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Cross-cultural study: Risk factors for dietary restraint in Mexican and German men

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Abstract
Dietary restraint is, together with other risk factors, part of an integrative etiological theory that contemplates direct and mediational mechanisms by which risk factors (ideal and actual figures, body dissatisfaction, ineffectiveness and body mass index) might work together to promote dieting and risky eating behaviors. To gain a better understanding of the risk factors associated with dieting, it was proposed to identify similarities and differences between Mexican and German cultures, and to develop structural models by comparing the interrelations of dieting risk factors. The sample (N = 221) was formed of medical and nursing male students, who completed a survey assessing these risk factors. There were 73 Mexicans and 148 Germans. The mean age of the total sample was M = 20.8 years (SD = 0.71). It was found that Mexican men displayed a higher body mass (t (177) = -4.2 p= .000) and were more dissatisfied with their body (t (184)=-2.9, p=.004), and also showed higher restrictive dieting (t (190) = 2.2, p= .03) than German men did. The hypothesized role of the body dissatisfaction factor was confirmed in both Mexican and German models, body dissatisfaction showed a direct link with dieting (body dissatisfaction predicts dieting), as well as a mediate one between body mass and dieting, and between ideal figure and dieting (dieting is

indirectly predicted by body mass or by ideal figure through body dissatisfaction). The relevance of this study is increased by the fact that it is a cross-cultural study, involving Mexican and German samples.

Keywords: cross-cultural study, predictive structural models, dietary restraint, risk factors prevention, Mexican and German men.

Introduction

It is usually believed that pathologies in eating behavior are only seen in women, and that only recently the males begun to show this problem. For this reason, it is somewhat surprising that Andersen (1990) states that one of the first two reports of anorexia nervosa written by Richard Morton in 1694 was that of a man. The prevalence of anorexia nervosa today is significantly higher in women than in men (10 to 1) (Andersen, 1992; Saldaña & Tomás, 1998; Rastam, Gilberg, & Garton, 1989). However, statistics of identified cases report 5 to 10% anorexic men (Lucas, Beard, Kurland, & O'Fallon, 1991), and 10 to 15% bulimic men (Carlat & Camargo, 1991; Garfinkel et al., 1995).

With regard to body appearance, what do men want? Men look for a mesomorphic figure, characterized by an athletic, muscular, strong, compact, but fatless body, often wish a "medium build" in V shape i.e., with their shoulders wider than their hips (Bruchon-Schweitzer, 1992; Gomez-Peresmitre, Granados, Jáuregui, Tafoya, & Unikel, 2000; McCrary & Seasse, 2000). Some studies show that among young adult men (18 to 25 years), half of them want to be thinner and the other half want to be bigger (Abel & Richards, 1996; McCabe & Ricciardelli, 2001). However, as Blyth et al. (1981) state, although some boys wish to be larger and more muscular, there may be an optimal range of body mass, because overweight boys have significantly lower self-esteem and are more self-conscious than their normal weight counterparts.

Field et al. (2001) reported that weight concerns in boys were strongly related to body mass; boys become concerned and dissatisfied only when they were objectively overweight. It has been found that for women, as well as for men, dieting and negative affect predict binge eating (Stice, Akutagawa, Caggar, & Agras, 2000). For the purpose of this study, negative affect was defined as a way of thinking, and feeling about oneself as a sense of ineffectiveness; that is feeling less confident, alone in the world, feeling inadequate, having a low opinion of oneself, and so forth. Thus, it was decided to apply one of the existing instruments, which estimates the ineffectiveness factor, i.e. the Ineffectiveness Scale of the Eating

Disorders Inventory (EDI) developed by Garner, Olmsted, & Polivy (1983), which has been successfully validated (convergent-validation) with self-esteem. This scale has also been used in a cross-cultural study in 12 countries (Jaeger et al., 2002).

