



Eating styles with some feeling: Latent profiles of appetitive and emotion-related impulsivity traits

Maria Gemescu^{a,b,*}, Cezar Giosan^b, Carmen Andreea Petre^b,
Ana Maria Olguța Barizi^b, Brîndușa Diana Paraschiv^b

^a Doctoral School in Psychology and Educational Sciences, University of Bucharest, Romania

^b Department of Psychology and Cognitive Science, University of Bucharest, Romania

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ABSTRACT

Introduction: Research focused on adult eating styles would benefit from investigating whether latent profiles of appetitive and emotion-related impulsivity traits differ in eating disorder (ED) and general psychopathology.

Objective: This study identified and validated latent eating profiles based on appetitive and emotion-related impulsivity traits.

Method: We conducted a cross-sectional study in a non-clinical sample of 232 adults who completed an online battery of questionnaires assessing appetitive traits, emotion-related impulsivity, ED symptomatology, anxiety, depression, stress, and other clinical and background characteristics. We fitted latent profile analysis (LPA) models with 2–8 classes on the dataset without multivariate outliers ($N = 223$). After retaining the best profile solution, we compared latent classes using ANCOVAs and Tukey post-hoc tests, controlling for age.

Results: The best-fitting model revealed four distinct profiles: Resilient Eaters (23.30%), with the lowest food responsiveness and emotion-related impulsivity; Moderate Eaters (46.27%), showing higher food avoidance and behavioral emotion-related impulsivity; Hedonic Eaters (14.03%), characterized by the highest enjoyment of food and lower emotion-related impulsivity; and Impulsive Eaters (16.40%), with the highest food responsiveness and emotion-related impulsivity. Resilient Eaters exhibited the most adaptive profile, with higher general and ED-specific flexibility and lower general ED psychopathology, depression, anxiety, and stress, compared to Moderate and Impulsive Eaters. Moderate and Hedonic Eaters showed intermediate levels of ED symptomatology and psychological distress, whereas Impulsive Eaters displayed the most maladaptive profile.

Conclusion: Classifying eating profiles based on appetitive and impulsive traits has the potential to advance screening for complex forms of ED psychopathology.

1. Introduction

1.1. Appetitive traits

According to Behavioral Susceptibility Theory (BST), the obesogenic environment impacts individuals' eating behaviors differentially, depending on their appetitive traits (for a review, see Lewellyn et al., 2023). More specifically, increased food approach and decreased food avoidance are considered to confer susceptibility to overeating and overweight, whereas extremely low levels of food approach and heightened food avoidance presumably predispose to selective eating and underweight.

1.2. Latent eating profiles

A series of studies (e.g., Coakley et al., 2022; Francis et al., 2022; He et al., 2020) has employed Latent Profile Analysis (LPA) to classify eating styles, using the Adult Eating Behavior Questionnaire (AEBQ; Hunot et al., 2016), a useful proxy for heritable predispositions toward certain eating styles (Lewellyn et al., 2023), that assesses food approach (enjoyment of food, food responsiveness, emotional overeating, hunger) and avoidance (satiety responsiveness, slowness in eating, food fussiness, emotional undereating) traits.

Using LPA on all AEBQ subscales, Coakley et al. (2022) identified a four-profile solution, comprising Moderate Eaters (lower levels of both food approach and food avoidance traits), Food Seekers and Avoiders

* Corresponding author at: Doctoral School in Psychology and Educational Sciences, University of Bucharest, 90 Panduri Street, Bucharest, Romania.
E-mail address: maria.gemescu@gmail.com (M. Gemescu).

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(higher levels of both food approach and food avoidance traits), Food Seekers (higher food approach and lower food avoidance traits), and Food Avoiders (higher food avoidance and lower food approach traits). Across profiles, Food Seekers exhibited the highest levels of all food approach traits and the lowest levels of food avoidance traits. In contrast, Food Avoiders showed the opposite pattern, with the highest food avoidance and lowest food approach levels, except for Hunger. Moderate Eaters demonstrated the lowest Hunger levels and relatively low levels across other appetitive traits, whereas Food Seekers and Avoiders displayed consistently elevated levels across appetitive traits. Notably, anxiety was highest in Food Seekers and Avoiders and lowest in Moderate Eaters, with Food Seekers and Food Avoiders showing intermediate levels.

