



ELSEVIER

Contents lists available at ScienceDirect

Mental Health & Prevention

journal homepage: www.elsevier.com/locate/mhp

Body image promotion program with a creative movement approach for female college students in Taiwan



Tsung-Chin Lee^{a,b}, Chung-Hsin Chiang^{c,d,*}, Ching-Lin Chu^e

^a MA Program of Counseling and Guidance, National Chengchi University, Taiwan

^b Department of Education, National Chengchi University, Taiwan

^c Department of Psychology, National Chengchi University, Taiwan

^d Research Center for Mind, Brain and Learning, National Chengchi University, Taiwan

^e Department of Educational Psychology & Counseling, National Pingtung University, Taiwan

ARTICLE INFO

Keywords:

Body image
Creative movement program
Prevention
Female adolescent

ABSTRACT

Body image is considered to be positively correlated with self-esteem and self-efficacy. “Beauty in the midst of moving: My healthy body image” program based upon a creative dance/movement therapy approach was proposed to improve body dissatisfaction in female college students. A quasi-experiment design with three groups: the experiment group of 16 female college students, the comparison group (mat Pilates course) of 17 female college students, and the control group of 24 female college students. These three groups were examined at three different time-points: pre-intervention, post-intervention, and three-month follow-up. The experimental group was designed with eight 90 min sessions, once a week for eight weeks. The results showed that after the program, the scores of body-image, mindfulness, and self-esteem were improved in the experimental group compared to the comparison and control groups, and the scores of body image and mindfulness were maintained in the three month follow-up.

1. Introduction

Body image is a multidimensional construct encompassing self perceptions and attitudes regarding one's physical appearance (Cash, 2002). Body dissatisfaction is defined as “a person's negative thoughts and feelings about his or her body” (p. 4, Grogan, 2017). From a developmental perspective, body dissatisfaction is not only prevalent during adolescence for females but persistent into adulthood (Grogan, 2011; Harris & Carr, 2001; Wertheim, & Paxton, 2011). For female college students, 70–94% expressed a desire to lose weight and become slimmer (Paxton et al., 1991; Vohs, Heatherton, & Herrin, 2001), and 80–91% reported dieting (Abraham, Mira, Beumont, Sowebutts, & Llewellyn-Jones, 1983; Striegel-Moore, Silberstein, Grunberg, & Rodin, 1990). In Taiwan, the John Tung Foundation (2000), a nationally established organization that focuses on mental health as a means to improve public welfare, surveyed more than 1000 adults and reported that male adults are more satisfied with their body shape than female adults. Moreover, the study determined that the age range of 20–29 years old is when male and female adults are most concerned about their body shape. Huang and Chang (2005) also surveyed 1953 adults

and discovered that, despite most participants being aware that their body mass index (BMI) was in the average range, most female adults (85.5%), particularly younger female adults, misidentified their body weight. This phenomenon did not appear in relation to male adult participants.

Individuals with body dissatisfaction experience possible negative effects including low self-esteem, social anxiety, depressive mood, impaired sexual functioning, and possible development of eating disorders (Cash & Fleming, 2002; O'Dea, 2004, 2012; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006; Wiederman, 2002). Regarding college students, the association of body dissatisfaction with dieting, disordered eating, and exercise behaviors is well documented in the West (Drewnowski, Yee, Kurth, & Krahn, 1994; Kenardy, Brown, & Vogt, 2001; O'Dea & Abraham, 2000). There are limited empirical studies about the issue of body dissatisfaction for the college student population in Taiwan. Lu and Hou (2009) indicated that for female college students, the greater the BMI, perceptions of how others viewed their bodies, and upward social comparisons, the more likely respondents felt dissatisfied with their bodies.

To counter some of the consequences of body dissatisfaction in

* Corresponding author at: Department of Psychology and Research Center for Mind, Brain, and Learning, National Chengchi University, No. 64, Sec. 2, ZhiNan Rd., Wenshan District, Taipei City 11605, Taiwan.

E-mail address: chchiang@nccu.edu.tw (C.-H. Chiang).