This study starts from the theoretical premises that state body dissatisfaction (BD) is one of the components of the risk factor chain that not only precedes dietary restraint (DR) but also plays a mediating role among some body factors and DR (Stice, Hayward, Cameron, Killen, & Taylor, 2000; Stice, 1994; 2001; 2002). DR in turn, precedes bulimic eating behaviors and bulimia nervosa (BN). DR has accumulated a great deal of evidence supporting its role as a predictive and facilitator risk factor for the onset and maintenance of BN (Johnson & Wardle, 2005; Neumark-Sztainer et al. 2006; Polivy & Herman, 1985).

These antecedents raised the following hypotheses: 1) The ideal figure predicts BD (ideal figure → BD) with a negative relationship between them; 2) body mass index (BMI) predicts BD (BMI → BD) with a positive relationship between them; 3) BD predicts DR (BD → DR) with a positive relationship between them, and 4) BD mediates the relationship between: A) BMI and dieting and B) ideal figure and dieting.

Therefore, the planned objectives of the study were: 1) to analyze risk factor distributions (ideal figure, actual figure, BD, ineffectiveness and BMI) associated with DR to identify similarities and differences between these two groups from different cultures – Mexico and Germany – (it is expected extreme cultural groups it would facilitate detecting factors shared regardless of culture and those specific to cultural groups); and 2) to develop structural models of the inter-relations among these risk factors, analyzing the strength of association (beta weights) the structure and direction of the relational links.

Methodology

Participants

A cross-cultural field study, with a cross-sectional design, was conducted with medical and nursing students. The total non-random (propositive) sample of 221 males comprised of Mexican (n = 73) composed of Med. students 38% and Nurs. students 62%, with a M_{age} = 20.52, (SD = 0.50), and of German (n = 148) formed by Med. students 69% and Nurs. students 31%, with a M_{age} = 21.09 (SD = 0.92). The samples were equated to some demographical variables, such as age (the

participants were recruited among first-year students of medicine and nursery within an age range of 19 to 22 years old) all of them were urban male students with the same academic field study (related to medicine) and the same study status (University level).

Measures

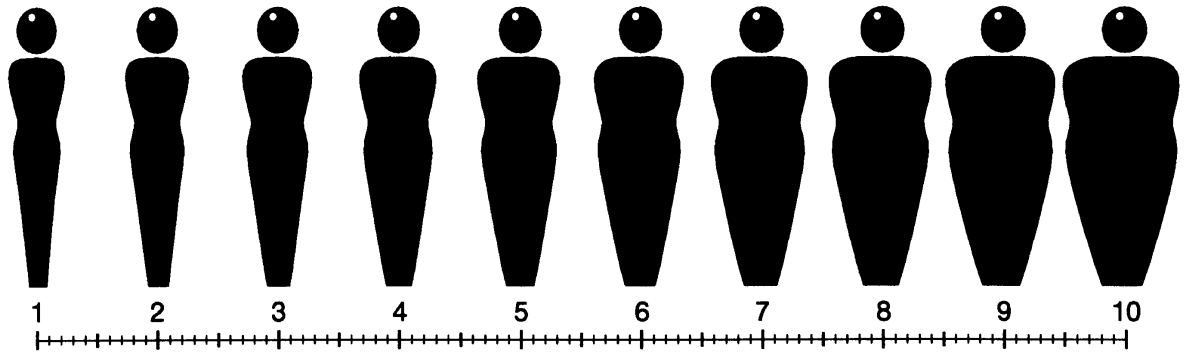
Body Dissatisfaction. In order to estimate body dissatisfaction, a cross-cultural measuring scale was used. It composed of ten silhouettes covering a continuum of body weight, ordered in equal intervals, from the thinnest (1) to the largest (10). This scale was previously used in a multi-cross-cultural research with participants from 12 different countries (Jaeger et al., 2002). According to its authors, (Jaëger et al. 2000), this scale is free of cultural and ethnic factors (Figure 1). The participants were asked four questions: "Please mark with a cross the silhouette that best represents the current shape of your body;" "How would you wish to look like?" "What is the most attractive silhouette in your opinion?" and "Which do you find the most attractive silhouette in the opposite sex?" Participants were asked to mark the position with a cross, which represented their attitudes on a 0-10 decimal scale; positions between the two silhouettes were allowed and coded as real numbers. Test-retest reliability reported by the authors are Rtt = 0.82 ("actual"); Rtt = 0.77 ("ideal"); Rtt = 0.71 ("attractive"), and those of the convergent validity are Rcit = 0.73 ("actual" and BMI). For a complete revision of the instrument (see Jaeger et al., 2000; Jaeger et al., 2002). Coefficients of convergent validity were, Mexican men Rc_{AB} = 0.64 and German men Rc_{AB} = 0.67.

