

## The Effects of Basic Psychological Need Satisfaction on Academic Performance in a Intensive Arabic Camp in Japan

학업 성취도에 대한 기본 심리적 욕구 만족도의 영향 분석: 일본의 '집중아랍캠프' 사례

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# The Effects of Basic Psychological Need Satisfaction on Academic Performance in a Intensive Arabic Camp in Japan

**Akiko M. SUMI \* and Katsunori SUMI \*\***

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## ■ ABSTRACT ■

The purpose of this study is to investigate effects of the satisfaction of basic psychological needs (competence, autonomy, and relatedness) on academic performance during the Intensive Arabic Camp in Rurikei. The Camp activities ran for approximately one week in 2015 and again in 2016 in Rurikei, a suburb of Kyoto, Japan. One of the goals was to offer the participants basic psychological need satisfaction, as defined by the self-determination theory. Academic performance during the Camp was measured using the results of written and oral examinations, which were conducted before and after the Camp. The authors' previous studies show that the participants' need satisfaction generally increased due to the methods utilized in the Camp (Sumi & Sumi, 2019). Data were gathered from 95 participants in the Camp, who were mostly university students in Japan.

The results showed that the written examination scores from after the Camp were positively affected by the satisfaction of autonomy and competence during the Camp. The oral examination scores from after the Camp were positively affected by the satisfaction of competence and relatedness during the Camp. These results suggest that the methods used within the Camp to increase need satisfaction also may enhance the participants' motivation to learn Arabic, which in turn elevates the degree of their academic performance.

**Key words** : Arabic learning, short-term intensive Arabic camp, basic psychological needs, academic performance, self-determination theory

## I. Introduction

### 1. The Short-term Intensive Arabic Camp in Japan

In Japan in 2015 and 2016, a short-term Arabic learning program was implemented for university students. This program which was held in Rurikei in Kyoto Prefecture named “the Intensive Arabic Camp in Rurikei” (referred to as the Camp below: Sumi & Sumi, 2018, 2019). The duration each time was about one week. Approximately 50 students participated in the Camp each year. Having voluntarily applied to attend the Camp, they agreed to make a pledge that they would use only Arabic 24 hours a day during the Camp, both inside and outside of class. Apart from the first and last day, the daily schedule of the Camp consisted of three 90-minute classes and one 90-minute cultural activity per day. The participants were divided into three levels: 3, 2, and 1 (3 is the highest); level 1 was further divided into two classes: 1B and 1A. The Camp was designed to elevate the satisfaction of the participants’ basic psychological needs, as defined by the self-determination theory.

### 2. Basic Psychological Needs Defined in Self-Determination Theory

As a theory of human motivation, personality development, and well-being in social contexts, the self-determination theory (Deci & Ryan, 1985, 2000; Ryan & Deci, 2000, 2017) has recently been attracting notable attention. Based on this theory, satisfying basic psychological needs is indispensable for internalizing motivation and also for psychological development, integrity, and well-being (Black & Deci, 2000; Ryan & Deci, 2017). Conversely, thwarting of these needs will result in decreasing motivation and well-being, which in turn may lead to poor academic outcomes (Deci & Ryan, 2012; Deci, Vallerand,

Pelletier, & Ryan, 1991; Ryan, 1995; Vansteenkiste, Ryan, & Deci, 2008). The self-determination theory is backed by evidence from many studies (Deci & Ryan, 2012; Niemiec & Ryan, 2009; Ryan & Deci, 2017).

The self-determination theory maintains that human beings have three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000; Ryan & Deci, 2000, 2017). Autonomy refers to the need to feel volitional and authentic in one's actions. For example, students satisfy their autonomy when they determinedly pursue a chosen field of school work according to their own free will. (Niemiec & Ryan, 2009). Competence refers to the need to experience oneself as effective in one's interactions with the environments. For example, students satisfy their competence when they succeed in difficult tasks or assignments in their academic setting. Relatedness refers to the need to experience oneself as connected to others and have meaningful relationships with them. For example, students satisfy their relatedness when they help each other or are assisted by their teachers and/or family members with their studies.

