

# Effectiveness of a School-Based Universal Prevention Program for Enhancing Autonomous Self-Esteem: Utilizing an Implicit Association Test as an Assessment Tool

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[Received April 6, 2021 ; Accepted October 28, 2021]

**Background:** School personnel often attempt to cultivate self-esteem, attributing the causes of many psychological and behavioral problems of children to their low self-esteem. Although self-esteem needs to be extensively studied with high accuracy due to its great interest, many serious problems have been identified regarding research on self-esteem. Most problems concern the concept and assessment of self-esteem. To address the problems, in recent years, self-esteem was divided into two types: autonomous and heteronomous self-esteem. The former is healthy and adaptive, while the latter is unhealthy and nonadaptive. Moreover, a school-based universal program that cultivates autonomous self-esteem and decreases heteronomous self-esteem has been developed. The program is termed “the School-Based Universal Prevention Program for Enhancing Autonomous Self-Esteem.” However, despite that autonomous and heteronomous self-esteem nonconsciously function with the need for being nonconsciously assessed, no nonconscious assessment tool has been utilized to test the effectiveness of the program.

**Objective:** The current study aimed to examine the effectiveness of the program using a reliable and valid implicit association test as a nonconscious assessment tool.

**Methods:** Participants were 55 (23 boys and 32 girls) and 60 (31 boys and 29 girls) 5th-grade children for the intervention and control groups, respectively. The program was conducted for 45 minutes once a week for four successive weeks. The test to assess the effectiveness of the program was the Autonomous and Heteronomous Self-Esteem Implicit Association Test for Children. The children in the intervention group completed the test twice, before and after the implementation of the program. Similar time periods were utilized for the control group that received no intervention.

**Results:** Results by 2 (intervention and control groups) × 2 (pre-intervention and post-intervention periods) × 2 (boys and girls; or high and low groups) analyses of variance showed that the program intervention significantly increased autonomous self-esteem and decreased heteronomous self-esteem compared to the control group. Moreover, the effectiveness of this program was similar regardless of sex and the level of autonomous self-esteem before the intervention.

**Conclusions:** The school-based universal program was found to be effective in cultivating autonomous self-esteem and decreasing heteronomous self-esteem when a nonconscious assessment tool of the implicit association test was utilized. Hereafter, the program is expected to be conducted at schools as an effective method to cultivate healthy and adaptive self-esteem.

**Keywords:** autonomous self-esteem, heteronomous self-esteem, school-based universal program, elementary school children

[School Health Vol.18, 1-9, 2022]

## I. Introduction

Self-esteem is still an interesting topic in psychology

and education. According to Mruk<sup>1)</sup>, the term “self-esteem” is found in the titles of over 30,000 publications, and the number continues to grow each year. The concept

of self-esteem is also prevalent among ordinary people, which has led to an increasing number of seminars to cultivate self-esteem, hosted by many commercial and noncommercial organizations. Moreover, school personnel also attempt to cultivate self-esteem, attributing the causes of many psychological and behavioral problems of children to their low self-esteem.

However, many serious problems have been identified regarding research on self-esteem. Most problems concern the concept and assessment of self-esteem. Originally, Rosenberg<sup>2)</sup> divided self-esteem into “good enough” and “very good” types. The former is a desirable and adaptive form of self-esteem, while the latter is undesirable and nonadaptive. He developed the “Rosenberg’s Self-Esteem Scale (RSES),” which has been widely and frequently used worldwide to measure the “good enough” type. However, despite its popular use, there are many limitations to RSES. One of the most serious limitations is that RSES cannot distinguish the “good enough” type from the “very good” type<sup>3,4)</sup>. That is, it is unclear what RSES measures.

