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The Effect of Horticultural Activity Program on Emotional Intelligence, Social Ability and Social Adaptability of Children in Single-parent Families

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Abstract

To grasp the effect of indoor horticultural activity program on emotional intelligence, social ability, and school adaptability of children in single-parent families, the program was conducted after dividing the participants into experimental group and control group consisting of 10 participants in each group. First, horticultural activity was effective in improving emotional awareness, emotional expression, empathy, emotional control, and emotional utilization in emotional intelligence. Second, horticultural activity was effective in improving sociability, interpersonal adaptability, social participation, and directedness, but it was not effective in improving popularity. Third, horticultural activity was effective in improving peer relationship and school class, but it was not effective in improving relationship with teachers and observing school regulation.

Keywords: Emotional Intelligence, Horticultural Activity Program, Social Ability, School Adaptability, Single Parent Families

1. Introduction

A single-parent family usually experiences financial difficulties and interpersonal problems, and sometimes, they have physical or psychological dysfunction among the family members due to structural absence of father or mother. Notably, children in a single-parent family may face various situations of crisis, where they experience psychological and emotional problems in coping with the sadness or sense of loss, and also with the problems arising from adaptation to environmental changes. As a primary environment where children learn about social systems and the forming of interpersonal relationships, a family serves as an indispensable condition for stable life. Nevertheless, the children in a single-parent family are deprived of this most fundamental environment, and to resolve this, horticultural activity program is recommended. Emotional intelligence was developed based on the social intelligence[1], which measures in a mixture of emotion and intelligence. Emotional intelligence is classified into 5 areas (i.e. emotional awareness, emotional expression, empathy, emotional control, and emotional utilization), which are concepts based on emotional values. As children in single-parent families are under the condition of poor emotional environment, they are more depressed with lower self-esteem, compared to normal children[2]. Furthermore, Erikson's adolescent developmental stage greatly emphasized on establishing ego identity, but the children in a single-parent family have low self-esteem and life satisfaction, and they are psychologically daunted, which has come into question. From a deterministic perspective of Freud, human beings should accomplish tasks within a decisive period, so emotional intelligence deserves serious and enthusiastic study.

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Thus, horticultural activity program can be an alternative solution to improve the poor situations of the children in single-parent families. Human beings satisfy their basic needs by accommodating to the society through socialization process, and they gradually serve as a member harmonized with the society by learning emotional expressions. Social ability can be developed through socialization process, which is a very comprehensive adaptation ability[3] which includes adaptability and interaction with surroundings[4], and goal achievement in interpersonal relationship[5]. As children grow, they experience love, protection, and authority from their parents, imitate their behavior, and internalize the values of their parents. However, children in single-parent families lack such opportunities, and they receive negative educational effects. Based on the results derived from after-school activity programs, which is shown to be effective in improving adolescents' social ability[6], the horticultural activity can be meaningful for the developing children in single-parent families by giving them experiences to help them enhance social ability; and it is accordingly required to be verified. School life stands for all educational areas that adolescents are given in school, and it also stands for a broad concept that includes non-educational areas such as student-student relationship, teacher-student relationship, and relationship with surrounding environment. School adaptability can be defined as a series of efforts by which the learners cope with stress arising from various situations in school, class works, school life, peer relationship, and school environment. Also, it is defined as the successful or unsuccessful attempts of the learners who try to cope with the school situations, depending on their ability to do well. Therefore, controlling learners' general requirements in school and carefully considering the realistic possibilities in school is important[6]. The horticultural activity has been reported to develop behaviors of being considerate of others, being patient to wait for turns when using shared tools, cooperating, being responsible, respecting others, and improving communication ability and interpersonal skills by learning to make relationship with others through collaboration to achieve common goals.Horticultural activity represents the development of social, educational, psychological, and physical adaptability through various human activities targeted on vegetation, and it pursues physical rehabilitation and mental recovery[8]. This activity contributes to natural and mutual exchange in many ways; diverse effects have been reported, such as emotional ability, social ability, and school adaptability.

