

The Impact of Dance on Health *—From the Perspective of Developmental Psychology*

Yidan Chen

The University of Edinburgh, Holyrood Rd, Edinburgh, EH8 8AQ
572936947@qq.com

Abstract: Dance, as a non-drug intervention means, has a positive effect on health. From the perspective of developmental psychology, the definition of health has different tendencies at different age. For example, in teenagers, emotional health is worthy of attention. Besides emotional health, cognitive health is also a major concern for the older adults. By introducing dance therapy, this paper sorts out and summarize the influence of dance therapy on teenagers' emotion, as well as the influence on emotion and cognition of the older adults. This study supports the positive influence and role of dance therapy in alleviating negative emotions in the two groups and improving cognitive function in the older adults group, which is of great significance for improving people's happiness index in the future.

Keywords: dance therapy, adolescent, older adults, emotion, cognition

1. Introduction

Dance is not only a culture, but also a popular performing arts. Accompanied by music, dancers can perform graceful or difficult movements. It can be said that dance is a kind of art with rhythmic movements as its main means of expression. Compared with non-dancers, dancers will show a different body shape or reveal different inner rhythms, which is largely due to the fact that controlling and using their body is a compulsory course for dancers [1]. For a long time, dance was regarded as a tool for people to communicate with each other and convey their feelings. Until now, human beings have combined modern dance art with psychology, forming the dance therapy that is now well known to the public. Dance therapy strongly collides physical movement with psychology, and further promote the healthy growth of human beings, increase social happiness and improve life by stimulating vitality[2]. Marian Chace and Mary Whitehouse pioneered dance therapy on the east and west coasts of the United States in the 1930s and 1950s respectively. Then, the American Dance Therapy Association (ADTA) was established in 1966. Now, ADTA has developed into an international organization with 1200 members in more than 20 countries. More and more attention is paid to dance therapy.

Dance itself pays great attention to the individual physical and mental interaction, which is common in all kinds of behaviors at all ages, such as children expressing sadness by shouting, and young people relaxing their nerves by mediation and breathing. Relying on this way of physical and mental interaction, dance therapy, as a special therapy widely used in the international clinical field and public health field, has produced many gratifying effects in many fields. Studies have found that dance therapy can improve teenagers who have special educational needs, cognitive deficits and emotional adjustment difficulties. In the older adults, it has played a certain role in relieving cognitive

and emotional problems such as Parkinson's disease and senile dementia [3]. It is very important and necessary to study the stage of teenagers and the older adults. In adolescence, the body grows extremely rapidly, which is a transitional period from immature to mature. It is more vulnerable to the adverse effects of negative emotions and it is a very easy stage of self-value doubt [4]. In old age, they will face the memory decline caused by aging, emotional anger, extreme loneliness, anxiety and other problems [5]. Here, this paper will focus on two different age levels, the youth and the older adults, and make a summary of previous studies by using the method of classification and comparison, and discuss how to implement dance therapy in different groups, and the effect of dance therapy in improving the emotional state and emotional distress of the youth and the older adults.

2. The Role of Dance in Adolescents

Adolescence refers to the stage of development between children and adults [6]. The main emotional problems faced by teenagers are impulsiveness, anxiety, depression and loneliness, etc. These emotional problems greatly perplex teenagers, which may cause negative effects such as stunting, social barriers and sensory defects. Studies have shown that dance therapy has expected intervention effects on these emotional problems.

Impulsive emotion is one of the most common emotional problems. Freud(1936) proposed that in the development of adolescence, strong sexual and aggressive impulses will lead to terrible behaviors such as suicide and bullying [7]. In a series of surveys in mid-2016, it was found that 21.8% of the 3,522 adolescents in Hong Kong reported suicidal thoughts [8]. This kind of impulsion showed a trend of relaxation in the dance intervention with creative dance as the main manifestation. In the process of *Creative Dance*, if participants are guided to pay attention to and return to their breathing, feelings, impulses and feelings with the tone of care and acceptance, and stop them in time when they have negative thoughts [9], teenagers can express their feelings and thoughts without fear, naturally get along with others, and explore their emotional needs from the dance [10]. This accepted emotion reduces the dangerous behaviors, such as suicide and violence caused by impulse, and makes teenagers look at the world again, feel the love and love from the society, and feel happiness freely.

