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Prevalence and factors associated with body image dissatisfaction among university students: repeated surveys analysis

Prevalências e fatores associados à insatisfação com a imagem corporal em universitários: análise de inquéritos repetidos

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Abstract – Body image dissatisfaction may favor the onset of disorders such as anorexia and bulimia. The aim of this study was to compare the prevalence of body image dissatisfaction between two surveys and to assess sociodemographic factors and link with university associated with body image dissatisfaction due to overweight and thinness. Two cross-sectional studies were carried out with samples of 1,085 and 1,041 public higher education institution students in years 2012 and 2014, respectively. The body silhouette scales measured body image dissatisfaction due to overweight and thinness. Sociodemographic variables (sex, age and marital status) and link with the university (study shift, university time and study areas) were the independent variables. Comparisons between surveys were performed using the Chi-square test and the association between variables by Odds Ratio (OR). There was an increase in the prevalence of body image dissatisfaction in students of the Engineering area between surveys. In 2012, younger presented lower chances of dissatisfaction due to overweight and the males higher chances of dissatisfaction due to thinness (OR: 2.06; 95%CI: 1.50–2.84). In 2014, males, younger, without partner, enrolled in the 2nd year of university and of the Health Sciences area (OR: 0.49; CI95%: 0.25–0.97) presented lowers chances of presenting dissatisfaction due to overweight. The prevalence of body image dissatisfaction due to overweight between surveys is higher in men and was associated with lower chances of dissatisfaction due to overweight in both surveys and in younger students.

Key words: Body image; Cross-sectional studies; Students.

Resumo – *A insatisfação com a imagem corporal pode favorecer o surgimento de transtornos, como a anorexia e bulimia. Objetivou-se comparar as prevalências de insatisfação com a imagem corporal entre dois inquéritos e analisar os fatores sociodemográficos e de vínculo com a universidade associados à insatisfação por excesso e por magreza. Este estudo (inquéritos transversais) foi realizado com amostras de 1.085 e 1.041 universitários, nos anos de 2012 e 2014, respectivamente. A insatisfação com imagem corporal por excesso e por magreza foram as variáveis dependentes. As variáveis sociodemográficas (sexo, idade e situação conjugal) e de vínculo com a universidade (período de estudo, tempo de universidade e áreas de estudo) foram as variáveis independentes. As comparações entre os inquéritos foram realizadas pelo teste Qui-quadrado e a associação entre as variáveis pelo Odds Ratio (OR). A prevalência de insatisfação por excesso aumentou entre os inquéritos em universitários do sexo masculino. Em 2012, os universitários mais jovens apresentaram menores chances de insatisfação por excesso e os homens maiores chances de insatisfação por magreza (OR: 2,06; IC95%: 1,50–2,84). Em 2014, os homens, os mais jovens, aqueles sem parceiro, do 2º ano de exposição à universidade e da área das Ciências da Saúde (OR: 0,49; IC95%: 0,25–0,97) apresentaram menores chances de insatisfação por excesso. As prevalências de insatisfação por excesso, entre os inquéritos, foram maiores em homens, e associados com menores chances de insatisfação por excesso, em ambos os inquéritos, os universitários mais jovens.*

Palavras-chave: *Estudantes; Estudos transversais; Imagem corporal.*

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INTRODUCTION

Modernization has stimulated the adoption of inadequate lifestyle[1], which contributes to changes in the profile of body composition and proportions, such as body weight gain[2]. Social pressures impose a beauty pattern and stereotyped bodies that affect people's perception and satisfaction regarding body acceptance and may favor the desire for thinness, especially in girls[3].

Body image self-perception can be understood as a construct derived from the social environment through interaction with family and friends, and electronic media, which integrate with subjective dimensions related to the perception of general appearance or specific body structures[4]. Body image perception can generate dissatisfaction due to overweight (IE) and thinness (IM). Body image dissatisfaction (IIC) may be associated with several psychic disorders, including depression, low self-esteem, anorexia, bulimia, and vigorexia[5,6] being then a public health problem.