### 3. Support for Basic Psychological Need Satisfaction in the Camp

According to the self-determination theory, support provided by teachers of basic psychological need satisfaction promotes student motivation and elevates academic performance (Deci et al., 1991; Niemiec & Ryan, 2009; Reeve, 2018; Ryan & Deci, 2017). Self-determination theory research shows that both intrinsic motivation and autonomous types of extrinsic motivation enhance engagement and promote optimal learning in educational settings (Niemiec & Ryan, 2009; Guay, Ratell, & Chanal, 2008). In particular, students with teachers who support their autonomy (compared to controlling teachers) are more likely to reach higher academic achievements and deeper conceptual understanding (Reeve, Bolt, & Cai, 1999; Deci, Spiegel, Ryan, Koestner & Kaufmann, 1982). In accordance with these studies,

the Camp was designed to provide an educational environment which promotes the participants' need satisfaction to stimulate autonomous motivation, comprising intrinsic motivation and autonomous types of extrinsic motivation (Niemic & Ryan, 2009; Mageau & Vallerand, 2003). The following situations were created for the participants to enhance their need satisfaction: (1) to (7) were for autonomy satisfaction, (8) to (10) were for competence satisfaction, and (11) to (13) were for relatedness satisfaction.

- (1) The director, who was also an instructor, of the Camp created a webpage to announce the aims of the Camp, its content in detail, and its pledge system, so that the participants could fully understand these before applying. The director also reminded them of these points in the opening ceremony (Deci & Ryan, 2000; Mageau & Vallerand, 2003; Niemic & Ryan, 2009; Reeve, Jang, Hardre, & Omura, 2002).
- (2) A few participants wanted to change the level to which they were assigned following their placement oral examination, i.e., they desired to move to a lower level. The director listened to their views and agreed to move them (Mageau & Vallerand, 2003; Reeve, 2002; Ringeisen & Burgermeister, 2015).
- (3) The instructors gave a certain amount of homework to the participants, which required an hour or two hours of preparation but also allowed them to review their lessons on their own. In other words, the participants had to do some homework given by the instructors, but they could choose to study other things as well to elevate their Arabic language ability (Mageau & Vallerand, 2003; Ringeisen & Burgermeister, 2015).
- (4) The instructors provided a general subject when they assigned an Arabic composition as homework or required the preparation of an oral presentation, but allowed the participants to select a specific subject within the general subject. For example, one of the instructors assigned sports as a general subject, and the participants were able to select either football, swimming, or skiing as a specific

subject (Mageau & Vallerand, 2003; Ringeisen & Burgermeister, 2015).

- (5) The participants chose their own themes, structures, and wording for presentations in class, and they practiced skits of their own design; they chose topics and their own structure while writing compositions in Arabic (within the given broad subject of the class); and they chose what to do in the talent show, which was performed by the class members at the end of the Camp. (Mageau & Vallerand, 2003; Ringeisen & Burgermeister, 2015).
- (6) The participants were able to go to the study room every night and seek assistance from the instructors, if they wished, on their own initiative (Mageau & Vallerand, 2003; Reeve, 2002; Ringeisen & Burgermeister, 2015).
- (7) The director announced to the participants at the end of breakfast on the fourth day that some participants had spoken in Japanese, thus violating the pledge. She said that the participants were supposed to be here to acquire Arabic, but that these participants may have forgotten that. She reminded them of their mutual desire to improve their Arabic, which would help them to attain their own goals (Deci & Ryan, 2000; Mageau & Vallerand, 2003; Niemiec & Ryan, 2009; Reeve et al., 2002). This action by the director also supported other participants in the Camp, who felt that observing the pledge was necessary so that the majority of the participants would not be distracted (Mageau & Vallerand, 2003).
- (8) A list of Arabic words and sample sentences were sent to the participants a few weeks prior to the Camp, in order to alleviate their possible performance anxiety while in the Camp (Mageau & Vallerand, 2003; Reeve, 2002; Ringeisen & Burgermeister, 2015).
- (9) During the Camp, the instructors always tried to provide positive evaluations and encouragement to the participants (Deci et al., 1982; Reeve, 2002).
- (10) The instructors were ready to answer questions and to help the participants in the study room at night, so that the participants could

attend classes and activities with confidence (Mageau & Vallerand, 2003; Reeve, 2002).