<https://doi.org/10.1016/j.mhp.2019.01.004>

Received 8 July 2018; Received in revised form 25 December 2018; Accepted 14 January 2019

Available online 15 January 2019

2212-6570/© 2019 Elsevier GmbH. All rights reserved.

college populations, programs such as media literacy interventions and dissonance-based programs have shown efficacy in promoting positive body image and reducing risk for eating disorders (Yager & O’dea, 2008). However, most of these programs focus on cognitive ways of changing negative body image or body dissatisfaction. They seem to ignore the strategy of directly experiencing or developing awareness of one’s own body to shift perspectives on body image.

Although recent literature has started to demonstrate that different types of body exercise such as yoga or belly dancing can reduce body dissatisfaction or improve positive body image in female adults (Mahlo & Tiggemann, 2016; Tiggemann, Coutts, & Clark, 2014), a possible deep psychological treatment of body-mind dialogue might be dance/movement therapy (DMT). DMT constitutes a form of creative psychotherapy (Meekums, 2002). DMT or Dance Movement Psychotherapy (DMP) is “a relational process in which client/s and therapist engage in an empathic creative process using body movement and dance to assist integration of emotional, cognitive, physical, social and spiritual aspects of self”. (Association for Dance Movement Psychotherapy UK, 2018). Through creative movement, deep feelings are evoked, which can lead to the releasing, embodying, and processing of thoughts and feelings (Chodorow, 1991; Levy, 2014). Creative movement uses a non-judgmental perspective to address the body through experiencing sensations within the body, connecting to emotions and feelings from the body, and identifying holistic body images (Levy, 1992). Lewis and Scannell (1995) presented one of the pioneer empirical studies that focused on a body image program with creative DMT approach. This study examined scores on the Multidimensional Body-Self Relations Questionnaire (MBSRQ) from 112 women between 18 and 69 years of age who had been actively participating in creative DMT courses for periods ranging from two weeks to 16.5 years. It was found that participants who had experienced more than five years of creative DMT were more satisfied with their appearance, fitness, and body parts than those with less than five years of experience. Recently Muller-Pinget, Carrard, Ybarra, and Golay (2012) enrolled 18 obese female patients to attend a weekly 2-h dance therapy workshop for 36 weeks. Following the workshop, these patients not only displayed improvement in health-related quality of life, body consciousness, but also self-body image. Until now, there have been very few studies utilizing DMT with a focus on facilitating positive body image and improvement of body dissatisfaction for young women.

In this study, we attempt to connect creative movement and the concept of body image as the working framework of a program entitled, “Beauty in the midst of moving: My healthy body image” to increase participants’ body confidence and self-esteem. To the best of the authors’ knowledge, this study is the first creative approach to exploring a body image promotion program in Taiwan. Thus, the recruitment of female college students as participants would constitute an initial aim.

The first goal of the study was to improve body dissatisfaction in Taiwanese female college students. Self-esteem and mindfulness are two additional key indicators for measurement due to the program

primarily using a creative movement approach to explore the bodily experience and feeling and to connect the body and mind.

2. Methods

2.1. Research design and participants

The study is a quasi-experiment research design. Nineteen female college students (ages 18–25 with mean age of 19.95) formed the experiment group (called “Beauty in the midst of moving: My healthy body image”), 20 female college students in a physical education group (mat Pilates course) formed the comparison group, and 30 female college students who did not attend any of the former two groups during the intervention and three-month follow periods were the general control group. Recruitment for the experimental group and general control group was accomplished through postings on the online and physical bulletin boards for university students in Taipei, the capital city of Taiwan. The participants in the physical education group collaborated with a gym teacher at a local university, who hosted a mat Pilates course and invited female students in her class to attend the study. The mat Pilates course was a weekly 90-min class for 8 weeks, including practicing body part stretching, balancing and coordinating, and strengthening core muscles. Participants were excluded if they: 1) achieved scores that were higher than cutoff scores (28 or above) by Cheng (1993)’s suggestion of using the Center for Epidemiological Studies Depression scale (CES-D, Radloff, 1977). Research assistants conducted individual interviews to rule out possible diagnoses of depression; if positive, the research team referred the participants to the university counseling center and omitted the data from the sample. 2) Participants were physically handicapped or anxious about expressing themselves through the body in a group setting. From the intervention period to three-month follow up, two, one and six of the participants in the each respective group were unable to complete the study due to graduation from university and lose connection. Thus the final valid data needed to complete pre-, post intervention and three-month follow-up were as follows: there are 16 in the experimental group, 17 in the physical education group and 24 in the general control group. The research protocol was approved by the Ethical Committee for Human Research at National Taiwan University.

