



Testing a model of the predictors and consequences of body dissatisfaction

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ABSTRACT

A cross-sectional study, testing a model of predictors and consequences of body dissatisfaction, was undertaken in Taiwan from December 30, 2006 to January 10, 2007. Two hundred and thirty-two female college students enrolled at a major university completed the self-administered questionnaire. Analytical results revealed that body dissatisfaction among respondents increased with BMI ($\beta = .32, p < .001$), perceptions of how others viewed their bodies ($\beta = .38, p < .001$), and upward social comparisons ($\beta = .17, p < .01$). Body dissatisfaction also markedly influenced respondent weight-loss intentions ($\beta = .51, p < .001$). Results imply that medical, psychological and social factors must be considered by school health educators wishing to understand the causes and consequences of body dissatisfaction among female college students.

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Introduction

Obesity/overweight has been stigmatized culturally and this stigmatization is not excluded in Taiwan (Tsou & Liu, 2006). Studies conducted in different countries have found that individuals who are obese are perceived as self-indulgent, lethargic, and slovenly (Ogden, 1992), which, in turn, may affect their interpersonal relationships (Harris, 1990) and perceptions of physical attractiveness (Chang, Liou, Sheu, & Chen, 2004). These aforementioned negative consequences of obesity/overweight are of particular concern among females. Ku's (2003) cross-sectional study on young females in Taiwan found that 91.2% of respondents reported that they were dissatisfied with their body figures. It is not surprising that a qualitative study conducted by Chang et al. (2004) concluded that a slimmer figure was preferred among females in Taiwan.

Researchers have found that body perception (satisfaction/dissatisfaction), defined as individuals' subjective feelings of being satisfied/dissatisfied with their physical appearances (Wood, Becker, & Thompson, 1996), is not only influenced by medical indicators (e.g., the calculation of body mass index) but also built by socio-cultural or psychological factors (e.g., social comparison). Based on theoretical considerations (e.g., social comparison

theory) and several prior studies, body mass index (BMI) (e.g., Jones, Vigfusdottir, & Lee, 2004), perceptions of others' views on one's body (e.g., Cash, Theriault, & Annis, 2004; Jones et al., 2004), and upward social comparison (Dittmar & Howard, 2004; Engeln-Maddox, 2005) are found to be predictive of body dissatisfaction.

The body mass index (BMI), which is the weight in kilograms divided by the square of height in meters, has been adopted to define obese/overweight. A BMI greater than 30 kg/m² is accepted as obese and a BMI ranging from 25 to 30 kg/m² is considered overweight among adults (Lobstein & Frelut, 2003). In Taiwan, a BMI ranging from 24 to 26.99 kg/m² is considered as overweight and greater than 27 kg/m² as obese (Department of Health, Taiwan, 2006). Although the normal BMI range varies due to geographic, ethnical, racial, and cultural differences (James, Leach, Kalamara, & Shayeghi, 2001), Jones et al. (2004) found that BMI directly contributed to body dissatisfaction among adolescent girls and boys. Similarly, Shroff and Thompson (2004) found that BMI had an impact on body dissatisfaction among Indian females mediated by teasing and media internalization. This evidence suggests that BMI can be positively predictive of an individual's body dissatisfaction.

An ideal body image, however, is mainly a socially constructed phenomenon. An individual's perception about his/her body shape is affected by referents' comments. According to interpersonal communication studies, social interactions with others (e.g., peers and family members) are found to have a significant impact on an individual's body image (Jones et al., 2004; Keery, Boutelle, van den Berg, & Thompson, 2005). Due to increased intimacy in friendship

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among young people, individuals' belief about whether their referents (e.g., peers) approve/disapprove their body shape may increase/decrease their body satisfaction (Jones et al., 2004). Cross-sectional studies have shown that among adolescents appearance teasing or criticism from peers will highlight specific undesired appearance attributes and impact their body dissatisfaction (Cash et al., 2004; Jones et al., 2004). By the same token, Keery et al. (2005) conducted a survey on middle school girls in Florida in the USA and their cross-sectional finding showed that girls reporting being teased by their siblings demonstrated significantly higher levels of body dissatisfaction than those not teased. As such, the effect of perceptions of others' views of one's body (e.g., parents, siblings, and friends) on young females' body dissatisfaction cannot be ignored.

