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Weight Dissatisfaction Mediates the Link between Body Mass Index and Disordered Eating Behaviors in Hispanic Adolescents: A Mediation and Moderated Mediation Analysis

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Abstract

Background/Objectives: Disordered eating behaviors and weight dissatisfaction are increasingly prevalent among Hispanic adolescents. However, limited research has explored how these factors interact, particularly in relation to body weight and gender. This study examined whether Negative Weight Attitudes mediates the relationship between standardized body mass index (zBMI) and Extreme Weight Control Behaviors in Hispanic adolescents, and whether gender moderates this model. **Methods:** Cross-sectional base-line data were collected from Hispanic 6th and 7th graders (N = 690; 53% female; mean age = 12). Disordered behaviors and bodyweight attitudes were assessed using the Modified Kids Eating Disorder Survey (M-KEDS). Mediation and moderated mediation analyses were conducted using Hayes' PROCESS macro in SPSS. A mediation analysis was conducted to examine the direct and indirect effects of zBMI on Extreme Weight Control Behaviors through Negative Weight Attitudes. A moderated mediation with gender as the moderator was also tested. **Results:** The mediation analysis revealed a regression model in which both zBMI and Negative Weight Attitudes predicted Extreme Weight Control Behaviors ($R^2 = 0.33$, $F(2, 687) = 170.20$, $p < 0.001$), and the Sobel test confirmed full mediation ($z = 393.70$, $p < 0.001$). The index of moderated mediation with gender was not significant (Index = −0.08, SE = 0.05, 95% BootCI [−0.17, 0.004], indicating there was no significant difference between males and females in the moderated mediation model. **Conclusions:** Negative Weight At-

titudes significantly account for the link between zBMI and Extreme Weight Control Behaviors among Hispanic adolescents. These findings highlight the importance of addressing body image in obesity and eating disorder prevention efforts in this population.

Keywords

Eating Disorder, Modified Kids Eating Disorder Survey, Prevention, Body Dissatisfaction, Weight

1. Introduction

Diagnosed eating disorders are a growing public health concern, affecting approximately 3% of adolescents in the US, with Hispanic youth reporting the highest prevalence [1]. These disorders are often preceded by disordered eating behaviors and body dissatisfaction, which are alarmingly common among adolescents. Research estimates that around 45% of all adolescents engage in disordered eating behaviors [2]-[4]. Among Hispanic youth, the rates are even higher—64% of females and 61% of those with overweight or obesity report such behaviors [4]-[8]. Compared to peers from other ethnic groups, Hispanic adolescents with overweight or obesity exhibit dieting, unhealthy weight control behaviors, and overeating [9]. Adolescents who experience both excess weight and disordered eating are at heightened risk for mental health challenges, such as depression, anxiety, and peer-related stressors, as well as long-term health issues, including obesity, cardiovascular disease, and metabolic disorders [10]-[13].

Body dissatisfaction, defined as a negative evaluation of one's body shape or weight, is a critical psychological factor that often develops in childhood and intensifies during adolescence. Influenced by societal ideals, this dissatisfaction can lead to harmful behaviors such as chronic dieting, extreme weight control methods, and disordered eating patterns [2] [14]-[19]. In Hispanic populations, these concerns are particularly pronounced: 76% of female and 61% of male Hispanic adolescents report a desire to be thinner, while only a small fraction are content with their current weight [14]. These attitudes are more prevalent among adolescents with overweight or obesity and are strongly associated with disordered eating behaviors.

Despite these trends, most of the literature draws from ethnically diverse cohorts where Hispanic adolescents are underrepresented. For example, Project EAT, one of the most cited sources, includes only 6% Hispanic participants [3] [4] [8]-[10] [17] [20]-[23]. Within this limited representation, Hispanic females report the highest levels of body dissatisfaction, chronic dieting, and both unhealthy (64%) and extreme (11%) weight control behaviors. Hispanic males also exhibit high rates of overweight, body dissatisfaction, and disordered eating behaviors, yet they remain underexamined in the literature [4] [20].

Previous research has established significant associations among body mass index (BMI), body dissatisfaction, and disordered eating behaviors. Several studies have identified body dissatisfaction as a mediator linking BMI or depressive symptoms to disordered eating, sometimes with gender moderating the strength of these relationships [21]-[23]. However, few studies have focused specifically on Hispanic adolescents, despite their elevated risk.

To address this gap, the present study examines whether weight dissatisfaction mediates the relationship between standardized body mass index (zBMI) and purging and restriction behaviors among Hispanic adolescents. Furthermore, if gender moderates this mediation, such that the strength of the indirect effect differs between males and females. By analyzing these variables across a large sample of Hispanic youth, including both males and females and those across different weight categories, this study contributes to a more culturally specific understanding of disordered eating behaviors. Guided by Social Cognitive Theory, we aim to clarify how personal factors (e.g., BMI, body image) influence behavioral outcomes, intending to inform more effective prevention and intervention efforts.