- (11) The Camp was designed to gather university participants whose goal was to improve their Arabic language skill as part of a group and while living together with Japanese instructors and native speakers of Arabic in one house for 24 hours; this encouraged them to feel a sense of belonging (Niemic & Ryan, 2009).
- (12) The relationships among the participants and the instructors were promoted via abundant opportunities to display cooperation, empathy, and solidarity, and through learning activities such as the practice of skits, dialogues, and group presentations (Niemic & Ryan, 2009; Ringeisen & Burgermeister, 2015).
- (13) The Camp included cultural activities, such as dancing, singing, and acting, which were socially binding activities (Niemic & Ryan, 2009; Standage, Duda, & Ntoumanis, 2006).

Support of the participants' need satisfaction within the Camp was found to be appropriate (Sumi & Sumi, 2019); during the Camp, the participants' need satisfaction increased generally. However, the effects of the need satisfaction on participants' learning outcomes were still unclear. Therefore, it is necessary to examine the degrees of effect exerted on the academic performance by their increased need satisfaction.

#### 4. The Purpose of the Study

The main aim of this study was to investigate the effects of the satisfaction of basic psychological needs on academic performance during the Camp. The data used by Sumi & Sumi (2019) were examined to assess the effects. Ethical clearance for the study was obtained from the ethical committees of the institutions involved in the study. The authors declare no conflicts of interest regarding the publication of this study.



## II. Methods

### 1. Research Participants

Questionnaire data were obtained from a total of 95 participants, comprising 45 participants who attended the Camp in 2015 and 50 participants who attended in 2016. Most of them were university students in Japan. With a mean age of 21.95 (SD = 8.17, range 18 to 68 years), they were comprised of 59 women and 36 men.

### 2. Questionnaire

Informed consent was obtained from all the respondents prior to the start of necessary procedure. After that, two kinds of data were obtained. One was for need satisfaction, and the other was for degree of academic performance.

As shown in Table 1, the questionnaire before the camp included three open questions about the need satisfaction during their own Arabic learning experiences up to that time. The questionnaire after the camp contained three open questions asking about the need satisfaction during the camp. The participants' answers for the questions were rated using a scale of 1 to 10: 1 represents no satisfaction of the need, and 10 represents considerable satisfaction. This rating process was conducted by two professors who fully understand self-determination theory. The averages of the two raters' scores were used as the data for the analyses.

Degree of the participants' academic performance was assessed using written examinations and oral examinations which were produced by all the instructors. All the participants were required to take these examinations before and after the Camp so that the increase in the participants' Arabic language ability during the Camp could be measured.

The examinations before and after the Camp were different in content but the same in structure and level. The written examinations were given scores from 0 to 100, and oral examinations were scored on a 5-point scale. To examine the effects of the Camp, scores were obtained by subtracting the examination score before the Camp from that after the Camp.

<Table 1> Open questions about need satisfaction

Basic needs	Before the camp	After the camp
Autonomy	How satisfied were you with autonomously choosing and practicing your Arabic learning until now?	During this camp, how satisfied were you with autonomously choosing and practicing?
Competence	How satisfied were you with exercising and expressing your capacities in Arabic learning until now?	During this camp, how satisfied were you with exercising and expressing your capacities?
Relatedness	How satisfied were you regarding connecting and interacting with others while learning Arabic until now?	During this camp, how satisfied were you regarding connecting and interacting with others?

### III. Results

Table 2 presents examples of participant responses concerning the need satisfaction before and during the Camp. Table 3 shows means, standard deviations, and range of the variables. There were statistically significant differences between before and during the Camp in all the need satisfaction ratings ( $ps < 0.01$ ). The need satisfaction ratings during the Camp were significantly higher than those before the Camp. These results were also reported by Sumi & Sumi (2018). In addition, the scores for both examinations after the Camp were statistically significantly higher than those before the Camp ( $ps < 0.01$ ).

Correlations between the scores for need satisfaction and the examinations are shown in Table 4. The scores for the examinations before and after the Camp were not statistically significantly correlated with the scores for need satisfaction before the Camp. Additionally, there were almost no statistically significant correlations between the scores for need satisfaction during the Camp and the examinations before the Camp. In contrast, most of the correlations between the scores for need satisfaction during the Camp and the scores obtained by subtracting the examination score before the Camp from that after the Camp were statistically significant.