Factors affecting body dissatisfaction also include social comparison. According to Festinger's (1954) social comparison theory, people tend to make comparisons between themselves and those who are similar to them and who are attractive. Social comparison can be categorized as upward, lateral, and downward (Bunnk, Collins, Taylor, VanYperen, & Dakof, 1990). When individuals internalize the cultural ideal of body shapes, they evaluate themselves against such social categories (Baird & Grieve, 2006) and become motivated to improve themselves if they find themselves lacking. Therefore, social comparisons with others which are perceived as superior on relevant dimensions (upward comparisons) can increase emotional stress and decrease self-esteem (Major, Testa, & Blysm, 1991).

Dittmar and Howard (2004) found that social comparison tendencies among adult professional women were predictive of the strength with which they internalized a thin body as their personal ideal. Engeln-Maddox (2005) examined the relationship between social comparison and body image disturbance in college females and found that upward social comparisons about body shapes were significantly associated with diseases of body dissatisfaction. Likewise, Krones, Stice, Batres, and Orjada (2005) surveyed young women and found that social comparative pressure to be slim reinforced body dissatisfaction. Aiming to investigate the role of upward social comparison in females' responses to a thin-idealized female beauty, Tiggemann and McGill (2004) found upward social comparison exacerbated females' negative mood and body dissatisfaction. Lin's (1999) study conducted in Taiwan found that the Taiwanese tended to compare themselves with others by way of lateral or upward social comparison. In a cross-sectional study Taiwanese females, as compared to Taiwanese American females, reported social comparison was significantly predictive of body dissatisfaction (Tsai, Curbow, & Heinberg, 2003).

BMI, perceptions of others' views of one's body, and upward social comparison play a vital role in the development of body dissatisfaction, and the consequence of this dissatisfaction cannot be overlooked. Studies conducted in different countries (e.g., Australia, Denmark, and India) suggest that individuals dissatisfied with their body shapes have a higher intention to lose their weight than their counterparts (Donovan, Spence, & Sheffield, 2006; Heywood & McCabe, 2006; Shroff & Thompson, 2004; Waadegaard & Petersen, 2002). Furthermore, although Western scholars found that among female college students, the body was an important means of fulfilling self-definition, self-identity, and seeking social approval (Brumberg, 1997), surveys among Taiwanese scholars showed some female college students who were slim but still felt dissatisfied with their bodies (Yu, 2002).

The present study was undertaken to test a model in which BMI, perception of how others view one's body, and upward social comparison were proposed to predict body dissatisfaction, which in turn was proposed to predict weight-loss intentions.

Method

Participants

This cross-sectional study, officially approved from the ethics committee at a major university located in central Taiwan, was conducted from December 30, 2006 to January 10, 2007. Five general education classes (students come from different years and with different majors) were randomly sampled, but only females were invited to participate in this study. Instructors and students from the sampled classes were informed by the research assistant about the purpose of the study before the survey was administered. The study took place in an assembly setting and complied with all ethical regulations. All respondents voluntarily participated in this study and signed a consent form before responding to the questionnaire.

Of 236 female college students who completed the questionnaire, 4 did not respond to all questions and their responses were regarded as invalid. Therefore, the total sample size was 232 of which 85 (36.6%) were freshmen, 77 (32.3%) sophomores, 37 (15.9%) juniors, and 35 (15.1%) seniors. Their average age was 19.63 ($SD = 1.37$).

Measures

Instruments adopted in this study included self-reported weight and height, perceptions of others' views of one's body, upward social comparison, body dissatisfaction, and intention to lose weight. With the help of a native English speaker teaching in Taiwan, scales developed from prior studies conducted in the Western world had been back-translated in order to reach the equivalent levels of precision with the original English version. Also, two experts in nursing and health communication were invited to assess the questionnaire for content validity.

