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Short Communication

Does Perceived Behavioral Control Predict Restrained Eating in Overweight and Obese Youth?

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Abstract

Introduction: Perceived behavioral control (PBC) is a core construct of the Theory of Planned Behavior (TPB) and a key determinant of health behaviors. However, its specific role in relation to restrained eating among overweight and obese youth remains underexplored. Therefore, this study aimed to investigate the association between PBC and restrained eating in this population.

Methods: This cross-sectional study included 220 overweight and obese youth (BMI > 25 kg/m²) aged 18–29 years from Malekan County, Iran. Participants were recruited using two-stage cluster sampling from urban and rural healthcare centers. Data were collected between October 2025 and February 2026. Validated TPB-based questionnaires and the Three-Factor Eating Questionnaire-Revised 18 (TFEQ-R18) were used. Data were analyzed using correlation coefficients and linear regression.

Results: PBC correlated with restrained eating ($r = 0.213$, $P < 0.001$). Subgroup correlations were significant among females ($r = 0.468$), rural residents ($r = 0.279$), married individuals ($r = 0.325$), those with family history of obesity ($r = 0.307$), and those with prior weight-loss experience ($r = 0.265$; all $P < 0.01$). In regression, PBC was the only TPB construct directly associated with restrained eating ($B = 0.007$, $P < 0.001$), explaining 11% of the variance ($R^2 = 0.11$, $P < 0.001$). PBC did not predict emotional or uncontrolled eating.

Conclusion: In this cross-sectional study, PBC was positively associated with restrained eating among overweight and obese youth. However, causal conclusions cannot be drawn due to the study design. Longitudinal and experimental research is warranted to confirm these associations.

Keywords: Perceived behavioral control, Restrained eating, Theory of planned behavior, Overweight, Obesity, Youth

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Introduction

Overweight and obesity among youth have reached alarming global levels.[1] Emerging adulthood (ages 18–29 years) represents a critical developmental period characterized by transitions to independent living, workforce entry, and shifting lifestyle patterns.[2] During this stage, deteriorating health behaviors increase susceptibility to weight gain and obesity-related risks.[3] Notably, brief, tailored interventions focusing on self-regulation have been shown to be feasible and effective for young adults, achieving significant weight loss and good retention.[4]

The Theory of Planned Behavior (TPB) proposes that perceived behavioral control (PBC)—an individual's perception of how easy or difficult it is to perform a behavior—directly influences both intention and action.[5]

While much research has focused on attitude as the primary predictor of weight-loss intention[6], the specific role of PBC in shaping actual restrained eating remains underexplored.[7] Despite the established role of behavioral intention as a proximal predictor of action, a substantial gap frequently exists between the intention to lose weight and the actual performance of weight-loss behaviors. Consequently, the mere presence of intention is often insufficient to ensure successful behavioral outcomes. In this context, beyond identifying barriers that impede action, it is essential to pinpoint variables that can bridge this intention-behavior gap. Specifically, identifying factors that facilitate controlled or restrained eating—as a key weight-loss behavior—may provide critical insights for more effective interventions.[8]

Previous research has shown that exercise intentions do not reliably translate into actual physical activity, with adherence rates declining substantially over time.[9,10] This phenomenon is particularly concerning for obesity interventions, where consistent behavioral engagement is essential for achieving clinically meaningful weight loss. Given that PBC has been proposed as a key moderator of the intention-behavior relationship, enhancing individuals' confidence in their ability to regulate eating behavior—even under challenging circumstances—may represent a promising strategy for closing the gap between weight-loss intentions and actual dietary adherence.

