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[原著] Body-Image and Depressed Mood during-Puberty

メタデータ	言語: 出版者: 琉球医学会 公開日: 2010-07-02 キーワード (Ja): キーワード (En): body image, personality, depression, puberty, sex-difference 作成者: Kono, Shinzo, Sunagawa, Yoko, Oshiro, Thikako, Okudaira, Takayo メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/0002015900

Body-Image and Depressed Mood during Puberty

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(Received on September 9th 1992, accepted on September 7th 1993)

Key words : body image, personality, depression, puberty, sex-difference

ABSTRACT

This research was performed to clarify depression status and body-image, personality perception, and recognition during puberty. For the purpose of evaluation a profile silhouette chart body image and modified Beck's Depression Index were used. Typical male and female students between 10 and 18 years were studied. A group of 1842 students was divided into separate groups according to sex, body type (obese, normal and lean), and stage of puberty (early, middle, late). The three body silhouettes (lean, normal and obese) were evaluated for an association with 10 designated personality traits : solemnity, effectiveness, happiness, productivity, smartness, cheerfulness, activity, popularity, nervousness and coldness. For the obese body silhouette, smartness, effectiveness, popularity, solemnity, nervousness and coldness were generally evaluated very low, while cheerfulness was evaluated high. The lean body silhouette was evaluated as being generally associated with nervousness and coldness, high only in the late stage with solemnity, and generally low with cheerfulness and happiness. The normal body silhouette received the highest marks in six categories, and generally good marks in other categories. In normal body type females of the middle and late stages, "present self-body image" was overestimated. With the exception of obese females, in lean and normal body females, the "preferable self-body image" was evaluated lower than both "healthy self body image" and "body image expected by parents". The degree of depression was generally estimated to be higher for females than for males, and this was especially remarkable in obese females of the middle stage.

INTRODUCTION

An increasing incidence of obesity has been noted in Japan due to the increasing popularity of Western food. Obesity is known to be a risk factor for the cardiovascular disease, diabetes mellitus and many other diseases.

Since obese subjects are thought to be incapable of control of their own health and social and administrative ability, even personality traits of obese subjects are frequently questioned.

The adolescent is known to be highly sensitive in the development of self-esteem and shows adoration for physical beauty. The mental and emotional response to such social trends in obesity presents an important problem in mental hygiene.

In obese young females, recognition of their body tends to be that of underestimation^{1,2)}, and their personality is also generally evaluated as being lower than that of their counterparts with normal or lean body build¹⁾. Obese subjects are generally in a depressed mood^{3,4)}. The changes in body image in the adolescent period during the stage of physical and psychological development had not been clarified.

Personality perception, recognition of body build, and depressed mood were therefore studied at the puberty stage, according to sex and body build.

SUBJECTS AND METHODS

This investigation was done in 1989 on 2395 primary school, junior and high school students aged 10 to 18.

The degree of obesity was calculated based on standard body weight (SBW) according to age, sex and height from statistical data on student health obtained by the Ministry of Education in 1984. Lean subjects (less than 90% SBW, 131 males and 237 females), subjects

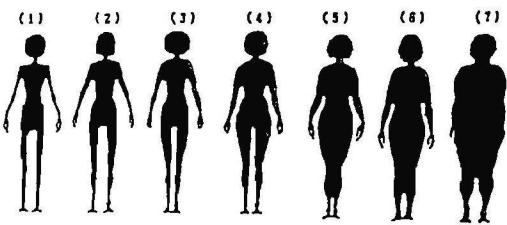


Fig. 1. Body silhouette chart.

with normal body weight (between 90 and 110% SBW, 766 males and 476 females), and obese subjects (greater than 20% SBW, 139 males and 93 females) were distinguished from all the subjects.

Personality perception and recognition of body build was evaluated using the silhouette chart method devised by Bell and Kirkpatrick¹⁾. In this method, the silhouettes of 8 body types ranging from lean (No.1) to ultra obese (No.8) are used. Since none of the Japanese subjects exhibited type 8, this particular silhouette was not used (Fig.1). In the survey on impression of body types, lean type (No.1), normal type (No.4), and obese body type (No.7) were selected from among these 7 body types. The test subjects were asked to describe their perception of the correspondence between each of ten personality traits and each body type using a scoring system (Fig.1). The scoring consisted of; very high: 5, high: 4, moderate: 3, low: 2, and very low: 1, for each item. A mean score for each subject was calculated from these scores. Perception of the personality was expressed in terms of "happiness", "activity", "popularity", "coldness", "solemnity", "effectiveness", "smartness", "nervousness", "cheerfulness", and "productiveness".

