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Is Body Surveillance Trivial? A Model of Body Dissatisfaction in Women based on the Sociocultural Model, Self-Determination Theory and Objectification Theory

Abstract: The presented study is based on three theoretical approaches: the sociocultural model of eating disorders, self-determination theory and objectification theory. The study has two aims. Firstly, to test a model of body dissatisfaction in women based on these theories and secondly, to experimentally examine the effect of low-intensity fat talk on body dissatisfaction and its related variables. The results showed that body surveillance and self-determination were directly associated with body dissatisfaction. There was an indirect effect of thin-ideal internalization on body dissatisfaction as well as an indirect effect of self-determination on body dissatisfaction, both through body surveillance. The experimental effect of this subtle form of fat talk was not confirmed. However, the content analysis of the participants' short texts revealed that even this form of fat talk was associated with marked body dissatisfaction and negative emotions for some participants. In summary, body surveillance was a central variable in the model of body dissatisfaction in young women. This habit of constant monitoring of body appearance is not trivial and should be addressed in interventions.

Keywords: *body dissatisfaction, body surveillance, self-objectification, self-determination, fat talk*

Body dissatisfaction is the negative evaluation of the appearance of one's body (Heider et al., 2018; Roosen & Mills, 2014) and may influence health and quality of life across a person's lifespan. Dissatisfaction with one's body and outward appearance is strongly related to disordered eating in women (e.g. Pedersen et al., 2018; Polivy & Herman, 2002; Rosewall et al., 2018; Tylka, 2004) and has been classified as a very strong and well-supported risk factor in the development of eating disorders (Jacoby et al., 2004). It has also been associated with binge-eating symptoms (e. g. Barker & Galambos, 2007; Lewer et al., 2017; Srivastava et al., 2020), excessive exercise (e. g. Davis & Fox, 1993; Freire et al., 2020; White & Halliwell, 2010), smoking (Howe et al., 2017; Wiseman et al., 1998), depressive symptoms (e.g. Flores-Cornejo et al., 2017; Sharpe et al., 2018; Stice & Bearman, 2001) and a decreased likelihood of cancer screening self-examinations (Ridolfi & Crowther, 2013). Given that women have greater body dissatisfaction than men (e. g. Fiske et al., 2014; Knauss et al., 2007; Lonergan et al., 2019; Quittkat et al., 2019), it is important to investigate the factors which may make women vulnerable or conversely may protect them from body dissatisfaction and subsequent eating disturbances.

The current study has two parts. In the first part, a hypothetical model of body dissatisfaction in women, based on the sociocultural model, self-determination theory and objectification theory, is presented and tested. In the second part, the effect of fat talk as a form of peer pressure to be thin on body dissatisfaction and its related variables is examined experimentally within the sociocultural model.

The presented model of body dissatisfaction is based on three theoretical approaches; the sociocultural model, self-determination theory and objectification theory (Figure 1). The sociocultural model of eating disorders has been well supported (e. g. Austin & Smith, 2008; Fitzsimmons-Craft et al., 2014; Stice, 2001; Stice & Agras, 1998; Vander Wal et al., 2008). Moreover, the usefulness of incorporating the constructs introduced in self-determination theory into models investigating body dissatisfaction has been repeatedly shown (e. g. Frederic & Grow, 1996; Hricova & Orosova, 2017; Mask & Blanchard, 2011; Thogersen-Ntoumani & Ntoumanis, 2007; Thogersen-Ntoumani et al., 2010). These two theories, in addition to the feminist perspective of objectification theory, allow a more detailed understanding of the processes which lead to body dissatisfaction. This is

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believed to be a novel approach since studies grounded in both objectification theory and self-determination theory have been rare (e. g. Baker, 2017; Baker et al., 2017; Cox et al., 2019). Moreover, none of these studies have looked at body dissatisfaction in women.

Firstly, it is expected that internalization of the thin ideal will be positively associated with body dissatisfaction as proposed in the sociocultural model (Stice & Agras, 1998; Stice et al., 1996). Internalization of the thin ideal means adopting societal standards of a thin female body as a personal goal and has repeatedly been associated with body dissatisfaction (e.g. Austin & Smith, 2008; Moreno-Domínguez et al., 2019; Stice, 2001; Vartanian et al., 2016).

Objectification theory (Fredrickson & Roberts, 1997) postulates that most women experience sexual objectification which is the experience of being treated as a body mainly valued for the use and pleasure of others. Women usually adopt the observer's perspective on themselves and begin to view their bodies as objects separate from their person. They become more focused on the appearance of their bodies rather than bodily feelings or abilities of their bodies. This experience is manifested as body surveillance and can be described as the habitual monitoring of the body's external appearance (Fredrickson & Roberts, 1997). It can be viewed as a behavioural manifestation of self-objectification (Moradi & Huang, 2008). This body monitoring, or body surveillance, takes up a considerable part of a woman's attention which could have been used for other activities (Fredrickson & Roberts, 1997). This means that whatever a woman is doing, part of her attention is focused on her appearance. Body surveillance has been repeatedly linked to body dissatisfaction or body shame (e. g. Schaefer et al., 2018; Seekis et al., 2020; Sun, 2018; Szymanski & Henning, 2007). In the presented model (Figure 1), body surveillance is a mediator variable through which other factors may increase or decrease body dissatisfaction.

In proposed model (Figure 1) body surveillance mediates the relationship between the internalization of the thin ideal and body dissatisfaction. This was suggested by Fitzsimmons-Craft (2011) in their elaborated sociocultural model of disordered eating. Internalization of the current beauty ideal makes women monitor their body to be able to evaluate it. Since the current body ideal is unrealistic, this monitoring usually leads to body dissatisfaction (Fitzsimmons-Craft et al., 2012; Fitzsimmons-Craft et al., 2016).