Unlike attitude and subjective norm, which primarily influence motivation, PBC directly captures an individual's perceived capability to perform a behavior under challenging conditions.[5] This makes it particularly relevant for restrained eating, which requires ongoing self-regulation in the face of environmental temptations and

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emotional cues.[11]

Furthermore, while behavioral intention explains why individuals want to restrict their eating, PBC may explain whether they actually can do so when faced with real-world barriers.[12]

Given that overweight and obesity affect an estimated 35.09% of the Iranian population, research conducted in this context can provide valuable insights for targeted interventions.[13] Furthermore, the unique urban-rural composition of Malekan County offers a valuable opportunity to examine PBC-restrained eating associations across diverse residential and demographic subgroups.

Accordingly, this short communication does not test formal separate hypotheses but rather pursues a single precise objective: to examine the direct relationship between PBC and restrained eating in overweight and obese youth (ages 18–29 years), while exploring whether this relationship holds above and beyond behavioral intention and across urban versus rural residential contexts.

Methods

Study design and participants

This cross-sectional study included 220 overweight/obese youth (BMI > 25 kg/m^2) aged 18–29 years from Malekan County, Iran, with data collected between October 2025 and February 2026. Mean age was 24.33 ± 3.46 years. Due to the cross-sectional design, findings are limited to associations and cannot establish causality.

Participants were selected via two-stage cluster sampling from urban and rural healthcare centers. In the first stage, health bases and houses were randomly selected as clusters. In the second stage, 220 eligible young adults were recruited from these clusters.

Sample size was calculated for estimating the prevalence of high behavioral intention for weight loss (score > 5), assumed at 72%. Using a single population proportion formula with 95% confidence (Z = 1.96) and precision of 0.06, the required sample was 215. To account for non-response and a design effect of 1.2 due to cluster sampling, the final sample was set at 220. This analysis is part of a larger study on weight-related behaviors in youth.[14]

Measures

Data were collected using two validated Persian instruments: a TPB-based questionnaire with 7-point scales assessing attitude (6 items, α = 0.95), subjective norm (4 items, α = 0.88), behavioral intention (4 items, α = 0.93), and perceived behavioral control (4 items, α = 0.88), with an overall Cronbach's α of 0.92.[15]; and the TFEQ-R18, assessing uncontrolled, restrained, and emotional eating, previously validated in Iran (α = 0.82).[16,17]

Statistical analysis

We used n (%), and mean ± SD to describe data. Correlation coefficient, Chi-square test, and linear regression were employed to examine relationships between variables. The significance level (α) was set at 0.05 (two-tailed). Post-hoc power analysis indicated that the achieved power for detecting a correlation of r = 0.20 with N = 220 and α = 0.05 was approximately 0.85. Linear regression analyses for restrained eating were adjusted for age, gender, BMI, and residential area (urban/rural) as potential confounders. Data analysis was performed using SPSS Statistics for Windows, version 27 (IBM Corp., Armonk, N.Y., USA).

Results

Perceived behavioral control showed a significant positive correlation with restrained eating in the total sample (r = 0.213, 95% CI: 0.004 to 0.011, $P < 0.001$), with notable variations across subgroups (Table 1).

The strongest correlation was observed in females (r = 0.468, $P < 0.001$), whereas the correlation was not significant in males (r = 0.166, $P = 0.083$). Regarding place of residence, significant correlations were found in both rural (r = 0.279, $P < 0.001$) and urban participants (r = 0.237, $P = 0.037$). Married individuals showed a significant correlation (r = 0.325, $P < 0.001$), while unmarried individuals did not (r = 0.185, $P = 0.088$). A family history of obesity was associated with a significant correlation (r = 0.307, $P < 0.001$), whereas no significant correlation was observed in those without such history (r = 0.183, $P = 0.114$).

PBC correlated with restrained eating in both participants with (r = 0.265, $P = 0.010$) and without (r = 0.206, $P = 0.021$) prior weight-loss attempts. Those with prior attempts also reported significantly higher PBC scores (70.80 ± 19.05 vs. 61.21 ± 21.05, $P < 0.001$).