Three groups of participants were matched in chronological age, BMI, social economic status based on participants’ parents education and vocational states, social desirability bias (Liao, 2000), and depressive mood (Radloff, 1977) (see Table 1).

2.2. Measures

All of the participants completed the following measures in-person during pre- and post-intervention. However, most participants completed the questionnaires online at three-month follow up.

The Multidimensional Body-Self Relations Questionnaire 3rd

Table 1
Characteristics of the three groups.

	Body image program (N = 16)		Pilates (N = 17)		Controls (N = 24)		Statistics	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range	F	p
Age	20.44 (1.21)	18–22	19.94 (0.97)	19–22	19.63 (0.97)	18–22	2.93	.06
BMI ^a	20.00 (1.99)	16.85–24.77	19.93 (1.88)	16.03–22.96	20.69 (2.54)	16.61–26.84	0.72	.49
SES	2.56 (0.89)	1–4	2.94 (0.90)	1–4	2.54 (1.06)	1–5	0.97	.39
TWSD	49.19 (7.12)	40–63	47.35 (6.29)	37–56	46.21 (5.16)	37–55	1.15	.33
CES-D	15.00 (9.17)	3–36	15.30 (9.23)	3–33	15.33 (10.65)	4–37	0.34	.71

Note. Analyses in the table were ANOVA.

SES: social-economic status.

TWSD = Taiwan social desirability.

CES-D = Center for Epidemiological Studies Depression Scale.

^a The valid data in the Pilates group are N = 14, and in the control group are N = 20.

Appearance Scale (MBSRQ-AS; Cash, 2000). MBSRQ-AS is a 34-item scale derived from the MBSRQ, which assesses self-attitudinal aspects of the body-image construct, especially on appearance-related subscales. Four subscales including appearance evaluation, appearance orientation, self-classified weight, and body areas satisfaction were chosen as body image indices in the current study. The original MBSRQ was developed in the U.S. as a high quality tool in both reliability and validity, and utilized broadly with adolescents and adults (Cash, 2000). The Chinese version of MBSRQ was translated by Wang and Wang (2004) and has achieved good internal reliability (Cronbach's $\alpha = 0.71\text{--}0.91$) and construct validity.

The Rosenberg Self-Esteem Scale (RES; Rosenberg, 1965). RES is a 10-item questionnaire, and widely used as a self-esteem scale for determining individuals' whole sense of self-value. Schmitt and Allik (2005) reported scale properties for the RSE for 53 nations including Taiwan and found a reasonable internal reliability and convergent validity.

The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). FFMQ measures five dimensions, including observing, describing, acting with awareness, non-judging of inner experiences, and non-reactivity of inner experiences. The Chinese version of the FFMQ was developed by Chang, Lin, and Huang (2010), and found the same factor structure. Each scale obtained high internal consistency (Cronbach's α is 0.80–0.90) and validity.

2.3. *Body image promotion program: "Beauty in the midst of moving: My healthy body image"*

The creative-movement approach, body image promotion program is a group-based creative movement program. It focuses on movement exploration about the body, based upon an expressive support group (Shechtman, 2007). The program was designed with eight 90-min sessions, once a week for eight weeks. Each session was approximately divided into four sections: 1) review and new topic introduction; 2) body exploration; 3) short lecture or video demonstration (optional); and 4) sharing and feedback. Table 2 presents the content of each session in the program, including different ways to experience body shape, body rhythm, and body felt sense to find each individual's personal body vocabulary and integration of the body-self and self-functioning. Regarding the design of the program, two key points are emphasized: 1) body exploration, where different movement components and related props were included; and 2) in working with a younger

generation, materials from popular culture are included, such as a "runway" component. Two group leaders encouraged group participants to explore and express their inner emotions without personal judgments or interpretations, and facilitated the sharing and feedback within the group setting. The group leaders were graduate students majoring in clinical and counseling psychology, who have been trained through the pilot study. To check for the adherence and fidelity of the program, group leaders were monitored and under the supervision by the first author, who is a professor of dance/movement therapy with a Ph.D. degree.