Self-determination theory postulates that there is a set of universal psychological needs that must be satisfied for psychological health and optimal functioning. These basic needs are competence, autonomy and relatedness (Deci & Ryan, 2008). In connection with fulfilling these basic psychological needs, Deci and Ryan (2000) have distinguished between the different types of motivation: intrinsic motivation and extrinsic motivation. Intrinsic motivation is related to doing something because it is interesting or enjoyable itself while extrinsic motivation refers to doing something because it leads to the expected outcome.

Extrinsic motivation varies in the degree to which it is autonomous. Individuals differ in the extent to which they do things because of intrinsic or extrinsic motivation (Deci & Ryan, 2008). This variable is referred to as global self-determination. The satisfaction of the three basic psychological needs is the basis for the development of strong global self-determination in individuals (Deci & Ryan, 2008; Ryan & Deci, 2000). Greater self-determination is associated with enhanced psychological wellbeing and more effective performance (Deci & Ryan, 2008).

Self-determination may play a protective role against the sociocultural pressures to be thin (e. g. Bégin et al., 2018; Guertin et al., 2017; Hricova et al., 2020; Kopp & Zimmer-Gembeck, 2011; Mask & Blanchard, 2011; Pelletier & Dion, 2007). Pelletier et al. (2004) have shown that perceiving less sociocultural pressures about thinness and experiencing fewer bulimic symptoms is associated with higher self-determination in women. Thus, it seems that for individuals with high self-determination, the ideal body image presented in the media may be information that is evaluated in relation to their own values and used or ignored accordingly. Moreover, autonomous motivation orientation may serve as a protective factor against state self-objectification (Baker et al., 2017). The proposed hypothetical model is based on the integration of these findings (Figure 1). It is suggested that the pathway from self-determination to body dissatisfaction is mediated through body surveillance, which is considered an indicator of self-objectification (Moradi & Huang, 2008). In other words, the higher the general self-determination is, the lower the body surveillance and subsequently body dissatisfaction are.

Body dissatisfaction is related to actual body mass index (e. g. Calzo et al., 2012; Hricova et al., 2014; Radwan et al., 2019). Therefore, BMI of women must be considered, when explaining body dissatisfaction in women even though the ideal thin woman's body is a myth unattainable for most women (Wolf, 1991). Therefore, the hypothetical model will be adjusted for the variation in body dissatisfaction attributed to body mass index.

According to the sociocultural model of eating disorders, the pressure to be thin is one of the antecedent variables which leads to body dissatisfaction (Stice, 2001). The pressure to be thin may come from peers, parents, the media and romantic partners (Keery et al., 2004; Tylka, 2011). As a form of peer pressure to be thin, Nichter and Vuckovic (1994) have identified fat talk. This is a form of self-degrading talk in which the speaker expresses dissatisfaction with their own body or particular body parts (e.g. "This skirt makes my stomach look fat"). In the second part of the present study, the aim was to experimentally examine the effect of fat talk on body dissatisfaction and its related factors and thus contribute to experimental research on the consequences of fat talk.

Many women talk about themselves as if they are overweight, even when this is not objectively true (Nichter & Vuckovic, 1994). Fat talk has been described as a kind of social ritual among friends that can serve various purposes such as creating solidarity (Nichter, 2000) and

increasing social cohesion (Cruwys et al., 2016). However, fat talk is also related to a number of negative psychological outcomes such as body dissatisfaction, body image concerns, depression and guilt, and is more common among individuals with an eating disorder (e. g. Chow & Tan, 2018; Mills & Fuller-Tyszkiewicz, 2017; Mills & Fuller-Tyszkiewicz, 2018; Shannon & Mills, 2015; Warren et al., 2012). Moreover, fat talk, particularly among family members, was described as a risk factor for disordered eating (Loth et al., 2009; Tzoneva et al., 2015).

There has been a range of studies examining fat talk from reading vignettes containing fat talk (Ambwani et al., 2017; Compeau, 2011; Katrevich et al., 2014), to online communication (Cruwys et al., 2016; Mills et al., 2019), video manipulation (Murray, 2020) and face-to-face conversations (Salk & Engeln-Maddox, 2012; Stice et al., 2003). In one study (Stice et al., 2003), a very slim assistant communicated with the participants about how she is not satisfied with her figure and what methods she uses to get thin. It was shown that impact of fat talk is stronger when the woman engaging in it is very thin (Corning et al., 2014). This is a strong source of peer pressure because the implication is that the heavier listener is even more overweight and needs to lose weight even more than the thinner fat talker (Stice et al., 2003). Stice et al. (2003) showed that fat talk resulted in increased body dissatisfaction. In the current study, this procedure was adapted to examine the consequences in a peer group rather than a dyad. The exposure to fat talk was more subtle and brief as well as being made in a group of peers so it was not intended for a particular listener. The study aimed to examine if such subtle exposure to fat talk would have an impact on body dissatisfaction and its related variables.