2. Methods

2.1. Sample

This research draws on secondary baseline data from an intensive lifestyle intervention targeted at Hispanic middle school students within a charter school in Houston, TX (n = 760) [24]-[26]. For this analysis, only participants with complete Modified Kids Eating Disorder Survey (M-KEDS) [27] and gender data at baseline were included (N = 690). One-way univariate analyses of variance tests revealed no significant differences ($p > 0.05$) in demographic features, age, BMI, and BMI percentile between the excluded and analytical samples. The original intervention study received approval from the Baylor College of Medicine's Institutional Review Board. All parents provided written consent, and adolescents provided written assent before enrollment in the study.

2.2. Measures

2.2.1. Modified Kids Eating Disorder Survey (M-KEDS)

The M-KEDS [27] is a concise, 7-item self-report screening tool designed to evaluate Negative Weight Attitudes and Extreme Weight Control Behaviors in Hispanic adolescents. The Negative Weight Attitudes subscale contains four items, with three scored as follows: "yes" = 1 and "no" = 0. These items assess the desire to lose weight, the perception of appearing overweight to others, and the fear of gaining weight. The last item assesses body dissatisfaction by utilizing eight child figure drawings (silhouettes) for each gender. Adolescents must identify the image that best represents their actual appearance and the one they aspire to (ideal). Scoring for the body silhouette item results in 1 point for any discrepancy between the ideal and actual images, and 0 points for no difference. The Extreme Weight Control Behaviors subscale comprises three items: dieting, excessive exercise, and

purging/restricting behaviors, including methods such as fasting, strict dieting, and the use of diet pills, diuretics, and laxatives. These items are scored "yes" = 1 and "no" = 0, and their sum provides the total score for Extreme Weight Control Behaviors. Overall scores from the two subscales (scores range from 0 to 7), Negative Weight Attitudes (scores range from 0 to 4), and Extreme Weight Control Behaviors (scores range from 0 to 3). Higher scores indicate more disordered eating behaviors and negative weight attitudes. The M-KEDS has been validated through confirmatory factor analysis and internal consistency, as noted by Lopez *et al.* (Kuder-Richardson = 0.77) [27].

2.2.2. Demographic and Anthropometric Data

At baseline, participants reported their age, gender, and ethnicity through a self-report survey. Weights were recorded by trained staff using a digital scale while participants wore light clothing and no shoes. Height was assessed with a stadiometer, also without shoes. The body mass index (BMI) was calculated using the recorded height and weight. BMI percentiles were determined using gender-specific BMI-for-age percentiles for children aged 2 to 19 [28] [29]. The standardized BMI z-score (zBMI) or standard deviation score was calculated for each participant [30].

2.3. Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics for Windows, Version 25.0 [31]. Prior to analysis, the dataset was screened for entry errors, missing values, and outliers. Kuder-Richardson was examined for each M-KEDS subscale and total score in this sample. The Negative Weight Attitudes subscales were internally reliable in this sample, with a Kuder-Richardson of 0.71. The Extreme Weight Control Behaviors subscale had a Kuder-Richardson reliability coefficient of 0.60, and the M-KEDS total score is also internally reliable, with a Kuder-Richardson reliability coefficient of 0.77. Descriptive statistics, including means and standard deviations, were calculated for key demographic and study variables, and these were stratified by gender to describe the sample characteristics. Bivariate correlations were estimated to examine associations among zBMI, M-KEDS total and subscale scores, and other continuous variables of interest. The baseline secondary dataset utilized in this study does not include measures of pubertal status or detailed socioeconomic indicators, which limits our ability to adjust for these variables.

To test the hypothesized mediation, Hayes' PROCESS Macro, Model 4, was used [32]. Following the guidelines by Hayes [32] [33], mediation was assessed by evaluating the indirect effect of the independent variable (X: zBMI) on the dependent variable (Y: Extreme Weight Control Behaviors) through the mediator (M: Negative Weight Attitudes). The Sobel Test will be utilized to test whether a mediator carries the influence of zBMI to Extreme Weight Control Behaviors [34] [35]. The Moderation Mediation analysis was also conducted using Hayes' PROCESS Macro [32] [33]. Moderation was tested by examining the interaction of

gender (W) with Model 59. Moderation Mediation Model 59 was tested first to explore the overall model.

All models were estimated using bias-corrected bootstrap confidence intervals based on 5000 resamples. An effect was considered statistically significant if the 95% bootstrap confidence interval did not contain the value zero. This approach is consistent with established guidelines for testing moderated mediation effects as outlined by Hayes [32].

3. Results

3.1. Descriptive Statistics

Demographics

The final sample included 690 Hispanic adolescents, with 53% identifying as female. The average age was 12.1 years (SD = 0.7), and 95% of the participants self-identified as Mexican American. The mean BMI was 22.8 (SD = 8.5), which corresponds to a zBMI of 0.88 (SD = 1.2) (Table 1).

Table 1. Demographic characteristics of participants (N = 690).