Among university students, studies have shown that overweight[7-10], being female[8,9,11,12] and low levels of physical activity[13] were associated with IIC. However, other associations were not evidenced such as age[9,11]. Considering the knowledge coming from associations already observed in previously studies[3,7-13], in relation to IIC, it is essential to understand how attributes linked to the academic life of university students, such as university time, study shift and study area can contribute to IIC. The university is a space of professional training, of technical and scientific deepening in different areas and also favors the personal aspect with socialization among colleagues and staff.

Considering the importance of surveillance research, with the follow-up of different health-related characteristics such as IIC[3], the aims of this study carried out with university students from a public institution were: to compare the prevalence of IIC among university students between two surveys (conducted in 2012 and 2014) and to analyze sociodemographic factors (sex, age, and marital status) and link with the university (study shift, university time and study area) associated with IE and IM at a public university in Bahia, Brazil.

METHOD

This study is part of the Monitoring of Health Indicators and Quality of Life in Academics (MONISA), approved by the ethics committee in research with human beings of the State University of Santa Cruz (No. 382/2010), and was carried out in a higher education institution located in the state of Bahia, Brazil[14]. This study is considered as a hybrid panel, by conducting two cross-sectional surveys in two different years (2012 and 2014) with populations and samples estimated each year. Participants signed the Free and Informed Consent Form prior to their inclusion in the study.

The target population was university students enrolled in the second semester. Sample calculation considered the target population (5,767 uni-

versity students in 2012 and 5,244 university students in 2014), by means of the sum of university students from all the institution's courses, 50% prevalence, acceptable error of three percentage points and 95% confidence level, added of 20% and 15% for losses/refusals and for association studies, respectively. Estimated samples were 1,243 in 2012 and 1,223 in 2014.

Samples were later stratified according to the number of courses (34 courses in 2012, 33 courses in 2014), study shift (day and night) and years of admission in the institution into four categories (2012 survey: 2012, 2011, 2010 and, 2009 and earlier; 2014 survey: 2014, 2013, 2012, and 2011 and previous years). University students were chosen by random selection in each stratum via alphabetical list. Those selected were searched in up to three attempts, changing the days and times. For both losses and refusals, there was no replacement.

In the months of July and August, training of collection teams was carried out, which were carried out in the months of September to November of each year of the research. The ISAQ-A questionnaire (Health Indicators and Quality of Life in Academics) and the guidelines for the application of this instrument were used to collect information[15], which was self-completed by students in classroom in the presence of a researcher.

Body image self-perception among university students was measured by body silhouette figures, using the psychometric method of choice[16]. The images of body silhouettes were printed together with the other questions of the questionnaire. For each of the nine figures, values were assigned from 1 to 9, maintaining the increasing equivalence of values in relation to the size of silhouettes. The current silhouette and the desired silhouette were measured. The response values allowed classifying as body image satisfaction (value 0), IE (positive values) and IM (negative values), by subtracting the scores of the current silhouette by the desired silhouette[9]. In the validation study of the ISAQ-A questionnaire, the reproducibility levels of body silhouettes, with one-week interval, were Kappa (k) 0.54 for current silhouette, and k of 0.77 for the desired silhouette[15].

Independent variables were: sex (male and female); age group classified in thirds (17-20 years, 21-23 years and 24 years or more); marital status (with no partner and with partner); study shift (day and night) and university time (in the 2012 survey: 1st year, admission in 2012, 2nd year, admission in 2011, 3rd year, admission in 2010, 4th year or earlier, admission in 2009 or previous years, in the 2014 survey: 1st year, admission in 2014, 2nd year, admission in 2013, 3rd year, admission in 2012, 4th year or earlier, admission in 2011 or previous years). The study area was classified according to the areas of knowledge of CAPES (Coordination for the Improvement of Higher Level Personnel)[17] into Health Sciences, Exact and Earth Sciences, Biological Sciences, Engineering, Agrarian Sciences, Social and Applied Sciences, Human Sciences and Linguistics, Languages and Arts, according to the institution courses.

Information was tabulated in EpiData software version 3.1. Analyses were performed in SPSS software version 24.0. Descriptive analyses of

proportion, mean, standard deviation (SD), minimum and maximum values were performed. Comparisons between surveys were performed using the chi-square test. In each year of the study, associations between independent variables and IE and IM were estimated by the Odds Ratio, using multinomial logistic regression (reference category: body image satisfaction) in crude and adjusted analyses.

