

## 日本の大学一年生に見られる自殺願望 —SOC および親や親しい友人との関係との関連性—

Nadzirah Ahmad Basri<sup>1,2</sup>, 本田 貴紀<sup>3,4</sup>, 陳 三妹<sup>5</sup>  
Atin Supartini<sup>1</sup>, 平野 (小原) 裕子<sup>6</sup>, 一宮 厚<sup>7</sup>, 熊谷 秋三<sup>1,7</sup>

### A wish to die among Japanese university freshmen: its association with the sense of coherence and relationship with parents and close friends

Nadzirah Ahmad Basri<sup>1,2</sup>, Takanori Honda<sup>3,4</sup>, Sanmei Chen<sup>5</sup>  
Atin Supartini<sup>1</sup>, Yuko O. Hirano<sup>6</sup>, Atsushi Ichimiya<sup>7</sup>, Shuzo Kumagai<sup>1,7</sup>

#### 抄録

**背景:** 日本の若年層の死因第一位は自殺である。このため自殺願望に関連した要因を特定することは、自殺の早期予防に対する手掛かりとなる。

**目的:** 本研究の目的は、わが国の大学一年生を対象として、SOC (sense of coherence: 首尾一貫感覚) や、親や親しい友人との関係が、抑うつ症状とは独立して自殺願望と関係するか否かを明らかにすることである。

**方法:** わが国のある国立大学で一年生を対象に実施されたメンタルヘルス研究における横断データを使用し (n = 2,036)、SOC、親との関係、親しい友人の有無と、自殺願望との関連を、多重ロジスティック回帰分析を行い検討した。

**結果:** SOCが高いほど自殺願望を有する確率は低く、その関係は抑うつ症状とは独立していた。同様に、親との関係が良好であると自殺願望を持つ確率が低く、また親しい友人がいないと確率が高くなった。

**結論:** 自殺する恐れのある生徒を学校医が特定するために、SOC スケールが有用である可能性が示唆された。また、学生の対人スキルの強化や親との関係性改善も自殺願望を防止するうえで重要である。

**キーワード:** 自殺願望、自殺、日本人新入生、SOC、抑うつ症状

1 Department of Behavioral and Health Sciences, Graduate School of Human-Environment Studies, Kyushu University, 6-1 Kasuga kouen, Kasuga City, Fukuoka Prefecture 816-8580, Japan.

nadzirahbasri@gmail.com

zamzabila@hotmail.com

2 Department of Psychiatry, Kulliyah of Medicine, International Islamic University Malaysia, Jalan Hospital, 25100 Kuantan, Pahang, Malaysia.

nadzirahbasri@gmail.com

3 Department of Epidemiology and Public Health, Graduate School of Medical Sciences, Kyushu University, Maidashi 3-1-1, Higashi-ku, Fukuoka City, Fukuoka Prefecture 812-8582, Japan.

4 Research Fellow of the Japan Society for the Promotion of Science, 5-3-1 Kojimachi, Chiyoda-ku, Tokyo, 102-0083, Japan.

honda-t@eph.med.kyushu-u.ac.jp

5 Xiangya Nursing School of Central South University, 172 Tongzipo Road, Changsha, Hunan, 410013, China

sanmei.chen@kyudai.jp

6 Graduate School of Biomedical Sciences, Nagasaki University, 1-7-1 Sakamoto, Nagasaki, 852-8520 Japan.

hirano@nagasaki-u.ac.jp

7 Faculty of Arts and Science, Kyushu University, 6-1 Kasuga kouen, Kasuga City, Fukuoka Prefecture 816-8580, Japan.

ichimiya@artsci.kyushu-u.ac.jp

shuzo@ihs.kyushu-u.ac.jp

Corresponding author: Shuzo Kumagai, PhD, Professor

Faculty of Arts and Science, Kyushu University, 6-1, Kasuga-kouen, Kasuga, Fukuoka, 816-0811 JAPAN.