AIM OF THE STUDY

This study was conducted with two main aims: to test a hypothetical model of body dissatisfaction in women and to explore the effect of fat talk on body dissatisfaction and its related variables in a peer group of women. It was

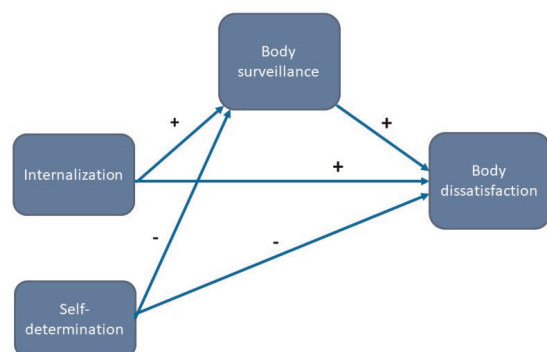


Figure 1. A conceptual diagram of a hypothetical mediation model of body dissatisfaction in women

Note. Hypothetical model is based on Stice (2001), Fredrickson & Roberts (1997), Fitzsimmons-Craft et al. (2012), Deci & Ryan (2008), Pelletier et al. (2004), Baker (2017).

anticipated that internalization of the thin ideal and body surveillance would be positively associated with body dissatisfaction while self-determination would be negatively associated with body dissatisfaction (H1). It was also hypothesized that internalization of the thin ideal would be indirectly associated with body dissatisfaction through body surveillance (H2). In addition, it was hypothesized that self-determination would be indirectly associated with body dissatisfaction through body surveillance (H3). And finally, it was expected that subtle exposure to fat talk would lead to an increase in thin-ideal internalization, body surveillance and body dissatisfaction (H4).

Methods

Participants

A convenience sampling method was used. The total sample size was made up of 73 female university students, all of whom were Caucasian. The students studied medicine (62%), social science and humanities (15%), management (8%), natural science (7%), healthcare and pharmacy (4%) and engineering (4%). The average age of the students was 22.29 years old ($SD = 2.189$, range: 19-36). The mean BMI was 20.87 ($SD = 2.52$). 11% participants ($n = 8$) were underweight ($BMI < 18.50$), 84% ($n = 61$) were a normal weight ($18.50 \leq BMI < 25$) while 5% ($n = 4$) were overweight ($BMI \geq 25$) based on the World Health Organization cut-off points (World Health Organization, 2000).

Procedure

First pilot testing including the manipulation check was performed as recommended by Ejelöv and Luke (2020).

The participants were asked to participate during regular seminars at the university (45 participants) and through social network (28 participants). The informed consent was obtained and participation was anonymous and voluntary. The participants asked to participate through the social network received cash compensation for their time.

Firstly, the data were collected during regular seminars at the university. Two seminar groups created an experimental group and two seminar groups created a control group. The participants filled in a pen and pencil questionnaire which assessed basic characteristics, thin-ideal internalization, body surveillance, self-determination and body dissatisfaction. The back translation method was used to translate the questionnaires.

At the second meeting more than one week later, the peer pressure to be thin was manipulated through fat talk. The experimenter introduced a slim and attractive 22-year-old woman ($BMI = 19.14$) as her assistant who is a student and helping to collect the data for her thesis. The experimenter mentioned that the assistant is a student at another faculty in the same academic year as the participants. Then the experimenter and the assistant brought bowls of cookies as refreshments for the participants before they filled in the questionnaires. In the experimental group (fat talk condition), the assistant said the prescribed remark: "I can't eat them because I've

gained weight recently. How will I look in a swimsuit?" In the control group, the same assistant said neutral prescribed remarks ("I hope you wrote the test well" or "It is very warm today") unrelated to body appearance. The assistant was dressed in the same clothes (a tight black dress) for each group as done by Stice et al. (2003). Afterwards, the participants filled in a post-test battery which assessed all the dependent variables (thin-ideal internalization, body surveillance and body dissatisfaction) with the last question about what they thought had been the true nature of the study.

This form of fat talk was an adaptation of Stice et al. (2003) and aimed to examine the consequences of a more subtle and brief form of fat talk. The current form of fat talk was brief and short and in a group of peers. This is in contrast to Stice's et al. (2003) experiment where the fat talk lasted 3-5 minutes and was in a dyad of peers.

Afterwards, the participants were debriefed in detail in the group and all their questions were answered by the experimenter. The experimenter explained the true purpose of the experiment as well as the phenomena of fat talk and its consequences. The experience of fat talk was set in a wider context of following the thin ideal presented by the media and its possible harmful effects. The participants in the experimental group were asked to write a short note about how they felt during and after the situation of fat talk and what they had learned about themselves from the experiment. One participant was excluded from further analyses since she had not caught the sentences said by assistant as it turned out in the following discussion.

Since the number of participants did not exceed the planned sample size, additional participants were recruited through social networks. They were offered financial compensation of twenty euros for taking part. The subscribed students were randomly assigned to either the experimental or control group by throwing a die to complete the groups. They completed the same procedure as previously described in small groups.

Measures

Basic Characteristics

Age, height and weight were filled in by each participant and the body mass index (BMI) was calculated.

Thin-Ideal Internalization

This variable was assessed using the Ideal Body Stereotype Scale – Revised (Stice et al., 1994). This scale contains 6 statements such as "Slender women are more attractive" or "Women with long legs are more attractive". The participants were asked to rate their agreement with these statements on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The responses were averaged to form a scale score with higher scores indicating a higher internalization of the thin ideal. The validity of this scale was supported by the positive correlation with the Conformity subscale of the Jackson Personality Inventory ($r = 0.37$) and Restrained Eating Questionnaire ($r = 0.38$) (Stice et al., 1994). In the scale development study, the

Cronbach's alpha was 0.86 and the test-retest reliability over a three-week period was 0.60 (Stice et al., 1994). In the current study, Cronbach's alpha was 0.73.

Body Surveillance

Body surveillance was assessed using the body surveillance subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996). This subscale contains 8 statements, e. g. "I think more about how my body feels than how my body looks" or "During the day, I think about how I look many times". The participants were asked to express their agreement with these statements on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). After recoding the reverse items, the responses were averaged to form a scale score with higher scores indicating a higher degree of body surveillance. The validity of the scale was supported by the negative correlation with body esteem ($r = -0.27$) and positive correlation with body shame ($r = 0.48$) (McKinley & Hyde, 1996). In the scale development study, Cronbach's alpha was 0.79 for a similarly aged group of women (McKinley & Hyde, 1996). In the current study, this scale had a Cronbach's alpha of 0.79.