<Table 2> Examples of participant responses concerning need satisfaction

Need satisfaction	Before the Camp	During the Camp
Autonomy satisfaction	I chose to learn Arabic by my own will. I have willingly learned Arabic, asking my teachers for instruction.	I moved my learning forward myself and decided everything except the content of the classes.
Competence satisfaction	Because I learn what I like, I carried out the given tasks. I found confidence in my understanding.	Under the strict rule of "Arabic only," the opportunities to display my ability to use Arabic increased.
Relatedness satisfaction	People who study Arabic generally possess a sense of purpose and an eagerness to study; therefore, they had a good influence on me.	I was very stimulated by people who are superior to me [in skill]. It was a good camp because I had friends who tried to use Arabic at all times.

Multiple regression analyses were conducted to examine relationships between the scores for the examinations and need satisfaction before the Camp. The examination scores before the Camp were regressed on scores for the three need satisfaction before the Camp. Table 5 presents the results of the multiple regression analyses. There were no significant regression coefficients for the need satisfaction. The coefficients of determination ( $R^2$ ) were not significant, indicating that the variation in both scores for the examinations before the Camp could not be accounted for by the scores for the need satisfaction before the Camp.

<Table 3> Means, standard deviations, and range

		Means	SD	Range
Need satisfaction	Before the Camp	7.16	2.17	
	Autonomy satisfaction			2.0 – 10.0
	Competence satisfaction	5.56	1.60	2.5 – 9.0
	Relatedness satisfaction	6.35	2.34	1.0 – 9.5
	During the Camp	8.56	1.33	
	Autonomy satisfaction			4.5 – 10.0
	Competence satisfaction	7.39	1.53	3.5 – 10.0
	Relatedness satisfaction	8.55	1.49	3.5 – 10.0
Exam.	Before the Camp			
	Written exam.	53.07	20.46	16.0 – 95.0
	Oral exam.	1.75	0.63	1.0 – 3.0
	After the Camp			
	Written exam.	57.87	16.88	17.5 – 100
	Oral exam.	2.42	0.81	1.0 – 4.5
	Difference			
	Written exam.	5.15	12.06	20.5 – 32.5
	Oral exam.	0.74	0.50	0.0 – 2.0

SD: standard deviations.

Difference: scores obtained by subtracting the examination score before the Camp from that after the Camp.

Hierarchical regression analyses were performed to clarify the extent to which the scores for the need satisfaction explained the variance in the examination scores after the Camp. The corresponding examination score before the Camp for the dependent variable was first entered into the regression equation in each analysis to control for this variable. Next, age and sex were entered into the regression equation in each analysis to control for the dependent variable. Sex was coded 0 for men and 1 for women as a dummy variable. Finally, the scores for the need satisfaction after the Camp were entered into the regression equation.

<Table> 4 Correlations between basic need satisfaction and the examination scores

Need satisfaction	Before		After		Difference	
	the Camp		the Camp			
	Written	Oral	Written	Oral	Written	Oral
	exam.	exam.	exam.	exam.	exam.	exam.
Before the Camp						
Autonomy satisfaction	-0.03	0.05	-0.09	0.01	0.06	0.08
Competence satisfaction	0.06	0.17	-0.07	0.13	0.10	0.17
Relatedness satisfaction	0.13	0.08	0.14	0.08	-0.06	-0.04
During the Camp						
Autonomy satisfaction	0.11	0.19	0.13	0.21*	0.17	0.27**
Competence satisfaction	0.09	0.22*	0.10	0.19	0.25**	0.35**
Relatedness satisfaction	0.03	0.10	-0.03	0.09	0.21*	0.22*

Difference: scores obtained by subtracting the examination score before the Camp from that after the Camp.

\*: probability level of less than 0.05.

\*\*: probability level of less than < 0.01.

<Table 5> Multiple regression analyses

IV (Before the Camp)	DV					
	Written exam. before the Camp			Oral exam. before the Camp		
	$\beta$	Partial r	$R^2$	$\beta$	Partial r	$R^2$
Autonomy						
satisfaction	-0.06	-0.06	0.021	-0.05	-0.04	0.029
Competence						
satisfaction	0.07	0.06		-0.07	-0.06	
Relatedness						
satisfaction	0.12	0.11		0.15	0.14	

IV: independent variables.