BMI

Weight and height were reported by respondents. Then, BMI was calculated as the ratio of the weight in kilograms divided by the square of height in meters. In this study, the average BMI was 20.39 ($SD = 2.61$).

Perceptions of others' views on one's body

Questions such as "My parents feel that my body shape is no good," "My siblings feel that my body shape is no good," and "My friends feel that my body shape is no good" were asked to measure respondents' perceptions of others' views of their body shapes. Answers ranged from "1," corresponding to "strongly disagree," to "5," corresponding to "strongly agree." These 3 items loaded in a single factor. The single-factor solution explained 71.24% of the total variance (eigenvalue = 2.14). The 3-item scale yielded a coefficient alpha of .80.

Upward social comparison

This study used a 4-item scale modified from Physical Appearance Comparison Scale (PACS) developed by Thompson, Heinberg, & Tantleff (1991) and Specific Attributes Comparison Scale (SACS) developed by Tiggemann and McGill (2004) to measure respondents' upward social comparison. Questions such as "At parties or other social events, I compare my physical appearances to the physical appearance of others I feel better than mine," "The best way for me to know if I am overweight is to compare my figure to that of others I feel better than mine," "Comparing my body shape to that of others I feel better than mine is a bad way to determine if I am attractive or not," and "In daily life, I sometimes compare my body shape to that of others I feel

better than mine” were asked. Answers for all questions ranged from “1,” corresponding to “strongly disagree,” to “5,” corresponding to “strongly agree.” The third item of this scale was reverse-coded. These 4 items loaded on a single factor. The single-factor solution explained 53.70% of the total variance (eigenvalue = 2.15). The 4-item scale yielded a coefficient alpha of .71.

Body dissatisfaction

The body dissatisfaction scale employed in this study was modified from the scale developed by McCabe, Ricciardelli, Mellor, and Ball (2005). The Likert-like scale included 8 statements related to respondents' dissatisfaction with chest, arms, hips, thighs, stomach, and the like. The answer ranged from 1, corresponding to “strongly disagree,” to “5,” corresponding to “strongly agree.” The 8-item scale yielded a coefficient alpha of .83. The mean of the computed score of the 8 items was the final score of body dissatisfaction ($M = 3.49$, $SD = .73$).

Intention to lose weight

Intention to lose weight was assessed by asking respondents the following question: “I have an intention to lose weight.” The answer ranged from 1, corresponding to “strongly disagree,” to “5,” corresponding to “strongly agree” ($M = 3.58$, $SD = 1.14$).

Data analysis

The determinants and the consequence of body dissatisfaction were examined using structural equation modeling (SEM) program (AMOS 6.0). The model parameters used maximum likelihood estimation. Traditionally, the χ^2 goodness of fit is adopted to assess the degree to which the hypothesized model fit the observed data (Hoyle & Panter, 1995). Yet, it has been found to be inappropriate because the χ^2 goodness of fit test may increase the chances of committing a Type II error (Bentler, 1990). Based on prior suggestions, the study also assessed the model fit by examining several fit indices including the normed χ^2 (NC) (χ^2/df), the Confirmatory Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). A model was considered to have reasonable error of approximation if the $NC < 3$ and the CFI was $\geq .90$; RMSEA $< .05$ is indicative of close fit, as well as RMSEA $< .05$ to $.08$ is indicative of reasonable fit by the SEM package. Also, if the factor loading for a latent variable was greater than .50, it indicated good fit.

The hypothesized model with all paths was constructed and tested. In addition, all exogenous variables were all correlated. Paths and correlates that were not significant ($p < .05$) were dropped at a time based on this empirical evidence, but also considering theoretical meanings of the various possible solutions. Each time a path was dropped, the model was re-constructed to examine the changes that resulted.

