

Uncontrolled Eating in Young Women: Advancing Dimensional Approach on Internalizing Spectrum of Hierarchical Taxonomy of Psychopathology

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Abstract. This study aims to investigate the relationship between uncontrolled eating and the internalizing spectrum of psychopathology among young women, framed within the Hierarchical Taxonomy of Psychopathology (HiTOP) model. In a cross-sectional study, 215 Romanian women aged 19–30 were assessed using the Inventory of Depression and Anxiety Symptoms (IDAS-II) and the Reward-Based Eating Drive Scale-13 (RED-13). Pearson correlation coefficients and multiple linear regression analyses were employed to examine the associations between uncontrolled eating behaviors and internalizing psychopathological symptoms. Significant correlations were found between uncontrolled eating and internalizing symptoms, with appetite gain exhibiting a strong positive association with uncontrolled eating. In addition, both Body Mass Index (BMI) and internalizing symptoms significantly predicted uncontrolled eating, accounting for a substantial portion of the variance in these behaviors. The study's findings support the HiTOP model's dimensional approach to psychopathology, demonstrating a significant relationship between uncontrolled eating and internalizing psychopathological symptoms in young women. These results highlight the need for integrated treatment strategies that address both eating behaviors and internalizing psychopathologies. The study's limitations, including its sample homogeneity and cross-sectional design, suggest caution in generalization and point towards the need for longitudinal research across diverse populations.

Keywords: HiTOP, Uncontrolled Eating, Internalizing Spectrum, IDAS-II

1 Introduction

Food addiction, disinhibition, hedonic hunger, emotional eating, and binge eating have been linked to obesity and excessive eating. These terms overlap to emphasize intake control loss [1]. The substantial association ($r > 0.5$) between these constructs in questionnaire assessments suggests they may form a single construct called 'uncontrolled eating' [2], [3]. Uncontrolled eating is perceived as a continuous trait, challenging the traditional binary diagnostic approach and aligning with a dimensional understanding of psychopathology that captures individual variances more accurately [4], [1]. Uncon-

trolled eating manifests across a spectrum, with 'passive overeating' at one end, characterized by the lack of impulsive or compulsive eating behaviors, and severe binge eating episodes at the other [1]. Past research [1], [3] showed that integrating different uncontrolled eating questionnaires into a single measurement model offers a detailed perspective on the spectrum of uncontrolled eating behaviors, which extend from mild to severe. To address the limitations of individual questionnaires, the Reward-related Eating Drive (RED-13) questionnaire was introduced, capturing the full range of uncontrolled eating behaviors [5].

Uncontrolled eating is closely tied to three psychological dimensions: reward sensitivity, cognitive control, and negative affect [1]. Reward sensitivity, or the tendency towards pleasure-seeking, is positively associated with uncontrolled eating in normal-weight individuals, yet this link may invert in overweight or obese individuals, suggesting that body mass index modulates the impact of reward sensitivity on eating patterns [6], [7], [1]. Cognitive control, referring to the capacity for behavioral regulation in pursuit of goals, appears diminished in those exhibiting uncontrolled eating, indicating difficulties in modulating reactions to food [8]. Furthermore, negative affect, defined as a tendency towards experiencing adverse emotions, correlates with uncontrolled eating, as demonstrated by its association with neuroticism and depression [9], [1]. These factors are crucial in delineating impulsivity and its connection to uncontrolled eating, underscoring the complex interplay of psychological elements influencing eating behavior, and advocating for a comprehensive approach to address uncontrolled eating.

The Hierarchical Taxonomy of Psychopathology (HiTOP) [10] proposes a dimensional and hierarchical framework for understanding psychopathology, challenging the conventional categorical systems by addressing heterogeneity, comorbidity, and diagnostic unreliability. HiTOP classifies mental disorders along a continuum, facilitating a more detailed understanding of psychopathological states [11], [10]. Within this model, the internalizing spectrum is broad and intricate, encompassing diverse conditions such as depressive and anxiety disorders, obsessive-compulsive and related disorders, trauma- and stress-related disorders, eating disorders, and personality disorders. Extensive structural analysis validates this spectrum, which encompasses the distress, mania, and fear subfactors. Emerging evidence suggests a third subfactor associated with eating pathology [11], [10], [12].

Incorporating uncontrolled eating within the HiTOP framework and specifically under the internalizing spectrum aligns with the dimensional and spectrum-based approach of the HiTOP model. Given that uncontrolled eating shares underlying psychological constructs with internalizing disorders—like negative affect, reward sensitivity, and cognitive control—it can be integrated into the internalizing spectrum. This integration could enhance the understanding of the relationship between uncontrolled eating and internalizing psychopathology, offering a more comprehensive and nuanced view of these psychological issues.

By advancing the dimensional approach within the internalizing spectrum of HiTOP to include uncontrolled eating, we recognize the continuous nature of psychopathological features and their overlap with eating-related issues. This approach not only aligns

with the current empirical evidence [13], [14], [15] but also enriches the HiTOP framework, potentially leading to more effective and tailored interventions for individuals exhibiting a range of internalizing symptoms and uncontrolled eating behaviors.