Phone: +81-92-583-7853 Fax: +81-92-583-7853 Email address: shuzo@ihs.kyushu-u.ac.jp

## Introduction

Suicide is a major public health concern in Japan. It was the leading cause of death for youths in the age groups of 15–19 and 20–24 years in the year 2014<sup>1)</sup> with 7.3 deaths by suicide per 100,000 for youths aged 15-19, and 19.7 per 100,000 for youths aged 20-24. Meanwhile in the United States, adolescents and young adults aged between 15-24 years had a suicide rate of 11.6 deaths per 100,000 US Americans in 2014.<sup>2)</sup> The magnitude of the suicidal phenomenon among Japanese youths requires a better understanding of the characteristics of youths with suicidal tendencies, in order to find more effective solutions to prevent and reduce suicidal thoughts and behaviors.

In the literature, the term “wish to die” has been described to be encompassed under the broad spectrum of suicide (ranging from a wish to die, to suicidal ideation, suicidal plans, suicide attempts, and suicide death),<sup>3)</sup> as a preliminary step to a pathway toward suicide<sup>4)</sup> and often precedes suicide attempts.<sup>5)</sup> A wish to die differs from suicidal ideation because despite having a strong desire to die, it does not involve thoughts of harming or killing oneself, as suicidal ideation does.<sup>6)</sup> It was contended that a wish to die can lead towards suicidal acts and death behaviors when there is an imbalance between the wish to die and the wish to live with abnormal developmental processes.<sup>7)</sup> Therefore, it is significant to identify and intervene on the wish to die early on; as a simple wish to die may be a warning in disguise and a strong predictor of a more serious suicide intent.<sup>8)</sup> For the purpose of this study, we define a wish to die as having thoughts of really wanting to die.

This study focuses on university freshmen, who were mostly going through a significant transition in their lives due to the transition from living at home to living away from home. For many of them, having to independently manage their lives; establish new friends; adjust to new schedules and succeed in academic and athletic pursuits is an overwhelming task. Furthermore in Japan, incoming freshmen had just been through a highly competitive university entrance examination, which was found to have contributed towards a high rate of depression among freshmen<sup>9)</sup> and a high suicide rate among young Japanese.<sup>10)</sup> Thus, this study intends to explore the characteristics associated with a wish to

die among freshmen at the transition of just entering university in order to understand them better.

Threats to university students' sense of having a coherent self in relationship to the world have been postulated to play an important role in the development of suicidal thoughts and behaviors.<sup>11)</sup> The Sense of Coherence (SOC) was also found to buffer the associations among coping style, suicide ideation, self-reported suicide attempts, and self-reported likelihood of future suicidal behavior among university students.<sup>12)</sup> According to Anotnovsky,<sup>13)</sup> SOC is a global orientation that reflects a person's coherent understanding of the world which comprises of three components: the ability for people to understand what happens around them (comprehensibility), to what extent they were able to manage the situation on their own or through significant others in their social network (manageability), and the ability to find meaning in the situation (meaningfulness). Therefore it is likely that a student with high SOC has a better ability to understand their situation, use inner and external resources to manage their problems more effectively, and make meaning out of a problem situation, hence lowering the odds of suicidality. SOC is tested and reinforced mainly in childhood and early adulthood; with the years before the age of 30 being the most important period regarding the development of SOC.<sup>13, 14)</sup> University freshmen belong to this group.

Previous studies have also showed associations between SOC and suicidality among military trainees and parasuicides,<sup>15, 16)</sup> demonstrating SOC's ability to predict suicidal ideation and future attempts<sup>17)</sup> and its potential to be a marker of risk for high suicidality in the aftermath of a suicide attempt.<sup>18)</sup> However, despite the accumulating studies on SOC and suicidality, most of the studies on SOC in Japanese youth have not been targeted at understanding the suicidal problem. Instead, studies on SOC among university students in Japan have focused on health,<sup>19, 20)</sup> and depression.<sup>21, 22)</sup> Therefore, this study intends to explore if similar associations exist between SOC with a wish to die, as it has with suicidal ideation and behaviors.