DV: dependent variables.

$\beta$ : standardized regression coefficient.

Partial r: correlation coefficient with the dependent variable controlling for other independent variables.

$R^2$ : coefficient of determination.

Table 6 shows the results of the hierarchical regression analyses. There were very high and positive relationships between the examination scores before the Camp and those after the Camp ( $r_s > 0.80$ ). After controlling for the examination score before the Camp, age and sex significantly accounted for the variance in both the examination scores before the Camp. The written examination scores after the Camp tended to be weakly and negatively correlated with age. Men tended to have somewhat higher scores for the written and the oral examinations after the Camp than women. The scores for satisfaction of autonomy and competence during the Camp contributed a low but significant variance in the written examination scores after the Camp (2.2% and 1.6%, respectively), after controlling for the written examination scores before the Camp, age, and sex. The scores for the two need satisfaction were weakly and positively correlated with the written examination scores after the Camp. In contrast, the scores for satisfaction of competence and relatedness during the Camp contributed a low but significant variance in the oral examination scores after the Camp (1.3% and 1.4%, respectively), after controlling for the oral examination scores before the Camp, age, and sex. The scores for need satisfaction were weakly and positively correlated with the oral examination scores after the Camp.

<Table 6> Hierarchical regression analyses

Entry order	IV	$\beta$	Partial r	$R^2$	$R^2$ Change
<b>DV: Written exam after the Camp</b>					
1	Written exam. before the Camp	0.78**	0.81**	0.634	0.634**
2	Age	-0.15*	-0.25*	0.667	0.034*
	Sex	-0.13*	-0.21*		
3	Autonomy satisfaction during the Camp	0.13*	0.23*	0.689	0.022*
1	Written exam. before the Camp	0.79**	0.81**	0.634	0.634**
2	Age	-0.12	-0.19	0.667	0.034*
	Sex	-0.13*	-0.23*		
3	Competence satisfaction of during the Camp	0.13*	0.22*	0.683	0.016*
1	Written exam. before the Camp	0.80**	0.81**	0.634	0.634**
2	Age	-0.14*	-0.23*	0.667	0.034*
	Sex	-0.14*	-0.23*		
3	Relatedness satisfaction of during the Camp	0.06	0.11	0.671	0.004
<b>DV: Oral exam after the Camp</b>					
1	Oral exam. before the Camp	0.80**	0.83**	0.677	0.677**
2	Age	-0.02	-0.03	0.700	0.023*
	Sex	-0.14*	-0.25*		
3	Autonomy satisfaction of during the Camp	0.08	0.15	0.707	0.007
1	Oral exam. before the Camp	0.80**	0.83**	0.677	0.677**
2	Age	0.02	0.03	0.700	0.023*
	Sex	-0.15*	-0.26*		
3	Competence satisfaction of during the Camp	0.12*	0.21*	0.713	0.013*
1	Oral exam. before the Camp	0.82**	0.83**	0.677	0.677**
2	Age	-0.01	-0.01	0.700	0.023*
	Sex	-0.15*	-0.27*		
3	Relatedness satisfaction of during the Camp	0.15*	0.20*	0.714	0.014*



Note

Entry order: the order of entry of independent variables into the regression equation.

IV: independent variables.

DV: dependent variables.

$\beta$ : standardized regression coefficient in the third order of entry.

Partial  $r$ : correlation coefficient with the dependent variable controlling for other independent variables in the third order of entry.

$R^2$ : coefficient of determination.

$R^2$  Change: difference in  $R^2$  between the previous and the present order of entry.

\*: probability level of less than 0.05.

\*\*: probability level of less than  $< 0.01$ .

## IV. Discussion

The purpose of this study was to examine the effects of satisfaction of basic psychological needs (competence, autonomy, and relatedness) on academic performance during the Intensive Arabic Camp in Rurikei. The participants' responses to the open questions about their satisfaction before and during the Camp were quantified based on the definition of need satisfaction proposed by the self-determination theory. Academic performance was assessed using scores from written and oral examinations, which were conducted twice, before and after the Camp.

