



[原著]

The Effects of a Resilience-Promoting Program for High School Students: Single-Group Pre-Post Study

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Summary

The purpose of this study was to examine the effects of a resilience-promoting program, developed by the authors, on “relationship-building skills,” “overcoming abilities” in acquired resilience, and on “positive mood” and “negative mood.” Participants were 65 first-year students from a regular high school. A single-group pre-post comparison design was employed to evaluate the effectiveness of the program. The intervention consisted of three sessions, each lasting 45 minutes, delivered in lecture format and focusing on skills to enhance resilience in daily school life. Outcome variables were measured at three time points: before the intervention, immediately after completion, and one month after the program. Results showed significant improvements in “relationship-building skills” between the pre-intervention and both immediate and one-month follow-ups ($p < .001$, $d = -.494$; $p < .001$, $d = -.273$). “Overcoming abilities” also increased significantly between pre-intervention and both subsequent measurements ($p = .028$, $d = -.288$; $p = .030$, $d = -.261$). In addition, “positive mood” improved immediately after and at one month post-intervention ($p = .001$, $d = -.477$; $p = .013$, $d = -.381$). Conversely, “negative mood” decreased significantly between pre-intervention and both immediate and one-month follow-ups ($p < .001$, $d = .589$; $p = .010$, $d = .360$). These findings suggest that this resilience-promoting program has the potential to strengthen adolescents’ relationship-building skills and overcoming abilities, while also fostering a more positive mood state and reducing negative mood. Such programs may represent a practical approach to supporting adolescent mental health in educational settings.

Keywords: High School, Resilience, Mood, Intervention Study

I. Introduction

High school students are at a

developmental stage where they are more prone to confusion and mood

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instability (1), and the proportion of those experiencing depressive states is not low (2). It has been shown that depressive states increase aggression (3) (4). Furthermore, research has revealed that depressive states can be a triggering factor for self-harm (5), highlighting the critical need for preventive psychoeducation for high school students.

The revised edition of the Japanese Society of Mood Disorders Treatment Guidelines (6) emphasizes the importance of promoting resilience in cases of mild depression. Resilience is defined as "the process, ability, and outcome of successfully adapting to difficult or threatening situations" (7). Resilience is considered to consist of "inherent factors," which are strongly related to one's innate temperament, and "acquired factors," which are more easily developed through experience (8). Since acquired resilience (hereafter referred to as "acquired resilience") has high plasticity, it is a key focus in psychological support. Acquired resilience consists of three elements: "relationship-building ability," "overcoming ability," and "breakthrough ability" (9). "Relationship-building ability" refers to the skill of intentionally and actively forming positive interpersonal relationships. "Overcoming ability" represents perseverance and endurance in overcoming difficulties, while "breakthrough ability" describes the capacity to flexibly find and create solutions (9). Previous studies examining the relationship between these three elements and the mental health of high school students have reported that "relationship building ability" and "overcoming ability" show significant associations with mental health, whereas "breakthrough ability" does not (10). Therefore, it is considered crucial to

promote "relationship-building ability" and "overcoming ability" in order to improve depressive states among high school students.

Several intervention studies have been conducted abroad to promote resilience in high school students. The effectiveness of culturally adapted interventions based on the Resourceful Adolescent Program has been demonstrated (11), along with the effects of the Coping with Stress Course for individuals with depressive symptoms (12) (13) and anger management interventions targeting female students (14). However, it remains unclear whether these interventions contribute to promoting "relationship-building ability" and "overcoming ability" in resilience. In Japan, the effectiveness of the SPARKS Resilience Program for high school students has been examined (15) (16) (17), but its impact has been limited, and it has not sufficiently enhanced "relationship-building ability" or "overcoming ability." Additionally, while mindfulness breathing exercises have been reported to improve "overcoming ability" (18), their effect on "relationship-building ability" has not been demonstrated. Given these circumstances, developing a psychological education program that effectively promotes both "relationship-building ability" and "overcoming ability" among high school students is an urgent issue.