In addition to SOC, studies have also linked suicidality with relationship with parents and peers. Dissociated relationship with parents was found to be an early risk factor for suicide<sup>23)</sup> whilst suicidal adolescents showed

less close relationships to their parents.<sup>24)</sup> Loneliness was found to moderate the relationship between peer relationship and suicide ideation and attempt<sup>25)</sup> while having four or more friends were associated with a lower risk of suicide in Japanese adults.<sup>26)</sup> While an inverse association was found between close relationship with parents and peers with suicidality, there has yet to be a study that explores the association with a wish to die. Therefore, as an attempt to fulfil the above mentioned gaps, this study is conducted with the following aims: 1) to examine the association between a wish to die with SOC, 2) to examine the association between a wish to die with relationship with parents, and 3) to examine the association between a wish to die with absence of close friends among Japanese university freshmen. All associations were controlled for age, sex, self-rated health, sleep quality and depressive symptoms. Based on the findings previously reviewed, we hypothesized that: i) higher SOC is associated with lower odds of a wish to die, ii) close relationship with parents is associated with lower odds of a wish to die and iii) absence of close friends is associated with higher odds of a wish to die.

## Materials and Methods

### Design

This cross-sectional study was conducted among freshmen who were recruited from a public university in the southeastern part of Japan. The study utilized the data drawn from a baseline study (of an epidemiologic study conducted in the university) called the EQU SITE study (Enhancement of Q-University Students InTElligence study); it was a study originally developed by the university, which aimed to improve the mental health of university students. The baseline study data were collected between May and June 2010. This study was approved by the ethics committee of the university. All participants provided written informed consent.

### Participants and Procedures

We distributed a set of health questionnaires to students in Physical Education class, a compulsory subject for incoming freshmen. Explanation about the objectives of the questionnaires was stated at the beginning of the questionnaire, along with informed consent of participation. Participants were informed that their participation was voluntarily and they can withdraw

from, or decline their participation at any time with no negative consequences. We found 2,631 freshmen to be eligible for the study. From these, 81.3% (n=2,139) gave consent to participate. We excluded 103 participants due to incomplete data and finally, a total of 2,036 (77.4%) participants were included in the analyses.

### Measures

*The Sense of Coherence (SOC)*. The SOC scale was developed by Antonovsky,<sup>13)</sup> it assesses the way individuals perceive life and its challenges that lead to increased coping and resiliency from stress. The present study uses the short version of the SOC, the (Japanese) 13-item SOC questionnaire<sup>27)</sup> with scores ranging from 13-91 with a higher score indicating a stronger sense of coherence. Validity and reliability of this scale with Japanese university students has been established.<sup>21, 28)</sup> In this study, Cronbach's alpha of the SOC scale was .79.

*A wish to die*. An item from the health questionnaire developed by the university among the students was asked, "Sometimes I have thoughts that I really want to die," (with the answer option of yes or no).

*Relationship with parents and absence of close friends*. Two items from the communication scale for university students was asked, "The relationship with my parents are going well" and "I have many friends, but I don't have anyone who I can call a close friend" (with the answer option of yes or no).

*Confounding variables*. *Centre for Epidemiologic Studies- Depression scale (CES-D)* is a 20-item self-administered test of the frequency of depressive symptoms within the previous week.<sup>29)</sup> Globally, a cutoff score of 16 is used to indicate the presence of depressive symptoms. The Japanese version of the CES-D<sup>30)</sup> was used in this study. The item on *self-rated health* asked how the participants would rate their physical health in general. Participants were categorized into two groups: unhealthy and healthy. *The Japanese version of the Pittsburgh Sleep Quality Index (PSQI)*<sup>31)</sup> was used to measure sleep quality, with a cutoff point of >5.5 from the global score to signify poor sleep quality.<sup>32)</sup> They were used as covariates because: i) major depressive disorder have been found to be associated with a high percentage of suicides,<sup>33)</sup> and depressive symptoms is highly correlated and, they possibly overlap with the SOC,<sup>34)</sup> ii) poor self-rated health has been found to be a

significant correlate to suicidality<sup>35)</sup> and increased the risk of death wishes and suicidal ideation,<sup>36)</sup> and iii) low sleep quality has been associated with suicide ideation among Japanese university students.<sup>37)</sup> Therefore, by controlling for these possible confounders, we would ensure that the odds ratio for a wish to die explained by SOC and relationship with parents and close friends were not influenced by these possible confounders.

