

Research on Intuitive Eating among Male College Students: an Experiment Based on the Perspective of Gratitude and Body Appreciation

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Abstract:

Health training is a new concern for schools and businesses in China to train students and staff. This study used a randomized controlled trial design experiment to explore the health intervention from the perspective of intuitive eating, that based on gratitude and body appreciation among Chinese men (N=107, Average age=19.37). The ANCOVA results showed that the 7 sections of online gratitude group counseling anchored in body appreciation could significantly improve the level of intuitive eating, gratitude and body appreciation among Chinese men. This study formed a set of simple, convenient and effective intervention methods suitable for men, In the future, they could be used to promote levels of gratitude, body appreciation, and intuitive eating among men.

Keywords: Intuitive Eating, Gratitude, Body Appreciation, Intervention, Male

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Introduction

Currently, the Chinese government is vigorously promoting the Healthy China Initiative (2019-2030) (National Health Commission of the People's Republic of China, 2019). And in 2024, a national weight management plan has been proposed (Xinhua, 2024). Weight and health are emerging as new concerns for schools and businesses in China to train students and staff. This study attempted to explore the education and management of health from the perspective of intuitive eating, which was a new way of dietary management, so as to provide reference for schools and enterprises to carry out health training.

Intuitive eating is an adaptive eating behavior that relies on internal physiological mechanisms to guide eating rather than eating in response to emotional stimuli (Tribole and Resch, 1995). Researchers found that intuitive eating is a way of eating that is good for both maintaining physical and mental health (Camilleri et al., 2016; Nejati et al., 2020). Among women, gratitude was found to significantly improve the level of intuitive eating through body appreciation (Homan and Tylka, 2018; Huang et al., 2024). Gratitude was a general tendency of an individual to be aware of and appreciate the positive experiences brought about by others' goodwill, and to be willing to reciprocate with gratitude (Wood et al., 2010). Body appreciation was a manifestation of an individual's respect for their physical needs, which was not influenced by the outside world (Koller et al., 2020). At present, there are few interventions on men's intuitive eating and body image, but some studies have gradually found that part of men were dissatisfied with their bodies, including body fat, muscle, hair and height (Tiggemann et al., 2008; Silva et al., 2011).

Many studies (Alleva and Tylka, 2021) have shown that "Expand Your Horizon" was effective in improving various aspects of body image, including dissatisfaction with one's body. Expand Your Horizon was a commonly used gratitude intervention strategy based on the Gratitude Broaden-Build Theory. It focuses on body functionality and was designed to be delivered online (Alleva and Tylka, 2021).

On account of these, from the perspective of gratitude intervention based on body appreciation, this study explored and formed a set of simply, conveniently and effectively intervention methods, which will be suitable for men to improve their intuitive eating level. So as to provide specific practice and basis for promoting the health education and management of male.

Research Objective

To study intuitive eating among male college students based on the perspective of gratitude and body appreciation.

Research Methodology

Research Design

This study used a randomized controlled trial experiment design (see Figure 1) to validate the effects of the intervention. The intervention in this study was based on the theoretical framework of Expand Your Horizon by Alleva (2015) to explore the impact of the intervention on gratitude, body appreciation and intuitive eating through 7 sections of online group counseling anchored in body appreciation. The independent variable was intervention (including Body Function Appreciation Writing Intervention and Body Appearance Appreciation Writing Intervention) (Alleva et al., 2015), the dependent variables were the level of gratitude, body appreciation, intuitive eating.