Therefore, this research herein aims to verify its effect in improving emotional intelligence, social ability, and school adaptability, by conducting an indoor horticultural activity program to the children from single-parent families.

2. Methodology

2.1 Research Subjects

In this research, 10 children from 4-6th grade, who were in the single-parent families and desired to participate in the horticultural activity program, were selected as experimental group, from an elementary school located in S city, Chungcheongnam province. For the control group, 10 children who did not participate in the program were selected.

2.2 Research Design

In this research, a pre-post control group quasi-experimental design was utilized to verify the changes in these children from single-parent families, on the following areas: emotional intelligence, social ability, and school adaptability. A pre-test and post-test were conducted after horticultural activity program was conducted, for experimental group; meanwhile, horticultural activity program was not conducted for the control group. The experimental procedure is as follows.

- A pre-test: On June 10, 2014 for emotional intelligence, social ability, and school adaptability
- How to apply program: Horticultural activity program was conducted for 12 weeks from June 11, 2014 to August 27, 2014 through twelve 120-minute sessions.
- A post-test: After 12-sessions of horticultural activity program, a post-test was conducted on August 28, 2014 by using a questionnaire survey identical to a pre-test, which was intended for experimental group and control group.

2.3 Instruments

- Emotional Intelligence

The measure for emotional intelligence for upper-grade students of elementary school (i.e. 3rd-6th grades) was designed by Moon[9], based on Salovely & Mayer's[10] emotional intelligence model.

This scale is a self-reported measurement tool that enables participants to perceive their emotional intelligence, and the questionnaire consist of 47 items in total. This scale was classified into 5 areas, such as emotional awareness, emotional expression, empathy, emotional control, and emotional utilization, in the sub category; and the 3-point Likert scale was used. The responses of question items consisted of 1, 2, and 3, points for "disagree", "neutral", and "agree", respectively. The higher score indicated higher emotional intelligence. Results obtained from Cronbach's α were as follows: "0.649-0.902" for a pre-test, and "0.635-0.919" for a post-test. These results demonstrated an appropriate level of reliability.

- Social Ability

The social ability is a self-report measurement tool, which was developed by Park [6] based on the social ability scale for children designed by Roh[11], Do[12] and Lee[13]. This was used to measure the children's social ability, and the scale consisted of 50 items.

This scale was classified into 6 areas such as sociability, interpersonal adaptability, social participation, popularity, and social ability in the sub category; and it consisted of the 5-point Likert scale. The responses of the scale consisted of 1, 2, 3, 4, and 5 points for "hardly agree", "sometimes agree", "neutral", "usually agree", and "strongly agree", respectively. The higher score indicated higher social ability. Results obtained from reliability test (Cronbach's α) were as follows: "0.844-.920" for a pre-test and "0.847-0.877" for a post-test. These results demonstrated an appropriate level of reliability.

- School Adaptability

A scale reorganized by Lim's[14] "The Scale for Children's School Adaptability" and Jeon's School Adaptability Scale, was utilized in this research to measure children's school adaptability. This scale is a self-reported measurement tool about school adaptability perceived by children. A total of 32 items were divided into 24 positive items and 8 negative items.

This scale was classified into 4 areas, such as teacher relationship, peer relationship, class works, and school regulations in the sub category; and it consists of a 5-point scale for the level of elementary school students. The responses of the scale consisted of 5, 4, 3, 2, and 1 point for "strongly agree", "agree", "neutral", "disagree", and "strongly disagree", respectively. The higher scores indicated higher school adaptability. Results obtained from reliability test (Cronbach's α) were as follows: "0.740-0.841" for a pre-test and "0.680-0.845" for a post-test. These results demonstrated an appropriate level of reliability.

2.4 Program Content

The content of horticultural activity program was composed of 12 sessions. The details of each session of the program are shown in Table 1.

