



Research Article

# Effects of a Self-Transcendence Intervention Program on Self-Transcendence, Aging Anxiety, Sense of Well-Being, and Ego Integrity in Middle-Aged Women: A Randomized Experimental Study

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## Abstract

**Purpose:** To examine effects of a self-transcendence intervention program in middle-aged women using an equivalent control group pretest-posttest design. **Methods:** Fifty-nine middle-aged women (29 in the experimental group and 30 in the control group for comparison) were selected as participants. Self-transcendence intervention was applied, and its effect was determined from May 15, 2020 to June 12, 2020. The self-transcendence intervention developed in this study considered social-cultural emotion and characteristics of middle-aged women based on Psychoeducational Approach to Transcendence and Health (PATH). Self-transcendence, aging anxiety, sense of wellbeing, and ego integrity before and after the experiment were examined. Collected data were analyzed using descriptive statistics, Fisher exact test, ANCOVA (Analysis of Covariance), and MANCOVA (Multivariate Analysis of Covariance) with IBM SPSS 25 program. **Results:** It appeared that the merged effect of self-transcendence intervention was significant (Wilks Lambda=.54,  $F=10.32$ ,  $p<.001$ ). Results of ANCOVA showed that self-transcendence intervention had significant effects on self-transcendence ( $F=39.68$ ,  $p<.001$ ), aging anxiety ( $F=5.73$ ,  $p=.020$ ), wellbeing ( $F=8.61$ ,  $p=.005$ ), and ego integrity ( $F=6.87$ ,  $p=.011$ ). **Conclusions:** The self-transcendence intervention applied in this study had significant effects on self-transcendence, aging anxiety, wellbeing, and ego integrity of middle-aged women. These variables are known to be essential psychosocial competence and resources for successful aging of elderly. Therefore, this study provides evidence that self-transcendence intervention has positive effects on variables that play key roles in successful aging for other age groups as well as the elderly.

**Keywords:** Self-Transcendence; Aging Anxiety; Wellbeing; Ego Integrity;

## Introduction

Globally, the population of those aged 80 and over is increasing rapidly every year. It has been estimated that the population of those aged 85 and more will almost triple from about 155 million in 2021 to about 459 million in 2050. Women live an average of 5.4 years longer than men as of 2021, accounting for 56% of those aged 65 and over, and 62% of those aged 80 and over [1].

Similarly in Korea, the proportion of the elderly aged 65 and older in the total population has been estimated to be 18.4% in 2023, 4.54% for those aged 80 and older. These numbers will increase to 40.1% and 16.5%, respectively, by 2050 [2]. As such, it is very important to achieve 'successful aging' while changing into an aging and super-aging society [3]. Flood (2005) has emphasized that self-transcendence is a very important factor for 'successful aging' [3]. Self-transcendence is defined as "surpassing the perceived limits of the self" in Oxford languages. However, in nursing, one's beliefs and beliefs are valued and respected and this is interpreted as 'Can I talk about my thoughts?' [4]. It can be said that it is an important factor in achieving 'successful aging' with the will to grow and develop beyond aging self. Reed (2008) has developed a mid-range theory of self-transcendence, explaining inner boundaries (self-acceptance and discovery of meaning in life), interpersonal boundaries (a sense of connection with others or nature), transcendental boundaries (reaching the reality and purpose of the absolute), and temporary boundaries (a dynamic process that integrates an individual's past and future into the present). Among them, Reed (2008) has emphasized that spirituality is the core of self-transcendence [5]. McCarthy and Bockweg (2013) have derived five areas (spirituality, self-reflection, creativity, relationship, contemplation and meditation) through conceptual analysis of self-transcendence [6]. Spirituality includes attributes such as unity with the absolute, sacredness, inner peace, and acceptance. Self-reflection includes attributes such as self-centered transition to self-transcendence, self-acceptance, and self-integration. Creativity includes expression of the self, fullness, productive participation, and a sense of purpose beyond the self. Relationship includes acceptance and connection to others, altruism and generosity, withdrawal of interest in social roles and expectations, and concentration on objects and activities that place value. Contemplation and meditation include attributes such as shifting from a rational perspective to a cosmic perspective, awareness of the cycle of life, and a sense of unity with the universe. Precedent factors that could improve and enhance attributes of these five areas of self-transcendence (spirituality, reflection, creativity, relationship, and meditation) emerged. Based on these, the Psychoeducational Approach to Transcendence and Health Program (PATH) was developed [7]. A literature review of outcome