In the adjusted analyses, all independent variables were considered, separated by hierarchical level, considering the hypothetical temporal relation. At distal level, sex and age group at intermediate level, marital status, and at proximal level, study shift, university time and study area. The procedure of selection of variables adopted was the backward, with permanence of the variable in the level and follow-up for the other levels if they presented p value of the likelihood ratio test ≤0.20. Associations were identified by the Wald test p value ≤0.05.

RESULTS

In the 2012 and 2014 surveys, 1,085 and 1,041 university students participated in this study, respectively. The mean age was 24 years (sd: 6, minimum: 17, maximum: 54) in 2012 and 23.6 years (sd: 5.8, minimum: 17, maximum: 57) in 2014. In both studies, there were predominance of female students (2012: 54.9%, 2014: 52.5%), the oldest age third (2012: 38.4%, 2014: 34.6%), with no partner (2012: 85.3%, 2014: 87.4%), day shift (2012: 67.4%, 2014: 71.8%) and with four or more years of university time (2012: 34.7%; 2014: 39.9%). Approximately one-third of students were distributed in each study area.

In general, IIC prevalence did not present statistical differences between surveys (p = 0.290, IE = 2012 = 39.8% and 2014 = 43.1%, IM = 2012 = 29.5% and 2014 = 27.1 %). Male university students and those of the Engineering area presented increase in IE and decrease in IM between years 2012 and 2014 (Table 1).

The factors associated with IIC in 2012 are presented in Table 2. In the crude analysis, there were lower chances of IE among university students of lower age groups (17-20 years and 21-23 years). University students with no partner presented lower chances of IE than those satisfied with body image. In relation to thinness, men presented greater chances of dissatisfaction when compared to women. In the adjusted analysis, the association between lower age groups and IE and the association between men and MI remained significant.

Factors associated with IIC in 2014 are presented in Table 3. In the crude analysis, university students with the lowest chances of IE were men aged 20-23 years, with no partner, in the second year of university time and of Agrarian Sciences, Engineering and Health Sciences areas. University students with no partner presented higher chances of IM. In the adjusted analysis, men of lower age groups, with no partner, of the 2nd year of university time and of Health Sciences area remained associated with IE.

Table 1. Body image dissatisfaction between surveys, according to the exploratory characteristics. Bahia. MONISA study. 2012 and 2014.

Variables	Dissatisfied due to overweight				Dissatisfied due to thinness				p
	2012		2014		2012		2014		
	n	%	n	%	n	%	n	%	
Sex									
Male	156	32.2	169	35.0	188	38.8	151	31.3	0.04
Female	263	46.4	265	50.6	122	21.5	122	23.3	0.10
Age group									
17 to 20 years	90	30.1	122	38.6	105	35.1	100	31.6	0.08
21 to 23 years	128	37.0	128	37.6	111	32.1	102	30.0	0.83
24 years or more	194	49.0	176	51.6	92	23.2	70	20.5	0.65
Marital status									
No partner	332	37.1	355	40.4	280	31.3	257	29.3	0.34
With partner	85	56.3	76	61.3	28	18.5	15	12.1	0.34
Study shift									
Day	270	38.1	299	41.1	224	31.6	205	28.2	0.32
Night	149	43.3	135	48.4	86	25.0	68	24.4	0.38
University time									
1st year	88	38.6	81	41.3	76	33.3	60	30.6	0.80
2nd year	90	35.6	68	34.9	81	32.0	58	29.7	0.78
3rd year	79	38.2	101	46.5	57	27.5	49	22.6	0.20
4th year or more	162	44.5	184	46.1	96	26.4	106	26.6	0.85
Study area									
Agrarian Sciences	30	33.7	31	40.3	31	34.8	19	24.7	0.36
Exact and Earth Sciences	58	31.2	67	42.1	66	35.5	43	27.0	0.08
Applied Social Sciences	99	43.2	94	44.5	59	25.8	60	28.4	0.63
Biological Sciences	33	46.5	41	49.5	18	25.4	21	25.3	0.91
Engineering	27	29.7	50	37.3	40	44.0	33	24.6	<0.01
Humanities and Social Sciences	68	43.6	60	43.8	32	20.5	40	29.2	0.13
Health Sciences	51	45.5	37	34.6	33	29.5	35	32.7	0.23
Linguistics, Languages and Arts	53	44.9	54	54.5	31	26.3	22	22.2	0.37

Note. %: Proportion.