Results

Measurement model

In order to be analyzed by structural equation modeling analysis, this hypothesized model needed to be identified and recursive. Only perceptions of others' views of body and social comparison were treated as latent variables which included 3 and 4 indicators, respectively. Body dissatisfaction, measured by 8 items, was treated as an observed variable (The final score of body dissatisfaction was the computed score of all items divided by 8). Thus, a measurement model was calculated for perceptions of others' views of one's body and social comparison, respectively. According to confirmatory factor analysis (CFA), the factor

loadings for items of perceptions of others' views of body were .85, .87, and .81 while the factor loadings for items of upward social comparison were .84, .64, .63, and .80. All were much greater than .50 which indicated the two measurement models had good fit.

Structural equation modeling results

In general, the hypothesized model included three exogenous variables (BMI, perceptions of others' views of one's body, and upward social comparison), a mediating variable (body dissatisfaction), and an outcome variable (intention to lose weight). First of all, the model correlated all exogenous variables. Secondly, this integrated model hypothesized that BMI, perceptions of others' views of one's body, and upward social comparison would positively predict body dissatisfaction, respectively. Thirdly, it hypothesized that body dissatisfaction positively predicted the intention to lose weight.

The model showed good-to-excellent fit with the data as evidenced by χ^2/df (NC) = 1.9 ($NC < 3$), CFI = .96 ($CFI \geq .90$), and RMSEA = .06 ($< .05$ to $.08$). In total, the model explained 42% of the variance in body dissatisfaction and 26% of the variance in the intention to lose weight.

Among all correlates, only the correlation between BMI and perceptions of others' views of one's body was statistically significant ($r = .60$, $p < .001$). In addition, all the hypothesized paths in this model were significant; that is, BMI ($\beta = .32$, $p < .001$), perceptions of others' views of one's body ($\beta = .38$, $p < .001$), and upward social comparison ($\beta = .17$, $p < .01$) were positively predictive of respondents' body dissatisfaction, respectively. In addition, this study attempted to elaborate the relationship between body dissatisfaction and the intention to lose weight. The result showed that respondents' body dissatisfaction positively predicted their intention to lose weight ($\beta = .51$, $p < .001$) (see Fig. 1).

Overall, the direct effect of BMI, perceptions of others' views of one's body, and upward social comparison on body dissatisfaction was .32, .38, and .17, respectively. The direct effect of body dissatisfaction on the intention to lose weight was .51. Additionally, the indirect effect of BMI, perceptions of others' views of one's body, and upward social comparison on the intention to lose weight (through body dissatisfaction) was .16, .20, and .09, respectively.

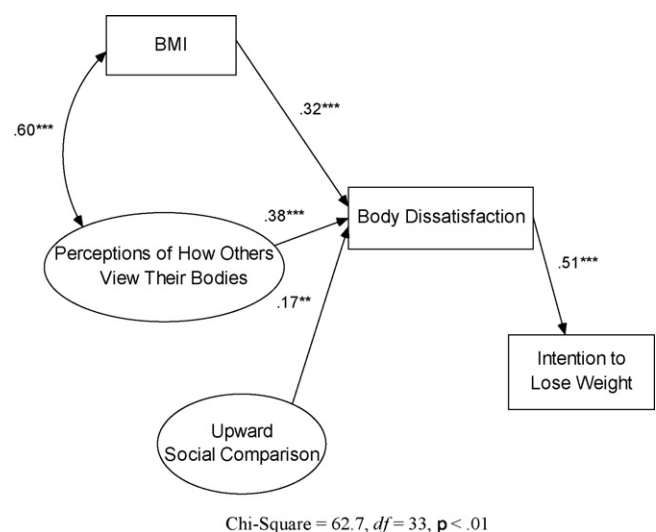


Fig. 1. A model of the predictors and consequences of body dissatisfaction.

Discussion

The results of the present study suggest that the greater the BMI, the more likely respondents felt dissatisfied with their bodies. The finding is consistent with what has been found by Jones et al. (2004) as well as Shroff and Thompson (2004). Perhaps, as Shroff and Thompson (2004) found, those whose BMIs were greater would be teased by referents around them, which, then, caused their unhappiness with their body shapes.