Demographic Variable	Mean ± SD	% of Sample
Age (years)	12.1 ± 0.7	—
BMI	22.8 ± 8.5	—
zBMI	0.88 ± 1.2	—
Female	—	53% (n = 363)
Male	—	47% (n = 327)
Mexican American	—	95% (n = 656)

3.2. Measures

3.2.1. Modified Kids Eating Disorder Survey (M-KEDS)

Descriptive statistics for each M-KEDS item by gender are presented in Table 2. Chi-square tests revealed statistically significant group differences ($p < 0.01$). Overall, 60% of participants reported currently wanting to lose weight, 44% felt they looked fat to others, and 73% endorsed body dissatisfaction. Gender differences were noted, with males more frequently reporting exercising to lose weight (45% vs. 33%), while females more often endorsed fears of weight gain and body dissatisfaction.

Mean scores for the weight dissatisfaction and purging/restriction subscales, along with total M-KEDS scores, are presented in Table 3. Females reported slightly higher weight dissatisfaction scores (M = 2.19, SD = 1.42) compared to males (M = 1.92, SD = 1.32). Conversely, males reported slightly higher purging/restriction scores (M = 0.94, SD = 1.00) than females (M = 0.81, SD = 0.94). Total M-KEDS scores were comparable across gender.

Bivariate correlations between zBMI, subscale scores, and total scores are presented in Table 4. The Pearson correlations showed strong positive relationships

among all variables ($p < 0.001$). The effect sizes for these correlations ranged from medium to large [36]. For both males and females, higher zBMI was significantly associated with greater weight dissatisfaction, increased purging/restriction behaviors, and higher total disordered eating scores.

Table 2. Descriptive Statistics of M-KEDS Items by gender (N = 690).

Items	Total Sample (N = 690) %	Females (N = 363) %	Males (N = 327) %
Negative Weight Attitudes Subscale			
Wanted to lose weight now	60	61	59
Felt looked fat to others	44	49*	38
Afraid to eat because of weight gain	29	34*	23
Body Dissatisfaction	73	75	72
Extreme Weight Control Behaviors Subscale			
Dieted to lose weight	36	37	36
Exercised a lot to lose weight	38	33	45**
Fasted, vomited, used diet pills/diuretics/laxatives	13	12	14

**$p < 0.001$, *$p < 0.01$ chi-square test; df = 1.

Table 3. Means and standard deviations for M-KEDS subscale and total scores by gender (N = 690).

Variables	Females (N = 363) M (SD)	Males (N = 327) M (SD)
Negative Weight Attitudes (Range: 0 - 4)	2.19 (1.42)	1.92 (1.32)
Extreme Weight Control Behaviors (Range: 0 - 3)	0.81 (0.94)	0.94 (1.00)
M-KEDS Total Score (Range: 0 - 7)	3.00 (2.06)	2.86 (2.10)

Table 4. Correlation matrix for M-KEDS subscale scores, total score, and zBMI by gender (N = 690).

Variables	Negative Weight Attitudes	Extreme Weight Control Behaviors	M-KEDS Total Score
Females			
Negative Weight Attitudes		0.62**	0.93**
Extreme Weight Control Behaviors			0.87**
zBMI	0.56**	0.42**	0.58**
Males			
Negative Weight Attitudes		0.52**	0.92**
Extreme Weight Control Behaviors			0.81**
zBMI	0.62**	0.50**	0.63**

**$p \leq 0.001$; zBMI = standardized BMI.

3.2.2. Mediation Analysis

A simple mediation model was conducted to test whether Negative Weight Attitudes mediate the relationship between zBMI and Extreme Weight Control Behaviors (Figure 1). The mediation analysis revealed that zBMI significantly predicts Negative Weight Attitudes ($R^2 = 0.331$, $F(1, 688) = 340.81$, $p < 0.001$), indicating that zBMI explains 33% of the variance in Negative Weight Attitudes.

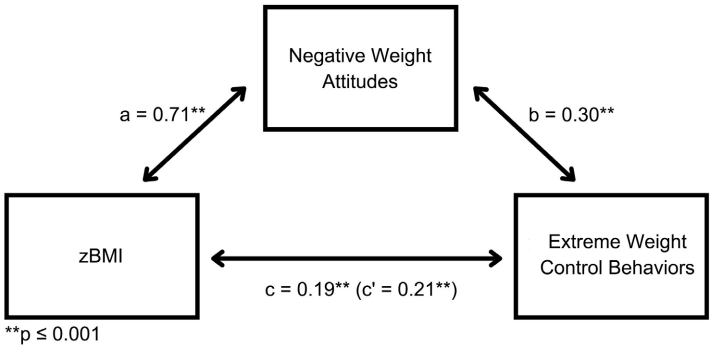

Figure 1. Mediation model for the sample. Relationship between standardized BMI (zBMI) and purging/restriction eating behaviors, mediated by weight dissatisfaction (N = 690). Standardized coefficients are shown on each path.