Thus, this study aims to gain insights for developing preventive psychological education for high school students experiencing depression. Specifically, an intervention will be conducted to examine the impact of our proposed psychological education program—the Resilience Promotion Program—on "relationship-building ability,"

"overcoming ability," "positive mood," and "negative mood" in acquired resilience.

II. Methods

The target group is first-year high school students. The reason for this is that the significance of this study lies in obtaining knowledge that contributes to the development of preventive psychoeducation for depression. Since early support from the beginning of high school enrollment is considered important for prevention, first-year students were chosen as the focus. A single-group pre-post comparison study was adopted as the research design, measuring the effects before the intervention, after the intervention, and one month later. The intervention was conducted in the form of lectures as a resilience promotion program. Each lecture was structured to last 45 minutes, with a total of three sessions. Due to the schedule of school events at the target high school, the second session was held one week after the first session, and the third session was held five weeks after the second session. The study period was from May to June 2022.

The resilience promotion program was conducted by two researchers, with one primarily responsible for the lectures and the other assisting with exercises. The lectures were delivered in a group format to all participants. The content was adapted from a stress management education program (19) that we developed, which has demonstrated certain effects in reducing cognitive interpersonal stress and enhancing help-seeking skills. First, we extracted content from the original program that was considered to contribute to the promotion of "relationship-building skills" and "overcoming skills." Specifically, for

enhancing "relationship-building skills," we consolidated the sections on Support Resources Around Oneself and The Importance and Practical Methods of Help-Seeking Behavior from the original program and implemented them under the title "Relying on Someone (Lecture and Exercise)." Additionally, we incorporated "Tips for Improving Communication Skills (Lecture and Exercise)" and "Building Trusting Relationships (Lecture and Exercise)" into the program, as they were also deemed beneficial for relationship-building skills. For enhancing "overcoming skills," we modified the titles to make them more understandable for high school students while keeping the core content unchanged. The topics Stress and Its Impact, Mechanisms of the Mind, Cognitive Patterns of the Mind, Balanced Thinking, and One's Strengths and Future Goals were implemented as "Stress and Stress Reactions (Lecture)," "Cognitive Patterns That Make Stress Accumulate and How to Handle Them (Lecture and Exercise)," "Mechanisms of the Mind and How to Cope (Lecture and Exercise)," and "Recognizing One's Strengths (Lecture and Exercise)."

In this program, the theme of the first lecture is understanding psychological stress, the second lecture focuses on relationship-building skills, and the third lecture is about awareness of one's own strengths and ability to seek help. The promotion of "relationship-building skills" is incorporated into the second and third lectures, while the promotion of "overcoming ability" is integrated into the first and third lectures. To support program implementation, a guidebook was created and used, clearly outlining the content of each session. Additionally, at the beginning of each session, an

Table 1: Structure of the Resilienc Promoting Program

Session	Theme	Overview	Intervention Elements
1	Understanding psychological stress	• Mechanisms, Effects and Practice of Relaxation Methods (exercises): 5minutes	Progressive Muscle Relaxation
		• Stress and Stress Reactions (Lecture): 10minutes	Psychological Education
		• Cognitive Patterns That Make Stress Accumulate and How to Handle Them (Lecture and Exercise): 15minutes	Cognitive Reconstruction
		• Mechanisms of the Mind and How to Cope (Lecture and Exercise): 15minutes	
2	Relationship-Building Skills	• Mechanisms, Effects and Practice of Relaxation Methods (exercises): 5minutes	Progressive Muscle Relaxation
		• Tips for Improving Communication Skills (Lecture and Exercise): 20minutes	Social Skills Training
		• Building Trusting Relationships (Lecture and Exercise): 20minutes	
3	Awareness of One's Own Strengths and Ability to Seek Help	• Mechanisms, Effects and Practice of Relaxation Methods (exercises): 5minutes	Progressive Muscle Relaxation
		• Recognizing One's Strengths (Lecture and Exercise): 15minutes	Cognitive Reconstruction
		• Relying on Someone (Lecture and Exercise): 15minutes	Social Skills Training
		• Summary and Review of The First Three Programs: 10minutes	

explanation of the mechanism and benefits of relaxation techniques was provided, followed by a five-minute practice of progressive muscle relaxation. The details of the resilience promotion program structure are presented in Table 1.