The group process of the program and the main protocol used are described briefly. In the initial phase, sessions 1 and 2, most participants expected the leaders to directly teach or demonstrate how to move. In addition, since most of the participants were anxious and worried about others' evaluations, their bodies were typically rigid and it was difficult for them to move freely. The group leaders repeatedly stated that "there is no 'right' or 'wrong' way to move" and encouraged the participants to understand that all of their movements were excellent and fully acceptable. In sessions 3-4, the transition phase, the participants engaged in the topic of grounding. In this phase, their feet made solid contact with the floor, and they experienced grounding and state of balance in their body. The group leader prepared shredded paper with different colors. Participants were led to tear up the paper and throw it into the air, playing freely with spontaneous vocalizations as individuals or in groups in various ways. Through this exercise, it appeared that all of the participants exuded child-like and playful happiness. At this time, their bodies were no longer rigid, their anxiety was reduced and participants expressed their feelings freely. In sessions 6-7, the working phase, the popular culture element, the "runway walk", was introduced to offer participants a unique and enjoyable experience. The participants were invited to walk on the runway and pose in a position, either individually or in a small group, and show their body posture in the center of the classroom. The group leaders then prompted the participants to speak first loudly "Which part of my body do I like/dislike most?", and then speak loudly "I love myself, the way I look" in the group. The reason being was to facilitate the participants' ability to stay positive in public situations and accept all body types unconditionally. This is based upon the concept that beauty originates internally and then radiates outward. At the end of the program, the participants shared their bodily learning and reframed their understanding of body image.

Table 2
Content of the "Beauty in the midst of moving: My healthy body image" program.

Session	Topic	Content of dance/movement	Body image related activities
1	Knowing my body	1. To become aware of the body 2. Body part activities	Body image state checklist
2	Trusting your body	1. Body centering and alignment 2. Space pathway: swing, sway, and rock <i>Material: leather</i>	Understand the sources that influence the development of body image
3	Listening to the body	1. Strong and light movements and shape 2. Grounding: weight shift and transfer <i>Material: shredded paper with different colors</i>	Aware and control the force of different body states
4	Body boundaries	1. Breathing exercises: tense and relax 2. Your personal body story <i>Material: scarf</i>	Awareness of body boundaries, and its possible comfortable personal space
5	Self-worth and body image	1. Stretching changes body shape 2. Movement and personal traits <i>Material: elastic rope</i>	Body diversity: appreciation and understanding different ways of beauty
6	Rhyme, rhythm, and response	1. Experience the rhyme and rhythm 2. Creative act: if I were...(Runway I)	Body acceptance: understanding holistic body state
7	Self-expression	1. Movement experiment with different types of bodily self-expression 2. Creative act: if I were...(Runway II)	Understanding the multiple roles of self in social contexts
8	Being myself	1. A love letter to myself 2. Creative act: if I were...(Runway III) 3. Group sharing and ending	Group discussion and review

Table 3
Outcomes in the three groups.

	Body image program (N = 16)			Pilates (N = 17)			Controls (N = 24)			Comparisons ^c
	Pre-Mean (SD)	Post-Mean (SD)	Three-month F/U Mean (SD)	Pre-Mean (SD)	Post-Mean (SD)	Three-month F/U Mean (SD)	Pre-Mean (SD)	Post-Mean (SD)	Three-month F/U Mean (SD)	
MBSRQ-AS ^d										
■ Appearance orientation	45.47 (6.50)	44.87 (5.26)	45.20 (5.94)	44.81 (5.71)	43.50 (4.59)	42.69 (3.93)	42.04 (5.30)	41.21 (5.82)	40.29 (6.40)	n.s.
■ Appearance evaluation	22.20 (4.96)	24.93 (4.83)	24.53 (4.94)	21.50 (6.12)	22.94 (5.08)	22.00 (4.95)	20.67 (3.78)	21.04 (4.04)	21.67 (4.52)	B > C
■ Self-classified weight ^b	17.73 (4.59)	17.13 (4.73)	18.13 (1.77)	18.31 (4.70)	18.19 (3.76)	18.50 (1.41)	17.04 (4.83)	17.13 (4.35)	17.88 (2.98)	n.s.
■ Body areas satisfaction	29.40 (5.72)	32.47 (4.69)	31.53 (6.05)	27.06 (3.99)	27.63 (5.35)	27.25 (4.64)	27.71 (3.90)	26.75 (4.46)	27.04 (3.98)	B > P, C
RSE	37.56 (6.01)	40.63 (5.32)	40.25 (6.18)	36.06 (6.41)	39.24 (5.30)	37.47 (6.10)	36.46 (5.54)	36.71 (6.10)	38.13 (6.15)	Post: B, P > C
FFMQ	91.56 (9.14)	97.75 (12.85)	99.94 (11.55)	95.53 (11.66)	97.18 (9.42)	95.24 (10.24)	93.42 (9.29)	92.54 (11.55)	93.46 (10.45)	B > P, C

Note. Analyses in the tables were ANCOVAs and the pre-test scores were used as a covariate.