Anxiety is also one of the most common emotional problems among teenagers. Martin[11] et al. used dance therapy of dance and movement therapy (DMT) or body psychiatry (BPT) to try to intervene the anxiety of teenagers. It is done individually, in pairs, or in groups, and every session of DMT divided into five parts: opening circle, war-up, structured task, creative movement, and closing circle. Each session is repetitive [11, 12]. With a set of twice a week, 90-minute each session, a group of up to 8 participants, the final result was very encouraging. After the participants received DMT for 10 weeks (20 times), compared with drug resistance and side effects caused by BPT, it had a positive effect [11]. In another meta-analysis study, Sabine et al. combined 41 intervention studies (N = 2,374; From January 2012 to March 2018). The results show that DMT can improve the quality of life, interpersonal communication and cognitive skills, as well as improve psychological and motor skills. More importantly, DMT can reduce anxiety and has long-term and lasting effects [13].

Depression is another common emotional problem that teenagers face in the development stage. In this rapidly developing and pressure-rising society, the incidence of depression is also rising rapidly among teenagers [14]. According to the data report of 2019, 11.1% of teenagers and children in the United States suffer from depression[15]. In the study, Jeong et al. examined the psychological profile of mild depression and whether there is any change in neurohormones after 12 weeks of DMT[16]. 40 adolescents with an average age of 16 participated in the study. The treatment group took a 45-minute DMT course three times a week, and the course revolved around four topics.

- (a) knowledge of the body, room and group;
- (b) expression of sports and symbolic quality of sports;
- (c) sports, sensations, images and words;

(d) emotional differentiation and integration.

Each topic includes different sub-topics, such as:

(a) setting boundaries and external, internal and personal spaces;

(b) body language, the process of reflection, polarity and inward and outward expression; (c) play, painting and language;

(d) inner feeling, sports quality and emotional expression.

After 12 weeks of dance therapy, plasma serotonin concentration in the DMT group increased and dopamine concentration decreased. It shows that dance therapy can effectively regulate the concentration of serotonin and dopamine, and improve the psychological pressure of adolescents with mild depression.

From the above research, it can be seen that dance therapy has obvious effect on teenagers' impulse, anxiety and depression. Dance therapy can cultivate teenagers' overall physical and mental development and cultivate a comprehensive sense of self [10]. This is because dance therapy is different from taking medicine or other therapeutic methods. The treatment process is both physical and mental, using language and non-language, focusing on stimulating people's health potential, but not on dealing with pathological problems. It deals with consciousness and subconsciousness, verbal and non-verbal by means of attunement, participating, facilitating and cooperative. Pre-verbal and non-verbal physical and mental behavioral disorders. This kind of therapy is good at mobilizing the intrinsic motivation of human nature, organizing its application and fundamentally improving mental behavior, not only in eliminating, relieving or inhibiting symptoms.

3. The Role of Dance in the Older adults

Apart from adolescence, from the perspective of developmental psychology, another group worthy of attention is the older adults. According to statistics, by 2050, the older adults aged 65 and above will account for nearly 17% of the world's population [17], so the related research on the older adults group has been paid more and more attention. With the increase of age, it is inevitable and irresistible for the older adults to suffer from cognitive decline and depression due to social environment, physical illness, partner and children problems [18]. Various studies have shown that dance therapy can relieve and improve the adverse emotions of the older adults in a safe and relaxed environment, and can also improve cognitive and physical functions [17, 19].