variables for self-transcendence interventions resulted in a sense of self-integration, well-being, recall, bond, resilience, physical and mental health, meaning of life, and connection [8-12]. In addition, self-transcendence has been found to affect life satisfaction as a major factor for reducing aging anxiety and depression and for improving well-being [13, 14]. Until now, research about the concept of self-transcendence has been conducted mainly on the elderly [4-6]. However, most of the elderly might have practical difficulties in acquiring and cultivating new knowledge or attitudes in terms of physical condition and/or cognitive function. Therefore, if self-transcendence can be increased through self-transcendence intervention for middle-aged people who are in the pre-old stage, it is expected to help achieve successful aging. Middle age is a time when anxiety about old age increases due to increased anxiety and fear of old age by experiencing various psychological and social problems as well as physical deterioration of aging [15]. In particular, middle-aged women can perceive physiological changes such as menopause more realistically than men. Women with jobs are expected to experience role tension and role conflict due to various roles such as work, housework, and child rearing in addition to physically experiencing aging [16]. In addition, studies have shown that elderly women have lower self-transcendence than elderly men [4]. It is believed that it will be an opportunity for middle-aged women with jobs to prepare for successful aging if they can re-examine the meaning of life, themselves, and others, reevaluate their lives, and change their values [17]. Therefore, this study aimed to develop a self-transcendence intervention program that could help middle-aged women, especially middle-aged women with jobs, cultivate strategies such as self-transcendence necessary for successful aging, and apply it to middle-aged women to test whether it is effective in increasing self-transcendence, lowering aging anxiety, raising well-being, and enhancing self-integration.

## Method

### Study Design

In this study, after applying self-transcendence intervention to middle-aged women, experimental design and equivalence control before and after design were applied to test the effectiveness of the intervention.

### Participants

Subjects of the study were middle-aged women living in Incheon, South Korea, who voluntarily agreed to participate in this study. The number of subjects was calculated using the G\*power 3.1 program [18]. As a result of entering statistical analysis MANOVA (Multivariate Analysis of Variance) with an effect size of 0.40 [19], a significance level of 0.05, and a power of 0.80, the total number of samples was 36 (18 for each group). Considering that the proportion of subjects who could be eliminated during

the study process could be more than 20%, 60 subjects (30 for the experimental group and 30 for the control group) were recruited. Specific criteria for selecting subjects were: (1) middle-aged women aged 50 to 60, (2) subjects who had no difficulty understanding or answering the questionnaire, (3) subjects who had no difficulty participating in interventions for a period of time (those who had no difficulty participating in interventions under physical and psychological conditions), (4) subjects who had no previous experience in transcendental interventions (those who had no similar experience in meditation, writing, or prayer), and (5) subjects who understood the purpose of this study and agreed to participate in this study. On the other hand, subjects were randomly assigned to the experimental group or the control group according to the card color selected by the subject (red color for experimental group and blue color for control group).

## **Instruments**

### **Self-Transcendence**

The Self-Transcendence Scale (STS) was developed by Reed (1991) [20]. Its Korean version, STS-K, was translated by Kim et al. (2012) and tested for reliability and validity [21]. STS-K was suitable as a result of testing translation validity and construct validity. Regarding its reliability, its Cronbach's alpha was 0.85, which was good. The tool is a 15-item, Likert-type scale consisting of four subscales: internal relationship, horizontal relationship, vertical relationship, and temporal relationship (4 points scale, 60 points total). The higher the score, the higher the sense of self-transcendence. Regarding the tool's reliability, its Cronbach's alpha was 0.80 at the time of development by Reed (1991) and 0.80 in this study [20].

### **Aging Anxiety**

For aging anxiety, the Korean version of Anxiety about Aging Scale's aging anxiety tool (Kim, Reed, Kang, & Oh, 2012) was modified and supplemented to suit middle-aged women [21]. A tool that tested its validity and reliability [22] was then used. It had four sub-areas, including social worthless (8 questions), physical function weakness (4 questions), worry about appearance change (4 questions), and negative expectations for old age (3 questions). The higher the score (total score: 95), the higher the degree of aging anxiety among middle-aged women. The Korean version of the middle-aged women's aging anxiety measurement tool was tested for construct validity, convergence validity, discrimination validity, and reference validity. Regarding the reliability of the tool, Cronbach's alpha was 0.91 in the study of Lee and You (2019) and 0.89 in this study [22].