F/U = follow-up.

MBSRQ-AS = Multidimensional Body-Self Relations Questionnaire 3rd -Appearance Scale.

RES = Rosenberg Self-esteem Scale.

FFMQ = The Five Facet Mindfulness Questionnaire.

*p < .05; **p < .01; n.s.: no significant

^a There were two missing parts of data in the body image program group (N = 15) and the Pilates group (N = 16).

^b A mixed between-within ANOVA was conducted due to violating the assumption of homogeneity of regression slopes for ANCOVA.

^c B = body image program; P = Pilates; C = controls. Only significant differences were shown.

3. Results

A mixed between-within ANCOVA, pre-intervention score as the covariate, was conducted to assess the efficacy of the body image group compared with the Pilates group, and general control group after the intervention (post) and at the three-month follow-up (see Table 3).

3.1. General body image

Regarding the appearance orientation subscale in MBSRQ-AS, after adjusting for pre-intervention scores, there was no significant interaction effect (Wilks' $\Lambda = 0.98$, $F(2,51) = 0.60$, $p = .55$), time main effect (Wilks' $\Lambda = 0.99$, $F(1, 51) = 0.49$, $p = .49$), or group main effect ($F(2,51) = 1.54$, $p = .22$). Regarding the appearance evaluation subscale, there was no significant interaction effect (Wilks' $\Lambda = 0.96$, $F(2, 51) = 0.95$, $p = .39$) or time main effect (Wilks' $\Lambda = 0.99$, $F(1, 51) = 0.64$, $p = .43$). There was a significant group main effect ($F(2,51) = 4.21$, $p < .05$, $\eta_p^2 = 0.14$). The adjusted means of the body image group were higher than the control group ($p < .05$). Concerning the self-classified weight subscale, there was no significant interaction effect (Wilks' $\Lambda = 0.99$, $F(2, 51) = 0.35$, $p = .71$) or group main effect ($F(2, 51) = 0.36$, $p = .70$). There was a significant time main effect (Wilks' $\Lambda = 0.40$, $F(1, 51) = 78.22$, $p < .0001$, partial $\eta^2 = 0.61$). The following post hoc comparison showed that there was no significant difference in self-classified weight subscale scores between post-intervention and the three-month follow up ($p > .05$). For the body areas satisfaction subscale, there was no significant interaction effect (Wilks' $\Lambda = 1.00$, $F(2, 51) = 0.46$, $p = .63$) or time main effect (Wilks' $\Lambda = 1.00$, $F(1, 51) = 0.19$, $p = .68$). There was a significant group main effect ($F(2,51) = 5.98$, $p = .005$, $\eta_p^2 = 0.22$). The body image program group was higher than the Pilates ($p < .05$) and control ($p < .01$) groups. The results showed that after the curriculum, the appearance evaluation and body areas satisfaction were improved in the experimental group at post-intervention and three-month follow-up.

3.2. Self-esteem

There was a significant interaction between group and time at the RSE (Wilks' $\Lambda = 0.88$, $F(2,53) = 3.75$, $p = .03$, $\eta_p^2 = 0.12$), but there were no other significant main effects (time: Wilks' $\Lambda = 0.998$, $F(1, 53) = 0.13$, $p = .28$; group: $F(2, 53) = 2.00$, $p = .15$). The post-hoc analyses exploring group difference at the two time points were conducted first. The results revealed that there was a significant group effect at post-intervention ($F(2, 53) = 4.69$, $p < .05$). The RSE scores were higher both in the body image program and Pilates groups, than in the general control group ($ps < 0.05$). However, there was no significant group effect at the three-month follow-up ($F(2, 53) = 0.70$, $p = .50$). Then considering the RSE scores within the three groups, there was no significant difference at post-intervention and the three-month follow-up in the body image group (Wilks' $\Lambda = 0.91$, $F(1,14) = 1.36$, $p = .26$) and in the general control group (Wilks' $\Lambda = 0.92$, $F(1,14) = 1.87$, $p = .19$). However, regarding the Pilates group, the RES scores were significantly lower at three-month follow-up than at the post-intervention (Wilks' $\Lambda = 0.69$, $F(1,14) = 6.74$, $p = .02$, $\eta_p^2 = 0.31$). The results showed that, after the intervention, both the body image program and the Pilates groups could improve the scores of self-esteem. However, after three months, the scores of self-esteem in Pilates group declined, while the other two groups did not show any significant negative change.