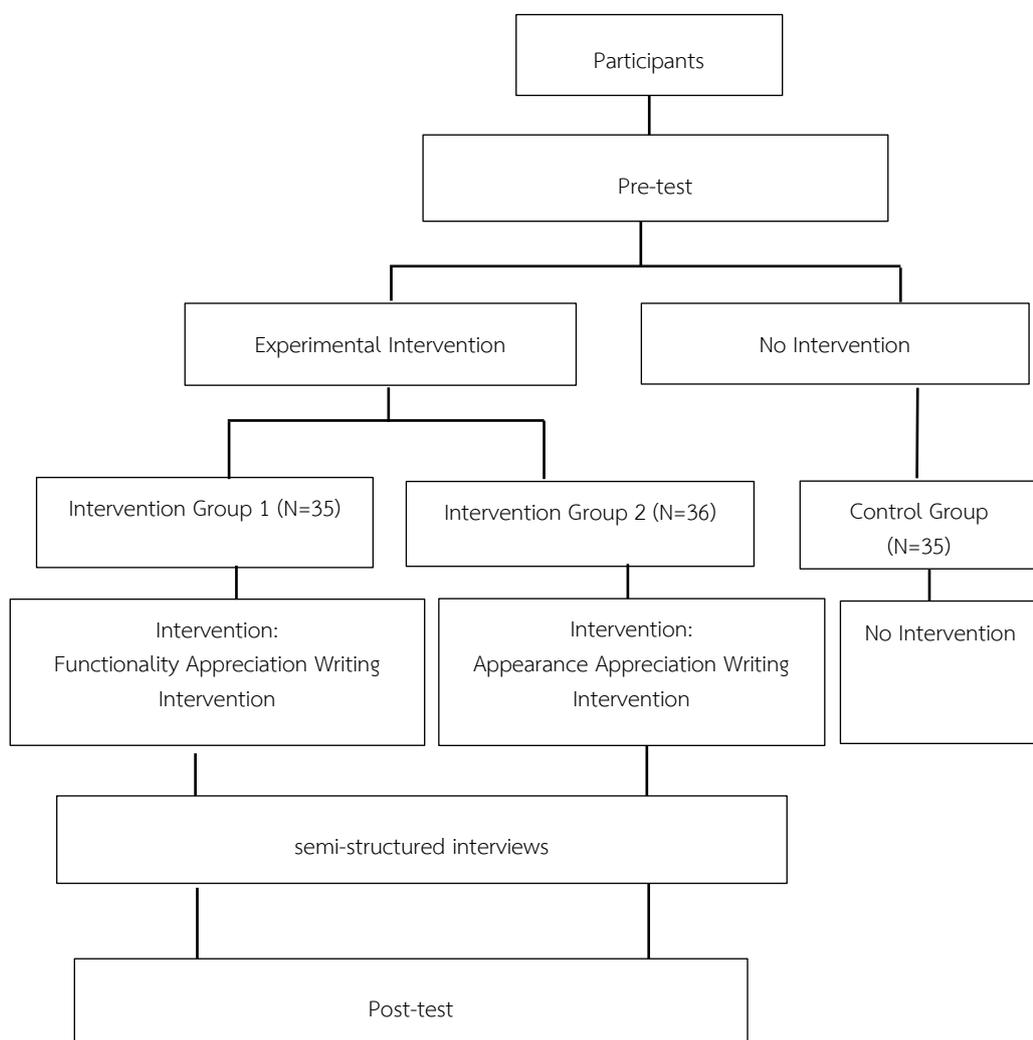


Figure 1 Randomized controlled trial experiment design

There were four hypothesis in this study:

Hypothesis 1: The “Functionality Appreciation” intervention group’s post-test scores on gratitude, body appreciation and intuitive eating would be greatly different than that of the pre-test scores.

Hypothesis 2: The “Appearance Appreciation” intervention group’s post-test scores on gratitude would be significantly different than that of the pre-test scores.

Hypothesis 3: The post-test scores of “Functionality Appreciation” intervention group and “Appearance Appreciation” intervention group would be significantly different than that of the control group.

Hypothesis 4: The post-test scores of “Functionality Appreciation” intervention group would not be significantly different than that of “Appearance Appreciation” intervention group.

Sample

Through online recruitment, a total of 106 male college students from a university were recruited with a posted advertisement of a “Online activity of body gratitude”. They were randomized into three experimental groups ($N_{\text{control}}=35$, $N_{\text{Body-appearance}}=36$, $N_{\text{Body-function}}=35$). They all participated in the whole course of the experiment.

Subsequently, 15 participants (in total 30) from each of the two intervention groups participated in a semi-structured interview (including 8 questions). The average age of all participants was 19.37 years, and the average body mass index (BMI) was 21.09.

Research Instrument

1. The intuitive eating scale-3 (IES-3)

IES-3 (Tylka *et al.*, 2024) was used for test the level of intuitive eating. It includes 12 items. Each items have recorded using a 5-point scale ranging. Higher score, higher levels of intuitive eating. The Cronbach's Alpha of total was 0.861.