### **Sense of Wellbeing**

The Philadelphia Geographic Center for Morale Scale (hereinafter referred to as PGCMS) [23, 24] was translated into Korean to test

translation validity (translation and reverse translation process) as a Korean version of PGCMS [25]. The higher the score (total score: 85 points), the higher the sense of well-being. It had three sub-scales, including rating on emotional life stability in old age (6 questions), aging attitude on old age adaptation indicators (5 questions), and life satisfaction on interpersonal relationships and loneliness (6 questions). The Korean version of PGCMS was tested for construct validity and standard validity. Regarding its reliability, the Cronbach's alpha was 0.78 at the time of development and 0.87 in this study.

### **Ego Integrity**

Ego integrity was measured with a self-integration tool developed by Choi & Ghim (2016) [26]. It is a five-point scale of 10 questions. It has two subscales, including positive attitudes toward life (6 questions) and past acceptance (4 questions). The higher the score (total score: 50 points), the higher the self-integration. Its construction validity, convergence validity, discrimination validity, and simultaneous validity were tested. Regarding the reliability of the tool, the Cronbach's alpha was 0.87 at the time of development [26]. It was 0.77 in this study.

### **Intervention Program**

The self-transcendence intervention program applied in this study was developed in consideration of characteristics of Korean social and cultural emotions and middle-aged women based on the five areas (self-reflection, relationship, contemplation and meditation, spirituality, and creativity) of self-transcendence suggested by PATH [7]. The specific intervention program of this study was developed to improve five areas of self-transcendence by referring to PATH and other domestically developed self-transcendence interventions [27] for middle-aged women. Core attributes that each area intends to implement in PATH were identified. Details of the intervention program for each area's activities and group activities were planned based on identified attributes (Table 1). A key property of the first self-reflection domain is maturity. The purpose of this domain is to induce maturity by reflecting on oneself and discovering true self covered by external conditions through contemplation and recording activities by asking subjects to 'Look back and record your inner reflection, thoughts about yourself, and inner agitation and conflict.' The second attribute of the relationship area is empathy. Its purpose is to induce improvement of empathy through connection with others based on memories and recollections and the shift in perception of others by asking subjects to 'Think about positive and negative relationships with others, recall communication experiences that have accepted others' positions, look back on role-oriented and person-centered relationships, record thoughts and recollections in detail.' The third property of contemplation and meditation is insight. Its purpose is to examine the meaning of life and expand the perspective of consciousness from oneself to the universe to gain insight into life

by asking subjects to ‘Think about topics such as the meaning of life, life and death, and the situation of experiencing healing, record the content of thinking.’ The fourth area is spirituality. Its purpose is to absolutely help one find a sense of connection with the absolutist or transcendent being or inner peace by asking subjects to ‘Find your own way of healing, think about your inner peace and sacredness, and organize and record your views on the afterlife.’ Then participants shared and discussed the previous four recordings with others through a group process. The fifth area is creativity, which is artistry by asking subjects to ‘Get a sense of accomplishment and discover new self through artistic or creative activities that have been interested in but have not been implemented.’ Then they shared experiences of these artistic and creative activities through a group process. On the other hand, before providing the developed intervention program to subjects, content validity was reviewed by an expert panel of five professors and a nurse (Table 1). This expert panel evaluated whether the contents, procedures and methods were suitable for assessing self-transcendence using a 5-point Likert scale. Content validity index is 0.81.