3.3. Mindfulness

After adjusting for pre-intervention scores, there was no significant interaction effect (Wilks' $\Lambda = 0.98$, $F(2, 53) = 0.64$, $p = .53$) or time main effect (Wilks' $\Lambda = 0.99$, $F(1, 53) = 0.74$, $p = .40$) at the FFMQ.

However, there was a significant difference at FFMQ between the three groups ($\eta_p^2 = 0.18$). The body image program group were higher than the Pilates and control groups ($ps < 0.05$), but there was no significant difference between the Pilates and control groups ($p = .44$).

4. Discussion

The purpose of the study aimed to examine the efficacy of the body image program called “Beauty in the midst of moving: My healthy body image”, a creative movement approach of DMT for female college students. The program mainly intended to ameliorate bodily dissatisfaction, and enhance self-esteem and mindfulness. After eight weeks, it was found that this program not only improved body image, such as body area satisfaction, but also facilitated increased self-esteem and increased the state of mindfulness and these improvements could be maintained after three-month follow-up.

As women in Taiwanese society, the participants grew up with both Chinese and Western cultural perspectives of “beauty.” It seems both perspectives in modern Taiwanese society are similar. In the body image program, many participants shared that they were struggling with powerful ideas of “real” or “ideal” beauty to fulfill societal norms, and thus, seldom had the opportunity to freely choose their social roles and norms. In the termination session, the participants agreed that “to be myself” and respect the authentic bodily self is not an easy task in daily social life. However, a consensus was reached that understanding, accepting, and embracing all bodies is an important start towards that goal.

In considering the theoretical perspective of how our program can achieve better results than the comparison and general control groups, Pylvänäinen (2003) proposed a tripartite model for the concept of body image in order to clarify the meaning of body image. She differentiated body image into three interrelated aspects in dance/movement therapy: 1) image-properties; 2) body-self; and 3) body-memory. Image-properties refer to one's perceived appearance of the body and to societal and cultural attitudes regarding it. Body-self is the body-based interaction, experience, and emotional core self. Body-memory stores the lived experiences and serves as a background for evaluating present experiences. Our program mainly used core ideas from the creative movement approach. The group leaders presented positive and encouraging ways to facilitate the participants in identifying different ways of exploring the possibilities of their own bodies, to experience and accept any kind of body sensation, and to also communicate with themselves or with group members during or after the practice. Therefore, all of the participants could gradually attempt to integrate their different image-properties, body-self, and body-memory toward their authentic self from session to session. Thus, it is reasonable that the results can decrease the participants' body dissatisfaction, and increase their self-esteem and mindfulness.

Regarding the conceptualization of positive body image, Cook-Cottone (2015) provided an attuned representational model of self to treat eating disorders. The proposal also constitutes a useful theoretical model to explain the reason for change in our program. Cook-Cottone proposed two critical ways of being that could be potential targets in the treatment: 1) embodied awareness of the internal and external aspect of the self; and 2) mindful self-care. Within the model, Cook-Cottone suggested that mindful self-care can be considered an active practice to enhance and maintain attunement and balance among internal and external aspects of the self. Additionally, it acts as a way to cultivate an active appreciation for, and an engagement with the body. By way of these two targets, individuals can improve their body image. Unlike former studies, our program did not directly employ behavioral or cognitive strategies to improve body image. However, our program directly addressed the experience of the body itself, and finding the body's flexibility and possibilities. Through the body cultivation process, in which many possibilities of the bodily-self are experienced in a non-judgmental way, an equivalent “attunement” and “mindful self-

care” process is developed. Thereby, the results can enhance body image and authenticity of the self, therefore promoting self-esteem and mindfulness.