After Rosenberg’s work, a few researchers proposed new classifications of self-esteem. For instance, Deci and colleagues<sup>5)</sup> distinguished “true self-esteem” and “contingent self-esteem.” According to Moller, Friedman, and Deci<sup>6)</sup>, “true self-esteem” is a form of intrinsic satisfaction and is relatively stable. Meanwhile, contingent self-esteem varies depending on the set of external achievements or standards by individuals. True self-esteem leads to beneficial outcomes in terms of both health and performance, while contingent self-esteem leads to unbeneficial outcomes. Likewise, Kernis<sup>3)</sup> divided high self-esteem into “secure high self-esteem” and “fragile high self-esteem.” Fragile high self-esteem is contingent on external factors such as comparison with others, changeable, and nonadaptive, while secure high self-esteem is stable, adaptive, and not contingent on external factors. Yamasaki and colleagues<sup>4)</sup> proposed the concepts of “autonomous self-esteem” and “heteronomous self-esteem” for adaptive and nonadaptive self-esteem, respectively. Although heteronomous self-esteem is almost the same as contingent self-esteem, autonomous self-esteem is different from true self-esteem. According to Yamasaki et al.<sup>4)</sup>, autonomous self-esteem consists of self-confidence, confidence in others, and intrinsic motivation, and all three components must be present for autonomous self-esteem to be complete. Regarding health and adjustment, in a similar way to true and contingent self-esteem, children with high autonomous

self-esteem is lower in aggressiveness and anxiety than heteronomous self-esteem<sup>7)</sup>, and heteronomous self-esteem is positively associated with interpersonal stress<sup>8)</sup>. When depicted about the children with high autonomous and heteronomous self-esteem, based on the high and low status of the three components above, children with high autonomous self-esteem independently and cheerfully do what they want to do alone or with friends, while those with high heteronomous self-esteem are competitive, caring about other’s performances. Moreover, Yamasaki et al.<sup>4)</sup> clarified that autonomous self-esteem can only be measured nonconsciously. That is, methods relying on conscious reporting, such as self-reports, cannot precisely measure autonomous self-esteem.

Although the above three kinds of classification of self-esteem touch on similar characteristics, Yamasaki et al.’s classification<sup>4)</sup> differs from the others as it clearly underscores the nonconscious characteristic of desirable, adaptive self-esteem. It is true that other researchers who proposed the two types of self-esteem, including Rosenberg<sup>2)</sup>, suggested the importance of nonconscious characteristics of desirable self-esteem, but they did not capture the nonconscious characteristics in assessing self-esteem. On the contrary, Yamasaki et al.<sup>4)</sup> emphasized the necessity of measuring autonomous self-esteem nonconsciously. Their colleagues developed new measures that could nonconsciously assess autonomous self-esteem using the Implicit Association Test (IAT)<sup>9)</sup>, as introduced later.

The IAT measures the implicit association between two kinds of stimuli (category and attribute stimuli). For instance, when assessing racial prejudice against black people, the implicit association between a white (or black) person and a pleasant (or unpleasant) word is measured. In the case of using a computer, if the reactions for a task in which a participant presses a left (or right) key when a white person or a pleasant word appears on the computer display and a right (or left) key when a black person or an unpleasant word appears are faster and more accurate than when a participant is tasked with pressing a left (or right) key when a white person or an unpleasant word appears and a right (or left) key when a black person or a pleasant word appears, racial prejudice against black people is predicted to exist. In general, implicit characteristics are considered to exist in the preconscious domain<sup>10)</sup>. However, to be more accurate, they should be considered to exist in the nonconscious domain, since the preconscious domain is largely influenced by the unconscious domain.

New measures that nonconsciously assess autonomous

self-esteem were developed as both a paper and pencil version<sup>7)</sup> and a tablet PC version<sup>11)</sup>, which have high reliability and validity. The category and attribute words and the structure of the trial blocks are the same for both versions. The category words are “I” and “myself” for self and “that” and “it” for not-self. The attribute words were “liked,” “wonderful,” “confident,” and “satisfied” for pleasant (high self-esteem) characteristics, and “disliked,” “worthless,” “anxious,” and “useless” for unpleasant (low self-esteem) ones. The structure of the trial blocks that were constructed according to Jordan, Spencer, Zanna, Hoshino-Browne, and Correll<sup>12)</sup>.

