

## Sensation seeking and personal growth in undergraduate freshmen: Likelihood of generalized self-efficacy over time<sup>1, 2, 3</sup>

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Through a follow-up study, relationships between sensation seeking (SS) and personal growth were examined. The survey research was conducted with the same undergraduate freshmen ( $n = 122$ ) just after entrance into university (Time 1) and again after 3 months (Time 2). The freshmen who showed high SS at Time 1 experienced more positive life events afterward, and those who experienced more positive life events improved generalized self-efficacy from Time 1 to Time 2. Additionally, the level of the SS at Time 1 predicted participation in volunteer activities and in club and circle activities. These results suggest that SS is a preceding factor for personal growth.

**Key words:** sensation seeking, personal growth, generalized self-efficacy, life event

Sensation seeking (SS) is a personality trait defined by the search for experiences and feelings that are varied, novel, complex, and intense and by the readiness to take physical, social, legal, and financial risks for the sake of such experiences (Zuckerman, 2007). Specific characteristics of SS include desire for speed activities and sports associated with danger, for novel and varied experiences, for freedom from social constraints, and so on. The Sensation Seeking Scale-Abstract Expression, a scale for grasping individual differences in SS, is designed to measure these characteristics (Furusawa, 1989).

An individual's level of SS tends to vary with age, becoming highest at adolescence to early adulthood, as an average tendency. At middle age, the SS decreases notably and drops to its lowest at older ages (Zuckerman, Eysenck, & Eysenck, 1978). Thus, during the life span, adolescence is the stage of the highest SS level.

Many studies on SS in adolescence have focused on this trait's negative side. Studies on Japanese adolescents found that High Sensation-Seekers (HSS), as compared with Low Sensation-Seekers (LSS), tend to take diverse health risk behaviors. As female undergraduates, the HSS smoke more frequently (Watanabe, 1998). In delinquent groups, beginnings of solvent inhalation are associated with SS (Morita et al, 1994). Additionally, the HSS drive dangerously more frequently as novices (Miyazaki & Kanachi, 2011). Moreover, the HSS tend to show stronger desires for self-harm (Matsuki & Saito, 2017).

On the other hand, recently, some studies have focused on the positive side of the SS. Miyazaki (2004) found that the HSS undergraduates more often experienced personal growth and a sense of competence because they tended to choose and belong to active clubs and circles. In addition, research on North American undergraduates found a weak positive correlation between the SS and level of psychological well-being (Ravert et al., 2013). In this

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research, well-being was a complex status that included the pursuit of self-growth. Such positive studies suggest that SS is a psychological factor for producing personal growth.

Of two possible approaches for promoting the mental health of the HSS (Miyazaki, 2005), one approach is to attenuate the negative side of the HSS. In this case, practical tasks prevent the HSS from engaging in health risk behaviors. Another approach is to strengthen the positive side of the HSS. Specifically, facilitating the personal growth of the HSS is an important task. Although both approaches are needed, little research has been conducted based on the latter approach, needed particularly for adolescents who are expected to grow and change mentally as preparation for social independence.

As a first step in strengthening the positive side of the HSS, we must understand accurately their advantages. A previous study found that the HSS often experienced personal growth (Miyazaki, 2004). However, this is a retrospective study in which the SS reported a sense of personal growth just by reflecting about the past. Therefore, whether the SS is a true preceding factor leading to personal growth remains unclear. The present study's purpose is, thus, to reveal a preceding or succeeding time relation between the SS and personal growth by using a follow-up study in a relatively short period. If the SS is a preceding factor for personal growth, a relationship will be found between the SS measured at a certain point and personal growth after that point.

The participants in this research were freshmen in the transition period from high school to university, where they must adapt to the new environment. If freshmen explore this new environment and extend their sphere of activity, they can experience many positive life events, such as the formation and deepening of human relations, belonging to diverse groups, acquisition of new knowledge and skills, and achievement of academic tasks (Hirao & Yamamoto, 2008). Indeed, life events have been found to result in personal growth (Park, Cohen, & Murch, 1996). SS includes searching for new experiences, and doing so is expected to provide the HSS freshman many positive life events leading to personal growth.