2.5 Data Analysis

In this research, experiment design was made; and frequency analysis, descriptive statistics, reliability analysis, and Analysis of Covariate (ANCOVA) were applied by using SPSS PC+ Win 21.0 Statistical Program.

3. Results

3.1 Verified Emotional Intelligence Effectiveness of Horticultural Activity Program

The adjusted emotional awareness score of experimental group and that of control group were 2.902 and 2.084 points, respectively. This is an adjusted score in the state of controlling a prior score on emotional awareness. There was a significant difference ($F=58.048$, $p<0.001$) between the groups after conducting ANCOVA, which verifies a difference between the groups. Furthermore, the adjusted emotional expression score of experimental group and that of control group were 2.603 and 2.254 points, respectively. The result of ANCOVA showed that there was a significant difference ($F=5.025$, $p<0.05$) between the groups. The adjusted empathy score of experimental group and that of control group were 2.264 and 2.036 points, respectively. This showed a significant difference ($F=6.229$, $p<0.05$) between the groups, as a result of ANCOVA.

The adjusted emotional control score of experimental group and that of control group were 2.717 and 2.2163 points, respectively. This showed a significant difference ($F=26.876$, $p<0.001$) between the groups, as a result of ANCOVA. The adjusted emotional utilization score of experimental group and that of control group were 2.408 and 2.302, respectively. This showed a significant difference ($F=20.807$, $p<0.001$) between the groups, as a result of ANCOVA.

Table 1. Content of horticultural activity program

Session	Program Title	Goal	Details
Session 1	Wrapping roses	Improving social ability	Announce program and wrap a rose by using transparent plastic paper.
Session 2	Name Tags of Compressed Flower	Improving school adaptability	Make a nickname and name tag by using compressed flower.
Session 3	A grass doll looks like me.	Improving Emotional Intelligence	Make a grass doll by putting and decorating vermiculite and grass seeds in stocking.
Session 4	Raise sprouts.	Improving Emotional Intelligence	Observe a shape of various seeds, and plant seeds.
Session 5	Make sprout bibimbap.	Improving Social Ability	Make and eat bibimbap by using sprout vegetable.
Session 6	Breed sweet potato.	Improving School Adaptability	Learn how to breed vegetation, and make and decorate flower pot by using recyclable materials.
Session 7	Cuttage (Pelargonium citrosa Van leenen and Viola)	Improving Social Ability	Try cuttage breeding by cutting twigs.
Session 8	Foliage Plant Hydroponic-culture	Improving Emotional Intelligence	Raise foliage plant by putting water and colored pebbles into transparent glass.
Session 9	Soap floral arrangement	Improving School Adaptability	Investigate goods using nature, and arrange soap flowers.
Session 10	Build assorted garden.	Improving Social Ability	Plant assorted vegetation in a pot, and decorate it for good environment.
Session 11	Make flower basket.	Improving Emotional Intelligence	Arrange flowers to be matched with different flowers, and prepare a thank-you card.
Session 12	Taste flower tea.	Improving School Adaptability	Investigate vegetation that can be made into tea, and examine flavor and color of it by brewing it to taste.

3.2 Verification of Social Ability Effectiveness of Horticultural Activity Program

The adjusted sociability score of experimental group and that of control group were "3.994" and "3.066", respectively. This showed that there was a significant difference ($F=27.363$, $p<0.001$) between the groups, as a result of ANCOVA. The adjusted interpersonal adaptability score of experimental group and that of control group were "3.902" and "2.808", respectively. This showed that there was a significant difference ($F=33.879$, $p<0.001$) between the groups, as a result of ANCOVA. Furthermore, the adjusted social participation score of experimental group and that of control group were 3.999 and 2.951 points, respectively. This showed that there was a significant difference ($F=41.928$, $p<0.001$) between the groups, as a result of ANCOVA. The adjusted directedness score of experimental group and that of control group were 3.843 and 3.137 points, respectively. This showed that there was a significant difference ($F=10.801$, $p<0.01$) between the groups, as a result of ANCOVA. Furthermore, the adjusted popularity score of experimental group and that of control group were 3.739 and 3.191 points, respectively. This showed that there was a significant difference ($F=6.305$, $p<0.05$) between the groups, as a result of ANCOVA.