Ageing process is usually accompanied by the decline of perception, motor behavior and cognitive function [20], especially the decline of cognitive function, which may be closely related to the Alzheimer's disease. Cognitive decline is mainly manifested in the decline of memory function and executive control function, which leads to the decline of the quality of life of the older adults. At present, there is no effective method of drug treatment for cognitive decline, so non-drug intervention has received extensive attention and a lot of research in this field. Dance intervention, as a non-drug intervention means, has shown a good effect in improving the cognitive function of the older adults. Kshtriya et al. evaluated and summarized 21 impact studies on cognitive performance of the older adults [21]. Cross-sectional study shows that the older adults people with dance experience had better cognitive performance than those without dance experience. For example, Kattenstroth et al. conducted a comparative test of 24 Amateur Dancers (AMD) and 38 control group (CG) in 2010, which included selective attention, concentration and general/fluid intelligence. The final results showed that the performance of AMD group was significantly better than that of CG group [22]. Subsequently, Kattenstroth et al. also found 11 Expert Dancers (ED) and 28 CG in 2011 and measured attention and intelligence. The results are consistent with the study in 2010, and the cognitive performance of ED group is better [23]. In addition to the cross-sectional study, Kattenstroth et al. (2013) divided 35 older adults people into a dance group and a control group, and the dance group participated in a six-month dance course specially designed for the older adults. After the course,

compared with the control group without any intervention, the performance of the dance group in attention and the total score of the neuropsychological test set was significantly improved [24]. Other studies using aerobic dance, social dance and modern dance as interventions also found that the executive function of the older adults was improved after dance intervention [25, 26]. In addition to the healthy older adults people, dance intervention also shown good intervention effects in older adults people with dementia symptoms. For example, Hokkanen et al. [26] under DMT intervention lasting for 9 weeks and 30-45 minutes per week, 29 older adults with dementia over the age of 70 years old used mini mental state examination (MMSE) to investigate cognitive performance at baseline, week 5, week 9 and week 13. The results showed that the scores of the intervention group were significantly improved. Hamill et al. investigated the influence of circle dancing's intervention on 18 senile dementia patients [27], of which 10 were in the intervention group and the other 8 were in the control group. Using standardized quantitative assessment, the results also showed the improvement of cognitive function by dance.

In addition to cognitive problems, emotional problems are also very common among the older adults. Depression, loneliness, anxiety, irritability and emotional disorders are the most common emotional problems experienced by the older adults, or because of the death of a partner, living alone, social isolation and so on, the surrounding environment always affects the emotional expression of the older adults. Dance is more like a kind of social activity, especially in the group dance environment [28], which will further strengthen a person's sense of belonging to society, thus reducing their loneliness [29]. Vankova[30] et al. performed dance therapy for depressive symptoms of older adults people in nursing homes. Participants are all people aged 60 or above, and the intervention method is Exercise Dance for Seniors (EXDASE) program, which is specially designed for the older adults living in the nursing home environment for a long time, once a week for 60 minutes at a time for three months. The geriatric depression scale (GDS) form was used to assess depressive symptoms before and after the intervention. The results showed that the GDS score of the intervention group was significantly increased, while the depressive symptoms of the control group showed a further worsening trend. DMT is a form of physical and psychological intervention that combines physical exercise with psychotherapy [31]. Rainbow Tin Hung Ho et al. conducted a single-blind, three-arm randomized controlled trial (RCT) study, which involved 204 older adults people with mild Alzheimer's disease to verify the impact on the mood of the older adults treated with dance. The older adults are randomly assigned to the DMT group, physical exercise group or waitinglist group. In the study, the DMT group consists of four elements, namely, simple group dance, movement games, improvemental dance movement, and movement interactions among members of the group, in order to encourage participants to remember the steps and sequences, improve mood and vitality, cultivate imagination, creativity and personal expression, and strengthen communication and social communication respectively [32]. On the other hand, the sports group contains moderate to moderate sports equivalent to the DMT group, which are conducted by well-trained and qualified fitness coaches. Each workout includes warm-up (15 minutes), stretching and joint movement (15 minutes), towel exercise (15 minutes) and cooling (15 minutes). The intervention lasted for 12 weeks and lasted for 24 hours in total. The final results showed that depression, autism and negative emotions in DMT group were significantly reduced, but exercise group had no significant effect. Under professional and systematic dance therapy, dance therapy can promote the older adults to express themselves and positive attitudes, strengthen their self-awareness and effectively alleviate their negative emotions [28,31,33]. Therefore, dance therapy is very suitable and beneficial to the treatment of the older adults, and it has a remarkable effect on reducing depression.