Self-Determination

General self-determination was assessed using the Self-determination Scale (Sheldon, 1995). It contains 10 items, each with 2 statements. The participants were asked to consider which of the two statements correspond better to reality on a 5-point scale ranging from 1 (*Only A is true*) to 5 (*Only B is true*). The scale has two facets, Self-Contact and Choice-Fullness. An example item of the Self-Contact facet is "A: I feel that I am rarely myself. B: I feel like I am always completely myself" while a Choice-Fullness facet would be "A: I always feel like I choose the things I do. B: I sometimes feel that it's not really me choosing the things I do". The present study combined these two facets. After recoding the reverse items, the responses were averaged to form a scale score with higher scores representing a higher degree of self-determination. The validity of this measure was supported by positive correlations with three other indicators of self-determination (Sheldon, 1995). Cronbach's alpha was from 0.86 to 0.92 in several samples (Sheldon, 1995). In the current study, Cronbach's alpha was 0.77.

Body Dissatisfaction

Body dissatisfaction was assessed using a reduced version (Confalonieri et al., 2008) of the Body Esteem Scale (Mendelson et al., 2001). This scale assesses dissatisfaction with overall appearance, dissatisfaction with weight and how they perceive, that their body is evaluated by others. The reduced version consists of 14 items, e. g. "I really like what I weigh" or "My looks help me to get dates". The participants were asked to rate how much they agree with these statements on a 5-point scale ranging from 1 (*never*) to 5 (*always*). After recoding the reverse items, the responses were averaged to form a scale score with higher scores indicating a higher level of body dissatisfaction. The convergent validity of the reduced

version was supported by a positive correlation with the Rosenberg Self-Esteem Scale (Confalonieri et al., 2008). Cronbach's alpha was 0.87 in the scale development study (Confalonieri et al., 2008). In the current study, Cronbach's alpha was 0.87.

Statistical Analyses

The analyses were carried out in SPSS 21. First, the differences in the main study variables between the participants recruited during the seminars in university and participants recruited online were checked. Then the means, standard deviations and Pearson's correlations between the study variables were examined before experimental manipulation and the descriptive statistics of the experimental and control group were conducted. Preliminary analyses were conducted to ensure there had been no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity.

In order to test hypotheses H1, H2 and H3, the data collected before experimental manipulation were used. The hypothesized model was tested using a simple mediation model with multiple X-variables according to Hayes (2018) using PROCESS macro. The statistical assumptions for a simple mediation were tested according to Kane and Ashbaugh (2017). There were two independent variables; thin-ideal internalization and self-determination and one covariate, BMI. The dependent variable was body dissatisfaction and the mediator was body surveillance. According to Hayes (2018), a mediation model with multiple X-variables is mathematically the same as a mediation model with one X-variable and covariates. This is why the PROCESS was executed 2 times, each time putting one X-variable as X and the other X-variable as a covariate. BMI was added as a covariate as well. The random number generator was seeded with the same seed so the bootstrap confidence intervals were based on the same set of bootstrap samples from the data. This was repeated two times generating direct and indirect effects for both independent variables in the model. As a result of this procedure, all the regression coefficients are the same as if they had been estimated simultaneously using SEM program (Hayes, 2018). 5000 bootstrap samples were used to produce 95% confidence intervals for the indirect effects of independent variables. A significant indirect effect is found when the confidence intervals do not include zero.

In order to test hypothesis 4, the data collected before and after the experimental manipulation were used. The differences between the experimental groups in basic characteristics and general self-determination were checked by a series of independent-sample t-tests. Following this, a series of mixed between-within subjects analyses of variance was used to test for the experimental effect of fat talk on thin-ideal internalization, body surveillance and body dissatisfaction. The results also served to ensure that the randomization process did not fail and that the groups were equal in thin-ideal internalization, body surveillance and body dissatisfaction before the experimental manipulation.

Content analysis of the participants' text

The obtained data were analysed using content analysis (Gavora, 2015). It was decided to proceed as needed when choosing the depth of analysis, either to stay with the manifest content or accept latent content if required. Theme was chosen as the unit of the analysis and combined verbal and numerical output as the presentation method.

The following questions were pre-set:

1. How did the fat talk affect the participants' emotions and body satisfaction in the experiment?
2. What are the participants' attitudes to fat talk after completing the experiment and subsequent debriefing?
3. What other topics did the participants bring up?

The obtained data were analysed in cycles. This was done inductively from the text to the creation of meaning categories, into which other texts were coded while the categories were supplemented, refined, modified and, if necessary, merged during the process. This process was repeated until a satisfactory solution was reached. The created categories are the product of the subjective interpretation of the text by the researcher (Gavora, 2015).

RESULTS

Preliminary Results

The differences between the participants recruited during the seminars in university and participants recruited online were checked and there were no differences between these differently recruited participants in all study variables (internalization of the thin-ideal, body surveillance, body dissatisfaction, self-determination, age) except for BMI. The participants recruited during seminars in university had significantly lower BMI ($M=20.32$, $SD=2.33$) than the participants recruited online ($M=21.75$, $SD=2.60$); $t(71)=-2.426$, $p=0.018$.

The descriptive statistics and correlations between the study variables before the peer pressure to be thin was manipulated through fat talk are presented in Table 1. The descriptive statistics of the study variables in the experimental groups before and after the experimental manipulation are presented in Table 2.