In the combined regression model predicting Extreme Weight Control Behaviors, both zBMI and Negative Weight Attitudes were included as predictors. The model explains 33% of the variance in Extreme Weight Control Behaviors ($R^2 = 0.334$, $F(2, 687) = 172.20$, $p < 0.001$). The direct effect of zBMI on Extreme Weight Control Behaviors (path c) was also significant ($B = 0.19$, $SE = 0.03$, $t(688) = 5.66$, $p < 0.001$). Additionally, there was a significant indirect effect of zBMI on Extreme Weight Control Behaviors ($B = 0.21$, $SE = 0.02$, 95% BootCI [0.17, 0.26]). The indirect pathway through Negative Weight Attitudes accounted for approximately 21% of the total effect. Finally, the Sobel test confirmed full mediation ($z = 9.63$, 95% CI [0.17, 0.26], $p < 0.001$) [34] [35], indicating that Negative Weight Attitudes fully mediate the relationship between zBMI and Extreme Weight Control Behaviors.

3.2.3. Moderated Mediation Analysis

A moderated mediation model was tested to assess whether gender influenced the mediation pathway from zBMI to Extreme Weight Control Behaviors through Negative Weight Attitudes. Interaction terms for gender at each path (zBMI to Negative Weight Attitudes, Negative Weight Attitudes to Extreme Weight Control Behaviors, and zBMI to Extreme Weight Control Behaviors) were tested. Pathway a, there was no significant moderation on zBMI and Negative Weight Attitudes ($B = -0.02$, $SE = 0.08$, 95% CI [−0.17, 0.13], $p = 0.82$). Pathway b, Negative Weight Attitudes to Extreme Weight Control Behaviors ($B = -0.11$, $SE = 0.05$, 95% CI [−0.22, −0.001], $p = 0.047$) and pathway c, zBMI to Extreme Weight Control Behaviors ($B = -0.01$, $SE = 0.07$, 95% CI [−0.14, 0.12], $p = 0.87$) were also not significant.

The moderation mediation conditional direct effects on path c, zBMI on Extreme Weight Control Behaviors, was significant for females (B = 0.16, SE = 0.05, 95% CI [0.07, 0.25], p = 0.004) and males (B = 0.17, SE = 0.05, 95% CI [0.07, 0.27], p = 0.006). Figure 2 illustrates the conditional indirect effects of standardized BMI (zBMI) on Extreme Weight Control Behaviors through Negative Weight Attitudes, stratified by gender. The indirect moderation mediation effect was also significant across both) genders, females (B = 0.19, SE = 0.03, 95% BootCI [0.14, 0.25] and males (B = 0.28, SE = 0.04, 95% BootCI [0.21, 0.35]). However, the index of moderated mediation with gender was not significant (Index = −0.08, SE = 0.05, 95% BootCI [−0.17, 0.004]), indicating that the model was not moderated by gender.

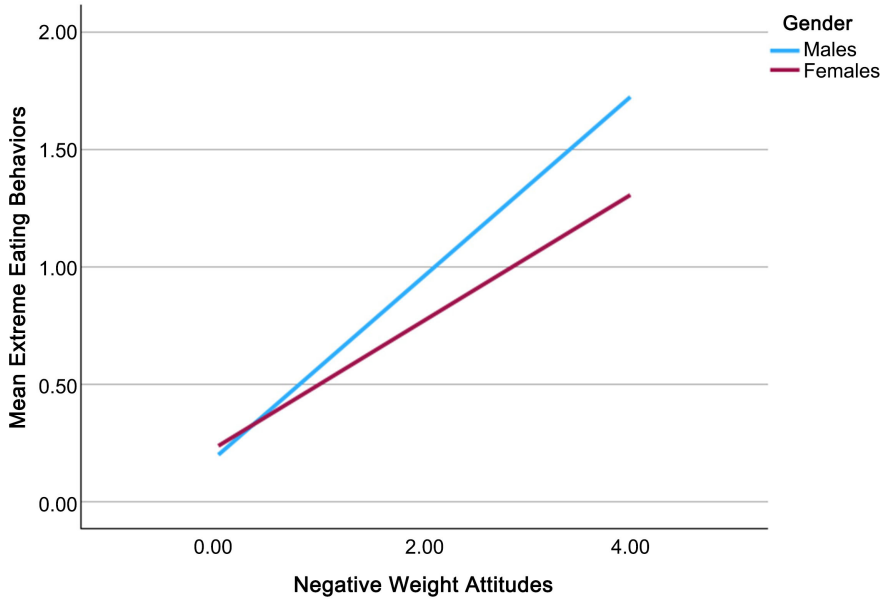

Figure 2. Conditional indirect effect of zBMI on disordered eating behaviors through weight dissatisfaction by gender.

4. Discussion

This study examined the mediating role of Negative Weight Attitudes in the link between zBMI and Extreme Weight Control Behaviors among Hispanic adolescents. Findings showed that Negative Weight Attitudes significantly mediated the relationship between zBMI and Extreme Weight Control Behaviors. A higher BMI was linked to increased weight dissatisfaction, which in turn predicted greater engagement in disordered eating behaviors. However, the strength of the indirect effect was slightly higher for males than for females. These results support the proposed mediation model and align with Social Cognitive Theory, demonstrating how personal factors (BMI and weight dissatisfaction) affect behavioral outcomes (disordered eating).