3.3 Verified School Adaptability Effectiveness of Horticultural Activity Program

The results derived from verified effectiveness on school adaptability demonstrated that the adjusted teacher relationship score of experimental group and that of control group were 3.429 and 3.083 points, respectively. This showed that there was no significant difference between the groups, as a result of ANCOVA.

The adjusted peer relationship score of experimental group and that of control group were 3.581 and 3.194 points, respectively. This showed that there was no significant difference ($F=4.941$, $p<0.05$) between the groups, as a result of ANCOVA. The adjusted school class score of experimental group and that of control group were 3.623

Table 2. Result of ANCOVA on emotional intelligence effectiveness

Source of variance	Sum of square	D.F.	Mean Square	F
Emotional awareness(pre-test)	.495	1	.495	7.889*
Group	3.644	1	3.644	58.048***
Emotional expression(pre-test)	.374	1	.374	3.252
Group	.577	1	.577	5.025*
Empathy(pre-test)	1.051	1	1.051	26.213***
Group	.250	1	.250	6.229*
Emotional control(pre-test)	.573	1	.573	10.697**
Group	1.440	1	1.440	26.876***
Emotional utilization(pre-test)	.348	1	.348	10.288**
Group	.705	1	.705	20.807***

*P<0.05, **P<.01, ***P<0.001

Table 3. Result of ANCOVA on social ability effectiveness

Source of variance	Sum of square	D.F.	Mean Square	F
Sociability (pre-test)	.894	1	.894	5.683*
Group	4.307	1	4.307	27.363***
Interpersonal adaptability (pre-test)	1.668	1	1.668	9.445**
Group	5.981	1	5.981	33.879***
Social participation (pre-test)	1.261	1	1.261	9.678**
Group	5.465	1	5.465	41.928***
Directedness (pre-test)	1.286	1	1.286	5.577*
Group	2.492	1	2.492	10.801**
Popularity (pre-test)	.789	1	.789	3.196
Group	1.489	1	1.489	6.305*

*P<0.05, **P<.01, ***P<0.001

Table 4. Result of ANCOVA on school adaptability effectiveness

Source of variance	Sum of square	D.F.	Mean Square	F
Teacher relationship (pre-test)	3.399	1	3.399	23.265***
Group	.599	1	.599	4.102
Peer relationship (pre-test)	2.397	1	2.397	15.762**
Group	.751	1	.751	4.941*
School class (pre-test)	3.103	1	3.103	16.693**
Group	1.310	1	1.310	7.045*
School regulation(pre-test)	3.560	1	3.560	13.495**
Group	1.161	1	1.161	4.401

*P<0.05, **P<.01, ***P<0.001

and 3.102 points, respectively. This showed that there was a significant difference ($F=7.045$, $p<0.01$) between the groups, as a result of ANCOVA. Finally, the adjusted school regulation score of experimental group and that of control group were 3.880 and 3.395 points, respectively. This showed that there was no significant difference between the groups, as a result of ANCOVA.