5. Conclusion

In the study, it was found that our program could not only decrease body dissatisfaction but also improve the self-esteem and mindfulness in college female students. Some of the strengths of the present study must be addressed. First, the study is one of the first studies using the creative movement approach of DMT to improve the body image as a promotion program for college female students, and the results were promising. Second, the study focused on the core concept of body image and related theoretical issues, such as self-esteem and state of mindfulness, to assess change after the program and at three-month follow-up. The results indicated that through the group process, the participants maintained their learning experience to cope with different social and cultural demands regarding body image and retained the learned bodily self in a sustainable way.

At least three limitations in the study must be acknowledged. First, the contents of the program lacked inclusion of discussion concerning the affect of different media on the development of our ideal and real body images. The following replication study should address this topic through short lecture or video demonstration. Second, the study is a case control study, and thus, the lack of a randomized control assignment to group conditions might reduce external validity. Third, the sample size is quite small in the study. The findings of the study might be replicated in a larger group with the same age range or a younger age group of females, or even a clinical sample for generalization in the future. Lastly, if program is replicated for a younger age group, the contents of each session in the program can be kept the same but the facilitation and guidance should be simplified.

Acknowledgments

Funding: This research was supported by the Ministry of Science and Technology in Taiwan [grant number MOST 104-2410-H-004-054 - and MOST 105-2410-H-004-080 - and 105-2410-H-004 - 071-MY3]. This work was also supported by “The Human Project from Mind, Brain and Learning” of NCCU from the Higher Education Sprout Project by the Ministry of Education in Taiwan. Much thanks to Ms. Alisha Jihn, 2017-2018 Fulbright Taiwan Fellow, for her invaluable comments and suggestions about the English editing.

Conflicts of interest

None

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.mhp.2019.01.004](https://doi.org/10.1016/j.mhp.2019.01.004).

References

- Abraham, S. F., Mira, M., Beumont, P. J. V., Sowebutts, T., & Llewellyn-Jones, D. (1983). Eating behaviors among young women. *The Medical Journal of Australia*, 2(5), 225–228.
- Association for Dance Movement Psychotherapy UK. (2018). What is dance movement psychotherapy? (2018). (<https://admp.org.uk/> Accessed: 05 November 2018).
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13, 27–45.
- Cash, T. F. (2000). *Multidimensional body-self relations questionnaire's manual* (3rd ed.). Norfolk, VA: Old Dominion University.
- Cash, T. F. (2002). Cognitive behavioral perspectives on body image. In T. F. Cash, & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 38–46). New York: Guilford Press.
- Cash, T. F., & Fleming, E. C. (2002a). Body image and social relations. In T. F. Cash, & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp.