Table 2. Factors associated with body image dissatisfaction in university students. Bahia. MONISA study. 2012 survey.

Variable	Dissatisfied due to overweight		Dissatisfied due to thinness	
	OR crude (95% CI)	OR adjusted (95% CI)	OR crude (95% CI)	OR adjusted (95% CI)
Sex[a]				
Male	0.77 (0.57; 1.04)	0.77 (0.57; 1.04)	2.00 (1.46; 2.75)	2.06 (1.50; 2.84)
Female	1.00	1.00	1.00	1.00
Age group[a]				
17 to 20 years	0.49 (0.34; 0.71)	0.49 (0.34; 0.70)	1.21 (0.82; 1.78)	1.29 (0.87; 1.91)
21 to 23 years	0.68 (0.48; 0.96)	0.66 (0.47; 0.94)	1.24 (0.84; 1.82)	1.32 (0.90; 1.95)
24 years or more	1.00	1.00	1.00	1.00
Marital status[b]				
No partner	0.52 (0.34; 0.79)	0.67 (0.43; 1.05)	1.34 (0.80; 2.24)	1.28 (0.74; 2.22)
With partner	1.00	1.00	1.00	1.00
Study shift[c]				
Day	0.92 (0.68; 1.25)	1.02 (0.70; 1.49)	1.33 (0.94; 1.86)	1.09 (0.72; 1.66)
Night	1.00	1.00	1.00	1.00

Continue...

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Variable	Dissatisfied due to overweight		Dissatisfied due to thinness	
	OR crude (95% CI)	OR adjusted (95% CI)	OR crude (95% CI)	OR adjusted (95% CI)
University time [c]				
1st year	0.90 (0.60; 1.35)	1.21 (0.77; 1.91)	1.31 (0.85; 2.02)	1.32 (0.81; 2.16)
2nd year	0.72 (0.49; 1.06)	0.81 (0.53; 1.22)	1.09 (0.72; 1.65)	1.03 (0.66; 1.61)
3rd year	0.73 (0.49; 1.09)	0.76 (0.50; 1.16)	0.89 (0.57; 1.38)	0.95 (0.60; 1.51)
4th year or more	1.00	1.00	1.00	1.00
Study area [c]				
Agrarian Sciences	0.69 (0.35; 1.34)	0.77 (0.39; 1.54)	1.21 (0.60; 2.46)	1.31 (0.63; 2.70)
Exact and Earth Sciences	0.60 (0.34; 1.05)	0.64 (0.36; 1.15)	1.17 (0.64; 2.12)	1.00 (0.54; 1.85)
Applied Social Sciences	0.89 (0.53; 1.52)	0.84 (0.48; 1.45)	0.91 (0.50; 1.65)	0.81 (0.44; 1.51)
Biological Sciences	1.06 (0.52; 2.14)	1.07 (0.52; 2.20)	0.99 (0.44; 2.20)	0.98 (0.43; 2.23)
Engineering	0.72 (0.36; 1.45)	1.06 (0.51; 2.21)	1.83 (0.91; 3.69)	1.53 (0.73; 3.20)
Humanities and Social Sciences	0.78 (0.45; 1.36)	0.59 (0.33; 1.06)	0.63 (0.33; 1.20)	0.61 (0.31; 1.20)
Health Sciences	1.17 (0.62; 2.20)	1.23 (0.64; 2.36)	1.29 (0.64; 2.60)	1.15 (0.56; 2.36)
Linguistics. Languages and Arts	1.00	1.00	1.00	1.00

Note. Reference category: Body image satisfaction; OR: Odds Ratio; 95% CI: 95% Confidence Interval; a: distal; b: intermediate; c: proximal; Adjusted at the end for sex, age group, marital status and study area.

Table 3. Factors associated with body image dissatisfaction in university students. Bahia. MONISA study. 2014 survey.