| Session | Domains       | Key Attributes  | Contents   | Assignments   |
|---------|---------------|---|--|---|
| 1       | Introspection | <p><b>Maturity</b><br/>Introspection<br/>Finding sincere oneself from the one covered with external roles and conditions</p>                            | <p>Introduce the program.<br/>Introduce oneself, make a list about views of value, happiness and share with others in the group.<br/><b>Purpose of activity : Understanding oneself through contemplation and journaling</b><br/>Look within and think about what oneself is.<br/>Think about inner agitation and conflict, write them down.<br/><b>Group process</b></p>  | <p><b>Music and writing</b><br/>Review activities<br/>Read a note and think about them .<br/>Write down today's life and feelings.<br/>Preparatory activities<br/>Write down relationship with others<br/>Write down the meaning, essence, and existence of life.</p>                         |
| 2       | Relationships | <p><b>Empathy</b><br/>Connecting with others<br/>Changing perception of others (recognizing others as precious beings who are connected to oneself)</p> | <p><b>Purpose of activity : Understanding other people through memories and reminiscences</b><br/>Look back on positive and negative relationships with others.<br/>Reminisce the experience of accepting others' positions through communicating with others (altruism and generosity).<br/>Grasp the importance of interest in people over socially given roles (change of interest).<br/><b>Group process</b></p> | <p><b>Meditation and writing</b><br/>Review activities<br/>Read a note and think about them<br/>Write down today's daily life and feelings<br/>Preparatory activities<br/>Think and write about the nature of life cycle.<br/>Think and write about creative, fun activities for oneself.</p> |
|         | Contemplation | <p><b>Insights</b><br/>Thinking about the meaning of life<br/>Expanding perspective</p>   | <p><b>Purpose of activity : Integrating life and expanding perspectives</b><br/>Think about the meaning of life.<br/>Expand the perspective of thought from oneself to cosmos.<br/><b>Group process</b></p>  |   |

|          |                     |  |  |  |
|----------|---------------------|--|--|--|
| <b>3</b> | <b>Spirituality</b> | <p><b>Absoluteness</b><br/>Connecting with an absolute or transcendental being<br/>Finding within peace</p>                    | <p><b>Purpose of activity : Self-healing through absolute (transcendental being) and within peace</b><br/>Choose the way to heal oneself (appreciation of music, poetry, painting, reading essays and religious books, praying, drawing and writing diary, etc.).<br/>Think about within peace and the sacred.<br/>Think about views on the afterlife and summarize them.<br/><b>Group process</b></p> | <p><b>Maintaining absoluteness and aesthetics</b><br/>Review activities<br/>Read a note and think about them .<br/>Write down today's daily life and feelings.<br/>Promise and Pledge<br/>Pledge to continue training, practicing creative activities.<br/>Maintain peaceful and joyful oneself.</p> |
|          | <b>Creativity</b>   | <p><b>Aesthetics</b><br/>Finding a sense of achievement through creative experience<br/>Discovering new concept of oneself</p> | <p><b>Purpose of activity Self-expression or self-actualization through achievement and new experiences</b><br/>Find creative activities (resources)<br/>Feel accomplished through aesthetic experience and creative activities. And then discover new concept of oneself.<br/>Try to continue creative activities as lifelong training.<br/><b>Group process</b></p>                                  |  |

**Table 1:** Contents, Procedures, and Methods of Self-Transcendence Intervention Program.

### Conduction Intervention Program

The experimental group consisted of five teams to provide intervention for each team. Each team consisted of 6 people (2 people for a pair, a total of 3 pairs). The intervention was conducted in an auditorium without having external influences so that the subject could engage in activities suitable for each topic in a comfortable atmosphere after work. The intervention program consisted of six stages: introduction, maturity, empathy, insight, absoluteness, and artistry. Two themes were provided once a week for three weeks, with a total of six themes provided three times. The time per episode was 60 minutes. Intensive discussions were conducted based on activities. Their thoughts were organized and presented in a notebook. In addition, assignments were given at the end of each session. Post-review and pre-study activities were conducted for 10 to 15 minutes at home every day. After completing all research processes, the control group was provided with the same intervention as the experimental group (a wait list control design was applied) so that there was no ethical problem. The intervention program was provided by this researcher and two research assistants. This researcher completed various elderly-related subjects while majoring in senescence in the master's degree and participated in spirituality-related education to have knowledge and experience appropriate for aging and successful aging, self-transcendence and self-integration, and spirituality.

Thus, the research is considered to have sufficient qualifications, conditions, and experience to operate the program.

### Data Collection

To provide intervention programs and collect data, the researcher received approval from the IRB of the university (200413-1A) and sent an official letter to representatives of mid-sized companies and general affairs planning team in Incheon Metropolitan City for recruitment of middle-aged women living in Incheon Metropolitan City. After that, the purpose and progress of this study were explained to those who were willing to participate in the study by notifying them on the corporate bulletin board. Intervention programs and data collection were provided to middle-aged women who voluntarily agreed in writing to participate in the study. Prior data were collected on general characteristics and outcome variables (self-transcendence, aging anxiety, well-being, and self-integration) of the experimental group and the control group. Post-mortem data were measured for the same variables as pre-investigation immediately after completing the intervention program. Post-mortem data of the control group were also measured for the same variables in the same period as the experimental group.