The primary outcomes were "relationship-building skills" and "overcoming skills." These were measured using the resilience scale (9) developed for high school students, specifically extracting the factors related to "relationship-building skills" and "overcoming skills." This scale consists of three items for each factor, with higher scores indicating higher abilities.

Additionally, the secondary outcome focused on mood (20), which is a key component of depression, and was defined as "positive mood" and "negative mood." These were measured using the short-form mood scale(21) developed for middle and high school students. This scale consists of four items for each factor, with higher scores indicating a stronger presence of each mood state. Additionally, gender was surveyed as basic demographic information.

Data collection was conducted a total of three times: T0 (pre-intervention), T1 (immediately post-intervention), and T2 (one month post-intervention). For analysis, the primary and secondary

Table 2. Descriptive Statistics and Test Results for Differences in Each Outcome Measure

		Unit : points			(n=65)	
Outcome Measure		Descriptive Statistics			Results of Linear Mixed Model	
		T0	T1	T2	T0 - T1	T0 - T2
		Mean (SD)	Mean (SD)	Mean (SD)	<i>p</i> - value Effect Size (<i>d</i>)	<i>p</i> - value Effect Size (<i>d</i>)
Resilience	Relationship-Building Skills	8.25 (3.16)	9.85 (3.27)	9.11 (3.12)	< .001 -.494	< .001 -.273
	Overcoming Abilities	9.29 (2.34)	10.00 (2.53)	9.91 (2.34)	.028 -.288	.030 -.261
Mood	Positive Mood	7.00 (2.17)	8.03 (2.12)	7.88 (2.40)	.001 -.477	.013 -.381
	Negative Mood	5.42 (1.84)	4.52 (1.08)	4.83 (1.35)	< .001 .589	.010 .360

T0= Pre-Intervention

T1= Post-Intervention

T2= One Month Post-Intervention

SD= Standard Deviation

outcome measures were natural log-transformed, and a linear mixed model was applied, setting time (T0, T1, T2) as a fixed effect and individual participant effects as a random effect. A two-tailed significance level of less than 5% was used. Additionally, effect sizes (*d*) for each difference were calculated. The effect size was interpreted using the standard thresholds: 0.2 as small, 0.5 as medium, and 0.8 as large (22). The analyses were performed using R Version 4.3.1 and HAD Version 18.008.

This study was conducted with the approval of the Ethics Review Committee of Kawasaki University of Medical Welfare (Approval Number: 20-090). Additionally, the study was carried out after providing both written and oral explanations to all participants and the principals of their respective high schools and obtaining their consent to participate in the research.

III. Results

The program was implemented with

78 first-year students from a general education high school. Among them, 65 students (41 males, 24 females) who participated in the entire program and had no missing data were included in the analysis.

For "relationship-building skills," a statistically significant increase was observed between T0 and T1 ($p < .001$) and between T0 and T2 ($p < .001$), with small effect sizes ($d = -0.494$, $d = -0.273$).

For "overcoming abilities," a statistically significant increase was observed between T0 and T1 ($p = .028$) and between T0 and T2 ($p = .030$), with small effect sizes ($d = -0.288$, $d = -0.261$) (Table 2).

For "positive mood," a statistically significant increase was observed between T0 and T1 ($p = .001$) and between T0 and T2 ($p = .013$), with small effect sizes ($d = -0.477$, $d = -0.381$). For "negative mood," a statistically significant decrease was observed between T0 and T1 ($p < .001$) and between T0 and T2 ($p = .010$), with a

medium effect size ($d = 0.589$) for T0 to T1 and a small effect size ($d = 0.360$) for T0 to T2 (Table 2).