Bell and Kirkpatrick¹⁾ evaluated recognition of body image in terms of "present self-body image", "body image expected by parents", and "ideal self-body image".

In the present study, the "ideal self-body image" was further divided into "healthy body im-

-age" and "preferable self-body image". The test subjects were asked to select the most representative of these images from among the seven body type silhouettes, ranging from lean (No.1) to obese (No.7), using a score of 1 to 7. A mean score for each subject (score) was then calculated.

Depression was evaluated according to a modification of Beck's Depression Inventory⁵⁾. The original inventory consisted of 21 questions. Items felt inadequate for use at school, such as those concerning sexual behavior and suicide, were excluded leaving thirteen which were rephrased to make them less complex. Student's t-test was used for statistical analysis, with less than 0.05 indicating significance.

RESULTS

1) Personality perception

For the "activity" personality, the normal body type scored the highest, followed by the lean body type, and lastly by the obese body type by both males and females in the early, middle and late stages in both normal and obese groups.

On comparison between males and females, the score for the obese body type and the lean body type in the early stage normal group was lower in females than in males (Fig. 2).

The score for "smartness" was also highest in the normal body type, followed by the lean body type, and finally by the obese body type in each group (as in "activity" as described above). On comparison between males and females, the score for normal body type in the early stage normal group, and late stage obese group was higher in females than in males. The score for lean body type in the middle stage normal and obese groups and late stage normal group was lower in females than in males.

With the exception of the lower score for the lean body type than for the obese type in the

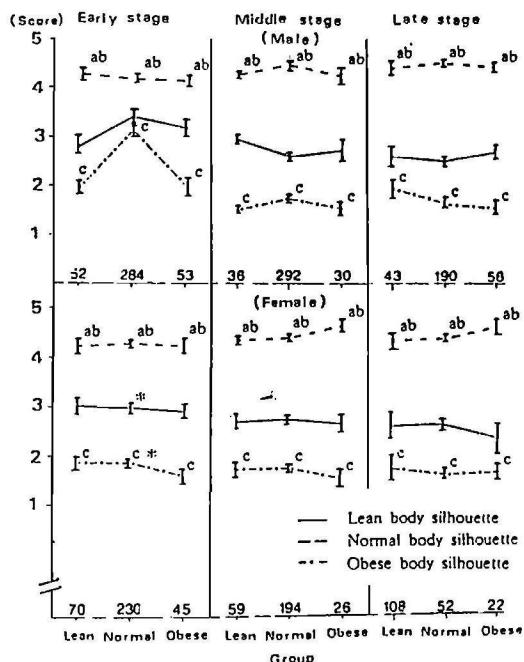


Fig. 2. Evaluation of activity for lean-, normal- and obese-body silhouettes. (Mean \pm SE) The following notations represent a significant difference ($P < 0.05$) ; a : vs obese body silhouette in the same sex, stage and group, b : vs lean body silhouette, c : vs normal body silhouette, and * : vs males in the same stage and group. Numbers in parentheses represent a subject number.

normal and obese groups of early stage males, the score for "popularity" was highest for the normal body type, followed by the lean body type, and finally by the obese body type (as in "activity" and "smart" as described above). On comparison between males and females, the score for normal body type in the middle stage normal group was higher in females than in males.