## Data Analyses

Data analyses were performed using SPSS/WIN 25.0. For the analysis of general characteristics and major variables of subjects, average value, standard deviation, frequency, and percentage were calculated by applying descriptive statistical analysis. Cronbach's alpha coefficient was calculated to test the reliability of a tool. Homogeneity test was performed for general characteristics and major variables between the experimental group and the control group. Self-transcendence, aging anxiety, well-being, and self-integration as outcome variables before the intervention program were analyzed by Pearson chi-square and Fisher exact test. Since there were many result variables, an overall test was performed with MANOVA, and a specific test was performed with ANOVA (Analysis of Variance) to reduce type I errors. Since differences in main variables between the two groups were significant (that is, not homogeneous), effectiveness of the intervention program was determined by ANCOVA ANOVA (Analysis of Covariance) after MANCOVA (Multivariate Analysis of Covariance).

## Results

### General Characteristics of Study Subjects

The experimental group recruited 30 people, but one of them expressed an intention not to participate before the experiment began. So, the experimental group was 29 people, and the control group was 30. The average age of study subjects was  $54.44 \pm 3.69$  years. There were 35 students (59.3%) with a high school diploma or lower and 24 students (40.7%) with a vocational college degree or higher. Thirty (50.8%) subjects were non-religious. There were 29 (49.2%) Confucians, 16 (27.1%) Protestants, six (10.2%) Catholics and Buddhists, and one (1.7%) who had non-response. Regarding job types, there were 38 (64.4%) production and sales workers and 21 (35.6%) office and management workers. Regarding menopause status, there were 40 (67.8%) in menopause and 19 (32.2%) non-menopausal cases. Forty (67.8%) subjects had no underlying disease and 19 (32.3%) had an underlying disease. There were 6 (10.2%) patients with hypertension, 5 (8.5%) patients with arthritis, 2 (3.4%) patients with cancer, 1 (1.7%) patient with heart disease, and 5 (8.5%) patients with hyperlipidemia, endometritis, internal osteochondrosis, adenomyoma, and breast tumors. As for the perception of health status, 40 (67.8%) subjects were perceived as 'normal' or 'unhealthy' and 19 subjects (32.2%) were perceived as 'healthy'. As for the degree of preparation for old age, 18 (30.5%) people were 'preparing well', 23 (39.0%) were 'just so', and 18 (30.5%) were 'not prepared at all'. Before intervention, the average self-transcendence score of subjects was

$43.53 \pm 5.13$  out of 60, the average aging anxiety score was  $56.78 \pm 11.56$  out of 95, the average well-being score was  $56.66 \pm 9.98$  out of 85, and the average self-integration score was  $38.22 \pm 3.68$  out of a total of 50 points, showing moderate or higher scores in all major variables.