#### Data Analysis

Chi-square tests were performed to assess the associations of demographic, health behavior and psychosocial variables with a wish to die. We also calculated the effect size to quantify the size of the difference between the two groups by using Cohen's *d*<sup>38)</sup> for continuous variables and Cramer's *V* for categorical variables<sup>39)</sup>. We used the multivariate logistic regression analyses to evaluate the influence of SOC, relationship with parents and absence of close friends on a wish to die, fitting all variables simultaneously in a single model using the forced entry method. We adjusted for con-

founders that were associated with a wish to die in the previous bivariate analyses at a p-value cut-off point of <0.20<sup>40)</sup> and in accordance to previous evidence. SOC was used as a continuous variable.<sup>13)</sup> All analyses were performed using SAS version 9.3 (SAS Institute Inc., Cary, N.C., USA), with a significance level of  $p=0.05$ .

## Results

### Characteristics of participants

The mean age of the freshmen was 18.4 (SD=1.1) years (within the age range of 18–32 years). Independent sample t-test indicated that there was no significant difference in wish to die with the age of the freshmen ( $t(122.6) = -1.32, p=0.19$ ), but a significant difference appeared in SOC score between students with and without a wish to die ( $t(2034) = 14.09, p<.001$ ). The mean SOC score for the sample was 54.7 (SD=10.6). Males made up 69.2% of the participants. Having a wish to die was reported by 5.8% ( $n=118$ ) of the freshmen. Depressive symptoms were observed in 27% ( $n=550$ ) of the freshmen, (CES-D

**Table 1 Demographic, health and psycho-social characteristics by a wish to die (N=2,036)**

| Variables <sup>a</sup>                            | Students with a wish to die (n=118) | Students without a wish to die (n= 1,918) | P value <sup>b</sup> | Effect size <sup>c</sup> |
|---|-------------------------------------|---|----------------------|--------------------------|
| Age, mean (SD)                                    | 18.4 (0.6)                          | 18.4 (0.8)                                | 0.41                 | 0.                       |
| Sex (male), n (%)                                 | 81 (68.6)                           | 1,327 (69.2)                              | 0.90                 | 0.003                    |
| SOC score, (continuous measure), mean (SD)        | 42 (9.5)                            | 55.5 (10.2)                               | <.001*               | 1.37                     |
| Good relationship with parents (yes), n (%)       | 93 (78.8)                           | 1,803 (94.0)                              | <.001*               | 0.14                     |
| Absence of close friends (yes), n (%)             | 52 (44.1)                           | 354 (18.5)                                | <.001*               | 0.15                     |
| High depressive symptoms (CES-D≥16), n (%)        | 86 (72.9)                           | 464 (24.2)                                | <.001*               | 0.26                     |
| Self-rated health, healthy (vs. unhealthy), n (%) | 83 (70.3)                           | 1689 (88.1)                               | <.001*               | 0.12                     |
| Sleep quality, poor (vs. good) (PSQI>5.5), n (%)  | 68 (57.6)                           | 614 (32.0)                                | <.001*               | 0.13                     |
| Tend to be absent in lectures (yes), n (%)        | 9 (7.6)                             | 99 (5.2)                                  | 0.25                 | 0.03                     |

<sup>a</sup>  $\chi^2$  test for proportions and Student t-test for continuous measure.

<sup>b</sup>\*  $p<.001$

<sup>c</sup> Effect size were measured using Cohen's *d* for continuous variables, and Cramer's *v* for categorical variables.