Except for a higher score for normal body type than obese and lean body type in each group of early stage males, the mean score was highest for "coldness" in the lean type, followed by the normal type and obese type in each group. On comparison between males and

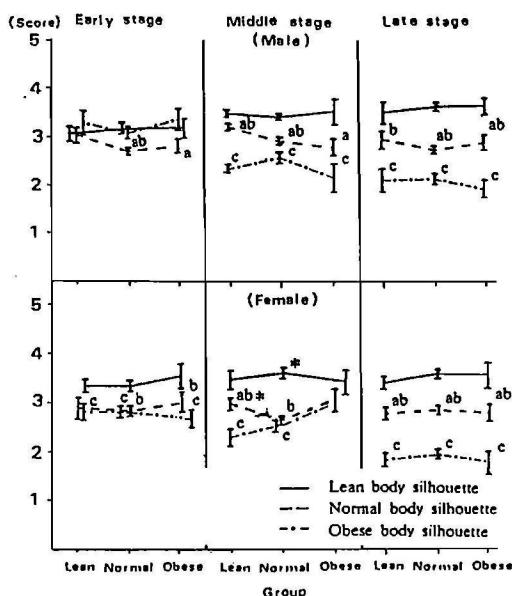


Fig. 3. Evaluation of coldness for lean-, normal- and obese-body silhouettes. (Mean \pm SE) Notations and subject numbers are same as those in Fig. 2.

females, no significant difference was found in each group at the same stage (Fig. 3).

As to "nervousness", a similar tendency to that for "coldness" described above was noted in each group of the same stage. On comparison between males and females, the score for normal body type in the middle stage lean type was lower in females than in males, and the score for lean body type in the middle stage normal group was higher in females than in males.

As to "cheerfulness", the score was highest for normal body type, followed by obese body type and then lean body type, in both males and females in each of the early and middle stage groups. On comparison between males and females, the score was lower in females than in males in the middle stage obese group (Fig. 4).

The score for "solemnity" was highest for the normal body type, followed by lean and then obese body type in each group of early stage males and females. In each middle stage group,

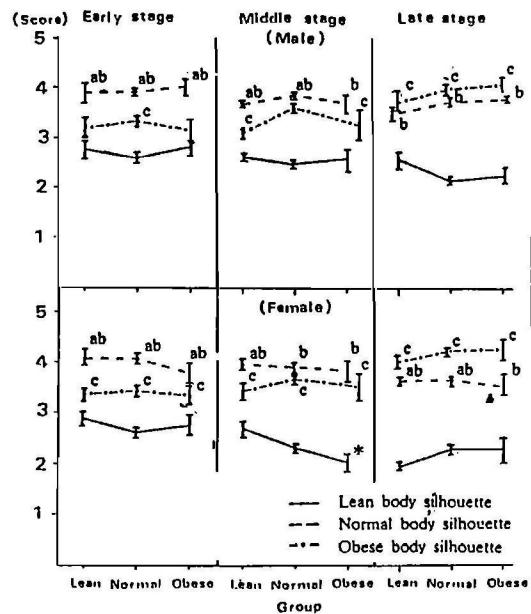


Fig. 4. Evaluation of cheerfulness for lean-, normal- and obese-body silhouettes. (Mean \pm SE) Notations and subject numbers are same as those in Fig. 2.

the score was the highest and similar between the lean body type group and normal body type group, and lowest in the obese body type group. In each late stage group, the highest score was noted for the lean body type, followed by the normal body type, and finally by the obese body type.

On comparison between males and females, no remarkable difference was noted between each group of the same stage (Fig. 5).

As to "effectiveness", the mean score was highest for the obese body type in each group of males and females. In the normal and obese groups of early stage females, lean and normal middle stage males, lean middle stage females, and normal late stage females, the lean type was followed by the obese type. In other groups, however, the obese type and lean type showed similar scores. On comparison between males and females, the score for normal body type was higher in females than in males in the lean

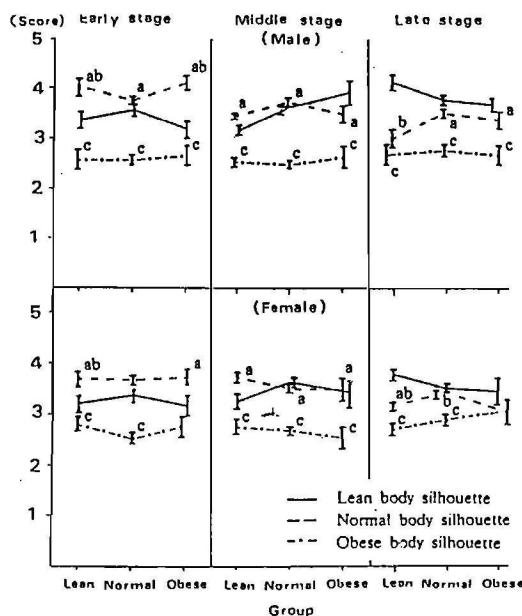


Fig. 5. Evaluation of solemnity for lean-, normal- and obese-body silhouettes. (Mean \pm SE) Notations and subject numbers are same as those in Fig. 2.