These IATs were developed for children because Yokoshima and colleagues intended to examine the effectiveness of a school-based universal prevention program to cultivate autonomous self-esteem<sup>13)</sup>. The program termed “the School-Based Universal Prevention Program for Enhancing Autonomous Self-Esteem” was one of a group of programs named the “Trial Of Prevention School Education for Life and Friendship (TOP SELF)”<sup>14)15)</sup>. The programs in TOP SELF are different from each other in purposes and detailed methods with the same background theories and operation frameworks of the programs. For the past twenty years, TOP SELF has been developed from the first to the third generation. The programs in the third generation, which are based on the same background theories, can be easily implemented by school teachers, maintaining attractiveness for children. The program is based on new theories to cultivate autonomous self-esteem, decreasing heteronomous self-esteem. The theories underscore the interaction between conscious and nonconscious functions, such as the somatic marker hypothesis<sup>16)</sup>. In this program, participants experience sufficient emotional stimulation during classes while desirable cognitive and behavioral characteristics are simultaneously learned; consequently, emotions integrated with the learned characteristics are stored in unified forms as memories; whenever needed, the memories are extracted as guided by the stored emotions, thereby leading to the utilization of the stored cognitive and behavioral characteristics. Enjoyable games and activities with appropriate music and sounds are essential as effective emotional stimulation. These processes move making participants experience by themselves instead of being directly taught by others. In other words, children are not taught about things to be cultivated consciously through verbal instruction, but the cultivation is unconsciously achieved, which is essential to enhance genuine autonomous self-esteem. Moreover, the program underscores to

esteem others collaborating with them, which is crucial to decrease heteronomous self-esteem. The detailed methods are described in the method section.

After developing these IATs to measure autonomous self-esteem, Yamasaki, Michishita, Yokoshima, Kaya, and Uchida<sup>17)</sup> examined the effectiveness of the program. They used the paper and pencil version of the IAT to measure autonomous self-esteem and a self-report questionnaire, the Heteronomous Self-Esteem Scale for Children (HSES-C)<sup>18)</sup> to assess heteronomous self-esteem. The results revealed that the program significantly increased autonomous self-esteem and decreased heteronomous self-esteem. Yamasaki et al.<sup>4)</sup> suggested that personality, such as self-esteem, usually works in the unconscious domain, influencing one’s explicit behaviors. Self-reports that have been frequently used to assess personality ask responders to consciously remind their characteristics regarding personality. Thus, in this process, the contents measured are distorted by various conscious efforts, such as social desirability consisting of self-deception and impression management<sup>19)</sup>. Therefore, precise measurement of heteronomous self-esteem also requires certain nonconscious methods, although it can be measured using self-reports to some extent because heteronomous self-esteem is often reflected in concrete behaviors. In line with this consideration, Yokoshima<sup>20)</sup> developed a new tablet version of the IAT to simultaneously measure both autonomous and heteronomous self-esteem. In general, autonomous and heteronomous self-esteem are located in the opposite direction along the same dimension. However, it was not clear whether lower scores on the previous IAT measures for autonomous self-esteem represent heteronomous self-esteem. That is, it is highly conceivable that lower scores represent an apathetic status, suggesting that lower scores do not automatically show higher heteronomous self-esteem. In this regard, Yokoshima<sup>20)</sup> clarified the validity of the new version, revealing that higher test scores represent higher autonomous self-esteem and lower scores represent higher heteronomous self-esteem. By this study, it was revealed that higher and lower scores of this test mean different concepts of both types of self-esteem. Additionally, in developing the new IAT, the category words regarding self were revised to assess autonomous and heteronomous self-esteem more precisely.

After developing the new tablet version of the IAT, the next step is to reexamine the effectiveness of the program using this new IAT that can simultaneously measure two types of self-esteem. In this study, the effects of the

third generation of the TOP SELF program to enhance autonomous self-esteem and decrease heteronomous self-esteem were examined in elementary school children using the new version of the IAT.

## II. Methods

### 1. Participants

Participants were 157 5th-grade children (73 boys and 95 girls) in two middle-scale public elementary schools in a local region in Japan. After deleting the data due to absence from school and high error rates of the test, the final sample consisted of 55 (23 boys and 32 girls) for the intervention group and 60 (31 boys and 29 girls) for the control group. Each group consisted of two classes, each of which was a group of children being taught by a fixed teacher for the year, as is common in Japan. The control group was wait-listed, and this group took the program afterwards. School principals and homeroom teachers were informed in detail about the study, and then provided consent. It was explained to the participants that they do not need to participate in the study if they do not want or have not good physical conditions and that this study is not related to their grades. Moreover, they were told that the obtained data are anonymously processed, keeping unknown about the specific names for each data. The program and evaluation were provided in official school classes primarily by school teachers under the supervision of principals. The teachers as program practitioners were extensively trained by the authors.