Dietary Restraint. Dietary restraint was measured by the Dieting Scale of the Eating Attitudes Test (EAT) (Garner, Olmsted, Bohr, & Garfinkel, 1982), including 16 statements on a 6-point scale (never = 0 / always = 5), with higher scores indicating a higher level of restrained eating. Coefficients of internal consistency were Mexican men (alpha = 0.89), German men (alpha = 0.70).

Ineffectiveness Scale. The negative affect was estimated through the Ineffectiveness Scale of the Eating Disorders Inventory (EDI) (Garner et al., 1983), which has shown a convergent validity (ineffectiveness / self esteem) of R = 0.70 ($p < .001$) and a reliability estimate of alpha = 0.90 for the sub-scale. The Ineffectiveness Scale comprised of ten statements scored on a 6-point scale (never = 0 / always = 5), with higher scores indicating a higher degree of ineffectiveness. Coefficients of internal consistency were Mexican men (alpha = 0.60) and German men (alpha = 0.79).

Body Mass Index. Body Mass Index (BMI) was calculated as weight in kilograms divided by height in square meters (BMI = kg/m2). Weight and height measures were taken by medical staff.

Figure 1. Intercultural Silhouette Scale



Procedure

The research team from each country (formed by the authors and three graduate students) divided the procedure of data recollection as follows: 1) In each classroom of medical and nursing freshmen, the students were informed about the research; 2) students who had agreed to participate were asked to sign an informed consent form; 3) questionnaires were applied to groups of students in their classrooms and participants were informed about the weight and height measures required to obtain their BMI. They were informed that to meet this requirement they had a period of eight days to go to the first aid post or health center in their schools to be weighed and measured. The translation was done by professional translators and controlled by retranslation procedures. The research protocol was approved by the corresponding local ethics committees.

Data analysis

The data were analyzed via the SPSS windows program (version 10.0). To analyze the functional interrelations, parameters, and path-models, the maximum likelihood method was utilized, and these were tested using the Structural Equation Model analysis (SEM) with the Statistical Program, AMOS 4.0 (Arbuckle & Wothke, 1999).

Results

Preliminary analysis

Age. We expected that there were not significant differences in the variable of age, Although a very small difference was found between the mean age of Mexican (M_{age} = 20.5, SD = 0.5) and German (M_{age} = 21.1, SD = 0.9); they resulted statistically significant (t (219) = 4.9, p = .000) due to the size of the sample.

Weight and Height. An examination of the height and weight data shows that Mexican participants are significantly shorter than German are, with a difference of almost 10 points (M_{Mex} = 171.8 cm, SD = 7.0. vs M_{Germ} 181.4 cm, SD = 7.0, t (218) = 9.5, p = .000). However, Mexicans are as heavy as German men are (M_{Mex} = 72.2 kg, SD = 10.3 vs M_{Germ} = 74.3 kg, SD = 10.3). These differences were not statistically significant: t (217) = 1.4, p = .15.

Body Mass Index. The BMI ranges were for Mexicans (17.5 to 29.4) and for Germans (18.4 to 31.2). According to the obtained cutting points with the validated BMI scale with Mexican students (Gomez-Peresmitre & Saucedo 1997; Saucedo & Gomez-Peresmitre, 1997), overweight is established when BMI ranges from 23 to 27. This finds 43% of Mexican men are overweight. Obesity is when the BMI is greater than 27, so 21% of Mexican were obese [N.B.: in the World Health Organization (WHO) (1999) classification, 0% of Mexican men and 2% of the Germans fell into the obesity range, while the overweight range covered 37% of the Mexicans and 14% of the Germans].