The findings align with previous research. For instance, Project EAT identified weight concerns as a key mediator between BMI and unhealthy weight control

behaviors in a diverse group of adolescents, with significant links across genders [21]. These results highlight the importance of body image and body dissatisfaction within this population. The current study found a significant direct effect of zBMI on disordered eating behaviors, indicating both direct and indirect impacts of body size on harmful weight-related actions in this group, providing a more focused view of this relationship among Hispanic adolescents.

Our findings also support the results of Buckingham-Howes *et al.* [23], who found that body dissatisfaction mediated the link between zBMI and dieting behaviors but not restricting/purging behaviors in African American adolescent females. This highlights potential cultural differences in how body dissatisfaction manifests behaviorally. Likewise, previous long-term studies with Spanish adolescents showed gender-influenced mediation between depressive symptoms and disordered eating through body dissatisfaction, although they did not consider BMI [23]. The current study expands on this by including both weight status and gender, offering a more complete understanding of risk factors.

The high prevalence of weight dissatisfaction and disordered eating behaviors among Hispanic adolescents with overweight or obesity in this sample is concerning. Prior research indicates that adolescents with excess weight are at an elevated risk for restrictive eating disorders and often face delays in diagnosis and treatment [37]-[40]. For Hispanic youth, these disparities are further compounded; only 13% of those reporting eating disorder symptoms receive treatment, and only 2% of treated cases are male [4] [9] [40]. Adolescents with overweight or obesity may go undiagnosed for months, during which harmful behaviors can escalate, sometimes resulting in extreme weight loss and increased health risks.

While this study identified Negative Weight Attitudes as a mediator, explaining 33% of the model, the model suggests there are additional factors involved. Future research should explore other possible mediators such as cultural body ideals, acculturation, peer and family influences, physical activity levels, and access to healthy foods. Understanding these broader psychosocial and environmental contributors is crucial for developing effective, culturally tailored interventions.

These findings have important implications for clinical practice and public health. Despite the high rates of disordered eating and body dissatisfaction among this group, many Hispanic adolescents encounter obstacles to receiving care [9] [41]. Cultural stigma around mental health, limited access to culturally appropriate services, language barriers, and financial issues can hinder adolescents from seeking help [42] [43]. Moreover, boys may be less likely to report symptoms due to the misconception that eating disorders mainly affect females [44]. These combined obstacles highlight the importance of school-based screening, family involvement, and interventions that are culturally sensitive.

Adolescents who present with both overweight/obesity and body dissatisfaction should be identified early and supported through integrated interventions that address both healthy weight management and psychological well-being. Health care providers must be trained to recognize disordered eating behaviors in ado-

lescents across the weight spectrum and provide appropriate referrals for treatment. Unfortunately, youth with comorbid obesity and disordered eating are often overlooked in screening and intervention protocols.

Schools play a vital role in prevention and early detection, especially in Hispanic communities. Since disordered eating often starts in early adolescence and can go unnoticed, training school staff counselors, nurses, and PE teachers to recognize culture- and gender-specific warning signs is crucial [21] [24]. Routine screening with culturally validated tools can identify issues early, and family-based education can reinforce healthy behaviors and promote help-seeking [45].

There is an urgent need for culturally relevant, evidence-based interventions for Hispanic adolescents. While few programs have addressed both body dissatisfaction and disordered eating behaviors simultaneously, cognitive behavioral therapy (CBT) interventions have shown promise in improving body image and reducing unhealthy eating behaviors in adolescents with overweight [40]. The current findings provide foundational knowledge to inform future intervention design, particularly those targeting early adolescents and incorporating both personal and behavioral factors.

This study presents several strengths, including a large and ethnically homogenous sample of Hispanic adolescents, balanced representation of both genders, and the use of objectively measured anthropometric data. Furthermore, it addresses a significant gap in the literature by examining a theoretically grounded model of disordered eating that incorporates BMI, weight dissatisfaction, and gender within a high-risk population. However, the cross-sectional design limits causal inferences, and longitudinal studies are necessary to establish the temporal sequence of weight dissatisfaction and disordered eating [46]. Additionally, the study's focus on a predominantly Mexican American sample restricts generalizability to other Hispanic subgroups or racial/ethnic populations. Lastly, while the M-KEDS is validated for Hispanic youth, it does not encompass the full range or frequency of disordered eating behaviors.

This study underscores the critical role of weight dissatisfaction in the development of disordered eating behaviors among Hispanic adolescents and affirms the need for early identification and culturally sensitive intervention. Addressing body dissatisfaction may be a key strategy in preventing both eating disorders and obesity-related health outcomes in this at-risk population.