Variable	Dissatisfied due to overweight		Dissatisfied due to thinness	
	OR crude (95% CI)	OR adjusted (95% CI)		OR crude (95% CI)
Sex [a]				
Male	0.54 (0.40; 0.72)	0.53 (0.39; 0.71)	1.04 (0.75; 1.45)	1.06 (0.76; 1.47)
Female	1.00	1.00	1.00	1.00
Age group [a]				
17 to 20 years	0.70 (0.48; 1.01)	0.67 (0.46; 0.97)	1.44 (0.95; 2.19)	1.45 (0.95; 2.20)
21 to 23 years	0.63 (0.44; 0.90)	0.60 (0.42; 0.86)	1.26 (0.83; 1.90)	1.26 (0.84; 1.90)
24 years or more	1.00	1.00	1.00	1.00
Marital status [b]				
No partner	0.58 (0.37; 0.90)	0.61 (0.37; 0.98)	2.13 (1.13; 4.01)	1.84 (0.94; 3.59)
With partner	1.00	1.00	1.00	1.00
Study shift [c]				
Day	0.75 (0.54; 1.04)	0.90 (0.59; 1.38)	1.02 (0.70; 1.49)	1.03 (0.65; 1.65)
Night	1.00	1.00	1.00	1.00
University time [c]				
1st year	0.87 (0.57; 1.32)	0.95 (0.60; 1.52)	1.12 (0.71; 1.76)	0.90 (0.54; 1.50)
2nd year	0.58 (0.39; 0.88)	0.62 (0.39; 0.97)	0.86 (0.56; 1.34)	0.71 (0.43; 1.15)
3rd year	0.89 (0.60; 1.32)	0.87 (0.57; 1.31)	0.75 (0.48; 1.19)	0.67 (0.41; 1.08)
4th year or more	1.00	1.00	1.00	1.00
Study area [c]				
Agrarian Sciences	0.49 (0.24; 0.99)	0.53 (0.26; 1.10)	0.74 (0.32; 1.68)	0.70 (0.30; 1.61)
Exact and Earth Sciences	0.58 (0.32; 1.07)	0.76 (0.41; 1.43)	0.92 (0.45; 1.87)	0.84 (0.41; 1.74)
Applied Social Sciences	0.70 (0.39; 1.26)	0.79 (0.43; 1.44)	1.10 (0.55; 2.19)	1.07 (0.53; 2.14)
Biological Sciences	0.83 (0.41; 1.70)	1.01 (0.48; 2.10)	1.04 (0.45; 2.42)	1.01 (0.43; 2.36)
Engineering	0.42 (0.22; 0.78)	0.59 (0.31; 1.12)	0.68 (0.33; 1.40)	0.57 (0.27; 1.21)
Humanities and Social Sciences	0.69 (0.36; 1.31)	0.62 (0.32; 1.19)	1.13 (0.54; 2.36)	1.27 (0.60; 2.68)
Health Sciences	0.45 (0.23; 0.88)	0.49 (0.25; 0.97)	1.04 (0.49; 2.21)	1.04 (0.49; 2.22)
Linguistics, Languages and Arts	1.00	1.00	1.00	1.00

Note. Reference category: Body image satisfaction; OR: Odds Ratio; 95% CI: 95% Confidence Interval; a: distal; b: intermediate; c: proximal; Adjusted at the end for sex, age group, marital status and study area .

DISCUSSION

In this study, there were no differences in IIC ratios between surveys; however, in male university students of the Engineering area, there was an increase in IE and a decrease in IM. Among associated factors, in 2012, younger people presented lower chances of IE and men presented higher chances of IM. In 2014, younger men, with no partner, in the second year of university and in the Health Sciences area presented lower chances of IE.

The prevalence of IE (2012: 39.8%, 2014: 43.1%) and IM (2012: 29.5%, 2014: 27.1%) were statistically similar between surveys. The prevalence found in this research was similar to that of university students in the southern region of Brazil, who presented 44.1% of IE and 25.4% of IM[11]. The IIC stability between years makes it possible to estimate the permanence of this perception over time, with emphasis on such characteristics in university students not only in this region of Brazil, but also in other Brazilian regions[3].