Francis et al. (2022) have examined latent eating profiles among preschool children, based not only on appetite, but also behavioral self-regulation, in order to take into account the interplay of top-down and bottom-up mechanisms that contribute to obesogenic eating behavior. Appetite self-regulation was defined as the combination of higher scores on specific food avoidance traits (satiety responsiveness, slowness in eating) and lower scores on some food approach traits (enjoyment of food, food responsiveness), whereas behavioral self-regulation was indexed by higher inhibitory control and attentional focusing, as well as lower impulsivity. LPA identified four eating styles: Highly-Regulated Behavior and Appetite, Dysregulated Behavior and Regulated Appetite, Regulated Behavior and Dysregulated Appetite, and Dysregulated Behavior and Appetite, with clusters characterized by appetite dysregulation showing the highest body mass index (BMI).

In a similar vein, the literature on mechanism-based subtyping in subclinical and clinical eating disorders (EDs) is beginning to flourish, thus answering previous calls (Treasure et al., 2007; Wildes & Marcus, 2013) to shift from symptom to etiologically based classifications of ED psychopathology, with the goal of better explaining clinical heterogeneity and informing personalized treatments by specifying the potential endophenotypes underlying disordered eating, such as impulsivity, compulsivity, punishment and reward sensitivity. Given that various impulsivity-related constructs have been consistently associated with ED psychopathology (Fischer et al., 2008; Garcia-Garcia et al., 2022; Waxman, 2009), impulsivity-related traits are frequently included in alternative, mechanism-based models of ED psychopathology (Brucar et al., 2025; Soidla & Akkermann, 2020; Wilkinson & Juarascio, 2025).

1.3. Emotion-related impulsivity

In order to identify latent eating styles associated with both ED and general psychopathology, the literature focusing on adults would benefit from LPA studies classifying eating profiles based on the interplay of appetite and impulse self-regulation.

One dimension of impulse self-regulation that is increasingly conceptualized as playing a transdiagnostic role in psychopathology is emotion-related impulsivity (Carver & Johnson, 2018; Pearlstein et al., 2024), comprising both cognitive and behavioral facets, that are linked with a wide range of internalizing and externalizing psychopathology, such as depression, anxiety, borderline personality features, substance abuse, self-harm, or various compulsive behaviors, to name a few (Berg et al., 2015; Cyders et al., 2016).

1.4. The current study

The current study intends to fill this gap by identifying and validating latent eating profiles in a non-clinical adult sample, using as indicators both appetitive and emotion-related impulsivity traits. To validate resulting latent classes, we investigated whether they showed meaningful differences in general and ED-specific flexibility, a wide range of ED-related domains, eating-related psychosocial impairment, anxiety, depression, stress, adverse childhood experiences, and substance abuse. These validators were chosen based on the prior LPA

literature on eating styles (Coakley et al., 2022; Ellis et al., 2018; He et al., 2020) or on studies highlighting the clinical relevance of general and ED-specific flexibility (Dahlgren et al., 2019; Duriez et al., 2021; Tchanturia et al., 2011), childhood maltreatment (Rossi et al., 2024), or substance abuse (Bahji et al., 2019) in ED psychopathology. From a clinical perspective, these variables were selected to evaluate whether the eating profiles differed across domains central to comprehensive models of ED psychopathology (Forbush et al., 2017; Wildes & Marcus, 2013), extending beyond core eating symptomatology to encompass common comorbidities and personality traits, as well as psychological distress.

1.5. Hypotheses

Based on the study by Francis et al. (2022), we expected four classes to emerge: (1) High Impulse and Appetite Self-Regulation (lowest emotion-related impulsivity, highest food avoidance, and lowest food approach); (2) Impulse Dysregulation and Appetite Self-Regulation (higher emotion-related impulsivity and food avoidance, along lower food approach); (3) Impulse Self-Regulation and Appetite Dysregulation (lower emotion-related impulsivity, lowest food avoidance, and highest food approach); and (4) Impulse and Appetite Dysregulation (highest emotion-related impulsivity, lower food avoidance, and higher food approach). We expected the latent profile exhibiting both impulse and appetite dysregulation to report the lowest general and ED-specific flexibility, as well as the greatest ED symptomatology, eating-related psychosocial impairment, anxiety, depression, stress, adverse childhood experiences, substance abuse, and BMI. We did not advance any a priori hypotheses regarding the other latent classes.

2. Method

2.1. Participants

We conducted a cross-sectional study in a sample of Romanian speaking adults aged 18 years or older, recruited from the general community, through social media advertisements and in-person invitations. Exclusion criteria were: (1) self-reported diagnosis of neurological or psychiatric disorders; (2) self-reported diagnosis of chronic medical conditions known to influence eating behavior or body weight; (c) current or recent pregnancy or breastfeeding; (d) recent bariatric surgery; (e) current use of any medication known to influence eating behavior or body weight; and (f) recent lifestyle changes that impacted weight or eating behavior. A total of 248 participants completed the online survey, of whom 16 were dropped due to incorrect responses to attention check items.