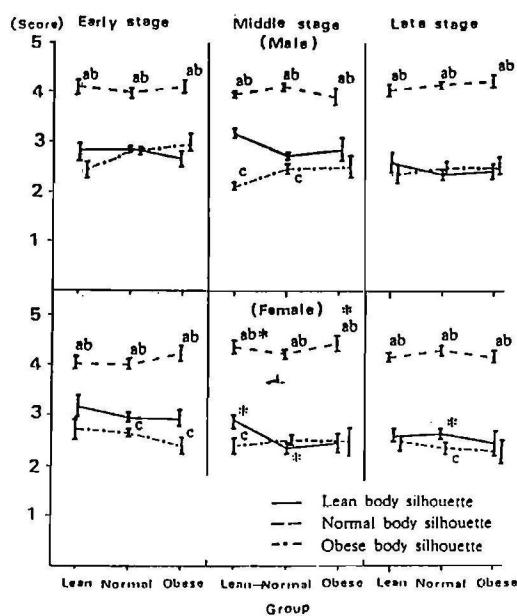


Fig. 6. Evaluation of effectiveness for lean-, normal- and obese-body silhouettes. (Mean \pm SE) Notations and subject numbers are same as those in Fig. 2.

and obese middle stage groups. On the contrary, the score for the lean type in the lean and normal groups, was lower in females than in males. The score for the lean type in the normal late group was higher in females than in males (Fig. 6).

As to "happiness", except for approximately the same score for the obese type and lean type which were lower than the normal type, in the lean and normal type early stage males and obese middle stage females the score was highest for the normal body type, followed by obese type and then lean type. Comparison between males and females revealed higher scores for the normal body type in females than in males of the middle stage obese group, but the score for the obese type was lower in females than in males. The score for the lean type in the lean groups was higher in females than in males. In the late stage, the score of the lean group for

the obese body type was lower in females than in males (Fig. 7).

As to "productiveness", except for a similar score for the lean and obese types, which were lower than those for the normal type in the obese and lean groups of early stage females, the score was highest for the normal body type followed by the obese body type in both males and females. These results are similar to those for "happiness" described above. On comparison between males and females, the score for normal body type in the middle stage obese group was higher in females than in males, but the score for the lean body type was lower in females than in males. The score for the obese body type in the late stage obese group was lower in females than in males.

2) Recognition of obesity

The results of obesity recognition are shown

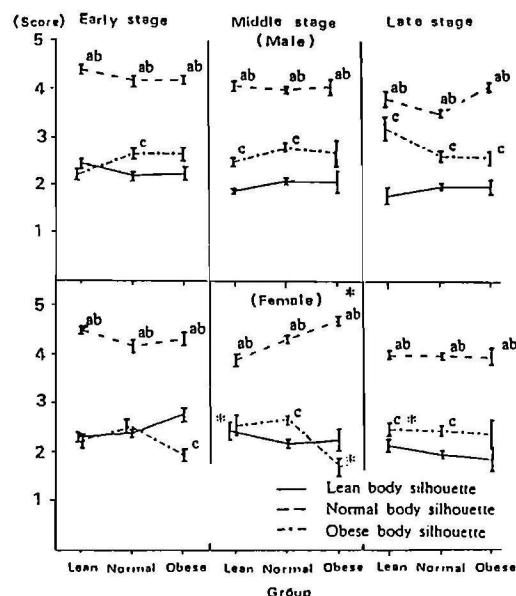


Fig. 7. Evaluation of happiness for lean-, normal- and obese-body silhouettes. (Mean \pm SE) Notations and subject numbers are same as those in Fig. 2.

in Fig. 8.

In females, the score for "present self-body image" was higher than that for "preferable self-body image", "healthy body image", and "body image expected by parents", but was lower in the lean group at each stage.