SD (Standard Deviation); CES-D (Centre for Epidemiologic Studies- Depression scale); PSQI (Pittsburgh Sleep Index Quality)

median=11.0, interquartile range= 10.0).

**Characteristics of students with a wish to die**

Chi-square analyses showed in Table 1 indicated that SOC score was found to be significantly lower in students with a wish to die compared to their counterparts without a wish to die. Students with a wish to die were found to be less close to their parents, and reported a higher tendency to have no close friends. Students with a wish to die reported higher depressive symptoms and poorer health and sleep quality than their counterparts. No significant difference appeared in being absent in lectures and the age of participants among the two groups.

**Associations between the Sense of Coherence and a wish to die**

In Table 2, model 1, we adjusted for age, sex, self-rated health and sleep quality and found that the higher the SOC score (measured by one-unit increment), the lower the odds were of having a wish to die (OR=0.88, 95% CI=0.85-0.90). In model 2, when we added depressive symptoms as a confounder, the SOC score remained significantly associated with a wish to die (OR=0.89, 95% CI=0.87-0.92).

**Associations between relationship with parents and absence of close friends**

Table 2 showed that students with a good relationship with their parents had lower odds of having a wish

to die independent of confounding factors and the significance remained when depressive symptoms was confounded (OR=0.46, 95% CI=0.25-0.82). Students that did not have close friends had higher odds of having a wish to die in both models before and after depressive symptoms were adjusted (OR= 1.72, 95% CI =1.11-2.68).

**Discussion**

This study's main aim was to examine whether SOC has an independent effect on a wish to die, beyond significant confounders such as depressive symptoms in incoming freshmen. Accordingly, our results indicate that a high SOC was associated with decreasing odds of having a wish to die, independent of all confounders. Our findings indicated that with each unit of increase in the SOC score, the odds of having a wish to die decreased by 11%.

Previous reports have also associated low SOC with increased risk of suicidal ideation<sup>16, 41)</sup> and low association of SOC with suicidality even after adjusting for major depression during follow-up.<sup>42)</sup> The results were also consistent with a previous study among university students, which demonstrated that SOC was a protective quality that could decrease the risk of students to enter the continuum of suicidality.<sup>11)</sup> It was postulated that a significant number of students began their university experience with preexisting vulnerabilities

**Table 2 Associations between the Sense of Coherence, relationship with parents and absence of close friends with a wish to die according to multiple logistic regression analysis (N=2,036)**

|  | Odds Ratio (95% Confidence Interval) |                     |
|--|--------------------------------------|---------------------|
|  | Model 1                              | Model 2             |
| SOC score (one unit increment)                 | 0.88 (0.85-0.90)***                  | 0.89 (0.87-0.92)*** |
| Good relationship with parents (reference: no) | 0.50 (0.28-0.90)*                    | 0.46 (0.25-0.82)**  |
| Absence of close friends (reference: no)       | 1.84 (1.19-2.85) **                  | 1.72 (1.11-2.68)*   |

\*p<.05

\*\*p<.01

\*\*\*p<.001

Model 1: adjusted for age, sex, self-rated health and sleep quality

Model 2: adjusted for co-variates in model 1 plus depressive symptoms

that have the potential to intersect with stressful life events to trigger or accelerate pathogenic processes, hence predicting entry onto suicidality particularly for those who are low in SOC and social connectedness.<sup>11)</sup> Our results indicated that students with low SOC were also at higher risk for having a wish to die; consistent with previous findings on suicidal ideation and behavior. This could be due to the reason that students with high SOC were less concerned with the feeling that life was not worth living even though they are in a stressful situation, as they view stressors in their lives as manageable and meaningful.<sup>13)</sup> These results highlight the importance for university clinicians to nurture the seeds of SOC in incoming freshmen with a wish to die and sustain them in the following years to prevent a wish to die from entering into a more severe continuum of suicide. If Antonovsky's theory holds true that the SOC will more or less be stable after one reaches their 30<sup>th</sup> age,<sup>13)</sup> it is highly timely that encouragement to foster the sense of coherence into youth be given at around the age of this present study's sample. Furthermore, school-based awareness programs have shown to be effective in reducing suicide ideation and attempts.<sup>43)</sup>