2.2. Procedure

This study was preregistered with the Open Science Framework (for protocol details and amendments, see <https://osf.io/hxzpc>). Data were collected during March–July 2025, using an online QuestionPro form that contained the study information, informed consent questions, and battery of questionnaires. To ensure data quality, we used three attention check items and the duplicate prevention option offered by QuestionPro. On average, the battery took 47.22 min to complete. After completion, participants were given an online debriefing form, access to their results regarding their appetitive traits, and an educational video with strategies for optimizing their eating styles. Participants did not receive any financial compensation.

2.3. Measures

2.3.1. Background characteristics

We assessed the following socioeconomic and demographic characteristics: age, ethnicity, sex assigned at birth, current gender, sexual

orientation, living arrangement, net monthly personal and household income, self-reported ability to pay necessary expenses and plan expenditures, educational attainment, employment status, occupation, work hours and schedule, place of residence, marital and romantic status, number of children, and number of children in care.

Participants also reported whether they had any food allergies or intolerances and followed any special diets, as well as several weight-related outcomes: (1) BMI, based on self-reported weight and height; (2) self-assessed weight; (3) current desire to gain/lose/maintain weight; (4) maximum adult weight and age at maximum adult weight; (5) minimum adult weight, age at minimum adult weight, and duration of minimum adult weight; (6) lifetime history of overweight (i.e., whether participants have ever been overweight by 4.5 kg or more) and age when they were first overweight, if applicable.

2.3.2. Mental health domains

To screen the study sample for general psychiatric symptoms (e.g., depression, anxiety, mania), we used the DSM-5-TR Level 1 Cross-Cutting Symptom Measure—Adult (American Psychiatric Association, 2024). A score of 2 or greater on any item was used as a positive symptom screen for any domain, except for substance use, suicidal ideation, and psychosis domains, where a cut-off score of 1 on any item was employed.

2.3.3. Social desirability responding

We assessed social desirability responding using the total score of the Marlowe-Crowne Social Desirability (MCSD) Scale-Short Form (Reynolds, 1982), with higher scores indicating greater social desirability responding.

2.3.4. Indicators

Appetitive Traits. We used the following AEBQ subscales (Hunot et al., 2016), as indicators: Satiety Responsiveness, Slowness in Eating, Enjoyment of Food, and Food Responsiveness, with higher scores indicating increased appetitive traits. We also included the rest of AEBQ subscales (Hunger, Emotional Overeating, Food Fussiness, Emotional Undereating) in the battery of measures, solely for descriptive purposes.

Emotion-Related Impulsivity. Additional indicators consisted of behavioral and cognitive dimensions of emotion-related impulsivity, as assessed with the following subscales of the Three Factor Impulsivity Index (TFII; Carver et al., 2011): Feelings Trigger Action and Pervasive Influence of Feelings, respectively, with higher scores denoting increased emotion-driven impulsivity.

2.3.5. Validators

General and ED-Specific Flexibility. We assessed general and ED-specific flexibility using the total score of Eating Disorder Flexibility Index (EDFLIX) Questionnaire (Dahlgren et al., 2019), which captures the ability to adapt and effectively shift thoughts and actions in general and eating-specific situations. Higher scores indicate increased general and ED-specific flexibility.

ED Psychopathology. To assess various ED-related domains, we used the following subscales of the HiTOP Self-Report (HiTOP-SR) Measure (HiTOP Consortium, 2024): Appetite Loss, Binge Eating, Body Dissatisfaction, Body Focus, Dietary Restraint, Excessive Exercise, Food Selectivity, Muscle Building, Purging, and Restricted Eating. We also computed the mean of all these subscales, as a measure of general ED psychopathology, with higher subscale and general ED psychopathology scores indicating increased severity of ED symptomatology.

Eating-Related Psychosocial Impairment. We measured eating-related psychosocial impairment using the total score of the Clinical Impairment Assessment Questionnaire (Bohn et al., 2008; Bohn & Fairburn, 2008), with increased scores indicating greater eating-related psychosocial impairment.

Depression, Anxiety, and Stress. We assessed depression, anxiety, and stress with the three corresponding subscales of the 21-item

Depression Anxiety Stress Scale (DASS-21) – Romanian Version (Murphy et al., 2024), with increased scores reflecting heightened severity of psychological distress.