Among men in this study, between years 2012 and 2014, there was an increase in IE (from 32.2% to 35.0%, respectively) and a decrease in IM from 38.8% to 31.3%, respectively. Such differences were also shown in university students of the Engineering study area, who presented a profile of the majority of men (66.3% in 2012, 65.2% in 2014, data not shown). These findings are in line with other studies, which indicated higher IM in men[11,18,19], which demonstrates concern with body appearance, especially the desire for larger body silhouette, more frequently related to the desire to increase muscle mass (hypertrophy)[3].

Both surveys showed decrease of chances of IE in younger students. This information differs from other studies that did not observe associations between age and IIC[9,11]. A possible justification for this result refers to the lower prevalence of overweight in younger students when compared to those with more advanced age[20,21]. Therefore, it could be inferred that the concern with body silhouette can appear with the passage of years, especially regarding body mass[3] and the increase of excess weight during university time[22].

According to this association characteristic, in 2014, university students with no partner presented lower chances of IE (OR: 0.61; 95% CI: 0.37-0.98). In another study, association between IIC and marital status was not evidenced in Physical Education students[11]. However, the lower desire to reduce body silhouette by university students with no partner may have occurred due to the lower prevalence of overweight in this group, evidenced in a study with university students[20], but also shown in population-based surveys[23,24], with higher prevalence of overweight/obesity for those with partner. Thus, smaller body silhouette may not represent for these students an attractive way to consider aspects related to social relationships.

In the 2014 survey, second-year university students presented lower chances of IE, although in another study, but only with Physical Education students, no differences were observed between body satisfaction and uni-

versity time[19]. Possibly, the low concern of second-year university students with body image, different from those who are about to complete the course, may have occurred due to their lower proximity to the end of the course, the search for entry into the labor market and concern with social acceptance.

This possibly corroborates results regarding the association of the study area with IIC, as lower chances of IE was observed in the 2014 survey among university students in the Health Sciences area (OR: 0.49 ; 95% CI: 0.25, 0.97). Possibly, the study of health-related contents can minimize IIC, and access to information enables greater concern with other health-related characteristics, such as healthy habits, which may favor the evaluation of one's own body image and the perspective of future professional performance, focusing on health promotion. However, in other studies, these associations were not observed[25,26].

Body image perception is also influenced by culture, its values and representations around the body. Notions about body are constructed, and symbolic conflicts that reflect contemporary issues emerge, since as pointed out by Ferreira [27] when comparing body image as capital, as it produces (and reproduces) codes of valorization and status. In this sense, body appearance allows the transit in different social positions, which sometimes can cause situations of suffering. IIC, together with the practice of dangerous diets, are mapped as risk factors for various diseases[28-30], thus, IIC research is fundamental for public health, especially for the health of university students.

The use of body silhouette figures, printed together with the other questionnaire questions, was considered as limitations, since they were not presented in individualized cards[16]; however, this format presented satisfactory results in the reproducibility stage, which characterizes smaller response bias on body image perception[15]. The innovative profile of this study should be highlighted, with sample procedure robustness, through the participation of university students by simple random selection after proportional stratification according to the University profile. The performance of repeated surveys as monitoring allows demonstrating the evolution of the body silhouette evaluation in two moments and presents as positive elements the direction of the discussion about IIC around characteristics related to the University, given the influence exercised during this period in professional training and personal advancement.

CONCLUSION

It could be concluded that the prevalence, in general, remained stable between years, but, the prevalence of IE and MI, increased and decreased, respectively, in male university students of the Engineering study area. In both 2012 and 2014 surveys, younger students had lower chances of IE. In 2012, men represented greater chances of MI, and in 2014, this same group was associated with lower chances of IE. In addition, those with no partner in the second year of university and in the Health Sciences area also presented lower chances of IE.

COMPLIANCE WITH ETHICAL STANDARDS

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Ethical approval

Ethical approval was obtained from the local Human Research Ethics Committee – State University of Santa Cruz (number 382/10) and the protocol was written in accordance with standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interests to declare.

Author Contributions

Developed and coordinated the MONISA study: TFS. Helped in data collection: TFS and ASR. Data analysis: TFS. Wrote the article: TFS, SFSS, ASR, CBP, DASS and ST. Critical review of the article: SFSS, CBP, DASS and ST.

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