To grasp personal growth, the present study focused on the change of some psychological resources between two time points. As tools to measure these resources, scales on generalized self-efficacy (GSE), self-esteem, and social skills were used. Self-efficacy is an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments. Among these, the GSE is efficacy for the wide range of behaviors needed in everyday life settings, and this belief is not tied to specific tasks or behaviors (Bandura, 1997; Sakano & Tohjoh, 1986).

On the other hand, self-esteem is the overall evaluation of one's self-worth (Rosenberg, 1965). Although self-esteem and the GSE have common features in that both are evaluations of the self, these two concepts differ in that self-esteem involves evaluation of one's self-worth, and the GSE involves the evaluation of one's ability (Bandura, 1997).

In the present study, social skills are defined as a set of skills that promote smoothness in personal relationships (Kikuchi, 2004). Social skills include mainly specific behaviors needed in interpersonal interactions, unlike the GSE, which is not specific to any situation.

Although these three indexes have different natures, each resource supports one's own mental health. Moreover, adequate levels of self-efficacy and social skills facilitate prosocial behaviors, stress coping, and effort on academic tasks (Bandura, 1997; Leary & Baumeister, 2000; Kikuchi, 2004; Sakano & Tohjoh, 1986). Therefore, considering improvement in these resources as a type of personal growth is reasonable.

## Hypotheses

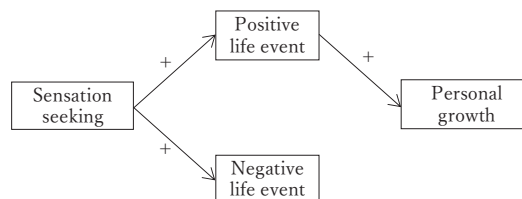
Based on the previous studies mentioned above, the present study generated three hypotheses.

Hypothesis 1: Because the SS includes the characteristic of searching for new experiences (Furusawa, 1989; Zuckerman, 2007), the HSS are expected to experience positive and negative life events more frequently.

Hypothesis 2: Because positive life events have been found to cause personal growth (Park, Cohen, & Murch, 1996), experiencing positive life events is expected to improve the GSE, self-esteem, and social skills.

Hypothesis 3: Because the SS includes the characteristic of searching for new experiences, (Furusawa, 1989; Zuckerman, 2007), more HSS are expected to participate in extra-curricular activities such as club and circle activities and volunteer activities, that were found to facilitate the participants' personal-growth (Kimura & Kawai, 2012; Matsui & Arai, 2003; Miyazaki, 2004).

The Hypothesis 1 and Hypothesis 2 are expressed as the path model (Figure.1), and structural equation modeling is used to test them.



*Figure 1.* Hypothetical model  
*Note.* + positive path coefficient is expected.

## Method

### *Participants*

The participants in this research were 122 freshmen at a university in Ibaraki prefecture.

### *Procedure*

In a liberal arts psychology class, questionnaires were administered twice to each

participant; the first questionnaire (Time 1) was administered on April 15, 2016<sup>1</sup>, and the second (Time 2) was administered on July 29, 2016. Time 1 was conducted during class as a task for experiencing psychological research methods, and the respondents were awarded 5 points for its completion. Time 2 was conducted just after the class, and no class points were awarded to the respondents.

### *Ethical Considerations*

In writing, it was explained to the potential participants that completing the questionnaires was voluntary, and those who chose not to complete the questionnaires would not suffer any disadvantages. Furthermore, completing the questionnaire was deemed agreement to research participation, and personal information would be kept entirely confidential. Questionnaires were completed anonymously, and although student identification (ID) was requested to compare the individuals' Time 1 and Time 2 results, the IDs were detached after merging the data from Time 1 and Time 2. To prevent any students' disadvantage, it was explained that those who did not complete the questionnaire at Time 1 could obtain 5 points by doing another task.

### *First Questionnaire Survey (Time 1)*

**Demographic characteristics.** The participants were asked their student ID, age, sex, and so on.

**Sensation seeking (SS).** The Sensation Seeking Scale-Abstract Expression (15 items; Furusawa, 1989) includes questions about representative characteristics of SS, that is, the need to engage in activities that involve speed and danger, the need for novel or unusual experiences, and the need to avoid social restriction and constraint. The participants rated the degree to which each question applied to them on a 5-point scale, with responses from 1 (not applicable) to 5 (applicable).