The score for "preferable self-body image" in the normal and lean groups of the early, middle and late stage tended to be lower than the score in the obese group at the same stage, and was lower than the score for "healthy body image" and "body image expected by parents" in each group. The score for "healthy body image" and "body image expected by parents" was the same in each group at each stage.

In males, the score for "present self-body image" was higher in the obese group than those of "desirable body image", "healthy body image" and "body image expected by parents". In the normal and lean groups, however, it was lower. Scores for "preferable self-body image", "heal-

thy body image" and "body image expected by parents" were approximately the same in each group at each stage.

3) Degree of depression

The mean score for depression in each person tended to be higher in the obese group than in the lean and normal groups in each group of same stage males and females. It was especially high in the obese group of middle stage females, being significantly higher than in the lean and normal groups of the same stage. On comparison between males and females, scores tended to be higher in females than in males in the middle and late stages. A significant difference was noted, especially in the normal and obese groups in the middle stage (Fig. 9).

DISCUSSION

As to the personality perception of body image, obese and normal subjects have been found to evaluate the normal body type the highest, followed by the lean body type and then the obese body type¹⁾. In the present study, the normal body type was generally evaluated the highest, followed by the obese type and finally by the lean type. The personality of the subjects with obese body type was evaluated quite highly, contradicting the results obtained by Bell and Kirkpatrick¹⁾. In the USA, unlike Japan, obesity has a negative connotation in society, and such a tendency is probably reflected in younger subjects.

No reports are available on the changes in personality perception of obesity within the pubertal period and according to gender. In the present study, the evaluation for "cheerfulness" was highest for the normal body type in the early and middle stage, followed by that for the obese body type, and finally by the lean body type. In the late stage group, the obese body type was evaluated highest, followed by the nor-

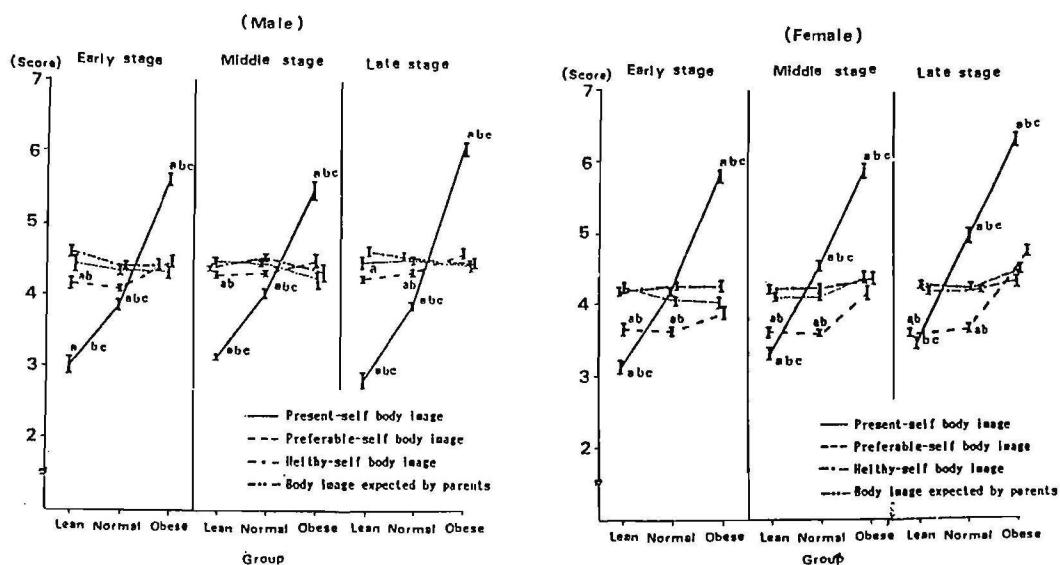


Fig. 8. Recognition of body image. The following notations represent a significant difference ($P < 0.05$) for other self-body images in the same sex, stage and group ; a : vs the preferable image, b : vs the healthy image, c : vs the parents-expected image, d : vs the healthy image, and e : vs the parents-expected image. Notations and subject numbers are same as those in Fig. 2.

mal body type and then the lean body type. The evaluation of "nervousness", "coldness", "effectiveness", "happiness", and "solemnity" changed from the early to the middle stage, and the evaluation differed somewhat between males and females.