Actual Figure. The actual or current figure refers to self-perception about corporal weight and shape (how I perceive my body shape and size). This estimation is obtained using a scale of ten silhouettes (Figure 1). According to the ten Silhouette Scale Positions (SSP), SSP ranges from 1 to 4.5, very thin and thin silhouettes were elected by 36% of Mexican men and 45.8% of German men. An SSP of 5 to 6, which represents "normal" weight were elected by 46 % Mexicans and 47 % of Germans. Lastly, the SSP (from 6.5 to 8), silhouettes, which are two points over the "normal" weight, were selected by the same percentage (16%) of both Mexican and German men.

Ideal Figure. Ideal figure is related to the desired body size. In terms of the SSP, 86% of Mexicans and 81% of the Germans chose thin and very thin figures (SSP 1 to 4.5); SSP from 5 to 6.0 were elected by 10% and 17% of Mexican and German men, respectively. Only 3% and 2%, respectively, chose a SSP greater than 6.5.

Body Dissatisfaction (BD). The estimated score of BD is calculated by subtracting the ideal figure from the perceived figure. The bigger the difference, the higher the BD. A positive difference means that an individual is dissatisfied because he wants to be thinner than his current body size, while a negative difference refers to an individual who is dissatisfied because he wants to be bigger. Forty-two percent of Mexican men obtained a satisfaction score (no differences between the perceived figure minus the ideal figure) and 50%, a positive difference score. Forty-three percent of German men obtained a satisfaction score and a 45%, a positive score. As can be seen, the minor percentages, 8% for the Mexican men and 12% for German men, were negative difference scores.

Attitudes Towards One's Own Body. Results of the estimate for attitudes towards body size, and self-perception, as well as attitude towards thinness, obtained with the use of a scale of ten silhouettes, appear in Table 1. Here, it can be observed that none of the estimates was significantly different, although two of them (ideal and attractive opposite sex) produced marginal significances ($p = .09$). According to the Mean Silhouette Scale Position (MSSP) selected by Mexican men, it can be seen that Mexicans see themselves as larger than German men (MSSP = 4.96 vs. MSSP = 4.67; $t(179) = -1.18$, $p = .24$). However, the ideal figure of Mexican men is thinner (MSSP = 4.16) than the one of Germans (MSSP = 4.52; ($t(176) = 1.7$, $p = .09$). The other figures, the most attractive and the most attractive for the opposite sex, are also thinner for Mexican men, where the most attractive figure for the opposite sex is the thinnest (MSSP = 2.99). Thus, the male figure considered as the most attractive to women is a thinner silhouette compared with the one they believe is the most attractive one to men and the one they choose as their "ideal" figure (MSSPs = 2.99 < 4.03 < 4.16). It is worth mentioning that, all those marks for the same figures done by Germans, except the "actual" figure, correspond to larger figures than the ones selected by Mexican men (See Table 1) but with the same direction. However, the figure considered most attractive for the opposite sex is also thinner, but not as thin as the one selected by the Mexicans (MSSPMex = 2.99 vs. MSSPGerm = 3.40; $t(146) = 1.7$, $p = .09$) (Table 1).

Table 1. Means and Standard Deviations.
Differences in silhouette estimates by country

Country	n	Actual M (SD)	Ideal M (SD)	Most attractive M (SD)	Attractive opposite sex M (SD)
Mexico	73	4.96 (1.62)	4.16 (1.48)	4.03 (1.53)	2.99 (1.51)
Germany	148	4.67 (1.38)	4.52 (.14)	4.30 (1.13)	3.40 (1.34)

Total	221	4.76 (1.53) t(179)= -1.18 p=.240	4.41 (1.34) t(176)=1.68 p=.094	4.21 (1.27) t(173)=1.32 p=.189	3.25 (1.41) t(146)=1.71 p=.090