4. Discussion and Conclusion

First, horticultural activity program was effective in improving emotional awareness, emotional expression, empathy, emotional control, and emotional utilization. This result is consistent with the 3 of the following results:
1) Horticultural activity enables children to naturally express emotion and develop creativity[15];
2) Horticultural activity largely reduces discursive behavior, social withdrawal, and frightened behavior that cause difficulty in interpersonal relationship, through experiences of touching and identifying vegetation[16];
3) Horticultural activity improves children's confidence, self-esteem, and self-control, and develops their future confidence, creativity, and self-expression[2].
This is mainly because horticultural activity stimulates diverse emotions and triggers sincere communications with other participants. Therefore, this research suggests requiring horticultural activity program for children in single-parent families or broken homes. Second, horticultural activity was effective in improving sociability, interpersonal adaptability, social participation, and directedness, whereas it was not effective in improving popularity. This is consistent with a result that it improved children's smooth interpersonal relationship and school adaptability. It also shares context with that children in single-parent families can make friends, socialize, take roles, have competitive spirit, cooperate, and build confidence. Furthermore, it helps to learn proper responses to many incidents occurring not only in human world but also in the nature, by experiencing diverse horticultural activities with peers[17]. Therefore, in order to achieve this, a prerequisite would be to consistently develop more diverse horticultural activity programs that are interesting for children in single-parent families. Third, horticultural activity was effective in improving peer relationship and class work, but it was not effective in improving teacher relationship and observing school regulation. This reached a similar result that horticultural activity enables children to learn how to make relationship with others through the followings: collaboration to achieve common goals, cooperation, responsibility, respect for others, improvement on interpersonal relationship[18], consideration for peers, and patience in waiting turn to use shared tools[19]. These serve as a basis to continue on the horticultural activity programs.

5. References

1. Oh SH. A Study on determinants of adolescent's adaptation in broken family. [Unpublished Doctoral Dissertation]. Seoul University; 2001.
2. Kim JY. The effects of optimism and humor style on well-being in children. [Unpublished Master's Dissertation]. Seoul Women's Umiversity; 2012.
3. Park MK. (The) relationships among emotional intelligence, social competence and school life satisfaction in institutionalized children and home reared children. The Catholic Universtty of Korea Seoul, Korea; 2006.
4. Connolly KJ , Bruner JS. Competence:Its nature and nursery. London: Academic Press; 1974
5. O'Malley. Research perspective on social competence. Merrill-Palmer Quarterly. 1977; 23(1):29–44.
6. Kim BS, Park JJ. The effect of intramural sport on adolescent's social competence. Korean Journal of Physical Education. 2000; 39(4):101–12.
7. Kim YR. An examination of the relationship among learners' academic/nonacademic self-concept, school-related attitudes and school-related coping. 2001; 1(18).
8. Song DY. Effect of the classroom horticultural program on elementary school student's self-esteem and peer-relationships. Majorin Educational Psycology Graduate School Chongju National University of Education. Chungbuk. Korea; 2008.
9. Moon YL. A study of emotinal intelligence development program for character education. Seoul University Press. 1997; 59:31–98.
10. Mayer JD, Salovey P. What is emotional inteligence? In: Salovey P, Sluyter D, editors. Emotional development and emotional intelligence : implication for deucators. New York : Basic Books; 1997.
11. Roh MY. Effects of group play therapy on improving social competence of children with single parent. [Unpublished Master's Dissertation]. Seoul Women's University; 2004.
12. Do NH. Horticultural therapy on the improvement of self-esteem and sociality of the low-income group children. [Master's Program in Economic Crops]. Graduate School of Agriculture and Animal Science of Konkuk University; 2006.
13. Lee SJ. Promotion of chideren's self- esteem and sociaity through group theraplay program. [Unpublished Master's Dissertation]. Sookmyung Women's Umiversity; 2003.

14. Lim JH. The scale for children's school adaptability and jeon's school adaptability scale; 1993.
15. Relf P D. Dynamics of horticultural theraphy, Relf. It; 1992.
16. Chon MH. Review of horticultural theraphy to apply emotionally disturbed elementary students. [Unpublished Master's Dissertation], Chungjoo University; 2003.
17. Song JE. Effect of horticultural therapy on life functional skills and vocational achiebement of students with mental retardation. Department of Special Education Graduate School, Daegu Universily Gyungpook, Korea; 2004.
18. Morgan B. Growing together: activities to use in your horticulture ane horticultural therapy program for children. Pittsbyrgh Civic Granden Center, Pittsbrugh; 1993.
19. Seo JK, Lee SM. Implication and application of horticultural therapy. Danguk University Press; 2004.