### 2. Measure: The tablet PC version of the Autonomous and Heteronomous Self-Esteem Implicit Association Test for Children (AHSE-IAT-C)

The AHSE-IAT-C was developed with the Android OS using JAVA through Android Studio<sup>20</sup>. The tablet was a Zen Pad 8.0 (Z380M) by the ASUSTeK or a BNT-791W by the BLUEDOT. The category words were “you and friends” (“minna” in Japanese) and “other than you and friends” (“minna-igai” in Japanese), and the attribute words were four positive ones (“liked,” “wonderful,” “confident,” and “satisfied”) and four negative ones (“disliked,” “worthless,” “anxious,” and “useless”). The test consisted of four trial blocks: Practice, scored trial 1, practice, and scored trial 2. Through a practice block of eight trials, a scored trial in which a 30-second time limit was set was given. This set was administered twice. The

first scored trial was the task in which participants touch a right (or left) lower icon when a word of “other than you and friends” or a positive word appears on the tablet display and a left (or right) key when a word of “you and friends” or a negative word appears. The second scored trial was the task in which participants touch a right (or left) lower icon when a word of “you and friends” or a positive word appears on the tablet display and a left (or right) key when a word of “other than your and friends” or a negative word appears. The scores were the difference in the correctly answered touches between the second and first scored trials. In the scores for autonomous self-esteem, the scores in the second scored trial were subtracted from those in the first scored trial. The contents of the first and second scored trials were not counterbalanced because Yokoshima, Yamaguchi, Kaya, Uchida, and Yamasaki<sup>21</sup> clarified that the results by this order were more valid than by the reversed order. The scores for heteronomous self-esteem were reversed from those for autonomous self-esteem. That is, autonomous and heteronomous self-esteem were located in the opposite directions of one dimension in this test. It is to be noted that the scores in both directions were proven to include the reliability and validity of autonomous and heteronomous self-esteem, respectively<sup>20</sup>.

### 3. Program

In this program, small groups consisting of four to six children are established in advance. The program is run in various children’s units such as the whole class and small groups as well as individual activities. The program consisted of four classes, each of which lasted 45 minutes. Each class followed the operation frameworks of TOP SELF: (1) paying attention to the necessity of concentration during the class (including how to do group activities); (2) introducing the purposes of the class; (3) watching an opening animated story; (4) doing preliminary activities; (5) doing climax activities; (6) sharing feelings and ideas during the activities; (7) watching a closing animated story; (8) confirming the process of the classes; and (9) listening to the meaning of what was learned in the class. The purposes and contents of the activities are shown in **Table 1**. In this program, the purposes hierarchically consist of intermediate, subordinate, and operational purposes. Among them, **Table 1** shows the operational purposes of each class that directly lead to the program methods. And the activities are briefly shown in terms of the preliminary (Step 4 above) and climax activities (Step 5 above) that are the

**Table 1** Purposes and activities in each class of the program

Classes	Purposes	Preliminary activities	Climax Activities
1	To search one's strengths, experiencing and accepting autonomous efficacy* of self positively.  To extract one's psychological desires.  To think about whether or not the extracted desires are allowed to satisfy.	·Children individually think and write about their future dreams and possible obstacles to actualize them.  · The members in small groups send messages for advices and cheering to each other.	·Enjoying a panel game, each group tells about the dreams and obstacles, along with advices and cheering from others.  · Each group selects one dream and prepares for presenting the dreams, obstacles, and methods to overcome obstacles in front of the whole class.
2	To admit the importance of satisfying one's desire, experiencing and accepting it.  To admit the importance of others' satisfying their desires, experiencing and accepting them.  To think about whether or not the extracted desires are allowed to satisfy.	·The whole class watches a video that explains about how group's presentations are done.  ·Each group does practices for presentation.	·The presentation is conducted by each group in front of the whole class.  · The other groups watching the presentations give comments and advices.  · Using the points children get during the presentations, they challenge an enjoyable game.
3	To think about the realistic aims and methods by which one's desires are satisfied.	·Children individually think and write about what they want to achieve in the near future, although it is difficult to succeed in it.  · In each group, children share what they wrote and select one writing about which effective methods to achieve are hardly found.	·Dong an othello-type game, each group tells about the selected dream, and then the other groups develop and present effective methods to realize the dream.  ·Then the whole class discusses to select the best method.
4	To experience and accept one's behaviors (acting themselves and their merits) that are conducted based on psychological desires.  To experience and accept others' behaviors (acting themselves and their merits) that are conducted based on psychological desires.	·Children individually remind and write about what they challenged and its benefits. And what they wrote is shared in each group.	· Children watch two short animated stories in which characters realize what they want to do overcoming the obstacles.  · Children individually write what they felt watching the stories.  ·Children think about the good points of one's and others' challenges, enjoying a detective game.