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Risk Factors for Dietary Restraint. The risk factors of internalization of a thin ideal figure ("ideal") and that of actual figure ("actual") are shown in Table 1. Table 2 shows the mean value of body dissatisfaction, ("body-dis"), which is significantly higher (t (184) = -2.9, p = .004) for Mexicans (M =0.80, SD = 1.62) when compared with Germans (M = 0.15, SD = 0.92). These numbers represent the difference between the actual and the ideal figure of men – the bigger the difference, the higher the dissatisfaction. This means that Mexican men are more dissatisfied with their bodies than German men are. Curiously, although the mean of self-esteem values (measured with EDI's Ineffectiveness scale) were higher for Germans (M = 11.13, SD = 5.69) than for Mexicans (M = 8.04, SD = 5.28), the differences were not significant (t (140) = 1.86, p = .60). The BMI values reveal that Mexican men's BMI (24.29) is significantly higher (t (177)= 4.2, p = .000) than German men's BMI (22.58) (Table 2). It has been indicated, according to the cut points of the Mexican validated BMI (Saucedo & Gomez-Peresmitre, 1997; Gomez-Peresmitre & Saucedo, 1997), that the BMI of the Mexicans fall into the overweight category while the Germans have normal weight. According to the WHO (1999) values, Mexican men are significantly heavier than German men are, although the Mexican and the German men fall into the normal weight range. It is important to note that the mean value of dietary restraint for the Mexicans was significantly (t (190) = 2.21, p = .028) higher (M = 13.45, SD = 10.32) than that of the Germans (M = 11. 16, SD = 6.78).

Table 2. Means and Standard Deviations. Differences in Risk Factors by Country

Country	**n**	**Body dissatisfaction M (SD)**	**Ineffectiveness (EDI) M (SD)**	**BMI M(SD)**	**Dietary Restraint (EAT) M (SD)**
Mexico	73	0.80 (1.62)	8.04 (5.28)	24.29 (2.67)	13.45 (10.32)
Germany	148	0.15 (0.92)	11.13 (5.69)	22.58 (2.63)	11.16 (6.78)
Total	221	0.45 (1.29)	9.77 (6.85)	23.25 (2.77)	12.31 (8.55)
		t(184)=-2.91	t(140)=1.86	t(177)=-4.22	t (190) = 2.21
		p=.004	p=.605	p=.000	p = .028

Main analyses

Structural Models. The indexes used to assess the models fit, i.e. the ability of a model to reproduce the data, were 1) The Chi-Square that tests the null hypothesis that the model has a good fit in the population, thus it is the acceptation of it what the researcher expects; 2) The Root Mean Square Error of Approximation (RMSEA) measures the error of approximation and a value of zero indicates the best fit. Thus, RMSEA ≤ .05 indicates close approximate fit, values between .05 and .08 suggest reasonable error of approximation, and RMSEA ≥ .10 suggest poor fit; and 3). The Normed Fit Index (NFI), define the null model as a model in which all of the correlations or co-variances are zero. A value between .90 and .95 is acceptable, and above .95 is good (Bollen & Long, 1993).

Both models, the one of Mexican men (Figure 2) and that of German men (Figure 3) obtained indicators with an acceptable goodness of fit values (Arbuckle & Wothke, 1999; Bollen & Long, 1993). Firstly the Chi-Square values were not significant: Mexicans (X^2 (4) = 5.1, p = 0.27) and Germans (X^2 (4) = 7.16, p = 0.12). NFI values close to the unit in the Mexican model (NFI = 0.94) and in the German model (NFI = 0.92). Finally, there were low RMSEA values: Mexican men (RMSEA = 0.06) and German men (RMSEA = 0.08).