As to the recognition of "present self-body image", it is overestimated in female subjects with normal weight¹¹ and female patients with anorexia nervosa^{1,6,7}, and underestimated in obese females¹¹. In the present study, females in the middle and late stage with normal body weight overestimated the "present self-body image", which is in agreement with the results of Halmi and Goldberg⁸. The females with normal body weight in the early stage, however, correctly evaluated the "present self-body image" of themselves. Between the early and middle periods of puberty, the recognition of "present self-body image" may appear to be somewhat different. Obese subjects correctly evaluated the "present self-body image" of themselves

according to the present study, unlike the conclusion of an underestimation reported by Bell and Kirkpatrick¹¹.

This may be because the obese subjects in the present study were only moderately obese, while those in the studies of Bell and Kirkpatrick¹¹ were ultraobese subjects consulting clinics for a perceived problem.

While the scores for "body image expected by parents" and "healthy body image" were between 4 to 5 in the present study, the corresponding values in the studies of Bell and Kirkpatrick¹¹ were lower, between 3 and 4, indicating a more intense dislike of obesity in American society than in Japanese society. The evaluation of "preferable self-body image" by obese subjects in the middle and late stages was higher than that by lean and normal subjects at the same stage. This may be due to the pressure of their own current obesity, causing a shift in recognition of "preferable self-body image".

The recognition of body image by females

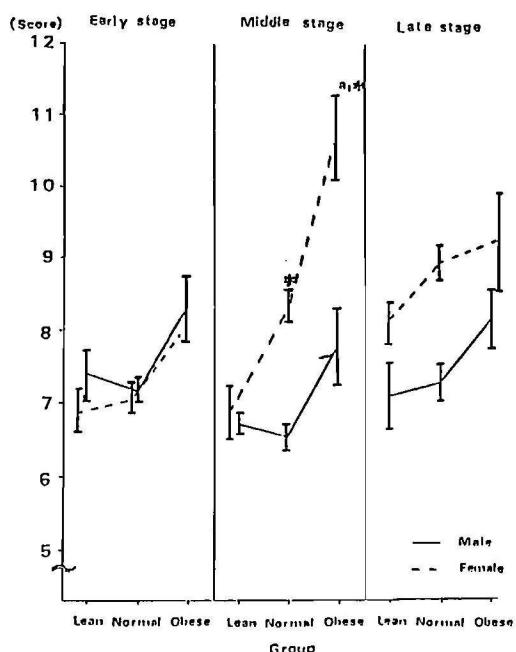


Fig. 9. Depression state. (Mean \pm SE) The following notations represent a significant difference ($P < 0.05$) ; a : vs lean group in the same sex, stage and group, * : vs male in the same sex, stage and group. Notations and subject numbers are same as those in Fig. 2.

may be somewhat different depending on the stage within the pubertal period and on the degree of obesity.

In males, such recognition is not related to the stage or degree of obesity, with approximate agreement between "preferable self-body image" and "body image expected by parents" or "healthy body image", indicating a difference between males and females.

Opinions have varied on the relationship between the degree of obesity and depression. Obesity is not currently included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-4-R) published by the American Psychiatric Association. However Bruch³⁾ explained a reactive obesity as being due to over-eating in an attempt to forget anxiety and tension. This would lead to depression according

to that author, who emphasizes the psychogenic cause of obesity. Hammer and Cambell⁴⁾ also reported a depressive and inactive tendency in obese children compared to their non-obese counterparts. According to the authors, the degree of depression generally tended to be highest in the obese male and female subjects, followed by the lean subjects and then the normal group, and the degree of depression was even more pronounced in middle pubertal females. This may be related to various types of stress at home, school and in society. As was described above, the personality perception of body image, especially the strict evaluation of obesity from the viewpoint of activity and ability may cause a major stress. While being cheerful is frequently identified with the obese body type, this may be merely a superficial impression based on facial expression, behavior and personality. Obese girls at puberty may in fact have considerable internal turmoil.

In the present study, body image (personality perception and recognition) and depression state were found to change markedly in puberty, especially in females from the early to the middle stage. Obese pubertal students are under remarkable stress.

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