\*A psychological characteristic leading to thoughts and feelings that one can act to satisfy them whenever intrinsic psychological desires arise.

most important phases of the program.

#### 4. Procedure

In the intervention group, pre- and post-intervention evaluations were conducted in the classes approximately one week before the start of the program and after the end of the program, respectively. Participants in the control group were given evaluations around the same time as the intervention group. In each evaluation, all participants completed the AHSE-IAT-C. As stated above, the current program was implemented weekly for four consecutive weeks in regular 45-minute classes for all homeroom class members.

#### 5. Data analysis

Data analyses were conducted using IBM SPSS statistics (ver. 23). The effects of the program were mainly analyzed using analyses of variance by comparing the intervention and control groups. Bonferroni corrections were applied to post-hoc analyses to adjust degrees of freedom. The effects of the program were also analyzed by dividing the high and low groups in

terms of the autonomous self-esteem scores before the intervention.

### III. Results

The results were depicted below to clarify how autonomous and heteronomous self-esteem changed by the program. Moreover, it was shown how effective the program was for high and low children in autonomous self-esteem before the program implementation.

**Table 2** shows the mean scores and standard deviations of the AHSE-IAT-C in each of the groups and periods for boys and girls. Data were analyzed by a 2 (intervention and control groups) × 2 (pre-intervention and post-intervention periods) × 2 (boys and girls) analysis of variance (ANOVA). The results revealed that the main effect of periods was significant,  $F(1, 111) = 16.59, p < .001, \eta_p^2 = .20$ . However, the main effects of groups and sex were not significant,  $F_s(1, 111) < 1$ , along with no significant interaction effect of groups × sex,  $F(1, 111) < 1$ . The interaction effect of groups × periods was statistically significant,  $F(1,111) = 11.02, p < .01, \eta_p^2 = .09$ , with no significant interactions of period × sex and groups × periods × sex, all  $F_s(1,111) < 1$ .



**Table 2** Mean scores (standard deviations) of the tablet PC version of the Autonomous and Heteronomous Self-Esteem Implicit Association Test for Children (AHSE-IAT-C) for each sex and period in the intervention and control groups

Groups	Boys		Girls	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Intervention Group	3.35 (4.31)	6.87 (4.03)	3.81 (4.27)	7.22 (4.42)
Control Group	4.48 (4.97)	4.74 (5.73)	4.34 (5.19)	4.79 (5.29)

Note: The main effect of periods was significant,  $F(1, 111) = 16.59, p < .001, \eta_p^2 = .20$ ; those for sex and groups were not significant,  $F_s(1, 111) < 1$ . The interaction effect of groups  $\times$  periods was significant,  $F(1, 111) = 11.02, p < .01, \eta_p^2 = .09$ , with no significant interactions of period  $\times$  sex and groups  $\times$  periods  $\times$  sex, all  $F_s(1, 111) < 1$ .

Post hoc tests with Bonferroni corrections using the data collapsed across boys and girls revealed that the scores in the intervention group significantly increased from the pre-intervention to post-intervention periods in the intervention group, whilst no significant change was observed in the control group.

In the AHSE-IAT-C, higher scores indicate higher autonomous self-esteem, while lower scores indicate higher heteronomous self-esteem in addition to lower autonomous self-esteem<sup>20</sup>. From this, the result that autonomous self-esteem increased by this program simultaneously reveals that heteronomous self-esteem decreased by this program.