5. Conclusion

This study highlights the harmful role of weight dissatisfaction as a key factor linking higher zBMI to disordered eating behaviors among Hispanic adolescents. Adolescents with overweight or obesity are at increased risk of experiencing body dissatisfaction, which then raises the likelihood of engaging in purging and restriction behaviors. We believe this is the first study to examine this mediation and moderated mediation model within a large, diverse sample of Hispanic adolescents, including both males and females. These findings improve our under-

standing of how personal factors, such as body size and body image, interact to promote harmful behaviors. Importantly, they highlight the importance of early, culturally sensitive interventions that address both psychological and behavioral risk factors in Hispanic youth, interventions that may ultimately prevent the development of full-syndrome eating disorders and reduce long-term health issues.

Author Contributions

Conceptualization, T.D.L., T.A.L., C.A., M.W., and K.H.; methodology, T.D.L., T.A.L., C.A., and M.W.; software, T.D.L. and M.W.; validation, T.D.L. and M.W.; formal analysis, T.D.L., M.W., and A.C.; writing—original draft preparation, T.D.L., T.A.L., C.A., M.W., and K.H.; writing—review and editing, T.D.L., T.A.L., C.A., M.W., K.H., and A.C. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

Ethical review and approval were waived for this study due to this study being a de-identified secondary analysis.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Upon request, data may be made available after a data use agreement.

Abbreviations

The following abbreviations are used in this manuscript: M-KEDS, Modified Kids Eating Disorder Survey.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] Swanson, S.A., Crow, S.J., Le Grange, D., Swendsen, J. and Merikangas, K.R. (2011) Prevalence and Correlates of Eating Disorders in Adolescents. Results from the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry*, **68**, 714-723. https://doi.org/10.1001/archgenpsychiatry.2011.22

[2] Neumark-Sztainer, D., Story, M., Hannan, P.J., Perry, C.L. and Irving, L.M. (2002) Weight-Related Concerns and Behaviors among Overweight and Non-Overweight Adolescents: Implications for Preventing Weight-Related Disorders. *Archives of Pe-*

diatrics & Adolescent Medicine, **156**, 171-178.
https://doi.org/10.1001/archpedi.156.2.171

[3] Neumark-Sztainer, D., Wall, M., Larson, N.I., Eisenberg, M.E. and Loth, K. (2011) Dieting and Disordered Eating Behaviors from Adolescence to Young Adulthood: Findings from a 10-Year Longitudinal Study. *Journal of the American Dietetic Association*, **111**, 1004-1011. https://doi.org/10.1016/j.jada.2011.04.012

[4] Neumark-Sztainer, D., Croll, J., Story, M., Hannan, P.J., French, S.A. and Perry, C. (2002) Ethnic/Racial Differences in Weight-Related Concerns and Behaviors among Adolescent Girls and Boys. *Journal of Psychosomatic Research*, **53**, 963-974. https://doi.org/10.1016/s0022-3999(02)00486-5

[5] Goldschmidt, A.B., Aspen, V.P., Sinton, M.M., Tanofsky-Kraff, M. and Wilfley, D.E. (2008) Disordered Eating Attitudes and Behaviors in Overweight Youth. *Obesity*, **16**, 257-264. https://doi.org/10.1038/oby.2007.48

[6] Hayes, J.F., Fitzsimmons-Craft, E.E., Karam, A.M., Jakubiak, J., Brown, M.L. and Wilfley, D.E. (2018) Disordered Eating Attitudes and Behaviors in Youth with Overweight and Obesity: Implications for Treatment. *Current Obesity Reports*, **7**, 235-246. https://doi.org/10.1007/s13679-018-0316-9

[7] Lampard, A.M., Maclehose, R.F., Eisenberg, M.E., Larson, N.I., Davison, K.K. and Neumark-Sztainer, D. (2016) Adolescents Who Engage Exclusively in Healthy Weight Control Behaviors: Who Are They? *International Journal of Behavioral Nutrition and Physical Activity*, **13**, Article No. 5.
https://doi.org/10.1186/s12966-016-0328-3

[8] Yoon, C., Mason, S.M., Hooper, L., Eisenberg, M.E. and Neumark-Sztainer, D. (2020) Disordered Eating Behaviors and 15-Year Trajectories in Body Mass Index: Findings from Project Eating and Activity in Teens and Young Adults (EAT). *Journal of Adolescent Health*, **66**, 181-188. https://doi.org/10.1016/j.jadohealth.2019.08.012

[9] Rodgers, R.F., Watts, A.W., Austin, S.B., Haines, J. and Neumark-Sztainer, D. (2017) Disordered Eating in Ethnic Minority Adolescents with Overweight. *International Journal of Eating Disorders*, **50**, 665-671. https://doi.org/10.1002/eat.22652

[10] Neumark-Sztainer, D., Wall, M., Story, M. and Sherwood, N.E. (2009) Five-Year Longitudinal Predictive Factors for Disordered Eating in a Population-Based Sample of Overweight Adolescents: Implications for Prevention and Treatment. *International Journal of Eating Disorders*, **42**, 664-672. https://doi.org/10.1002/eat.20733

[11] Pervanidou, P., Bastaki, D., Chouliaras, G., Papanikolaou, K., Laios, E., Kanaka-Gantenbein, C., *et al.* (2013) Circadian Cortisol Profiles, Anxiety and Depressive Symptomatology, and Body Mass Index in a Clinical Population of Obese Children. *Stress*, **16**, 34-43. https://doi.org/10.3109/10253890.2012.689040