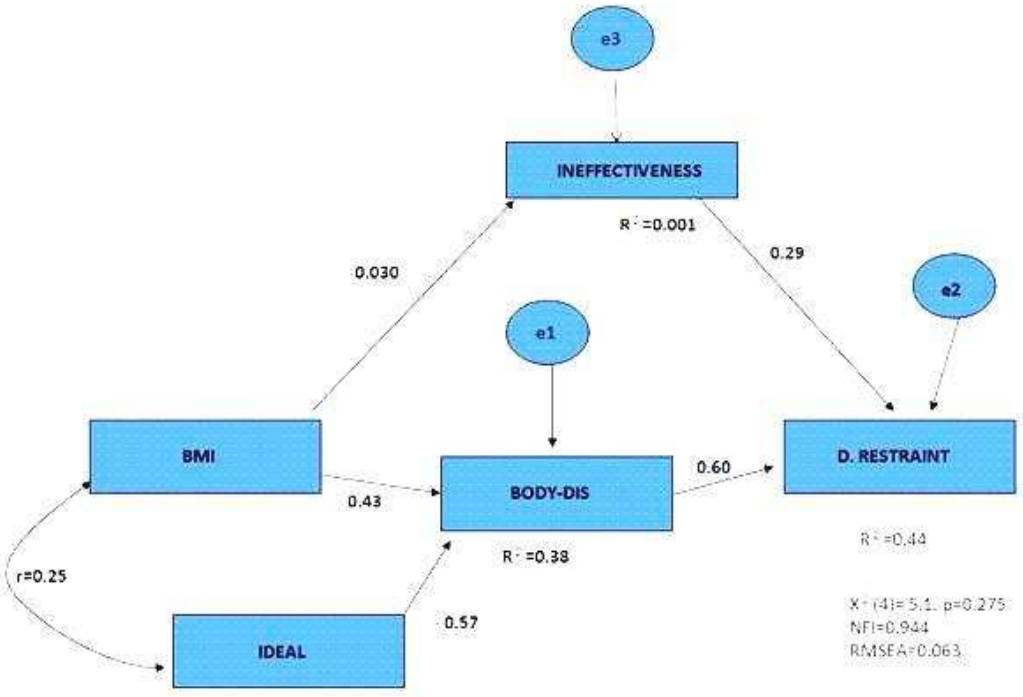

Figure 2. Mexican male model

Starting with the interrelations among BMI, ideal figure (ideal) body-dissatisfaction (body-dis), ineffectiveness and dietary restraint (DR), it can be seen that in both men

models (Mexican vs German) the same links appear with similar beta weights and same directions. It is shown that BMI (Mex 0.43 vs Ger 0.52) and ideal figure (-0.57 vs -0.48) are directly inter-related with body-dis, and with a negative relationship between ideal and body-dis (i.e., the thinner the ideal figure, the most body dissatisfaction) and a similar correlation (doubled- headed arrow) between BMI and ideal (0.25 vs 0.18). Other similar interrelations in both models are: 1) the link "body-dis" and dieting, although among Mexicans this link is higher, more than twice, than that among Germans and 2) body-dis working, as a mediating factor between BMI and DR (BMI → body-dis → dietary restraint), and between the ideal figure and DR (ideal → body-dis → dietary restraint) (see figures 2 and 3). It must be underlined that the first difference between these two models is that, in the German model, BMI shows a direct link with DR and an indirect one (through body-dis) with DR, which is not present in the Mexican model. Thus, BMI relates directly and indirectly with DR.

Finally, another similar relationship in both models is that of ineffectiveness and DR (Mex 0.29 vs Ger 0.26), although, here we find a second difference in these two models. In the Mexican model, there is a direct link between BMI → ineffectiveness, however, the beta weight of this link is very low, practically non-existent (-0.03). It does not contribute to explaining the variance (R^2 = 0.001), while in the German model, this link simply vanishes (see figure 3). Lastly, with respect to the explained variance by the other risk factors, it can be seen that body-dis and DR have a similar variance in both models, 0.38 vs 0.40 and 0.44 vs 0.23, respectively.