IV. Discussion

This study aimed to gain insights for developing preventive psychoeducational interventions addressing depression in high school students by evaluating the impact of our original resilience-promoting program on "relationship-building skills," "overcoming abilities," "positive mood," and "negative mood," components of acquired resilience. The results demonstrated intervention effects across all outcomes, which persisted up to one month post-intervention. These findings suggest that the program effectively promoted "relationship-building skills" and "overcoming abilities," improved "positive mood," and reduced "negative mood."

Many of the "10 Tips to Build Resilience" for teenagers suggested by the American Psychological Association (23) are related to the content of this program, making it understandable that this program contributed to the promotion of "relationship-building skills" and "overcoming abilities" in the context of acquired resilience. Furthermore, given that "relationship-building skills" and "overcoming abilities" are associated with mental health (10), it is reasonable to interpret the program's impact on promoting "relationship-building skills" and "overcoming abilities," as well as its effects on "positive mood" and "negative mood," as valid outcomes. However, since the effect sizes (22), which represent the magnitude of actual differences, were mostly small in this study, the program's overall impact cannot be considered substantial and should be interpreted as limited.

Notably, the high efficiency of this program stands out. Outside Japan, interventions aimed at enhancing resilience in high school students include a culturally adapted version of the Resourceful Adolescent Program, which consists of six 90-minute sessions (11); the Coping with Stress course, which comprises 15 sessions (12) (13); and an anger control intervention, which consists of 12 sessions (14). Meanwhile, the SPARKS Resilience Program for Japanese high school students consists of six sessions lasting 45 to 90 minutes each (15) (16) (17). In contrast, this program was condensed into three 45-minute sessions by focusing specifically on understanding psychological stress, developing relationship-building skills, recognizing personal strengths, and enhancing help-seeking abilities. Despite its shorter duration, the promotion of both "relationship-building ability" and "overcoming ability" was confirmed, further supporting the efficiency of this program. This suggests that our program is a practical resilience-promoting intervention, particularly suitable for the time-constrained environment of Japanese high school education, and has the potential to serve as a psychoeducational tool for depression prevention.

This study has several limitations. As the intervention was conducted in a single high school, the generalizability of the results is limited. Furthermore, the single-group pre-post comparison design lacked a control group, which may introduce confounding biases into the results. In the future, studies targeting high school students from multiple schools, as well as investigations utilizing randomized controlled trials with control groups, will be required. Additionally, it will be necessary to

assess participants' satisfaction and feedback on this program, examining its qualitative aspects. Ultimately, efforts should be made to develop an implementation manual to facilitate the widespread use of this program in various educational settings.

V. Conclusion

This study aimed to gain insights for the development of preventive psychoeducation for depression in high school students. It examined the effects of a resilience enhancement program on "relationship-building ability" and "overcoming ability" in acquired resilience, as well as on "positive mood" and "negative mood" among high school students. As a result, it was found that the program had a certain degree of positive impact on all outcomes. These findings provide preliminary evidence suggesting the potential usefulness of this program in preventive psychoeducation for depression in high school students.

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高校生に対するレジリエンス促進プログラムの効果

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要旨

本研究は、我々が考案した心理教育プログラムであるレジリエンス促進プログラムが獲得的レジリエンスにおける「関係構築力」と「克服力」、および「ポジティブ気分」、「ネガティブ気分」に与える影響を明らかにすることを目的に介入を実施した。対象者は、普通科高等学校 1 校の 1 年生 65 名であった。研究デザインには、単群前後比較試験を採用した。介入はレジリエンス促進プログラムとし、講義形式で 1 回 45 分間、計 3 回実施した。アウトカムは、「関係構築力」、「克服力」、「ポジティブ気分」、「ネガティブ気分」とした。データは、3 時点で収集し（介入前、介入直後、介入 1 か月後）、比較した。結果、すべてのアウトカムにおいて、介入前と介入直後、介入前と介入 1 か月後の間で有意な差が認められた。これらの結果から、本プログラムは「関係構築力」と「克服力」を促進するとともに、「ポジティブ気分」の向上と「ネガティブ気分」の低減に効果を有する可能性が示唆された。

キーワード：高等学校、回復力、気分、介入研究