[12] Llewellyn, A., Simmonds, M., Owen, C.G. and Woolacott, N. (2016) Childhood Obesity as a Predictor of Morbidity in Adulthood: A Systematic Review and Meta-Analysis. *Obesity Reviews*, **17**, 56-67. https://doi.org/10.1111/obr.12316

[13] Ayala, G.X., Mickens, L., Galindo, P. and Elder, J.P. (2007) Acculturation and Body Image Perception among Latino Youth. *Ethnicity & Health*, **12**, 21-41.
https://doi.org/10.1080/13557850600824294

[14] Sonneville, K.R., Calzo, J.P., Horton, N.J., Haines, J., Austin, S.B. and Field, A.E. (2012) Body Satisfaction, Weight Gain and Binge Eating among Overweight Adolescent Girls. *International Journal of Obesity*, **36**, 944-949.
https://doi.org/10.1038/ijo.2012.68

[15] Hales, C.M., Carroll, M.D., Fryar, C.D. and Ogden, C.L. (2017) Prevalence of Obesity among Adults and Youth: United States, 2015-2016. NCHS Data Brief.

[16] Bucchianeri, M.M., Fernandes, N., Loth, K., Hannan, P.J., Eisenberg, M.E. and Neumark-Sztainer, D. (2016) Body Dissatisfaction: Do Associations with Disordered Eating and Psychological Well-Being Differ across Race/Ethnicity in Adolescent Girls and Boys? *Cultural Diversity & Ethnic Minority Psychology*, **22**, 137-146. https://doi.org/10.1037/cdp0000036

[17] Neumark-Sztainer, D., Paxton, S.J., Hannan, P.J., Haines, J. and Story, M. (2006) Does Body Satisfaction Matter? Five-Year Longitudinal Associations between Body Satisfaction and Health Behaviors in Adolescent Females and Males. *Journal of Adolescent Health*, **39**, 244-251. https://doi.org/10.1016/j.jadohealth.2005.12.001

[18] Neumark-Sztainer, D.R., Wall, M.M., Haines, J.I., Story, M.T., Sherwood, N.E. and van den Berg, P.A. (2007) Shared Risk and Protective Factors for Overweight and Disordered Eating in Adolescents. *American Journal of Preventive Medicine*, **33**, 359-369.e3. https://doi.org/10.1016/j.amepre.2007.07.031

[19] Stice, E. and Whitenton, K. (2002) Risk Factors for Body Dissatisfaction in Adolescent Girls: A Longitudinal Investigation. *Developmental Psychology*, **38**, 669-678. https://doi.org/10.1037//0012-1649.38.5.669

[20] Rodgers, R.F., McLean, S.A., Marques, M., Dunstan, C.J. and Paxton, S.J. (2016) Trajectories of Body Dissatisfaction and Dietary Restriction in Early Adolescent Girls: A Latent Class Growth Analysis. *Journal of Youth and Adolescence*, **45**, 1664-1677. https://doi.org/10.1007/s10964-015-0356-3

[21] Neumark-Sztainer, D., Wall, M.M., Story, M. and Perry, C.L. (2003) Correlates of Unhealthy Weight-Control Behaviors among Adolescents: Implications for Prevention Programs. *Health Psychology*, **22**, 88-98. https://doi.org/10.1037//0278-6133.22.1.88

[22] Ferreiro, F., Seoane, G. and Senra, C. (2014) Toward Understanding the Role of Body Dissatisfaction in the Gender Differences in Depressive Symptoms and Disordered Eating: A Longitudinal Study during Adolescence. *Journal of Adolescence*, **37**, 73-84. https://doi.org/10.1016/j.adolescence.2013.10.013

[23] Buckingham-Howes, S., Armstrong, B., Pejsa-Reitz, M.C., Wang, Y., Witherspoon, D.O., Hager, E.R., *et al.* (2018) BMI and Disordered Eating in Urban, African American, Adolescent Girls: The Mediating Role of Body Dissatisfaction. *Eating Behaviors*, **29**, 59-63. https://doi.org/10.1016/j.eatbeh.2018.02.006

[24] Arlinghaus, K.R., Ledoux, T.A. and Johnston, C.A. (2021) Randomized Controlled Trial to Increase Physical Activity among Hispanic-American Middle School Students. *Journal of School Health*, **91**, 307-317. https://doi.org/10.1111/josh.13004

[25] Johnston, C.A. and Moreno, J.P. (2014) Development of a School-Based Obesity Intervention for Mexican Americans. *Clinical Practice in Pediatric Psychology*, **2**, 116-130. https://doi.org/10.1037/cpp0000061

[26] Johnston, C.A., Moreno, J.P., Hernandez, D.C., Reichek, B. and Foreyt, J.P. (2017) Dissemination of a School-Based Obesity Intervention for Mexican Americans: A Randomized Controlled Trial. *Health Behavior and Policy Review*, **4**, 454-465. https://doi.org/10.14485/hbpr.4.5.5