**Generalized self-efficacy (GSE).** The Generalized Self-Efficacy Scale (16 items; Sakano & Tohjoh, 1986) included questions about a positive manner of behavior, anxiety about failure, and social status in relation to self-competencies. The participants answered whether each question applied to them on a 2-point scale, with responses of 0 (no) or 1 (yes).

**Self-esteem.** On the Self-Esteem Scale (10 items; Yamamoto, Matsui, & Yamanari, 1982), the participants rated to what degree each question applied to them on a 5-point scale, with responses from 1 (not applicable) to 5 (applicable).

**Social skills.** On Kikuchi's Scale of Social Skills (18 items, Kikuchi, 1988), the participants rated their individual frequency of social behavior on a 5-point scale, with responses from 1 (never) to 5 (always).

**Psychological stress responses.** On the Psychological Stress Response Scale (18 items; Suzuki et al, 1997), the participants rated to what degree each question applied to them

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1. The new school year begins in April Japan.

for the last 2 or 3 days on a 4-point scale, with responses from 1 (not applicable) to 4 (applicable).

### *Questionnaire in the Second Survey (Time 2)*

**Demographic characteristics.** The participants were asked about their student ID, age, sex, club and circle experiences in the university (yes, now / yes, past / no), volunteer experiences after April (yes, now / yes, past / no), part-time job experiences after April (yes, now / yes, past / no), and so on.

**Life events.** The Positive Life Event Scale (25 items) and Negative Life Event Scale (10 items) were used (Hirao & Yamamoto, 2008). These scales were designed to measure typical life events of undergraduates concerning friendship, club activities, academic tasks, busyness, injury, illness, and so on. First, the participants responded about the experiences of each event (yes / no) from April to the time of the survey. If they answered, “yes,” they then rated themselves on a 5-point scale from -3 (very distressful / painful / hateful) to +3 (very joyful / happy / delightful).

In addition to these questions, the SS, the GSE, self-esteem, social skills, and stress responses were measured by the same methods used for Time 1.

## **Results**

### *Demographic Characteristics of Participants*

Questionnaires were distributed to 143 participants at Time 1 and to 129 at Time 2 and then collected. Due to respondent refusals or missing values, seven questionnaires were excluded from analyses. Finally, data from 122 participants who completed questionnaires both at Time 1 and Time 2 were analyzed.

All the participants were freshmen (54 men, 68 women), and their mean age was 18.29 years ( $SD = .64$ ). The participants came from the faculties of Humanity (26), Education (40), Science (12), Engineering (32), and Agriculture (12).

### *Calculating Indexes*

Cronbach's alphas on scales of the SS, self-esteem, social skills, and stress responses at Time 1 and Time 2 were over .80, respectively. Then, for each scale, ratings were added, and the sum was divided by the number of items in the scale to generate the scale score.

For positive life events, numbers of experienced events rated as “+1 (slightly joyful / happy / delightful)” and above were counted to generate the scale score. For negative life events, numbers of experienced events rated as “-1 (slightly distressful / painful / hateful)” and below were counted to generate the scale score.

For the GSE, numbers of “yes” answers were counted to generate the scale score.

Next, change scores on the GSE, self-esteem, and social skills were calculated by the following formula, which represents the degree of personal growth from Time 1 to Time 2. A higher value on a change score means greater improvement in the psychological resource.

$$\text{Change score} = (\text{scale score at Time2}) - (\text{scale score at Time 1})$$

### *Relationships Among Sensation Seeking, Life Events, and Personal Growth*

Pearson correlation coefficients between variables (SS scale score at Time 1, life events from Time 1 to Time 2, change scores on the GSE, self-esteem, and social skills, stress response) were calculated (Table 1). The results showed significant positive correlation between the SS and positive life events, as well as between positive life events and change scores on the GSE. As above, among psychological resources, the GSE result was consistent with the hypotheses. Then, path analysis was conducted with IBM Amos ver. 22, using the SS, life events, and the GSE change score (Figure 2). Maximum likelihood estimation was used for parameter estimation, and each parameter from errors to observed variables was fixed at 1 for establishing model identification. GFI, AGFI, and RMSEA were used as fit indices. GFI and AGFI greater than 0.9, and RMSEA less than .05 indicate good model fit (Kline, 2005). All fit indices met the criteria, and then the hypotheses were tested ( $\chi^2 = .615$ ,  $df = 2$ ,  $p = .735$ , GFI = .997, AGFI = .987, RMSEA = .000).