Table 2 presents the multiple linear regression analysis examining the predictive power of TPB constructs on restrained eating. The model revealed modest but significant explanatory power ($R^2 = 0.11$, Adjusted $R^2 = 0.10$). In the unadjusted model (Table 2), PBC significantly predicted restrained eating (B (unstandardized) = 0.007, 95% CI: 0.004 to 0.011, $P < 0.001$). After adjusting for gender, age, BMI, marital status, place of residence, family history of obesity, and previous weight-loss behavior, PBC remained a significant predictor (B (unstandardized) = 0.008, 95% CI: 0.004 to 0.011, $P < 0.001$).. Attitude toward the behavior (AB: β = 0.006, SE = 0.147, $P = 0.96$), subjective norm (SN: β = 0.00, SE = 0.028, $P = 0.90$), and behavioral intention (BI: β = 0.092, SE = 0.144, $P = 0.52$) did not show statistically significant associations with restrained eating.

In contrast, the regression models for emotional eating ($R^2 = 0.01$, Adjusted $R^2 = 0.00$) and uncontrolled eating ($R^2 = 0.01$, Adjusted $R^2 = 0.00$) were not significant, and none of the TPB constructs, including PBC, emerged as significant predictors of these eating behaviors.

Discussion

The subgroup findings presented in Table 1 offer several important insights. First, the PBC-restrained eating correlation was significantly stronger in females than males, consistent with prior evidence that perceived control over eating is more influential among women.[18,19] This gender difference may reflect stronger sociocultural pressures regarding thinness and body image among young females,

Table 1. Subgroup comparisons of PBC and its correlation with restrained eating

Variable	Subgroup	N (%)	PBC (Mean ± SD)	*P*-value (group comparison)	Correlation with restrained eating r (*P*-value)
Gender	Male	110 (50%)	69.19 ± 16.47	0.005	0.166 (0.083)
	Female	110 (50%)	61.44 ± 23.70		0.468** (<0.001)
Residence	Urban	78 (35.5%)	64.53 ± 19.22	0.68	0.237* (0.037)
	Rural	142 (64.5%)	65.74 ± 21.56		0.279** (<0.001)
Marriage	Yes	134	63.19 ± 22.55	0.058	0.325** (<0.001)
	No	86	68.61 ± 17.11		0.185 (0.088)
Family history of obesity	Yes	144	65.97 ± 21.65	0.516	0.307** (<0.001)
	No	76	64.05 ± 18.93		0.183 (0.114)
Previous weight-loss behavior	Yes	94	70.80 ± 19.05	<0.001	0.265** (0.010)
	No	126	61.21 ± 21.05		0.206* (0.021)

*$P<0.05$, **$P<0.01$ (two-tailed).

Table 2. TPB constructs as predictors of restrained, emotional, and uncontrolled eating

Dimensions	Predictor	B (unstandardized)	SE	*P*
Emotional eating	Constant	1.54	0.32	<0.001
	AB	-0.062	0.23	0.78
	SN	0.027	0.045	0.55
	PBC	0.00	0.003	0.87
	BI	0.10	0.22	0.64
R^2 = 0.01, Adjusted R^2 = 0.00				
Uncontrolled eating	Constant	2.09	0.21	<0.001
	AB	0.00	0.15	0.99
	SN	0.045	0.03	0.13
	PBC	0.00	0.002	0.99
	BI	-0.027	0.15	0.86
R^2 = 0.01, Adjusted R^2 = 0.00				
Restrained eating	Constant	1.47	0.20	<0.001
	AB	0.006	0.147	0.96
	SN	0.00	0.028	0.90
	PBC	0.007	0.002	<0.001
	BI	0.092	0.144	0.52

R^2 = 0.11, Adjusted R^2 = 0.10
AB, Attitude toward the Behavior; BI, Behavioral Intention; PBC, Perceived Behavioral Control; SN, Subjective Norm.
Please add these to the caption.

making perceived control over eating a more critical factor for dietary restraint.