Simple Mediation Analysis with Multiple X-Variables

Body surveillance ($b = 0.307$, $SE = 0.080$, $p < 0.001$) and self-determination ($C' = -0.230$, $SE = 0.114$, $p = 0.048$) were significantly associated with body dissatisfaction. The analysis showed no significant direct effect of thin ideal internalization ($c' = -0.119$, $SE = 0.129$, $p = 0.359$) on body dissatisfaction (Figure 2).

An indirect effect of thin-ideal internalization on body dissatisfaction through body surveillance was found to be statistically significant ($IE = 0.197$, 95% bootstrap CI [0.056, 0.413]). In addition, an indirect effect of self-determination on body dissatisfaction through body surveillance was found to be statistically significant ($IE = -0.148$, 95% bootstrap CI [-0.287, -0.035]). The total effect of thin-ideal internalization on body dissatisfaction was not found to be significant ($c = 0.078$, $SE = 0.131$,

Table 1. Mean Scores, Standard Deviations and Correlations between the Variables in a Whole Sample before the Pressure to Be Thin was Manipulated

	Mean	±SD	1.	2.	3.	4.
Age	22.29	2.19				
BMI	20.87	2.52				
1. Internalization	3.61	0.57				
2. Body surveillance	4.16	0.98	0.40**			
3. Self-determination	3.80	0.67	-0.10	-0.35**		
4. Body dissatisfaction	2.74	0.66	0.12	0.54***	-0.39**	

Note. SD; standard deviation. BMI; body mass index. Internalization; internalization of the thin ideal.

p < 0.01. *p < 0.001.

Table 2. Descriptive Statistics of the Experimental and Control Group before and after the Pressure to Be Thin was Manipulated

	Exp Pre-test		Ctrl Pre-test		Exp Post-test		Ctrl Post-test	
	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD
Age	22.32	2.92	22.26	1.29				
BMI	21.05	2.55	20.71	2.51				
Self-determination	3.81	0.61	3.78	0.73				
Internalization	3.75	0.57	3.49	0.55	3.70	0.61	3.66	0.62
Body surveillance	4.36	1.12	3.98	0.82	4.22	1.20	3.93	0.97
Body dissatisfaction	2.75	0.67	2.74	0.66	2.69	0.75	2.68	0.66

Note. Means and standard deviations of assessed variables before and after experimental manipulation. Exp; experimental group. Ctrl; control group. Internalization; internalization of the thin ideal.

p = 0.554) while the total effect of self-determination on body dissatisfaction was statistically significant (C = -0.378, SE = 0.118, p = 0.002). The coefficients for the simple mediation model with multiple X-variables are presented in Table 3 and Figure 2.

Effect of Fat Talk on Outcome Variables

Firstly, the differences between the experimental groups in basic characteristics (age and BMI) and self-determination were checked by a series of independent-

sample t-tests to ensure that the randomization process had not failed. There were no significant differences in the basic characteristics or self-determination, so the experimental groups were equal in these characteristics. There was no participant who correctly guessed the true nature of the experiment. The data from one participant were excluded from further analyses since she had not heard the fat talk. Following this, a series of mixed between-within subjects analysis of variance was used. The results of these analyses are presented below for each outcome variable.

Table 3. Coefficients for Simple Mediation Model of Body Dissatisfaction with Multiple X-Variables

Antecedent	Consequent					
	Body surveillance (M)			Body dissatisfaction (Y)		
	Coeff.	SE	p	Coeff.	SE	p
Internalization (X ₁)	0.642	0.187	0.001	-0.119	0.129	0.359
Self-determination (X ₂)	-0.483	0.169	0.006	-0.230	0.114	0.048
BMI (X ₃)	0.084	0.044	0.063	0.056	0.029	0.056
Body surveillance (M)				0.307	0.080	< .001
Constant	1.972	1.331	0.143	1.586	0.857	0.069
R ² = 0.307				R ² = 0.382		
F(3, 62) = 9.166, p < .001				F(4, 61) = 9.426, p < .001		

Note. The presented coefficients are unstandardised. Internalization; internalization of the thin ideal.

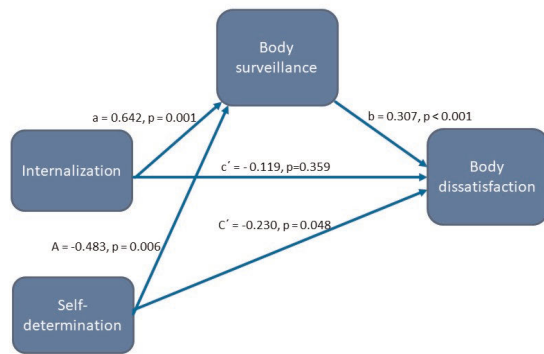


Figure 2. Simple mediation model of body dissatisfaction with multiple X-variables

Note. Indirect effect of thin-ideal internalization, IE = 0.197, 95% CI [0.06, 0.41]. Indirect effect of self-determination, IE = -0.148, 95% CI [-0.29, -0.04]. The presented coefficients are unstandardised. Internalization; Internalization of the thin ideal.

Thin-Ideal Internalization

There was no interaction found between the group and time, Wilks Lambda = 0.975, $F(1, 67) = 1.74$, $p = 0.19$, partial $\eta^2 = 0.025$. The main effect of time was not significant, Wilks Lambda = 0.992, $F(1, 67) = 0.55$, $p = 0.46$, partial $\eta^2 = 0.008$, suggesting that neither group differed in thin-ideal internalization between the time points before and after the fat talk. The main effect of the experimental group was not significant, $F(1, 67) = 1.05$, $p = 0.31$, partial $\eta^2 = 0.015$, suggesting that there was no difference in thin-ideal internalization between the experimental and control group.