4. Summary

Among teenagers, dance therapy can significantly interfere with their emotional problems, because dance therapy provides a rich rehabilitation and treatment environment to improve their psychosocial function. Among the older adults, dance therapy not only solves their needs and concerns and improves their emotions in a unique and profound way [29], but also plays an active role in gradually recovering and enhancing their cognitive function [21]. The reason why dance therapy can achieve pleasant results may be that dance is a multi-modal stimulation, and the use of dance therapy requires a lot of physical and cognitive participation, which is an experience of providing multi-sensory stimulation in an attractive environment [34], thus stimulating changes in human brain structure and helping the body recover. Dance, as an effective intervention means, has rich potential in both physical and psychological aspects of the human body [29]. At the closing of the American Dance Therapy Association Conference held in San Antonio, Texas, USA in 2017, Rainbow Tin Hung Ho of the University of Hong Kong said, "If there are elders in the family, there are treasures" [29], hoping that the older adults can express their emotions freely by means of dance therapy, find a sense of social belonging and identity, and realize the aging growth, which is of great significance to society and relatives. Facing the rapid popularization of international dance therapy, dance therapy, as a special medical method, has achieved some confirmatory research results, but what is the mechanism behind the dance therapy and how to set up the intervention to achieve the best results are our important research directions in the future.

References

- [1] Cameron. (1997). *Amazing grace ... for ordinary people. (attaining dancer's poise)*. *Natural Health*, 27(5), 110–.
- [2] Williams. (2019). *(Re-) Defining Dance/Movement Therapy Fifty Years Hence*. *American Journal of Dance Therapy*, 41(2), 273–285. <https://doi.org/10.1007/s10465-019-09295-6>
- [3] Bryl, & Fontanesi, C. (2021). *Abstracts from the 2020 Research and Thesis Poster Session of the 55th Annual American Dance Therapy Association Conference, Online*. *American Journal of Dance Therapy*, 43(1), 92–102. <https://doi.org/10.1007/s10465-021-09344-z>
- [4] Engelhard. (2014). *Dance/movement therapy during adolescence – Learning about adolescence through the experiential movement of dance/movement therapy students*. *The Arts in Psychotherapy*, 41(5), 498–503. <https://doi.org/10.1016/j.aip.2014.08.005>
- [5] Kshtriya, Barnstaple, R., Rabinovich, D. B., & DeSouza, J. F. X. (2015). *Dance and Aging: A Critical Review of Findings in Neuroscience*. *American Journal of Dance Therapy*, 37(2), 81–112. <https://doi.org/10.1007/s10465-015-9196-7>
- [6] Hopkins. (1983). *Adolescence : the transitional years / J. Roy Hopkins*. Academic Press.
- [7] Freud. (1966). *The Ego and the Mechanisms of Defence (revised)*. Routledge. <https://doi.org/10.4324/9780429481550>
- [8] Chang, Xing, J., Ho, R. T. ., & Yip, P. S. . (2019). *Cyberbullying and suicide ideation among Hong Kong adolescents: The mitigating effects of life satisfaction with family, classmates and academic results*. *Psychiatry Research*, 274, 269–273. <https://doi.org/10.1016/j.psychres.2019.02.054>
- [9] Margolin. (2019). *Breaking Free: One Adolescent Woman's Recovery from Dating Violence Through Creative Dance*. *American Journal of Dance Therapy*, 41(2), 170–192. <https://doi.org/10.1007/s10465-019-09311-9>
- [10] Capello. (2008). *Dance/Movement Therapy with Children Throughout the World*. *American Journal of Dance Therapy*, 30(1), 24–36. <https://doi.org/10.1007/s10465-008-9045-z>
- [11] Martin, Koch, S. C., Hirjak, D., & Fuchs, T. (2016). *Overcoming disembodiment: The effect of movement therapy on negative symptoms in schizophrenia-a multicenter randomized controlled trial*. *Frontiers in Psychology*, 7, 483–483. <https://doi.org/10.3389/fpsyg.2016.00483>
- [12] RÖHRICHT, & PRIEBE, S. (2006). *Effect of body-oriented psychological therapy on negative symptoms in schizophrenia: a randomized controlled trial*. *Psychological Medicine*, 36(5), 669–678. <https://doi.org/10.1017/S0033291706007161>
- [13] Koch, Riege, R. F. F., Tisborn, K., Biondo, J., Martin, L., & Beelmann, A. (2019). *Effects of dance movement therapy and dance on health-related psychological outcomes. A meta-analysis update*. *Frontiers in Psychology*, 10, 1806–1806. <https://doi.org/10.3389/fpsyg.2019.01806>

