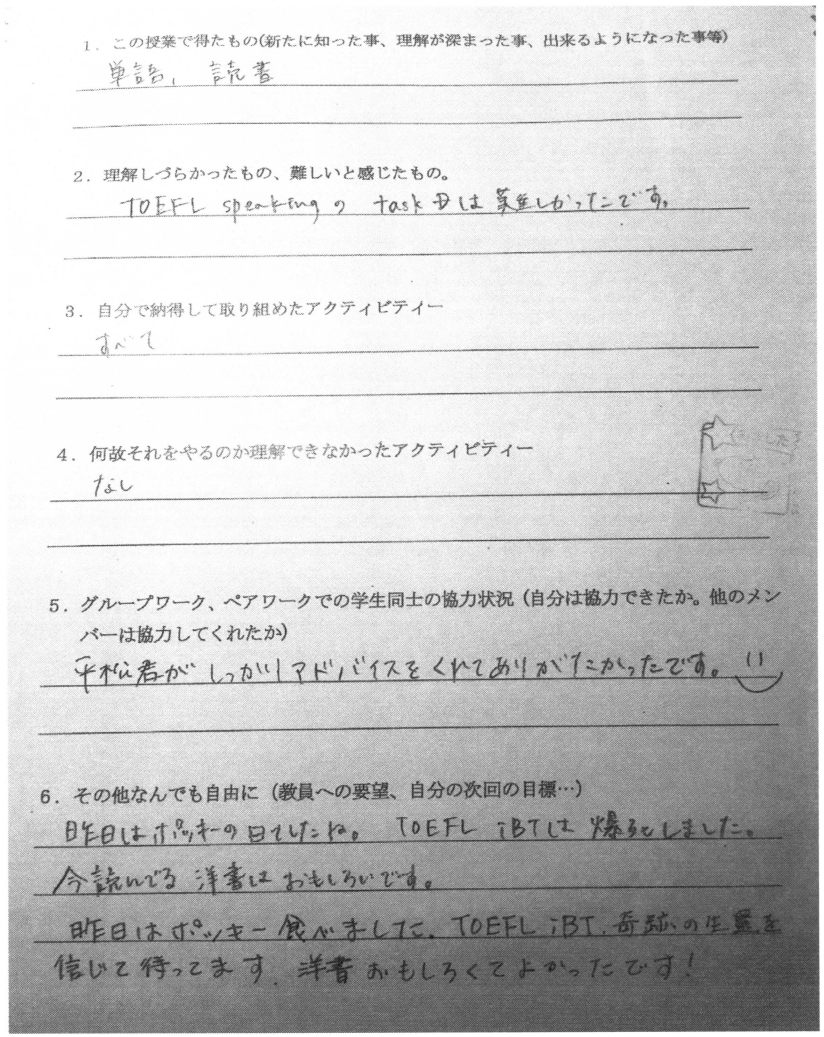
4．何故それをやるのか理解できなかったアクティビティー

5．グループワーク、ペアワークでの学生同士の協力状況（自分は協力できたか。他のメンバーは協力してくれたか）

できた。

6．その他なんでも自由に（教員への要望、自分の次回の目標…）

クライテリオン書き直しをして初5点です！とても嬉しいです。
挙げられた改善点を次回に生かしたいです。
すばらしい！
次回もがんばってください！



1．この授業で得たもの(新たに知った事、理解が深まった事、出来るようになった事等)

単語、読書

2．理解しづらかったもの、難しいと感じたもの。

TOEFL speakingのtask 4は緊張しかったです。

3．自分で納得して取り組めたアクティビティー

すべて

4．何故それをやるのか理解できなかったアクティビティー

なし

5．グループワーク、ペアワークでの学生同士の協力状況（自分は協力できたか。他のメンバーは協力してくれたか）

平松君がしっかりアドバイスをくれてありがたかったです。 :)

6．その他なんでも自由に（教員への要望、自分の次回の目標…）

昨日はポッキーの日でしたね。TOEFL iBTは燃えもしました。
今読んでる洋書はおもしろいです。
昨日はポッキー食べました。TOEFL iBT、奇跡の生還を信じて待ってます。洋書おもしろくてよかったです！