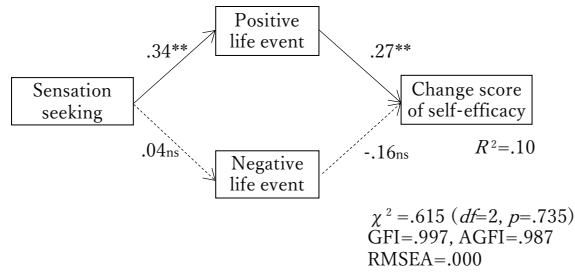
The path coefficient from SS to positive life events ( $\beta = .34$ ,  $p < .01$ ) was positive and significant, partially supporting hypothesis 1. The path coefficient from positive life events to the GSE change scores was positive and significant ( $\beta = .27$ ,  $p < .01$ ), partially supporting hypotheses 2.

**Table 1.** *Correlations among sensation seeking, life event, and change scores on self-efficacy, self-esteem, social skills, stress responses*

Index	(range <sup>1</sup> )	<i>M</i>	( <i>SD</i> )	1	2	3	4	5	6
1 Sensation seeking	(1.00—5.00)	3.23	(.60)	—					
Life event									
2 Positive	(0—25)	15.33	(5.08)	<b>.34**</b>	—				
3 Negative	(0—10)	4.50	(2.70)	.04	.06	—			
Change score									
4 Self-efficacy	(-16—16)	.15	(2.41)	.04	<b>.26**</b>	-.15	—		
5 Self-esteem	(-4.00—4.00)	.11	(.48)	-.02	.17	-.03	<b>.25**</b>	—	
6 Social skill	(-4.00—4.00)	.08	(.39)	-.04	.12	.04	.14	<b>.32**</b>	—
7 Stress response	(-3.00—3.00)	.05	(.58)	.07	.01	-.03	<b>-.23*</b>	<b>-.34**</b>	-.12

*Note.* <sup>1</sup> Range of values that the variable can take  
 $n = 122$

\*\*: $p < .01$  \*:  $p < .05$



**Figure 2.** Path model of the relationship among sensation seeking in Time1, life events, and improvement of self-efficacy from Time1 to Time2

\*\* :  $p < .01$  \* :  $p < .05$

Note. Values in the model are standardization pass coefficients.

### *Relationships Between Sensation Seeking and Extra-Curricular Activities*

Mean scale scores (*SD*) on SS, GSE, self-esteem, social skills, and stress response at Time 1 were calculated (Table 2). To examine the relationships between these scores at Time 1 and experiences of extra-curricular activities from Time 1 to Time 2, the following analyses were conducted.

**Club and circle activities.** The participants were classified into three groups (yes, now / yes, past / no) according to their club and circle experiences. A one-way between subjects ANOVA was conducted to compare each scale score at Time 1 among the three groups, respectively (Table 2). There were significant main effects of activity experience on the SS score as well as on the stress response score [SS  $F(2, 119) = 7.88, p < .01$ ; Stress response  $F(2, 119) = 4.63, p < .05$ ]. Post hoc comparisons using the Tukey-b test with an alpha level of .05

**Table 2.** Mean scale scores (*SD*) at Time1 and extra-curricular activities from Time1 to Time2.

Group	<i>n</i>	Index <sup>1</sup>					Stress response
		Sensation seeking	Self-efficacy	Self-esteem	Social skill		
Club and Circle <sup>2</sup>							
Yes, now	26	3.27 <sup>b</sup> (.55)	5.46 (4.26)	3.05 (.68)	3.05 (.48)	.93 <sup>a</sup>	(.65)
Yes, past	86	3.30 <sup>b</sup> (.64)	5.98 (3.67)	2.95 (.78)	3.14 (.51)	.87 <sup>a</sup>	(.61)
No	10	2.55 <sup>a</sup> (.70)	3.90 (2.85)	2.67 (.69)	3.07 (.53)	1.52 <sup>b</sup>	(.93)
Volunteer <sup>2</sup>							
experienced	91	3.34 <sup>b</sup> (.56)	5.79 (3.94)	2.97 (.72)	3.17 <sup>b</sup> (.50)	.89	(.63)
inexperienced	31	2.93 <sup>a</sup> (.75)	5.42 (3.22)	2.89 (.84)	2.96 <sup>a</sup> (.50)	1.07	(.75)
Total	122	3.23 (.60)	5.70 (3.76)	2.95 (.75)	3.12 (.50)	.93	(.66)

Note. <sup>1</sup> Each value was measured at Time 1.