2. The 5-item gratitude questionnaire (GQ-5)

The Chinese translated version of Zeng (2017) was used for this study. The questionnaire was a one-dimensional structure, including 5 items, with higher scores and a higher level of gratitude. Each item has recorded using a 7-point scale ranging. The item-3 was scoring in reverse order. The value of Cronbach's α was 0.812.

3. The body appreciation scale (BAS-2) (Ma *et al.*, 2022)

The Chinese version of Body Appreciation scale (Chinese BAS-2) by Ma *et al.* (2022) was used to test the level of body appreciation. This scale includes 10 items; each item has recorded using a 5-point scale ranging. The total score was the average of the 10 items, Higher score, participants have high levels of body appreciation. The McDonald's omega was 0.912.

4. Semi-structured interview

To facilitate the effective conduct of the interview, the researcher had designed 8 semi-structured questions, including: Sharing their favorite and most useful parts of the intervention (with examples), discussing aspects they found most difficult to accomplish or least beneficial (with examples), reflecting on their struggles with the status of gratitude, the level of body appreciation and intuitive eating before interventions, also including any changes they experienced afterward (with examples), sharing the experiences they gained through the intervention and their expectations for future practice. The final question invited participants to offer suggestions for any further improvements.

Data Collection

There were two interventions in this study. Participants or samples were asked to complete one 15-minute writing exercise related to body function or body appearance per day for a week. Participants were asked to write down the “Gratitude letter” and “Reflective journal” to appreciate his body could do for him and why was he grateful for these aspects of his body function or body appearance.

1. Body Function Appreciation Writing Intervention

The body function tips referenced the definition of “physical function” from the Expand Your Horizons program (Alleva et al., 2015). Such as body functions related to sensations, physical activity, health, creative endeavors, self-care, daily routines and relationships with others.

2. Body Appearance Appreciation Writing Intervention

The body appearance tips were derived from Cash's Multidimensional Body Self Relations Questionnaire (Chen and Jackson, 2005). Such as head, torso, muscles, skin, overall appearance, physical appearance during exercise.

Data Analysis

After controlling the pre-test scores as to be a covariate variable, ANCOVA was used to analyze whether there were differences in post-test scores between different experimental groups, so as to test the effect of the interventions. Then the research used Braun and Clarke's Six-Phase Framework for Thematic Analysis (Braun and Clarke, 2006) to examine the qualitative data of semi-structured interviews.

Findings

1. Difference test

In order to make the statistics more accurate and valid, the study also used Analysis of Covariance (ANCOVA) statistics to evaluate the effect of the two interventions after controlling for the influence of pre-test scores in the three groups. The results showed that there was a significant linear relationship between the covariates (pre-test scores) and the dependent variables (post-test scores) among each group, all the r^2 was more than 0.83, and the linear relationship between pre-test scores and post-test scores of the three groups tended to be consistent. Meanwhile, there was no significant interaction between covariate (pre-test score) and independent variable (group), the p values were all more than 0.05. In addition, Levene's test for equality of variances was not significant for GQ, IES, BAS ($p > 0.05$). It could be seen that the data was satisfied the assumptions of covariance analysis. The researcher could perform a statistical test for covariance. Taking the pretest scores of intuitive eating, gratitude and body appreciation of the participants in the three groups as covariate, the ANCOVA results showed that (Table 1).

Table 1 The results of ANCOVA

Dependent variable	Independent variable: groups	Original Mean	Adjusted Mean	95% Confidence Interval		F	Pairwise Comparisons
				Lower Bound	Upper Bound		
Gratitude	BAI	5.68	5.71	5.60	5.83	11.36***	MDT (BAI:CG)=0.35*** (p<0.000); MDT (BFI:CG)=0.34*** (p<0.000); MDT (BAI:BFI)=0.01 (p=1).
	BFI	5.80	5.75	5.59	5.82		
	CG	5.31	5.37	5.25	5.48		
Intuitive eating	BAI	3.71	3.78	3.74	3.82	10.67***	MDT (BAI:CG)=0.08* (p=0.017); MDT (BFI:CG)=0.14* (p=0.030); MDT (BAI:BFI)=-0.05(p=0.245).
	BFI	3.87	3.83	3.79	3.88		
	CG	3.73	3.70	3.65	3.74		
Body appreciation	BAI	4.16	4.19	4.13	4.25	7.07***	MDT (BAI:CG)=0.16*** (p=0.001); MDT (BFI:CG)=0.12*** (p=0.001); MDT (BAI:BFI)=0.04 (p=1).
	BFI	4.17	4.15	4.09	4.21		
	CG	4.03	4.03	3.97	4.09		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. BAI=Body-appearance intervention, BFI=Body-function intervention, CG=Control group. Mean Difference Test (Body-appearance intervention: Control group)=MDT (BAI:CG), Mean Difference Test (Body-function intervention: Control group)=MDT (BFI:CG), Mean Difference Test (Body-appearance intervention:Body-function intervention)= MDT (BAI:BFI) .