### Homogeneity of Groups

A homogeneity test was performed for nominal exogenous variables between the experimental group and the control group. As a result, the two groups were not homogeneous in the degree of education ( $\chi^2 = 4.97$ ,  $p = 0.035$ ) and menopause ( $\chi^2 = 9.95$ ,  $p = 0.002$ ). That is, the proportion of highly educated people in the experimental group was significantly higher than that in the control group. However, the menopause rate in the experimental group was significantly lower than that in the control group. Therefore, covariate treatment of these variables was required in the analysis testing the effectiveness of the intervention. Other nominal exogenous variables, namely marital status ( $\chi^2 = 2.10$ ,  $p = 0.233$ ), economic status ( $\chi^2 = 0.44$ ,  $p = 0.567$ ), religion ( $\chi^2 = 2.05$ ,  $p = 0.196$ ), job type ( $\chi^2 = 2.12$ ,  $p = 0.180$ ), underlying diseases ( $\chi^2 = 0.56$ ,  $p = 0.580$ ), perception of health status ( $\chi^2 = 2.20$ ,  $p = 0.170$ ), and preparation for old age ( $\chi^2 = 5.52$ ,  $p = 0.081$ ), were found to be homogeneous between the two groups (Table 2). Age, pre-intervention self-transcendence, aging anxiety, well-being, and self-integration are all continuous exogenous variables that can affect the effect of intervention. Thus, a multivariate analysis of variance (MANOVA) was performed to test the homogeneity of these variables to reduce type I errors that could be caused by repeating individual t-tests. As a result of the analysis, significant differences were found in these exogenous variables between the experimental group and the control group (Wilks Lambda = 0.63,  $F = 6.27$ ,  $p < 0.001$ ). In other words, the two groups were not homogeneous for these exogenous variables. As a result of performing univariate analysis of variance (ANOVA) to identify specific variables with significant differences, age ( $F = 21.79$ ,  $p < 0.001$ ), self-transcendence ( $F = 5.16$ ,  $p = 0.027$ ), and well-being ( $F = 5.04$ ,  $p = 0.029$ ) were not homogeneous. In other words, the age of the experimental group was significantly lower than that of the control group. The self-transcendence score of the experimental group was significantly lower than that of the control group before intervention and the well-being score of the experimental group was significantly lower than that of the control group. Therefore, to test the effectiveness of the intervention, these variables required covariate treatment. However, aging anxiety ( $F = 2.43$ ,  $p = 0.125$ ) and self-integration ( $F = 1.92$ ,  $p = 0.172$ ) were homogeneous (Table 2).

| Variables            | Categories                   | N (%)                 |                  | $\chi^2(p)$ |
|----------------------|------------------------------|-----------------------|------------------|-------------|
|                      |                              | Experimental (n = 29) | Control (n = 30) |             |
| Education            | ≤high school                 | 13(44.8)              | 22(73.3)         | 4.97(.035)  |
|                      | ≥college                     | 16(55.2)              | 8(26.7)          |             |
| Marital status       | married                      | 24(82.8)              | 20(66.7)         | 2.01(.233)  |
|                      | divorced/widowed             | 5(17.2)               | 10(33.3)         |             |
| Economical Status    | <middle class                | 9(31.0)               | 7(23.3)          | 0.44(.567)  |
|                      | ≥middle class                | 20(69.0)              | 23(76.7)         |             |
| Religion             | no                           | 12(41.4)              | 18(60.0)         | 2.05(.196)  |
|                      | yes                          | 17(58.6)              | 12(40.0)         |             |
| Job position         | production/sales worker      | 16(55.2)              | 22(73.3)         | 2.12(.180)  |
|                      | office/administrative worker | 13(44.8)              | 8(26.7)          |             |
| Menopause            | no                           | 15(51.7)              | 4(13.3)          | 9.95(.002)  |
|                      | yes                          | 14(48.3)              | 26(86.7)         |             |
| Underlying Disease   | no                           | 21(72.4)              | 19(63.3)         | 0.56(.580)  |
|                      | yes                          | 8(27.6)               | 11(36.7)         |             |
| Perception of health | be so-so or not healthy      | 17(58.6)              | 23(76.7)         | 2.20(.170)  |
|                      | healthy                      | 12(41.4)              | 7(23.3)          |             |
| Aged Preparation     | no                           | 13(44.8)              | 5(16.7)          | 5.52(.081)  |
|                      | be so-so                     | 9(31.0)               | 14(46.7)         |             |
|                      | yes                          | 7(24.1)               | 11(36.7)         |             |

**Table 2:** Homogeneity Test of Nominal Scale of Extraneous Variables between Groups (n=59).

### Program Effectiveness Test

This study was conducted to determine effects of the self-transcendence intervention program on outcome variables such as self-transcendence, aging anxiety, well-being, and self-integration. However, multivariate analysis of variance was judged to be appropriate to test the effectiveness of the intervention since there were many outcome variables with significant correlations ( $r = .30\sim.71$ ) between outcome variables. On the other hand, as a result of testing homogeneity for exogenous variables that could affect outcome variables other than intervention, the two groups were not homogeneous in menopause, education level, age, pre-intervention self-transcendence, or well-being. Therefore, it was judged that variables needed to be treated as covariates. Therefore, multivariate analysis of covariance (MANCOVA) was applied to test the effectiveness of the intervention program. As a result of multivariate covariance analysis, the self-transcendence intervention program provided in this study was found to be effective in integrating outcome variables such as self-transcendence, aging anxiety, well-being, and self-integration (Wilks Lambda = 0.54,  $F = 10.32$ ,  $p < 0.001$ ). However, univariate covariance analysis (ANCOVA) was specifically conducted to test which outcome variables had a significant effect due to the intervention program. As a result of univariate covariance analysis, the self-transcendence intervention program showed significant effects on self-transcendence, aging anxiety, well-being, and self-integration. After the intervention, the self-transcendence score ( $49.72 \pm 4.78$ ) of the experimental group was higher than that of the control group ( $44.70 \pm 5.11$ ). This difference was statistically significant ( $F = 39.68$ ,  $p < 0.001$ ).