<sup>2</sup> Activity experiences from Time1 to Time2

Means in each column with different superscript are significantly different ( $p < 0.05$ , by Turkey-b test or t-test).

indicated that the mean SS score in the “no” group was significantly lower than that of other two groups and that the mean stress response score in the “no” group was significantly higher than that of the other two groups, supporting hypotheses 3.

**Volunteer activities.** The participants were classified into the experienced group (“yes, now” or “yes, past”) or the inexperienced group (“no”) according to their volunteer activities. An independent-samples t-test was conducted to compare each scale score at Time 1 between the two groups, respectively (Table 2). The results indicated that the mean SS score in the experienced group was significantly higher than that of the inexperienced group and that the mean social skills score in the experienced group was significantly higher than that of the inexperienced group [ $SS\ t(120) = 3.36, p < .01$ ; Social Skill  $t(120) = 1.99, p < .05$ ], supporting hypotheses 3.

## Discussion

To reveal the positive side of SS, the present study examined relationships between SS and personal growth. The result shows that the HSS experienced more positive life events from April (i.e., just after entering the university) to July than did the LSS. In addition, those who experienced more positive life events more remarkably improved GSE during this period.

Miyazaki (2004) found that the HSS often reported a sense of personal growth in club and circle activities, consistent with results in the present study.

Moreover, the present study had two original findings that were not in the previous study. First, the present study revealed a preceding/succeeding time relation between the SS and personal growth. The follow-up survey found that the SS measured just after entrance to the university led to personal growth about 3 months later. This result suggested that the SS was a preceding factor for personal growth.

Second, the present study found a mediator variable intervening between the SS and personal growth. The path analysis revealed that positive life events mediated between these two variables. Positive life events measured in the present study included the formation of new relationships, belonging to clubs and circles, acquisition of new knowledge or skills. These are important tasks for freshmen who are adapting to university life, and the SS seems to facilitate attainment of these tasks.

Then, why did positive life events improve the GSE? Bandura, Adams, and Beyer (1977) show evidence that performance mastery experience in a specific domain improves GSE. That is, specific self-efficacy tends to generalize to the GSE. In the present study, the freshmen who experienced many positive life events had improved efficacy for successfully leading their future university life. This domain-specific efficacy concerning university life is believed to improve the GSE.

There were also relationships between the SS and volunteer activities as well as club and circle activities. In particular, the SS level in April was a variable predicting future participation in extra-curricular activities. In addition to the SS, there were other predictors



for extra-curricular activities. A high level of social skills predicted volunteer activities, and a low level of stress response predicted club and circle activities. These results suggest that interacting with others smoothly, as well as maintaining their own mental health, was needed for the HSS to participate in extra-curricular activities.

Previous studies found that the HSS often engaged in health risk behaviors in adolescence (Matsuki & Saito, 2017; Miyazaki, & Kanachi, 2011; Watanabe, 1998). However, the present study revealed that, as freshmen, the HSS experienced positive life events and extra-curricular activities more frequently. Taking these results together, the SS can possibly lead to both positive and negative behaviors. Thus, canalization leading to positive SS behaviors is needed for the HSS. In the present study, positive behaviors included volunteer activities and club and circle activities. Providing the HSS with sufficient opportunities to participate in these activities would strengthen the positive side of the SS. To provide such opportunities, further study is needed to reveal why the HSS participate in these activities and what they obtained from these experiences.

The present study did not find relationships between the SS and improvement in self-esteem or social skills. An important factor affecting self-esteem was found to be acceptance experiences by others, accumulated over a long time (Leary & Baumeister, 2000). Further studies, including measurement of acceptance experiences over longer periods, are needed to draw conclusions about relationships between the SS and self-esteem.

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