[27] Lopez, T.D., Cepni, A.B., Goodman, L.P., Arlinghaus, K.R., Wiesner, M., Johnston, C.A., *et al.* (2024) Development of the Two-Factor Modified Kids Eating Disorder Survey (M-KEDS): A Validation Study with Hispanic Adolescents. *Nutrition Journal*, **23**, Article No. 134. https://doi.org/10.1186/s12937-024-01031-2

[28] Hampl, S.E., Hassink, S.G., Skinner, A.C., Armstrong, S.C., Barlow, S.E., Bolling, C.F., *et al.* (2023) Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents with Obesity. *Pediatrics*, **151**, e2022060640.

https://doi.org/10.1542/peds.2022-060640

[29] BMI (2025) Child and Teen BMI Calculator. https://www.cdc.gov/bmi/child-teen-calculator/index.html

[30] Flegal, K.M. and Cole., T.J. (2013) Construction of LMS Parameters for the Centers for Disease Control and Prevention 2000 Growth Charts. US Department of Health and Human Services and Centers for Disease Control and Prevention.

[31] IBM (2017) IBM SPSS Statistics for Windows, Version 25.0.

[32] Hayes, A.F. (2022) Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach. 3rd Edition, Guilford Press.

[33] Preacher, K.J., Rucker, D.D. and Hayes, A.F. (2007) Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions. *Multivariate Behavioral Research*, **42**, 185-227. https://doi.org/10.1080/00273170701341316

[34] Preacher, K.J. and Hayes, A.F. (2008) Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models. *Behavior Research Methods*, **40**, 879-891. https://doi.org/10.3758/brm.40.3.879

[35] Preacher, K.J. and Hayes, A.F. (2004) SPSS and SAS Procedures for Estimating Indirect Effects in Simple Mediation Models. *Behavior Research Methods, Instruments, & Computers*, **36**, 717-731. https://doi.org/10.3758/bf03206553

[36] Cohen, J. (1988) Statistical Power Analysis for the Behavioral Sciences. 2nd Edition, Lawrence Erlbaum Associates.

[37] Barakat, S., McLean, S.A., Bryant, E., Le, A. and Marks, P. (2023) Risk Factors for Eating Disorders: Findings from a Rapid Review. *Journal of Eating Disorders*, **11**, Article No. 8.

[38] Lebow, J., Sim, L.A. and Kransdorf, L.N. (2015) Prevalence of a History of Overweight and Obesity in Adolescents with Restrictive Eating Disorders. *Journal of Adolescent Health*, **56**, 19-24. https://doi.org/10.1016/j.jadohealth.2014.06.005

[39] Berkowitz, S.A., Witt, A.A., Gillberg, C., Råstam, M., Wentz, E. and Lowe, M.R. (2016) Childhood Body Mass Index in Adolescent-Onset Anorexia Nervosa. *International Journal of Eating Disorders*, **49**, 1002-1009. https://doi.org/10.1002/eat.22584

[40] Neumark-Sztainer, D. (2015) Higher Weight Status and Restrictive Eating Disorders: An Overlooked Concern. *Journal of Adolescent Health*, **56**, 1-2. https://doi.org/10.1016/j.jadohealth.2014.10.261

[41] Becker, A.E., Franko, D.L., Speck, A. and Herzog, D.B. (2003) Ethnicity and Differential Access to Care for Eating Disorder Symptoms. *International Journal of Eating Disorders*, **33**, 205-212. https://doi.org/10.1002/eat.10129

[42] Jebeile, H., Lister, N.B., Baur, L.A., Garnett, S.P. and Paxton, S.J. (2021) Eating Disorder Risk in Adolescents with Obesity. *Obesity Reviews*, **22**, e13173. https://doi.org/10.1111/obr.13173

[43] Kimber, M., Couturier, J., Georgiades, K., Wahoush, O. and Jack, S.M. (2014) Ethnic Minority Status and Body Image Dissatisfaction: A Scoping Review of the Child and Adolescent Literature. *Journal of Immigrant and Minority Health*, **17**, 1567-1579. https://doi.org/10.1007/s10903-014-0082-z

[44] Ralph-Nearman, C. and Filik, R. (2018) New Body Scales Reveal Body Dissatisfaction, Thin-Ideal, and Muscularity-Ideal in Males. *American Journal of Men's Health*, **12**, 740-750. https://doi.org/10.1177/1557988318763516

[45] Tanner, A.B., Williams, L. and Goldschmidt, A.B. (2025) Screening and Monitoring

for Eating Disorders in Youth Presenting for Obesity Treatment. *Pediatrics Open Science*, **1**, 1-4. https://doi.org/10.1542/pedsos.2024-000333

[46] Maxwell, S.E. and Cole, D.A. (2007) Bias in Cross-Sectional Analyses of Longitudinal Mediation. *Psychological Methods*, **12**, 23-44. https://doi.org/10.1037/1082-989x.12.1.23