After the intervention, the aging anxiety score of the experimental group ( $47.00 \pm 10.11$ ) was lower than that of the control group ( $52.03 \pm 10.74$ ). This difference was statistically significant ( $F = 5.73, p = 0.020$ ). After the intervention, the well-being score ( $62.17 \pm 8.02$ ) of the experimental group was higher than that of the control group ( $59.93 \pm 8.14$ ). This difference was statistically significant ( $F = 8.61, p = 0.005$ ). Finally, the self-integration score of the experimental group ( $41.24 \pm 3.55$ ) after the intervention was higher than that of the control group ( $39.40 \pm 4.52$ ). This difference was statistically significant ( $F = 6.87, p = 0.011$ ). Results of this study suggested that the self-transcendence program was useful for successful aging preparation for middle-aged women. It was effective in increasing self-transcendence, well-being, self-integration, and lowering aging anxiety (Table 3).

| Variables <sup>a</sup> | Mean $\pm$ SD          |                   | MANCOVA <sup>b</sup> |              | ANCOVA <sup>c</sup> |
|------------------------|------------------------|-------------------|----------------------|--------------|---------------------|
|                        | Experimental<br>(n=29) | Control<br>(n=30) | Wilks<br>Lambda      | F(p)         | F(p)                |
| Transcendence          | 49.72 $\pm$ 4.78       | 44.70 $\pm$ 5.11  | 0.54                 | 10.32(<.001) | 39.68(<.001)        |
| Anxiety                | 47.00 $\pm$ 10.11      | 52.03 $\pm$ 10.74 |                      |              | 5.73(.020)          |
| Wellbeing              | 62.17 $\pm$ 8.02       | 59.93 $\pm$ 8.14  |                      |              | 8.61(.005)          |
| Integrity              | 41.24 $\pm$ 3.55       | 39.40 $\pm$ 4.52  |                      |              | 6.87(.011)          |

a: Post intervention data  
b: Multivariate Analysis of Covariance (menopause, education, age, pre-transcendence, pre-wellbeing were used as covariates in MANCOVA)  
c: Analysis of Covariance (menopause, education, age, pre-transcendence, pre-wellbeing were used as covariates in ANCOVA)

**Table 3:** Effects of PATH Program on Outcome Variables (N=59).

## Discussion

As a result of this study, the self-transcendence of the experimental group after providing the self-transcendence intervention program was statistically significantly higher than that of the control group. Thus, the self-transcendence intervention program had a significant effect on self-transcendence of middle-aged women. The self-transcendence of the experimental group was rather lower than that of the control group before the intervention. However, it was significantly increased after the intervention, showing a difference from the control group, which did not change significantly between before and after the intervention. It is difficult to directly compare results of this study with other studies because studies testing effects of self-transcendence intervention programs on self-transcendence in middle-aged women as in this study have not been reported yet. However, a study that applied self-transcendence intervention to drug addicts also found that the intervention had a significant effect on self-transcendence [19]. However, the difference between this study and the previous study was that this study developed and applied a self-transcendence intervention program that reflected the conceptual nature of self-transcendence by referring to PATH [7]. However, the study by Kim & Kim (2017) developed and applied a self-transcendence intervention that highlighted the perspective of ‘forgiveness’ by referring to the forgiveness program applied to drug addict

wives [28] and alcoholics [19, 21]. In addition, studies conducted on the elderly in nursing homes [11], breast cancer patients [8], and dementia caregivers [9] also showed that self-transcendence interventions had a significant effect on self-transcendence.