As already reported by Sumi & Sumi (2019), the participants' need satisfaction during the Camp was high and exceeded the ratings from before the Camp. These findings suggest a success in the supportive ways that were conducted in the Camp (Sumi & Sumi, 2019). Likewise, the participants' scores for both the written and oral examinations after the Camp exceeded those before the Camp. The Camp generally appears to have succeeded in increasing the degree of the participants' academic performance, as well as their need satisfaction.

The correlation and multiple regression analyses indicated that there were no relationships between scores for the examinations and need satisfaction before the Camp (Table 4 and 5). These results are inconsistent with the predictions of self-determination theory (Deci &

Ryan, 2000; Ryan & Deci, 2000, 2017), which suggest a positive correlation between learning achievements and need satisfaction. However, the degree of the participants' academic performance before the Camp may be more strongly influenced by something other than need satisfaction because the students had a variety of backgrounds and experiences regarding Arabic learning.

As the results of the hierarchical regression analyses (Table 6), the younger participants achieved higher written examination scores. Additionally, the results show that male participants achieved higher scores in both the written and oral examinations. Although the relationships between the examination scores and need satisfaction were weak, the reason for this tendency should be examined in a future study because the tendency is interesting.

There were positive relationships between the written examination scores after the Camp and satisfaction of autonomy and competence during the Camp, and between the oral examination scores after the Camp and satisfaction of competence and relatedness during the Camp. Generally, those participants who had higher need satisfaction during the Camp increased their degree of academic performance. However, the relationships between need satisfaction and academic performance were weak. In addition, there were no relationships between the written examination scores after the Camp and satisfaction of relatedness during the Camp, or between the oral examination scores after the Camp and satisfaction of autonomy during the Camp. Yet, in general, the present findings support predictions based on the self-determination theory (Deci & Ryan, 1985, 2000; Ryan & Deci, 2000, 2017). Thus, the methods used within the Camp to enhance need satisfaction appear to enhance the participants' autonomous motivation to learn Arabic and to increase their degree of academic performance. Further study is needed to examine specific changes in the participants' autonomous motivation during the Camp. It is also still necessary to clarify the relationships between autonomous motivation and the degree of academic performance during the Camp.

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## 국문초록

### 학업 성취도에 대한 기본 심리적 욕구 만족도의 영향 분석: 일본의 ‘집중아랍캠프’ 사례

이 연구의 목적은 루리케이의 ‘집중아랍캠프’ 프로그램 운영 기간 동안 학업 성과에 대한 능력, 자율성 및 관련성 등 기본 심리적 욕구의 만족도의 효과를 측정하는 것이다. 캠프 프로그램은 2015년에 약 1주일, 2016년에는 일본 교토 교외의 ‘루리케이’에서 진행되었다. 아랍어 집중 프로그램 개설의 목표 중 하나는 참가자에게 자기 결정 이론에 의해 정의된 바와 같이 기본 심리적 욕구 만족을 제공하는 것이다. 수집된 자료는 캠프 참가자인 일본의 대학생 95명이었다. 캠프 기간 동안의 학업 성과는 필기 및 구두시험의 결과를 사용하여 측정되었고, 이는 캠프 프로그램 운영전후 두 차례를 실시하였다. 유사한 선행 연구(Sumi & Sumi, 2019)에서는 전반적으로 캠프에서 활용된 훈련방법이 주요인이 되어서 참가자의 욕구가 증가한 것으로 나타났다.

이 조사의 분석결과, 캠프 후 필기시험 점수가 캠프 기간 동안 자율성과 능력의 만족에 의해 긍정적으로 영향을 받은 것으로 나타났다. 캠프 후의 구두시험 점수는 캠프 기간 동안 역량과 관련성의 만족에 의해 긍정적으로 영향을 받았다. 이러한 결과는 욕구 만족도를 높이기 위해 캠프 내에서 사용되는 다양한 기법도 참가자의 아랍어 학습 의욕을 향상시킬 수 있음을 시사하고 있고, 이는 결정적으로 개별 학생의 학업 성과의 수준을 향상시키고 있다고 평가한다.

**주제어 :** 아랍어 학습, 집중 아랍어 캠프, 기본 심리적 욕구,  
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