Another goal of this study was to investigate how perceptions of others' views of one's body influenced body dissatisfaction. Consistent with the finding of prior studies (e.g., Cash et al., 2004; Jones et al., 2004), the study result supports the notion that social interactions with others (e.g., peers and family members) are significantly predictive of body dissatisfaction. This finding anchors the assumption of symbolic interactionism (Mead, 1934), indicating an individual's identity is affected by interaction with others. Obviously, cultures shape people's attitudes toward an ideal body shape of a female, which, in turn, is adopted as a base to evaluate other's body shapes. Interpersonal communication studies found that people tended to be highly concerned about intimate others' criticism on them (Cash et al., 2004) and interpersonal influence on an individual's behavior is more significant than that of other channels (Lazarsfeld, Berelson, & Gaudet, 1946). In particular, Taiwan is a collectivism-oriented country (Wu, 2004) where intimate others tend to pass on the values and expectations about an ideal body shape to young females. It is not surprising to know that perceptions of others' views of one's body shape show a stronger association with body dissatisfaction compared to BMI.

Similar to perceptions of others' views of one's body, upward social comparison was found to be one of the significant predictors of body dissatisfaction. As described in other studies (Engeln-Maddox, 2005; Krones et al., 2005), upward social comparison led young females to perceive themselves as overweight no matter what their body sizes were. Social comparison about body shapes is ubiquitous in the world due to the internalization of a slim body image (Dittmar & Howard, 2004). As social comparison theory suggests, comparison is undertaken to fulfill human beings' drive for self-evaluation (Festinger, 1954). Unfortunately, upward social comparison may damage young females' self-esteem and arouses their feelings of lacking which then causes their body dissatisfaction.

Most importantly, the study result shows that body dissatisfaction was a strong predictor of the intention to lose weight ($\beta = .51$, $p < .001$) and 26% of variance of the intention to lose weight can be explained by body dissatisfaction. It supports the finding of prior studies suggesting that body dissatisfaction has become common among females, which is frequently indicated by concerns to lose weight (Thompson, Coovert, & Stormer, 1999). This finding implies that the consequence of body dissatisfaction needs to be considered as long as health educator design campaigns for body image education. In other words, young females dissatisfied with their body shapes may engage in risk behavior to reduce their weight. Health educator needs to teach them how to make a decision on weight-loss and to adopt appropriate strategies to lose their weight if necessary.

Overall, this study attempts to develop a model for understanding the predictors and the outcome of body dissatisfaction. The findings of this study would enhance our understanding of what determines body dissatisfaction and the outcome of body dissatisfaction among Taiwanese female college students. This study may also give health educators in colleges an understanding of how to educate young females to perceive and accept their bodies.

Some limitations of this study, however, need to be discussed. Inferences from the findings presented here are limited by the use

of a sample from just one major university in Taiwan; thus, they cannot be generalized to all Taiwanese female college students. Answers to measures (e.g., BMI, perceptions of others' views of one's body, and upward social comparison) are self-reported which may be over-exaggerated or under-estimated. The gap caused by self-reported answers needs to be taken into account. Although the model proposes a sequence of predictors and consequences of body dissatisfaction, prospective and experimental designs are needed to confirm order of effect in the future.

Several research directions follow from the present study. This study does not examine the impact of weight-control advice on body dissatisfaction. Including the impact of weight-control advice in the model may increase its significance. Also, this study does not explore the onset of weight-loss strategies of respondents who feel dissatisfied with their bodies and have an intention to lose weight. Previous studies indicate that young people tend to lose weight through dieting techniques (Shapiro, Newcomb, & Loeb, 1997), self-induced vomiting (Paxton, 1993), or diet medication treatments (Killen et al., 1993). The preferred weight loss strategies among Taiwanese female college students may need to be investigated in future studies.

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