The results also supported our second hypothesis; that a close relationship with parents would be associated with decreasing odds of having a wish to die. We found that having a good relationship with parents decreased the odds of a wish to die by 54% (OR=0.46, 95% CI=0.25-0.82) than having a poor parental relationship. This is consistent with prior evidence among adolescents which demonstrated that suicidal adolescents were less close to their parents<sup>24)</sup> and that dissociated relationship with parents is an early risk factor for suicide.<sup>23)</sup> Findings in a previous study demonstrated that significantly more adolescents who characterized their parental relationship as dissociated stated that they 'wanted to die', compared with both the entire study group and the subgroup with close parental relationships.<sup>23)</sup> Another study suggested that poor communication with parents is a risk factor for future suicide attempts.<sup>44)</sup> These previous findings were in line with the present study's results which indicated the importance of fostering a good relationship with parents which could lower the risk of having a wish to die among the incoming freshmen.

Results also indicated that our third hypothesis was supported. The absence of close friends was found to increase the odds of having a wish to die after adjusting for significant confounders (OR 1.72, 95% CI=1.11-2.68). Our findings were consistent with a previous report that demonstrated the significance of peer relationships in preventing against suicide ideation and attempt<sup>25)</sup> and the findings that dissociated relationship with friends was an early risk factor for suicide.<sup>23)</sup> Previous studies have offered possible explanations for the absence of close friends among the Japanese students. It was suggested that Japanese in general have a fear of relationships, regardless of whether they have any cognitive distortions or not, as for most of them, when in a relationship, people are required to pay closer attention to the other person's thoughts and feelings,<sup>45)</sup> and this could bring about elevated fear and anxiety to build close relationships. Japanese students were also suggested to have extremely high communication apprehension levels,<sup>46)</sup> particularly classroom communication fear.<sup>47)</sup> These results indicate the significance for faculty members to create opportunities for communication among students, preferably outside the classroom to prevent classroom communication fear. Indeed, interpersonal skills are significant for university students, as interpersonal difficulties have been found to play a pivotal role in the development of suicidal behavior in late adolescence and early adulthood.<sup>48)</sup> Furthermore, it has been reported that establishing interpersonal relations marked by cooperation would be able to intensify the SOC in young people,<sup>49)</sup> and a previous study demonstrated that both SOC and social connectedness are protective factors for suicide ideation and behaviors among university students.<sup>11)</sup> Future studies may adopt longitudinal studies, which could further explore if a wish to die in university students would lead to suicidal ideation and attempts and the factors associated with it. Pre and post study measuring the SOC of incoming freshmen after the implementation of intervention programs could also be useful to help school clinicians to improve current preventive interventions of suicide.

### ***Strengths and Limitations***

To our knowledge, this is the first study to explore the characteristics of incoming freshmen and a wish to die. We examined a range of potential confounders, and this

study included a large sample size and relatively high response rate. However, this study should also be interpreted with some limitations in mind. A wish to die, relationship with parents and close friends were only measured by a single dichotomous question which limit the interpretation of the results, while depressive symptoms were measured by self-reported questionnaires rather than by clinical observations. The cross-sectional design did not allow us to determine causal direction between each of the characteristics and a wish to die. The present results were also not representative of the entire Japanese university freshmen population. The timing of the survey, which was conducted between one and two months after the participants' enrollment in the university may be a stressful time than others and thus may not able to yield a valid tendency for a wish to die in freshmen.

#### Conclusions

This study indicates that high SOC and good parental relationships are associated with lower odds of having a wish to die, whilst absence of close friends is associated with higher odds of having a wish to die, independent of confounding factors such as depressive symptoms. These findings highlight the importance of enhancing SOC and interpersonal skills among incoming freshmen as well as improving parental relationship that may contribute towards prevention of a wish to die among the students.

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#### Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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