Body Surveillance

There was no interaction between the group and time, Wilks Lambda = 0.992, $F(1, 71) = 0.56$, $p = 0.46$, partial $\eta^2 = 0.008$. The main effect of time was not significant, Wilks Lambda = 0.966, $F(1, 71) = 2.47$, $p = 0.12$, partial $\eta^2 = 0.034$, suggesting that neither group differed in body surveillance between the time points before and after fat talk. The main effect of the experimental group was not significant, $F(1, 71) = 2.08$, $p = 0.15$, partial $\eta^2 = 0.029$, suggesting that there was no difference in body surveillance between the experimental and control group.

Body Dissatisfaction

There was no interaction between the group and time, Wilks Lambda = 0.986, $F(1, 66) = 0.92$, $p = 0.34$, partial $\eta^2 = 0.014$. The main effect of time was not significant, Wilks Lambda = 0.995, $F(1, 66) = 0.32$, $p = 0.58$, partial $\eta^2 = 0.005$, suggesting that neither group differed in body dissatisfaction between the time points before and after fat talk. The main effect of the experimental group was not significant, $F(1, 66) < 0.001$, $p = 0.999$, partial $\eta^2 < 0.001$, suggesting that there was no difference in body dissatisfaction between the experimental and control group.

Content Analysis of Short Texts Written by Participants

The participants were instructed to write a short text on how they felt in the situation of fat talk, what they learned from this research, or whatever they wanted to

write. The participants did not get round to mentioning all the topics and most of the remarks were related to their feelings in the situation of fat talk.

The occurring themes were divided into three main categories, according to whether they were related to A) the very situation of fat talk which they had experienced, B) fat talk as a phenomenon and the participants' attitude towards it, C) other.

The first main category covered topics related to the experience of the experiment itself. For simplicity, we can call the assistant using the fat talk, Veronica. Some participants stated that Veronica's fat talk was unfounded as she was slim ($n=12$; code A1). Within these topics, feeling sorry for Veronica ($n=4$, code A1.1) appeared as a subtopic.

Some participants interpreted her remark in the sense of "If she is fat, then what about me", which was accompanied by unpleasant feelings and plans to improve their figure ($n=10$, code A2). In this category, there was a subcategory of participants who stated that just completing the questionnaire caused them unpleasant feelings and awareness of being dissatisfied with their own body ($n=3$, code A2.1). There was also a subcategory of participants who stated that the fat talk effect only lasted a short time and then "passed" ($n=2$, code A2.2).

Other participants stated that the fat talk did not affect them ($n=9$, A3). One participant thought that Veronica looked good because she had a restricted diet ($n=1$, A4.1) while one participant stated that the whole situation of Veronica's remark seemed ironic to her in relation to the questions in the questionnaire ($n=1$, A4.2).

The second main category covered topics dealing with fat talk as a phenomenon and social pressures towards thinness. Some participants stated a negative attitude towards fat talk and alternatively also an attempt to avoid it ($n=8$, B1). Semantically, this also included a subcategory of participants who think that excessive involvement in appearance and the social pressure to be thin is harmful ($n=5$, B1.1). Several participants thought that fat talk is frequent and normal ($n=8$, B2). Two participants thought that the goal of fat talk is to get assurance from others, that the opposite is true and to get flattery ($n=2$, B3) or that it unnecessarily draws attention to sometimes not even real shortcomings ($n=1$, B4). Three participants related fat talk to a lack of effort to improve appearance and passivity in this context ($n=3$, B5).

In the third category of other themes, there was the theme of protective factors that can protect young women from body dissatisfaction. These themes were not induced in any way by the researcher and the participants brought them up themselves: love for oneself ($n=1$, C1.1), rejection of the thin ideal ($n=2$, C1.2), sport ($n=2$, C1.3), religiosity ($n=1$, C1.4), satisfactory interpersonal relationships ($n=1$, C1.5), rejection of food preoccupation ($n=1$, C1.6) and positive thinking ($n=1$, C1.7).

In the category of other themes, there was also a positive evaluation of this research and its importance ($n=11$, C2) as well as doubts about its objectivity, together with suggestions for improvement ($n=4$, C3). The research

helped two participants realize that many women are dissatisfied with their own body (n=2, C4). Some examples of the statements classified into specific categories are illustrated in Table 4 according to the codes.

(e.g. Butkowski et al., 2019; Fitzsimmons-Craft et al., 2015; Mercurio & Rima, 2011).

However, the association between internalization of the thin-ideal and body dissatisfaction was not confirmed

Table 4. Examples of Statements Classified into the Categories

Code	Example of statement
A1	"She was very slender, she should not have a reason for such low self-esteem, that she could not afford to eat one cookie, so that she does not get fat." "It was very startling and even funny to hear, that such a slim woman should say, that she cannot eat one cookie."
A1.1	"It made me feel sorry for this young lady, who said that she gained weight." "I felt sorry for Veronica, when she said that about losing weight."
A2	"When she said that fat talk sentence, I think it could have temporarily lowered my self-esteem." "When I saw her body, it made me not to eat a cookie too." "When she said she was fat, the first thing that crossed my mind was, if she thinks she is fat, then I am even more so."
A2.1	"According to the statements in the questionnaire, I found out I am very dissatisfied with how I look."
A3	"It did not have any effect on me personally."
A4.2	"It was very ironic for me, in connection to the theme of the questionnaire."
B1	"I do not like this fat talk and it affects me negatively." "I am trying to not react to such statements and not to support such behaviour." "In the future, I will definitely think about what I am saying and how it could affect others."
B1.1	"Nowadays there is a big pressure for looks and girls are struggling with it every day." "The society needs to discuss this more, so that the girls are not struggling with their bodies."
B2	"It was something I hear from my friends daily and also at work." "It was not anything extraordinary, nowadays every other girl thinks like that."
B3	"This fat talk was for me more like 'tell me I look good' or 'contradict me'."
C1.1	"If I love myself, I am not going to restrain myself from eating things I like."
C1.2	"What she likes is not necessarily what I like."
C1.3	"I would steer women and girls towards sports, then they would definitely eat healthier and anorexia-bulimia would be less frequent."
C1.5	"If a person has people, by whom they feel loved, they do not have a reason to be unsatisfied."