There were significant inter-group differences in the post-test scores of intuitive eating, gratitude, and body appreciation of the three groups ($p < 0.01$). After pairwise comparison (the Post Hoc Tests method “LSD” was used for the Equal Variances Assumed of Difference test) of the adjusted mean values of each group, it was found that there were significant differences between the post-test scores of participants in the control group and those in the body function intervention group ($p < 0.05$), and the same as among body appearance intervention group ($p < 0.05$). However, the result also showed that there was no significant difference in post-test scores between the Body function intervention group and the Body appearance intervention group. It meant gratitude intervention was effective in Chinese male college students, and the effect of the two intervention methods was the same. It could be inferred from this that the statistical results of the data supported four hypotheses.

2. Qualitative analysis

In order to further explore the states and feelings of the participants during the intervention process, as well as the changes after the intervention, this study also adopted the qualitative analysis method for analysis. The researcher performed the Thematic Analysis by Braun and Clarke’s Six-Phase Framework (Braun and Clarke, 2006). At first, the researcher grouped similar or related codes into more than 20 preliminary subject categories. Then according to the research question (the promoting effect of gratitude on body appreciation and intuitive eating) and the specific measures of the intervention program (effectiveness and process supervision, suggestions for future work, etc.), the researcher examined and refined these more than 20 preliminary themes. Finally, the researcher summarized 4 themes, with a total of 17 sub-themes:

The first theme: About the focal points. It mainly referred to what things, matters and things the participants pay attention to in the process of the activity, mainly reflecting the participants' interest points and concerns. There were total seven sub-themes in the first theme. Such as the content of intervention (Keywords: one of body function or appearance; Gratitude letter; Reflective journal), body and me (Keywords: Body; Function, impact and contribution; Appearance and outward manifestation), Self (Keywords: Myself), extension of thought (Keywords: Details, subtleties, previously neglected attention or less attention, expansion, potential and renew; Quantity, Uniqueness, richness, diversity), healthy concept (Keywords: Healthy concept; Exercise; Diet), other person (Keywords: others, include people around and the attractive person), enjoyment of the activities (Keywords: Interest, funny, novelty, games in the activities).

The second theme: About the perceptions of intervention activities. It mainly referred to the personal experience and feelings of the participants during and after the activity, mainly reflecting the main gains of the participants' participation in the activity and the changes that they

perceive or pay attention to. There were total four sub-themes in the second theme. Such as the gratitude to the body (Keywords: Thanks, grateful, appreciate; To cherish and take care of the body; Change, grow, reduce the focus on deficiencies, recognize the shortcomings, relieve anxiety), the integration of the self (Keywords: Appreciate myself; Acceptance myself; Advantages; Happy with myself; Self-compassion), the hopeful attitude (Keywords: Positive attitude, positive, cheerful, optimistic, cheerful, joyful, nice, warm, peace of mind; Self-confidence), the curiosity to probe the methods of activities (Keywords: Surprise, magic, amazed, mystery, novelty, curiosity).

The third theme: About the actions of participation. It mainly referred to the behaviors and actions mainly displayed by the participants in the activity, which mainly reflected the performance status and participation ways of the participants in the activity. There were total two sub-themes in the third theme. It contained two sub-themes, such as introspection (Keywords: Understand self; Feel; Explore; Observe; Reflect), interact with others (Keywords: Interact, convey emotion, communicate, share).