- [14]Thapar, Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *The Lancet (British Edition)*, 379(9820), 1056–1067. [https://doi.org/10.1016/S0140-6736\(11\)60871-4](https://doi.org/10.1016/S0140-6736(11)60871-4)
- [15]The National Institute of Mental Health (2017). NIMH >> Major Depression. The National Institute of Mental Health. Available online at: <https://www.nimh.nih.gov/health/statistics/major-depression.shtml>
- [16]JEONG, HONG, S.-C., LEE, M. S., PARK, M.-C., KIM, Y.-K., & SUH, C.-M. (2005). DANCE MOVEMENT THERAPY IMPROVES EMOTIONAL RESPONSES AND MODULATES NEUROHORMONES IN ADOLESCENTS WITH MILD DEPRESSION. *International Journal of Neuroscience*, 115(12), 1711–1720. <https://doi.org/10.1080/00207450590958574>
- [17]Capello. (2018). Dance/Movement Therapy and the Older Adult Client: Healing Pathways to Resilience and Community. *American Journal of Dance Therapy*, 40(1), 164–178. <https://doi.org/10.1007/s10465-018-9270-z>
- [18]Anderson. (2001). Treating depression in old age: the reasons to be positive. *Age and Ageing*, 30(1), 13–17. <https://doi.org/10.1093/ageing/30.1.13>
- [19]Alpert, Miller, S. K., Wallmann, H., Havey, R., Cross, C., Chevalia, T., Gillis, C. B., & Kodandapari, K. (2009). The effect of modified jazz dance on balance, cognition, and mood in older adults. *Journal of the American Academy of Nurse Practitioners*, 21(2), 108–115. <https://doi.org/10.1111/j.1745-7599.2008.00392.x>
- [20]Krampe. (2002). Aging, expertise and fine motor movement. *Neuroscience and Biobehavioral Reviews*, 26(7), 769–776. [https://doi.org/10.1016/S0149-7634\(02\)00064-7](https://doi.org/10.1016/S0149-7634(02)00064-7)
- [21]Kshtriya, Barnstaple, R., Rabinovich, D. B., & DeSouza, J. F. X. (2015). Dance and Aging: A Critical Review of Findings in Neuroscience. *American Journal of Dance Therapy*, 37(2), 81–112. <https://doi.org/10.1007/s10465-015-9196-7>
- [22]Kattenstroth, Kolankowska, I., Kalisch, T., & Dinse, H. R. (2010). Superior sensory, motor, and cognitive performance in older adults individuals with multi-year dancing activities. *Frontiers in Aging Neuroscience*, 2. <https://doi.org/10.3389/fnagi.2010.00031>
- [23]Kattenstroth, Kalisch, T., Kolankowska, I., & Dinse, H. R. (2011). Balance, Sensorimotor, and Cognitive Performance in Long-Year Expert Senior Ballroom Dancers. *Journal of Aging Research*, 2011, 176709–176710. <https://doi.org/10.4061/2011/176709>
- [24]Kattenstroth, Kalisch, T., Holt, S., Tegenthoff, M., & Dinse, H. R. (2013). Six months of dance intervention enhances postural, sensorimotor, and cognitive performance in older adults without affecting cardio-respiratory functions. *Frontiers in Aging Neuroscience*, 5, 5–5. <https://doi.org/10.3389/fnagi.2013.00005>