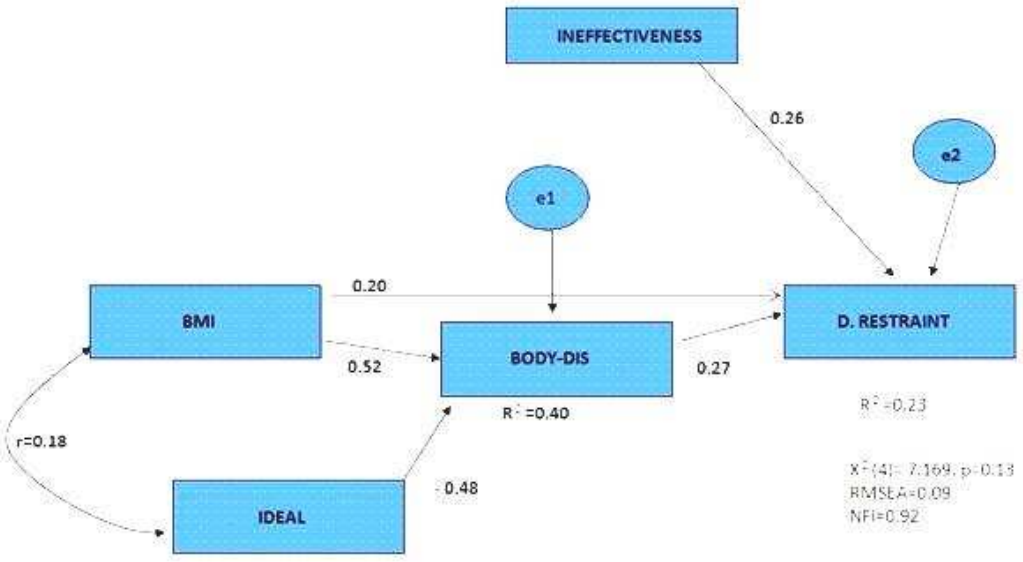

Figure 3. German male model

Discussion

It is worth noting that few cross-cultural studies focus on risk factors for the development of anomalous eating behaviors, and there are even fewer studies with men samples and almost none in Latin America. Thus, this study represents one of the first contributions to the field of cross-cultural research focusing on predictive or antecedent risk factors for Dietary Restraint (DR) in men.

Taking into account that DR is an important antecedent to the onset and maintenance of bulimia nervosa (Leon, Fulkerson, Perry, & Early-Zald, 1995; Stice, Nemeroff, & Shaw, 1996; Stice, Stewart, & Hammer, 1998), two proposals addressed this work: 1) to determine differences and similarities between the risk factors distributions for DR (actual and ideal figures, body dissatisfaction, ineffectiveness, and BMI) by comparing Mexican and German men models, and 2) to develop structural models of the inter-relations among these risk factors, to detect and confirm, the presence of expected results as were postulated by the hypotheses of this study.

It is worth mentioning that the major percentages for both groups were comprised of satisfied and positively dissatisfied scores, whereas only a small percentage (< 10%) averaging the number of men of both groups were negatively dissatisfied. That is, a minority wanted to be bigger than their current figure, contrary to the higher and similar rates (between those men wanting a body size bigger or thinner than their current body size) often reported by some studies (Abell & Richards, 1996; McCabe & Ricciardelli, 2001; 2003; Ricciardelli & McCabe, 2001). However, it must be noted that previous studies, which have examined the desired body size among men, have produced mixed results (Ricciardelli & McCabe). We need more studies to compare the results of the measurement cross-cultural scale used in this study versus those using other body figure drawings.

Taking into account that Mexicans are significantly shorter (almost ten points less) than Germans, but both are equally heavy, what is the ideal figure of the groups? We found that a majority of the men in the two samples (> 80%) in congruence with their positively dissatisfied response, elected a thin silhouette (one point under the "normal" weight) as an ideal figure. However, the ideal figure for the Mexicans is even thinner (with a marginal significance) than the ideal figure for the Germans, so one could expect it translated into more body dissatisfaction than German men have. Effectively, this higher body dissatisfaction was confirmed. It can be observed (see Table 2) that Mexican men are five times more dissatisfied than German men (0.80 vs. 0.15). Further results from the structural analysis also confirmed this statement

(regarding the higher dissatisfaction of the Mexicans), since it was found for each structural men model (besides the expected order: ideal figure → body-diss) a negative relationship (see Figures 2 and 3) between ideal figure and body-dissatisfaction, meaning that a thinner ideal figure leads to more body dissatisfaction, confirming, in this way the hypothesis 1.