Next, we examined the effectiveness of distinguishing between subgroups of high and low autonomous self-esteem. The intervention and control groups were divided into High (higher than the median of the scores

of autonomous self-esteem) and Low (lower than or equal to the median), using the scores in the pre-intervention period. Consequently, the High and Low groups consisted of 25 children (10 boys and 15 girls) and 30 children (13 boys and 17 girls), respectively, for the intervention group, and 27 children (15 boys and 12 girls) and 33 children (16 boys and 17 girls), respectively, for the control group. In the analysis of the data, sex was not considered because no sex differences were found in the above data analyses. **Table 3** shows the mean scores and standard deviations of the AHSE-IAT-C in the pre- and post-intervention periods in the High and Low groups of the intervention and control groups. Data were analyzed by a 2 (intervention and control groups)  $\times$  2 (pre-intervention and post-intervention periods)  $\times$  2 (high and low groups) analysis of variance (ANOVA). When focusing on the interaction effects regarding the periods,

**Table 3** Mean scores (standard deviations) of the tablet PC version of the Autonomous and Heteronomous Self-Esteem Implicit Association Test for Children (AHSE-IAT-C) in each period of Groups High and Low in the intervention and control groups

Groups	Group High		Group Low	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Intervention Group	7.44 (2.60)	7.64 (4.67)	.43 (2.24)	6.60 (3.83)
Control Group	8.96 (2.70)	7.70 (5.23)	.70 (3.03)	2.36 (4.45)

Note: The main effects of periods and high and low (h-l) groups were significant,  $F(1, 111) = 16.88, p < .001, \eta_p^2 = .13$ ;  $F(1, 111) = 91.96, p < .001, \eta_p^2 = .45$ , with no significant main effect of intervention and control (i-c) groups,  $F(1, 111) < 1$ . The interaction effects of periods  $\times$  h-l groups, periods  $\times$  i-c groups, and h-l groups  $\times$  i-c groups were significant,  $F(1, 111) = 29.09, p < .001, \eta_p^2 = .21$ ;  $F(1, 111) = 13.07, p < .001, \eta_p^2 = .11$ ,  $F(1, 111) = 6.06, p < .05, \eta_p^2 = .05$ , with no significant interaction of periods  $\times$  h-l groups  $\times$  i-c groups,  $F(1, 111) = 3.40, p > .05$ .

the results revealed that the interaction effects of the high-low groups  $\times$  periods and the intervention-control groups  $\times$  periods were statistically significant,  $F(1, 111) = 29.09$ ,  $p < .001$ ,  $\eta_p^2 = .21$ ;  $F(1, 111) = 13.07$ ,  $p < .001$ ,  $\eta_p^2 = .11$ , respectively, with no significant interaction effect of the high-low groups  $\times$  intervention-control groups  $\times$  periods,  $F(1, 111) = 3.40$ ,  $p > .05$ ,  $\eta_p^2 = .03$ . The finding that the three-way interaction was not significant indicates that the High and Low groups improved to the same degree in autonomous self-esteem in the intervention group compared to the control group, although in the intervention group, an apparent improvement was higher in the Low group than in the High group. Likewise, the results revealed that heteronomous self-esteem decreased to the same degree in the High and Low groups of the intervention group compared to the control group.

#### IV. Discussion

In this study, the program for cultivating autonomous self-esteem was effective in increasing autonomous self-esteem and decreasing heteronomous self-esteem. It is to be noted that the study has shown the effectiveness of the program by drastically revising Yamasaki et al.<sup>17)</sup> that utilized insufficient assessment tools to measure both types of self-esteem. As the AHSE-IAT-C can assess both autonomous and heteronomous self-esteem as a reliable and valid measure, this study showed the effectiveness in terms of both self-esteem types using only one test. This means that both types of self-esteem were assessed by the same assessment method. In general, the comparability of two psychological characteristics is higher when using the same measurement tool than when using different measurement tools such as IATs versus self-reports. Although the same types of measurement tools include the same measurement errors, different tools often assess different aspects of targeted characteristics. IATs address implicit characteristics, whereas self-reports measure explicit characteristics.

In psychology and education, the evaluation of a certain effect is often conducted using conscious methods such as self-reports. When applying psychological programs to schools, the targets to modify are psychological characteristics such as prosociality and creativity. Certain psychological characteristics cannot be precisely assessed using self-reports. Autonomous self-esteem is typically one such psychological characteristic<sup>22)</sup>. If we attempt to measure autonomous self-esteem using self-reports, what is measured is undesirable self-esteem such as heteronomous self-esteem<sup>4)</sup>. Thus, when

assessing the effectiveness of a program to cultivate desirable self-esteem, such as autonomous self-esteem, certain nonconscious assessment tools are required. In this study, the implicit association test, as one of the nonconscious assessment tools that were confirmed as reliable and valid, was utilized and revealed that desirable (autonomous) self-esteem was improved, while undesirable (heteronomous) self-esteem was lowered. In schools, self-reports have been frequently utilized to measure psychological characteristics such as personality and morality because they can be easily prepared and administered to children. However, such attempts lack precision in measurement in many cases. This study has opened avenues by which other nonconscious measurement tools can be utilized to assess the effects of psychological school education.