DISCUSSION

The aim of the present study was to test a hypothetical model of body dissatisfaction based on three theoretical approaches (sociocultural model, objectification theory and self-determination theory) as well as to test the effect of a subtle and very brief form of fat talk in a peer group of female university students. The results showed that body surveillance and self-determination were significantly associated with body dissatisfaction. There was a significant indirect effect of thin-ideal internalization on body dissatisfaction as well as a significant indirect effect of self-determination on body dissatisfaction, both through body surveillance. The experimental effect of this form of fat talk in a peer group was not confirmed for any of the outcome variables.

In the current results, there was an association between body surveillance and body dissatisfaction. The theoretical background of objectification theory claims that body surveillance may lead to shame (Fredrickson & Roberts, 1997) and research has repeatedly shown that body surveillance is associated with body dissatisfaction

in the current study. The Ideal Body Stereotype Scale – Revised (Stice & Agras, 1998) was used to assess internalization of the thin ideal. This scale assesses the extent to which one agrees with statements that slender, fit and tall women with long legs are more attractive. Yet, cognitive acceptance of these statements did not translate itself directly into a sense of dissatisfaction with one's own body. Rather, it was done through body surveillance. The results indicate that the higher the internalization of the thin ideal, the higher the monitoring of outward body appearance and subsequently the higher the body dissatisfaction. This is consistent with Fitzsimmons-Craft et al. (2012) who identified an indirect effect of thin-ideal internalization on body dissatisfaction through body surveillance. These results, in addition to the current ones, contribute to the evidence that body surveillance may serve women to assess where their body appearance stands relative to the thin ideal. Women may become aware of the discrepancy between their actual and ideal body appearance through body surveillance and this may lead in turn to body dissatisfaction. A similar result was also obtained by Calogero et al. (2005) who identified a mediation effect between the internalization of the thin ideal and drive for

thinness through self-objectification in a clinical sample of women with eating disorders.

The second indirect association observed in the current study was between self-determination and body dissatisfaction through body surveillance. The higher the general self-determination of the women was, the less they checked the outward appearance of their bodies and thus the less they were unsatisfied with their bodies. This result contributes to the evidence that general self-determination could be a protective factor against body dissatisfaction as previously suggested (Pelletier & Dion, 2007; Pelletier et al., 2004). However, the mechanism through which self-determination attenuates body dissatisfaction is the unique contribution of this study. The results suggest that this is through body surveillance.

With regards to the objectification theory, Fredrickson and Roberts (1997) have drawn attention to the consequences of body surveillance. The current empirical results confirm that “this habit of self-conscious body monitoring is far from trivial” (Fredrickson & Roberts, 1997, p. 180). In the current study, the amplification or attenuation of body dissatisfaction associated with internalization of the thin ideal and self-determination was done through body surveillance. In the model proposed in the current study, body surveillance is the mediating variable closest to body dissatisfaction.

However, the total effect of thin-ideal internalization on body dissatisfaction was not significant, even though an indirect effect of thin-ideal internalization on body dissatisfaction through body surveillance was found to be significant in the present study. This suggests the presence of suppression effects (Hayes & Rockwood, 2017; Rucker et al., 2011) of an unmeasured variable or variables. Identifying these intervening suppressor variables and extending the presented model would be an interesting subject of further research.

The second part of the study investigated the effect of fat talk on thin-ideal internalization, body surveillance and body dissatisfaction. The results revealed no differences between the experimental and control group in these variables after the fat talk. In the current study, it was decided to examine the effect of fat talk with a lower intensity than Stice et al. (2003) had done in their experiment. In comparison, the current form of fat talk consisted of two sentences compared to 3-5 minutes in Stice's et al. (2003) experiment. In addition, it was presented in a group of students compared to being intended for a particular listener as in Stice's et al. (2003) study, which might have resulted in lower vigilance and engagement of participants in the current study. In Stice's et al. (2003) results, the fat talk led to an increase in body dissatisfaction. The current results have showed that for a given experimental conditions, fat talk must reach a certain intensity to be able to cause an increase in body dissatisfaction. In the case of a short remark given in a group of peers, fat talk may not lead to negative outcomes. This is in line with studies which have shown that taking part in fat talk has greater negative impact than hearing fat talk (Jones et al., 2014; Lin & Soby, 2016).

While the quantitative analysis did not show the effect of fat talk on body dissatisfaction, the content analysis of the written texts showed that negative emotions and body dissatisfaction after the fat talk were felt quite significantly in some participants ($n=10$, 29%). In addition, completing the questionnaire itself evoked negative feelings of body dissatisfaction in three participants. In further research, it is therefore necessary to be careful when opening these sensitive issues and be prepared to treat the possible adverse effects of the research itself in susceptible individuals.

Regarding the second question, the conclusion was reached that after completing the experiment and debriefing, the awareness of the harmfulness of following a thin ideal and fat talk among participants was low ($n=13$, 38%). This implies that a longer and more intensive form and especially more active involvement of participants would be needed for the possible preventive impact of such an activity.

The content analysis also identified the theme of protective factors that may act as buffers against body dissatisfaction in young women. It is significant that this topic was brought by the participants themselves ($n=9$, 26%) and was not induced in any way by the experimenter. This speaks to the fact that some young women have and use their strategies to manage the societal pressure to be thin, helping them to avoid the negative effects. It is important to ask young women about their own coping strategies in prevention and therapeutic settings, strengthening their self-determination and autonomy.