Therefore, integrating uncontrolled eating into the internalizing spectrum of the HiTOP model would not only broaden our understanding of these behaviors but also elucidate and confirm their connection to internalizing psychopathology. Such integration would recognize the intricacies of eating disorders, viewing them as part of a larger psychological continuum, rather than as standalone or purely externalizing phenomena.

2 Method

2.1 Sample

Participant recruitment for this study spanned across Romania, leveraging social media platforms to invite individuals to engage in an online survey comprising two questionnaires. The survey, devoid of a stringent time constraint, featured random checks for response variability. Initially, participants received a briefing on the study's objectives and the expected duration of participation, estimated at 30 minutes, after online informed consent was obtained. Ethical endorsement for this research was obtained from the University of Bucharest's ethics committee (IRB no 43/27.02.2019).

The demographic data collected included birth year, gender, ethnicity, place of residence, educational level, and married and partnership status. The study's demographic profile showed a sample of 215 females, aged between 19 and 30 years ($M=24$, $SD=3.30$). The participants' educational levels were as follows: 81 had a secondary school, 80 were undergraduates, and 47 were postgraduates. All participants were Romanian, with 168 residing in urban areas and 47 in rural areas. 148 respondents were in a relationship, while 67 were single. There were 40 participants who were married, 173 who were unmarried, and 2 who were divorced.

2.2 Instruments

Inventory of Depression and Anxiety Symptoms (IDAS-II) (Romanian version) [16] [17]. The IDAS-II, a factor analysis-based self-report tool, assesses symptoms of a broad scale, General Depression, which includes items from several other scales and 18 nonoverlapping scales (Dysphoria, Lassitude, Insomnia, Suicidality, Appetite Loss, Appetite Gain, Well-Being, Ill Temper, Mania, Euphoria, Panic, Social Anxiety, Claustrophobia, Traumatic Intrusions, Traumatic Avoidance, Checking, Ordering, and Cleaning), aligning with the HiTOP framework [17]. The IDAS-II has 99 items on a 5-point Likert scale (1 "not at all" to 5 "extremely") that rate symptoms during the past two weeks. Psychometric research supports its use in measuring the HiTOP model internalizing spectrum symptoms [10]. Since its first release in English [17], the IDAS-II has been adapted to Turkish [18], Spanish [19], German [20], Swedish [21], and Romanian [16] populations. The current sample median internal consistency was .96.

Reward-Based Eating Drive Scale-13 (RED-13) [5] is a self-report psychometric tool that assess an individual's drive to eat as influenced by reward sensitivity. This measure extends the original RED-9 by incorporating four additional items, thus enhancing its capability to capture a broader range of reward-based eating behaviors. Consisting of 13 items, the RED-13 measure on a five-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree), the severity of the uncontrolled eating construct, including lack of control, preoccupation with food, and lack of satiety. The RED-13 exhibits robust reliability and construct validity. It demonstrates high internal consistency, with Cronbach's alpha values regularly surpassing 0.8, indicative of its reliability in measuring the construct of reward-based eating drive. The scale also shows strong construct validity, as evidenced by its significant correlations with related psychological constructs, including impulsivity and food craving, thereby affirming its validity as a measure of uncontrolled eating. The median internal consistency was .95 in the current sample.

2.3 Statistical method

Descriptive statistics were calculated. Pearson correlation coefficients were used to analyze the association between constructs of the RED-13 and IDAS-II scales. Multiple linear regression analysis was used to investigate the relationships between age, BMI, uncontrolled eating constructs, and the internalizing spectrum of psychopathology.

We used SPSS (Version 27) for the statistical analyses.

3 Results and discussions

3.1 Descriptive statistics

The participants were 215 females ($M = 24$, $SD = 3.3$), with an age range of 19–30 years. All variables were normally distributed. **Table 1** shows the characteristics of the sample included in the statistical analyses (frequencies and percentages for categorical variables, as well as means, median, and standard deviation for continuous variables).

Table 1. Baseline characteristics (N = 215)

General characteristics		Frequency	Percent	
Gender	Female	215	100	
	Unmarried	173	80.5	
Marital status	Married	40	18.6	
	Divorced	2	0.9	
	Missing	0	0	
	Total	215	100	
Residence	Urban	168	78.1	
	Rural	47	21.9	
	Missing	0	0	
	Total	215	100	
Education level	Elementary	7	3.3	
	Secondary	81	37.7	
	Undergraduate	80	37.2	
	Postgraduate	47	21.9	
Partnership Status	Missing	0	0	
	In a relationship	148	68.8	
	No relationship	67	31.2	
	Missing	0	0	
	Mean	Median	Std. Deviation	Missing
Age, years	24	24.00	3.30	0
BMI, Kg/m²	23	22.41	4.64	0