- 277–286). New York: Guilford Press.
- Chang, J. H., Lin, Y. C., & Huang, C. L. (2010). Exploring the mechanism of mindfulness: From attention to self-integration. *Poster presented at the 11th annual meeting of the society for personality and social psychology.*
- Cheng, W. J. (1993). *A study of estimating and preventive strategy in school system for depression.* Taiwan: Ministry of Education PG9403-0433-92A339.
- Chodorow, J. (1991). *Dance therapy and depth psychology: The moving imagination.* London: Routledge.
- Cook-Cottone, C. P. (2015). Incorporating positive body image into the treatment of eating disorders: A model for attunement and mindful self-care. *Body Image, 14,* 158–167.
- Drewnowski, A., Yee, D. K., Kurth, C. L., & Krahn, D. D. (1994). Eating pathology and DSM-III-R bulimia nervosa: A continuum of behavior. *American Journal of Psychiatry, 151,* 1217–1219.
- Grogan, S. (2017). *Body image: Understanding body dissatisfaction in men, women, and children* (3rd ed). London: Routledge.
- Grogan, S. (2011). Body image development in adulthood. In T. F. Cash, & L. Somlak (Eds.). *Body image: A handbook of science, practice and prevention* (pp. 93–100). New York: Guilford.
- John Tung Foundation. (2000). *The national survey of body shape awareness in Taiwan (2000).* (<http://nutri.jitf.org.tw/index.php?idd=10&aid=2&bid=34&cid=555>).
- Harris, D. L., & Carr, A. T. (2001). Prevalence of concern about physical appearance in the general population. *British Journal of Plastic Surgery, 54*(3), 223–226.
- Huang, L. L., & Chang, C. H. (2005). Body image and its predictors in Taiwan: Interpersonal pressure and media agreement as mediators. *Journal of Chinese Psychology, 47*(3), 269–287.
- Kenardy, J., Brown, W., & Vogt, E. (2001). Dieting and health in young Australian women. *European Eating Disorders Review, 9,* 242–254.
- Levy, F. (1992). *Dance/movement therapy—A healing art.* Reston, VA: American Alliance for Health, Physical Education, Recreation and Dance.
- Levy, F. J. (2014). Integrating the arts in psychotherapy: Opening the doors of shared creativity. *American Journal of Dance Therapy, 36,* 6–27.
- Lewis, R. N., & Scannell, E. D. (1995). Relationship of body image and creative dance movement. *Perceptual and motor skills, 81*(1), 155–160.
- Liao, Y. L. (2000). *Development of Taiwanese social desirability scale and related psychological process* Unpublished Master Thesis. National Taiwan University.
- Lu, H. Y., & Hou, H. Y. (2009). Testing a model of the predictors and consequences of body dissatisfaction. *Body Image, 6*(1), 19–23.
- O'Dea, J. (2004). Evidence for a self-esteem approach in the prevention of body image and eating problems among children and adolescents. *Eating Disorders, 12*(3), 225–239.
- O'Dea, J. (2012). Body image and self-esteem. In T. F. Cash (Ed.). *Encyclopedia of body image and human appearance* (pp. 141–147). London: Elsevier.
- O'Dea, J. A., & Abraham, S. (2000). Improving the body image, eating attitudes, and behaviors of young male and female adolescents: A new educational approach that focuses on self-esteem. *International Journal of Eating Disorders, 28,* 43–57.
- Mahlo, L., & Tiggemann, M. (2016). Yoga and positive body image: A test of the Embodiment model. *Body Image, 18,* 135–142.
- MEEKUMS, B. (2002). *Dance movement therapy: A creative psychotherapeutic approach.* London: Sage.
- Muller-Pinget, S., Carrard, I., Ybarra, J., & Golay, A. (2012). Dance therapy improves self-body image among obese patients. *Patient Education and Counseling, 89*(3), 525–528.
- Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology, 35*(4), 539–549.
- Paxton, S. J., Wertheim, E. H., Gibbons, K., Szmukler, G. I., Hillier, L., & Petrovich, J. L. (1991). Body image satisfaction, dieting beliefs, and weight loss behaviors in adolescent girls and boys. *Journal of Youth and Adolescence, 20,* 361–379.
- Pylvänäinen, P. (2003). Body image: A tripartite model for use in dance/movement therapy. *American Journal of Dance Therapy, 25*(1), 39–55.
- Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385–401.
- Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.
- Schmitt, D., & Allik, J. (2005). Simultaneous administration of the rosenberg self-esteem scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *Journal of Personality and Social Psychology, 89,* 623–642.
- Shechtman, Z. (2007). *Group counseling and psychotherapy with children and adolescents.* Mahwah, NJ: Erlbaum.
- Striegel-Moore, R. H., Silberstein, L. R., Grunberg, N. E., & Rodin, J. (1990). Competing on all fronts: Achievement orientation and disordered eating. *Sex Roles, 23,* 697–702.
- Tiggemann, M., Coutts, E., & Clark, L. (2014). Belly dance as an embodying activity? A test of the embodiment model of positive body image. *Sex Roles, 71,* 197–207.
- Vohs, K. D., Heatherton, T. F., & Herrin, M. (2001). Disordered eating and the transition to college: A prospective study. *International Journal of Eating Disorders, 29,* 280–288.
- Wang, C. S., & Wang, C. H. (2004). The revision of the translated multidimensional body-self relations questionnaire. *Bulletin of Sport and Exercise Psychology of Taiwan, 5,* 101–126.
- Wertheim, E., & Paxton, S. (2011). Body image development in adolescent girls. In T. F. Cash, & L. Somlak (Eds.). *Body image: A handbook of science, practice and prevention* (pp. 76–84). New York: Guilford.
- Wiederman, M. W. (2002). Body image and sexual functioning. In T. F. Cash, & T. Pruzinsky (Eds.). *Body image: A handbook of theory, research, and clinical practice* (pp. 287–294). New York: Guilford Press.
- Yager, Z., & O'dea, J. A. (2008). Prevention programs for body image and eating disorders on University campuses: A review of large controlled interventions. *Health Promotion International, 23*(2), 173–189.