On the other hand, a study conducted on the elderly living in the community suggested that self-transcendence intervention did not have a significant effect on self-transcendence [22]. The reason why the intervention effect was not significant was presumed to be because it was a preliminary study conducted with a very small sample. Based on these evidence, self-transcendence intervention is effective in improving self-transcendence regardless of conditions or characteristics of the subject, such as race, cultural background, age, and health status. As a result of this study, the experimental group’s aging anxiety was significantly lower than that of the control group after the self-transcendence intervention program was provided. Thus, the self-transcendence intervention program had a significant effect on aging anxiety in middle-aged women. It is difficult to directly compare results of previous studies with results of this study because studies testing effects of self-transcendence intervention programs on aging anxiety in middle-aged women have not been reported yet. However, it has been reported that the effect of intervention on aging anxiety is not significant in a study that has tested the effect of a retirement preparation health promotion program on aging anxiety in middle-aged women [23].



While the intervention applied in Choi & Suh's (2014) study was a program focused on health promotion to prepare for old age, the intervention program in this study included more diverse aspects, especially spirituality, such as internal maturity, empathy, insight, absoluteness, and artistry through self-reflection, connection with others, search for the essence and meaning of life, connection with the absolute, creative experience, and so on [29]. For that reason, it was presumed that the intervention program of this study was effective in lowering anxiety, especially anxiety related to aging. After the self-transcendence intervention program was provided, the experimental group's well-being was statistically significantly higher than that of the control group. Thus, the self-transcendence intervention program was found to have a significant effect on the well-being of middle-aged women. In a study by Scult et al. (2015), self-transcendence interventions performed on the elderly showed a significant effect on well-being [30]. However, two other studies suggested that there was no significant effect [31, 32]. One of them included elderly women living alone as subjects [31]. In the case of middle-aged women with jobs, the self-transcendence intervention program had a significant effect on well-being. The reason why it did not have a significant effect on elderly women living alone was related to age of the subject and presence or absence of social activity. The self-transcendence intervention program applied in this study seemed to be suitable for improving the well-being of middle-aged women who have jobs but lacked preparation for old age. However, the effect of self-transcendence intervention on well-being was inconsistent. Thus, more research needs to be conducted. Self-transcendence, well-being, and self-integration of the experimental group were lower than those of the control group before the intervention, but significantly increased after the intervention, showing a significant difference from the control group where slight changes occurred between before and after the intervention. It is considered that the effect of the intervention program is greater when the experimental group has higher education level and lower age than the control group, consistent with Haugan's (2022) study, where those with younger age and higher education showed higher self-transcendence scores [4]. Thus, it is considered that the self-transcendence program can be sufficiently effective for younger age groups.

## Conclusions

So far, self-transcendence intervention programs have been applied to subjects in special situations such as the elderly, those with drug addiction, and cancer patients. However, no research has been conducted to comprehensively test effects of self-transcendence intervention programs on self-transcendence, aging anxiety, well-being, and self-integration, which are key concepts for successful aging of ordinary middle-aged women. Therefore, if a study involving middle-aged women with various conditions is conducted, it will help us more clearly identify the effectiveness of the self-transcendence intervention program for middle-aged women. The

self-transcendence intervention program developed in this study was found to be effective in integrating outcome variables such as self-transcendence, aging anxiety, well-being, and self-integration. It also showed significant effects on outcome variables such as self-transcendence, aging anxiety, well-being, and self-integration. As a result of this study, the self-transcendence intervention program provided for middle-aged women was effective in improving their self-transcendence, reducing aging anxiety, and improving their well-being and self-integration. By developing and applying self-transcendence intervention programs for middle-aged women in self-transcendence intervention programs for the elderly, basic data can be obtained for developing and applying self-transcendence intervention programs for subjects of younger ages and various situations by providing empirical evidence that self-transcendence intervention programs are important for various age groups. Although there are limitations in developing and applying self-transcendence intervention programs only for middle-aged women, research will be conducted to test their effectiveness by developing customized self-transcendence intervention programs for various age groups. In addition, this study has limitations in testing only short-term effects by analyzing effects immediately after intervention. Thus, it is judged that if a study can show the effect of intervention after conducting the study in a mid- to long-term, the contribution of the study will be more critical.

**\*Research Data:** The data used to support the findings of this study may be released upon application to the IRB of INHA University, who can be contacted at the 1st author's e.mail(Kangeun72@hanmail.net)

**\*The experiment in this paper does not have a registration number because it was not registered with ICMJE.**

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