Thus, it can be inferred that Mexican men suffer greater social pressure related to body weight, as Paxton et al. (1991), and Thelen and Cormier (1995) stated, there is a positive correlation between BMI and body dissatisfaction, and they suggest the existence of the same relationship between body dissatisfaction and anomalous eating behavior. This last aspect was also found in this study, confirming hypothesis 3, when it was evident that Mexicans are restrained eaters and they diet more than Germans (see table 2). These findings were replicated by structural modeling. The variance explained by dietary restraint was almost more than twice for Mexicans (44%) than for Germans (23%), and the results of the two structural male models confirmed the hypothesis 2 , the relationship (BMI → body-dis), as previously pointed out by Blyth et al. (1981) and Field et al. (2001). In this same way, the risk factor of body dissatisfaction show a higher influence, more than twice (B 0.60), on dietary restraint (dieting) among Mexicans than among Germans (B =.27) (see figures 2 and 3), meaning that Mexicans are not only more dissatisfied but they also diet more than Germans.

Some readers would argue that dieting is an adequate eating behavior for heavy or overweight men; however, this statement could be true if the indicated behavior were elicited by healthy motives. One should be careful of viewing dieting independently of important related variables. In this study, dieting was seen as interrelated to a self-perceived, big actual figure, associated to the wish of a thin ideal figure, and in connection to body dissatisfaction.

On the other side, it is intriguing that ineffectiveness, like actual figure, was not significantly different between Mexican and German groups (see Tables 1 and 2), and that ineffectiveness was linked with a mid beta weight to dietary restraint. It was also found that the BMI → ineffectiveness link, showed the lowest negative beta weight (-0.03), although the negative relation goes in accordance to results reported by Blyth et al. (1981) the greater the BMI the lower effectiveness.

In comparing the selected figures in both groups, specifically thin as ideal and the most attractive for the opposite sex, we can see from Table 1 that the ideal and the most attractive for the opposite sex – were thinner for Mexican men. Regarding the results related to the last figure ("the most attractive…sex") it could be said that

Mexican men do not only feel pressure themselves, but they, in turn, also exert more pressure on their female counterparts than would be expected from the Germans.

Thus, according to the above stated results, one of our main conclusions is that there seem to be more similarities than differences in the factors distributions, as well as in the structure of the models of the Mexican and German men groups. Other conclusions are:

1. The most obvious physical difference between these two groups of men is the bigger corporal mass in Mexicans (Mexican men's BMI > German men's BMI with a statistically significant difference) and their shorter height (10 points less than Germans). The importance of these physical characteristics is that because of them, the results have greater negative implications. That is, one could expect that Mexicans have a higher risk of developing bulimic behavior due to their significant higher BMI, their higher body dissatisfaction, and their increased dietary restraint (dieting), as stated by other authors such as Leon et al. (1995), Stice et al. (1996, 1998), and Stice, (2001).

2. The hypothesized mediate role of body-dissatisfaction (hypothesis 4) was confirmed: A) In the two men models, the body-dissatisfaction played a mediate role as stated by Stice et al. (2000) and body-dissatisfaction appears as a mediating factor between BMI and dietary restraint; (body dissatisfaction → dietary restraint.) confirming Stice (1994; 2001; 2002) and B) A second mediate role by the body dissatisfaction factor was produced between ideal and dieting (ideal figure → body-dis → dieting). Body-dissatisfaction explains a similar percentage of variance in the Mexican and German models, whereas the explained variance by dietary restraint was higher in the Mexican model, almost two times more, than that in the German one, confirming the significant difference of the higher Mexican value of the DR mean obtained in the statistical t test (see table 2).

The results of this study, specifically those associated to the key role of the body dissatisfaction related to direct and mediating influence with dietary restraint, suggest that further research with stronger methodological designs is required to demonstrate the causal relationships among these preceding risk factors of dietary restraint. An experimental design or a longitudinal or prospective one would allow establishing cause-effect relationships, which is impossible to achieve with the cross-sectional design presented above. Another limitation of this study is its inability to generalize (extend) the results to the respective populations (Mexican and German medical and nursing students) because of its sampling frame and the cross-sectional

design, which does not allow temporal and causal relationships to be unambiguously interpreted. The study also relied entirely on self-report data, which should be supplemented in future studies with more precise analysis methods and data collection. In addition, it is theoretically and empirically relevant to note that future research should be done measuring bulimic behavior to complete the model of risk factors in the development of BN proposed by Stice (1994; 2001).

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