Finally, the results of the content analysis confirm its usefulness. It has enriched insights into the problem with new dimensions compared to the quantitative analyses.

Implications

The currently established dissonance-based eating disorder prevention programs are aimed at reducing thin-ideal internalization (e.g. Greif et al., 2015; Linville et al., 2015; Stice et al., 2008). There have only been a few studies (e. g. Becker et al., 2013; Menzel, 2013; van Dienst & Perez, 2013) which have examined if influencing body surveillance or self-objectification could be useful in preventing body dissatisfaction. The current study supports the integration of body surveillance and self-objectification within eating disorder prevention programs as suggested in the meta-analysis by Schaefer and Thomson (2018). The current results suggest that simultaneously targeting body surveillance and self-determination in interventions may lead to a reduction in body dissatisfaction above and beyond these established programs. Further research is needed to explore the effectiveness of intervention strategies which integrate the sociocultural, self-determination and objectification theories.

The second part of the study aimed to contribute to experimental research on the consequences of fat talk. It aimed to add to the studies which have examined the different forms and intensities of fat talk and its consequences. The results suggest that in order for fat talk to become “toxic” and produce unwanted outcomes, it must reach a certain intensity. It seems that accidentally

hearing a comment containing fat talk is not enough to induce negative outcomes in most women. However, the content analysis suggests that even such a subtle form of fat talk may arouse significant negative emotions and body dissatisfaction in susceptible women.

Fat talk is associated with the evaluation of one's own appearance and the perception of oneself as a sexual object, the quality (appearance) of which will be assessed. It was therefore believed that hearing fat talk from a slim assistant could be very negatively experienced by participants who had a high degree of self-objectification and thus also body surveillance. This is also evidenced by the analysed statements (e. g. "Fat talk had the exact effect on me that I needed to think about myself and evaluate myself" "I immediately came up with the idea of a plan to improve my figure by the summer" "I personally have a problem with me liking myself and how I look.>"). However, there is unfortunately no link between these two types of data in this study. Thus, further research should investigate the hypothesis as to whether the negative effects of fat talk are associated with a high degree of self-objectification and body surveillance. Jones et al. (2014) has already provided some support for this hypothesis. The outlined considerations confirm the key role of self-objectification and body surveillance in experiencing body dissatisfaction.

Limitations

Despite the limited sample size, the study had sufficient statistical power to clearly indicate the pattern of the relationships between the examined factors in the model. Yet, there are several limitations which should also be considered.

Firstly, it is the cross-sectional design of the first study part which was used to model the process of body dissatisfaction development. The obtained results indicate only covariation between the variables and described relationships need to be tested in longitudinal studies in the future.

Secondly, there are limitations regarding the sample. The generalizability of the results is limited by the sample size and the composition of the sample which consisted exclusively of university students. The proposed model of body dissatisfaction should be tested in more diverse samples by considering factors such as ethnicity and age. Moreover, the convenience sampling method may be the cause that certain groups of female students may be under-represented in the sample. The second part of the sample consisted of students asked to participate via social network. This could have led to the under-representation of those not active in social networks and conversely over-represent those who show certain personality traits such as high novelty seeking, etc. This was partially balanced by the first part of the sample which consisted of female medical students assigned into their study groups.

However, regarding the experimental part, it is important to mention the different size of groups in which fat talk was presented. The groups created from participants recruited in university were larger than the groups created from participants recruited online. This may have

affected the attention of participants paid to the fat talk presented.

Next, the disadvantages associated with self-report measures should be considered. As an example, the items in the Self-determination scale (e. g. „My emotions sometimes seem alien to me“) may have different meanings to different individuals. In future studies, it would be useful to combine the self-report data with behavioural indicators.

The use of the PROCESS tool instead of the SEM program for analysing the obtained results can also be seen as a limitation. SEM is less susceptible to bias in the estimation of effects due to random measurement error, allows the use of latent variable, allows greater flexibility for model specification and more options for dealing with missing data (Hayes et al., 2017; Hayes & Rockwood, 2017). However, PROCESS is considered to be a reliable observed-variable modelling tool and has been used to model integrated models before in similar studies (e. g. Bégin et al., 2018; Monell et al., 2020). The results obtained by using PROCESS or SEM program are substantively identical (Hayes, 2018; Hayes et al., 2017) and the regression coefficients are the same as if they had been estimated simultaneously using the SEM program (Hayes, 2018).

Conclusion

This study provides a more detailed understanding of the mechanism through which thin-ideal internalization is associated with body dissatisfaction and how general self-determination may attenuate body dissatisfaction in women. Both processes take place through body surveillance. These results suggest the importance of influencing body surveillance in eating disorder interventions in young women. As Fredrickson and Roberts (1997) have suggested, this habit of body checking is not as harmless as it looks and the current study supports this. As Fitzsimmons-Craft et al. (2012) have noted, body monitoring may even not be noticed by women in a culture where they have been socialized to be preoccupied with their own physical appearance. Once women start to become aware of this habit, they may try to replace it with perceiving their own bodies as instruments of function and not as objects for viewing and evaluation. This may subsequently decrease the translation of thin-ideal internalization into women's body dissatisfaction. This study also confirms the previous results that increasing women's general self-determination may help to decrease body dissatisfaction. In addition, the current results suggest that when a short note containing fat talk is overheard randomly, this does not lead to body dissatisfaction in general, however, this may be reflected in the subjective experience of some women.

Compliance with Ethical Standards

The research was carried out with the consent of the Ethics Committee of Pavol Jozef Safarik University in Kosice.

The informed consent of all participants was obtained and participation was anonymous and voluntary.

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