3.2 The relationship between Uncontrolled Eating and the Internalizing Spectrum of Psychopathology

The Pearson correlation results between the IDAS-II scales (General Depression, Dysphoria, Lassitude, Ill Temper, Panic, Traumatic Intrusions, Appetite Loss, Mania, Suicidality, Traumatic Avoidance, Appetite Gain, Insomnia, Cleaning, Ordering, Checking, Claustrophobia, Social Anxiety, and Well-Being) and the RED-13 scales (Uncontrolled Eating, Lack of Control, Preoccupation with Food, and Lack of Satiety) demonstrated statistically significant associations ($p < .001$; $p < .05$), with the exception of the IDAS-II Euphoria scale. There was no statistically significant correlation between the Preoccupation with Food scale and the IDAS-II Cleaning scale. Furthermore, the IDAS-II Insomnia scale did not show a significant association with the RED-13' Lack

of Control scale. Additionally, scales assessing the same constructs exhibited the highest correlations. For instance, a strong positive correlation was observed between the IDAS-II Appetite Gain scale and the RED-13 Uncontrolled Eating ($r = .77, p < .001$), Lack of Control ($r = .73, p < .001$), Preoccupation with Food ($r = .74, p < .001$), and Lack of Satiety scales ($r = .71, p < .001$).

The results of multiple linear regression analyses to investigate the relationships between demographic factors, Uncontrolled Eating, and the internalizing spectrum of psychopathological factors revealed the following: Model 1 which included Body Mass Index (BMI) and Age as predictors, accounted for a small but significant variance in Uncontrolled Eating, $R^2 = 0.052, F(2, 211) = 5.76, p = .004$. Specifically, both BMI ($B = 53.41, p = .012$), and age ($B = -0.70, p = .019$), were significant predictors. Adding IDAS-II scales alongside BMI and age in model 2 significantly improved the prediction of Uncontrolled Eating, explaining 65.6% of the variance, $R^2 = 0.66, F(21, 192) = 17.41, p < .000$. In model 2, BMI ($B = 39.36, p = .006$) remained a significant predictor, albeit with a reduced effect size compared to Model 1. Age was no longer a significant predictor ($B = -0.132, p = .569$). Significant predictors of Uncontrolled Eating were Loss of Appetite ($B = -0.83, p = .018$) and Appetite Gain ($B = 2.75, p < .0001$), with the latter showing the strongest positive association. Other IDAS-II variables were not statistically significant, although they contributed to the model's overall explanatory power.

The findings from the regression analyses highlight the multifaceted nature of Uncontrolled Eating. While demographic factors like BMI play a role, the inclusion of internalizing factors of psychopathology in the model significantly enhanced the predictive power of uncontrolled eating behaviors.

3.3 Integration with HiTOP Model

The results are consistent with the Hierarchical Taxonomy of Psychopathology (HiTOP) framework [11], [13], [10], [22], [15], [12], which conceptualizes psychopathological conditions, including uncontrolled eating, as part of a dimensional spectrum rather than isolated categories. The correlations that are statistically significant between the IDAS-II and RED-13 scales underscore the relationship between uncontrolled eating behaviors and internalizing symptoms, such as anxiety, depression, and other mood disorders. Forbush et al. [13] provide support for this integration by demonstrating that eating disorders exhibit comorbidities with a wider range of internalizing psychopathology.

3.4 Uncontrolled Eating and Internalizing Symptoms

The strong associations between uncontrolled eating and symptoms like appetite gain are echoed in the literature. For instance, Vainik et al. (2019) defined uncontrolled eating as a broad phenotype that encompasses various psychological constructs, including appetite changes, which are central to both uncontrolled eating and internalizing disorders. The strong association between these constructs underlines the conceptualization of uncontrolled eating as a manifestation of broader internalizing psychopathology.

4 Conclusions

This study's exploration into the relationship between uncontrolled eating and the internalizing spectrum of psychopathology, particularly within young women, offers substantial insights into the dimensional nature of these disorders as framed by the HiTOP model. The findings showed significant correlations between uncontrolled eating behaviors and internalizing psychopathological symptoms, emphasizing the need for an integrated treatment approach that addresses both the overt eating behaviors and the underlying psychological dimensions.

The results underscore the importance of developing clinical interventions that are multifaceted and transdiagnostic, addressing not only the symptoms of uncontrolled eating but also the associated internalizing psychopathologies. Tailoring treatment strategies to the individual's comprehensive psychological profile could enhance therapeutic outcomes, promoting a more effective approach to managing psychopathological conditions.

While the study provides important insights, its generalizability is constrained by the sample's homogeneity, consisting primarily of young women from a specific geographical and cultural background. Additionally, the reliance on cross-sectional, self-reported data limits the ability to infer causality and understand the temporal dynamics of the observed associations. Future research should aim to incorporate a more diverse and representative sample, along with employing longitudinal study designs, to validate and expand upon these findings. Such studies could offer a more nuanced understanding of how uncontrolled eating and internalizing psychopathologies interact over time across different populations.

In conclusion, the integration of uncontrolled eating into the internalizing spectrum of the HiTOP model not only broadens our understanding of these behaviors, but also highlights the intricate link between eating disorders and internalizing psychopathology. This study contributes to the growing body of evidence advocating for a dimensional and integrative approach to mental health, which is crucial for developing more effective and individualized treatment paradigms.

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