The fourth theme: About the limitation (self and intervention). It mainly referred to the uncomfortable or unfavorable aspects felt by the participants in the process of the activity, which mainly reflected the restrictions and possible obstacles of the participants in the process of participating in the activity. There were total four sub-themes in the fourth theme. Such as the challenges of Self-exploration (Keywords: Limitations, narrowness and inadequacy in thinking, unaccustomed, difficult, less change, feel embarrassed; Poor expression, less words; Expect to guidance), the time expectation (Keywords: Lack of time, limited; Writing tasks takes a long time; Insufficient time planning), impacted by emotional influences (Keywords: Assignment, pressure; External influence, environment), worry about habit formation (Keywords: Although the concept had taken shape, behavior still lags behind).

Discussion

The Chinese government has clearly stated in the currently implemented Healthy China Initiative (2019-2030) that corresponding health education courses should be set up according to different stages of school education, and health education course resources should be developed and expanded. It is also required to formulate construction norms and evaluation indicators for health cell projects such as healthy communities, healthy departments (enterprises), and healthy schools.

This study showed that focusing on guidance and behavioral training would help men improve their level of gratitude. This study designed 2 gratitude intervention activities in terms of body function and body appearance. The results showed that the intervention activities had a

significant promotion effect on men's gratitude levels, which in turn also increased the level of body appreciation and intuitive eating (Dunaev *et al.*, 2018; Jans-Beken *et al.*, 2019). The findings provided support for addressing men's body appreciation and intuitive eating through a short, simple gratitude intervention. Current research showed that men and women were equally concerned with the themes of physical appearance, function, and health (Dunaev *et al.*, 2018; Purkiss, 2022). This study found that the effects of “functional appreciation” and “appearance appreciation” interventions were similar in male groups, but compared with previous study on female groups, the effect of “appearance appreciation” in female groups was more pronounced than that of “functional appreciation” (Purkiss, 2022). This provided an effective basis for future intervention of different gender groups.

In the future, the researcher could develop more similar intervention activities and further explore the intervention methods to improve men's gratitude ability. Moreover, our study also found some clues that might be used to explain the previous gender differences in levels of gratitude, body appreciation and intuitive eating. In the qualitative analysis section, the researcher extracted the sub-theme “The challenges of Self-exploration” in the fourth theme (About the limitation), which included the more frequent keywords, such as “Limitations, narrowness and inadequacy in thinking, unaccustomed, difficult, less change, feel embarrassed, Poor expression(language), less words, Expect to guidance”. The sub-theme “Impacted by emotional influences” was also extracted, which expressed that male participants were vulnerable to the “purpose and task” of the activity, and they felt that participating in the gratitude task was an invisible pressure. At the same time, they also say that they were vulnerable to the influence of the outside world (others) and other circumstances, leading to negative emotions, limiting the initiative and enthusiasm of introspection thinking. When the sub-theme of “Worry about habit formation” was extracted, participants said that the activity helped them raise their awareness of gratitude, but they were more concerned about their behavior change and development, which needs to be strengthened. Men seem to be more rational.

Therefore, when the researcher conducts health interventions for men in the future, in addition to forming awareness, the researcher needs to focus on how to develop behavior habit. The researcher need to create a relaxed and comfortable working environment for men. And strengthen and refine the guidance of the participants' activity process, especially the timely feedback after each activity, the participants' language expression and guidance of effective introspection. Meanwhile, the researcher should also pay attention to and do a good job in the intervention and treatment of the negative emotions during the activities, so as to improve the effect of the intervention activities, and truly form the behavior habits with positive quality.

Through quantitative and qualitative analysis, this study found that increasing gratitude levels could promote levels of body appreciation and intuitive eating in Chinese male college students. One-week online intervention had a better promotion effect on gratitude. Both Body-appearance intervention and Body-function intervention has a better promoting effect on men. In the future, they could be used to promote levels of gratitude, body appreciation, and intuitive eating among men. This will help enrich and innovate the practice of health literacy training for students and staff.

Recommendation

The researcher used online measurement methods, and all the questions used self-assessment questionnaires. The measurement methods were self-reported. Some scales contain fewer questions, which were prone to measurement errors due to the influence of social approval. The intervention activities were not taken long enough, which may not benefit the formation of behavioral habits in the short term. And the time interval between the pre-test and post-test was relatively short, which might produce memory effect. Insufficient guidance to participants (no feedback to participants after completion of each writing task) might affect the effect of the intervention. In future, could add the longitudinal studies to assess the long-term effects of interventions, and design more abundant, more interesting, easier to operate, more targeted intervention activities to enrich the practice of health education.

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