Second, the correlation was somewhat stronger in rural than urban residents, consistent with recent findings reporting that non-metropolitan residents exhibit healthier eating intentions and stronger perceived control, possibly due to more structured daily routines and fewer opportunistic eating cues.[20]

Third, the significant correlation among married individuals and those with a family history of obesity suggests that social and familial contexts may moderate the observed association between PBC and restrained eating, potentially through shared eating environments or inherited weight-related vulnerabilities.[21,22] Fourth, participants with a history of previous weight-loss behavior exhibited significantly higher mean PBC scores and a stronger correlation between PBC and restrained eating, which is consistent with a reciprocal relationship consistent with Social Cognitive Theory.[23]

These subgroup differences suggest that the PBC-restrained eating association varies by demographic and clinical characteristics, highlighting the need for tailored interventions. However, causal conclusions are precluded by the cross-sectional design, necessitating longitudinal studies.[24]

The regression findings (Table 2) further support that PBC is the only TPB construct directly associated with restrained eating, consistent with the theoretical premise that PBC influences behavior directly when volitional control is incomplete.[5] The lack of a direct effect from behavioral intention suggests that intention may operate indirectly through PBC, a pattern previously observed in dietary behavior studies.[25]

Theoretically, these findings partially support the applicability of the PBC construct within the TPB, along with Social Cognitive Theory, to restrained eating among Iranian youth with overweight and obesity.[5,26] However, the full TPB model explained only a small proportion of the variance in restrained eating, indicating that most of the variance remains unaccounted for by TPB constructs. In contrast, neither emotional nor uncontrolled eating were significantly predicted, with both models showing negligible explanatory power. Future studies should examine whether variables such as body image dissatisfaction or family eating norms moderate or mediate the effect of PBC on restrained eating.[27,28]

The cross-sectional link between past weight-loss success and PBC suggests early, achievable goals could be prioritized in weight management. Building mastery experiences[26] may enhance PBC among youth with prior unsuccessful dieting, though this needs controlled testing. Structured strategies—such as self-monitoring, meal planning, and gradual restriction—could support these mastery experiences.[29]

Moreover, the conditional effect of intention on behavior[2] suggests that strong intentions to restrict eating may fail if perceived control is low. Future research could

examine whether interventions incorporating volitional components—such as action planning, coping planning, and barrier management—are more effective than mere motivational enhancement.[30]

The lower PBC–behavior correlation in our sample compared to Western meta-analytic averages warrants further investigation.[25] Potential cultural explanations include collectivist values, gender-specific norms around eating and body weight, or differential access to weight-loss resources in Iran. Future studies should examine whether culturally adapted versions of PBC measures yield stronger associations, and should explore potential moderators such as socioeconomic status, parental involvement, or weight stigma.[31]

Finally, the cross-sectional nature of this study limits causal inference. Longitudinal designs are needed to test the proposed reciprocal relationship between PBC and weight-loss behavior, and to determine whether changes in PBC precede changes in restrained eating. Experimental studies that manipulate PBC (e.g., through success feedback or skills training) would provide stronger evidence for causality.[32]

Conclusion

This short communication demonstrates that PBC was directly associated with restrained eating in overweight and obese youth, independent of attitude, subjective norm, and behavioral intention. The association varied across subgroups (e.g., stronger in females, married individuals, and those with prior weight-loss experience). PBC was not associated with emotional or uncontrolled eating. These findings support TPB applicability but highlight its modest explanatory power, suggesting other factors (e.g., body image, family norms) may play a role. Longitudinal and experimental studies are needed to establish causality. Future research could examine whether interventions enhancing PBC through mastery experiences and culturally tailored strategies promote restrained eating.

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Competing Interests

The authors declare that they have no competing interests.

Consent for Publication

The authors consent to the publication of this manuscript.

Data Availability Statement

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Ethical Approval

This study was part of a doctoral thesis approved by the Ethics Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1403.646).

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