- [25]Coubard, Duret, S., Lefebvre, V., Lapalus, P., & Ferrufino, L. (2011). Practice of contemporary dance improves cognitive flexibility in aging. *Frontiers in Aging Neuroscience*, 3, 1–12. <https://doi.org/10.3389/fnagi.2011.00013>
- [26]Kimura, & Hozumi, N. (2012). Investigating the acute effect of an aerobic dance exercise program on neuro-cognitive function in the older adults. *Psychology of Sport and Exercise*, 13(5), 623–629. <https://doi.org/10.1016/j.psychsport.2012.04.001>
- [27]Hamill, Smith, L., & Röhrich, F. (2012). “Dancing down memory lane”: Circle dancing as a psychotherapeutic intervention in dementia—a pilot study. *Dementia (London, England)*, 11(6), 709–724. <https://doi.org/10.1177/1471301211420509>
- [28]Violets-Gibson. (2004). Dance and movement therapy for people with severe dementia. In *Talking Over the Years: A Handbook of Dynamic Psychotherapy with Older Adults* (pp. 197–214). <https://doi.org/10.4324/9780203501665-22>
- [29]Capello. (2018). Dance/Movement Therapy and the Older Adult Client: Healing Pathways to Resilience and Community. *American Journal of Dance Therapy*, 40(1), 164–178. <https://doi.org/10.1007/s10465-018-9270-z>
- [30]Vankova, Holmerova, I., Machacova, K., Volicer, L., Veleta, P., & Celko, A. M. (2014). The Effect of Dance on Depressive Symptoms in Nursing Home Residents. *Journal of the American Medical Directors Association*, 15(8), 582–587. <https://doi.org/10.1016/j.jamda.2014.04.013>
- [31]Ho, Fong, T. C. T., Chan, W. C., Kwan, J. S. K., Chiu, P. K. C., Yau, J. C. Y., & Lam, L. C. W. (2020). Psychophysiological Effects of Dance Movement Therapy and Physical Exercise on Older Adults With Mild Dementia: A Randomized Controlled Trial. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 75(3), 560–570. <https://doi.org/10.1093/geronb/gby145>
- [32]Foster. (2013). How does dancing promote brain reconditioning in the older adults? *Frontiers in Aging Neuroscience*, 5, 4–4. <https://doi.org/10.3389/fnagi.2013.00004>
- [33]Guzmán-García, Hughes, J. C., James, I. A., & Rochester, L. (2013). Dancing as a psychosocial intervention in care homes: a systematic review of the literature. *International Journal of Geriatric Psychiatry*, 28(9), 914–924. <https://doi.org/10.1002/gps.3913>
- [34]Hokkanen, Rantala, L., Remes, A. M., Härkönen, B., Viramo, P., & Winblad, I. (2008). DANCE AND MOVEMENT THERAPEUTIC METHODS IN MANAGEMENT OF DEMENTIA: A RANDOMIZED, CONTROLLED STUDY. *Journal of the American Geriatrics Society (JAGS)*, 56(4), 771–772. <https://doi.org/10.1111/j.1532-5415.2008.01611.x>