In recent years, many psychological and behavioral problems have become prevalent in schools. To address these problems is more important than academics because the problems are closely related to health and adjustment, that is, life. Moreover, the basic psychological characteristics to prevent and overcome such problems are the basis for academics, as many programs in social and emotional learning have demonstrated<sup>23)24)</sup>. Although most school personnel recognize it, the present scarcity of effective and easily implementable programs with precise assessment methods have prevented the regular implementation of programs in schools. If a program can be implemented in various schools on a regular basis, the following features are essential: (1) the effectiveness of the program is scientifically proven; (2) the program is attractive enough for children to actively participate in; (3) the program can be easily prepared and implemented by school teachers; and (4) subjective evaluations of the program from teachers, children, and family members are all positive.

Although randomized controlled trials (RCTs), regarded as the most scientific evaluation procedure, are needed to precisely examine the effectiveness, Feature No.1 is difficult to achieve. This is because RCTs are also rarely conducted without any faults due to the complexity of the procedure as well as its time- and labor-consuming operating characteristics. Therefore, other than relying on RCTs, we must be cautious in establishing the structure of the program's purposes and methods. The final primary purpose of cultivating autonomous self-esteem is too large and abstract to directly and effectively develop program methods. In this regard, it is necessary to construct hierarchical program purposes to be more concrete and smaller with the evidence and logic that

the purpose structure can help in successfully achieving the primary purpose. In addition, the methods must be confirmed to attain their relevant purpose by previous research.

Concerning feature No. 2, most existing programs are lacking in this. Unless children enjoy the program, regular implementation is not possible. For all education, enthusiasm, that is, high motivation to participate, is one of the most important factors for its success. Feature No. 3 is also indispensable in daily busy conditions for school teachers who cannot introduce new programs unless the programs are easy to prepare and implement. Feature No. 4 is not based on scientific evidence, but it is a powerful and useful factor for programs to be adopted regularly in schools.

This study has several limitations. First, there are a small number of classes in the intervention and control groups, implying that the samples are not representative of the relevant population in Japan. In RCTs, each group must be constructed using relatively large samples extracted randomly from the population. Second, although this study revealed the effectiveness immediately after the intervention, it did not examine any sustained effectiveness of the program. Follow-up evaluations are required over a longer period, such as one month, three months, or one year after the intervention. Booster sessions should also be considered if the results of the follow-up evaluations are negative.

Fundamental psychological characteristics such as self-esteem are largely established in early developmental stages due to the influence of a plethora of environmental factors during the few years after birth, although some genetic factors function. Thus, if such characteristics suffer from certain distortions, it will take substantial time and effort to modify and enhance them in school education, which is a suitable opportunity for doing so. This program is expected to attribute to this modification and enhancement in schools.

#### Disclosure statement

The authors declare no conflicts of interest associated with this manuscript.

#### Funding

This research was funded by JSPS KAKENHI, Grant Number 18K03140.

#### Acknowledgements

The authors would like to thank Dr. Ikuko Kaya and Ms. Aska Kageyama for their contribution to conduct this

research.

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- 2015-2016, Visiting Researcher, Institute for Children, Youth, and Families, Michigan State University
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**Main Works:**

- Yamasaki K: Why do researchers and educators still use the Rosenberg Scale? Alternative new concepts and measurement tools for self-esteem. Journal of Psychology and Behavioral Science 7: 74-83, 2019
- Yamasaki K, Umakoshi A, Uchida K: Efficacy of a school-based universal program for bullying prevention: Considering the extended effects associated with achievement of the direct purposes of the program. International Journal of Social Science Studies 5: 1-8, 2017

**Membership in Learned Societies:**

- The Japanese Association of School Health
  - American Psychological Association
  - Association for Psychological Science
  - Society for Personality and Social Psychology
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