Substance Abuse. We used the total score of the 4-item CAGE Questionnaire (Ewing, 1984), as a screen for substance abuse, with higher scores reflecting greater risk for substance abuse-related problems.

Adverse Childhood Experiences. We assessed adverse childhood experiences (ACE) using the total ACE score (Anda et al., 2006), with higher counts indicating more adverse experiences during childhood.

2.4. Statistical approach

After we computed Spearman zero-order correlations among all main variables, we used LPA to identify latent eating profiles, based on the following z-scored subscale scores: AEBQ - Satiety Responsiveness, Slowness in Eating, Enjoyment of Food, Food Responsiveness, along TFII - Feelings Trigger Action and Pervasive Influence of Feelings.

Prior to conducting LPA, we checked for univariate and multivariate normality, as well as multivariate outliers. After computing Mahalanobis distances for the six indicators using a chi-square cutoff corresponding to a p -value of .001, we identified nine multivariate outliers. We conducted LPA on the datasets with and without multivariate outliers. Given that the LPA without multivariate outliers showed improved fit indices, profile differentiation, and theoretical interpretability, the final analytic sample consisted of 223 participants. This sample size falls within the range shown to be adequate for LPA when class separation is moderate to high (Tein et al., 2013).

We estimated LPA models with 2–8 classes, equal variances, and zero covariances, using as an estimator, Maximum Likelihood with robust standard errors (MLR). To minimize the risk of local maxima, we employed 7000 random starts and 200 final stage optimizations. We selected the best-fitting LPA model based on entropy (with higher values showing better fitting models), Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Sample-Adjusted BIC (SABIC), and Bootstrapped Likelihood Ratio Test (BLRT) p -value. Lower AIC, BIC, and SABIC values were used to indicate better fitting models. BLRT p -values $\leq .05$ indicated whether models with k classes provided a better fit than models with $k-1$ classes. We also examined profile size and discrimination, as well as theoretical meaningfulness. After retaining the best-fitting model, class membership was determined using modal posterior-probability assignment.

To identify potential covariates for subsequent class comparisons, latent classes were first examined with respect to sociodemographic (i.e., gender, personal and household income, ability to pay necessary expenses and plan expenditures, educational attainment level, age) and weight-related (i.e., lifetime history of overweight, BMI) variables, using Chi-square tests for categorical variables and ANOVAs for continuous variables. At this stage, latent classes were also compared on social desirability responding to evaluate profile differences in impression management tendencies. Then, we compared latent classes with respect to the validators, using ANCOVAs with heteroskedasticity-consistent standard errors (HC3 adjustment), controlling for age. Estimated marginal means were computed at the mean age, and Tukey post-hoc tests were used for pairwise comparisons. Class differences on the CAGE score were examined with the Kruskal–Wallis test, with post-hoc comparisons based on Bonferroni-adjusted approximate p -values. For ANCOVA omnibus tests, we lowered the significance threshold ($\alpha = 0.01$) to control for family-wise error rate; for all other analyses, the conventional threshold ($\alpha = 0.05$) was used as the criterion for statistical significance.

We conducted all analyses in R (Version 4.5.1; R Core Team, 2025), using as main R-packages, tidyLPA (Rosenberg et al., 2018) with MplusAutomation (Hallquist & Wiley, 2018), car (Fox & Weisberg, 2019), emmeans (Lenth, 2025), lmtest (Zeileis & Hothorn, 2002), and sandwich (Zeileis, 2004; Zeileis et al., 2020).

3. Results

3.1. Sample characteristics

The full sample, including multivariate outliers, consisted of 232 participants, with a mean age of 41.53 years ($SD = 14.84$) and an average BMI of 25.51 ($SD = 5.10$). The majority of participants identified as Romanian (97.41%), with small representations from Hungarian (0.43%), Romani (0.86%), and mixed ethnicity (1.29%) backgrounds. In terms of sex assigned at birth and current gender identity, 76.72% identified as female and 23.28% as male. Most participants reported their sexual orientation as heterosexual (88.36%), whereas smaller proportions identified as bisexual (2.16%), or lesbian/gay (1.29%). The rest of the participants preferred not to disclose their sexual orientation (6.03%), used another term to describe their sexual orientation (0.86%), or were unsure (1.29%). Additional sample characteristics are presented in Table 1.

Descriptive statistics and reliability estimates for the psychological measures (full sample, including multivariate outliers) are reported in Supplementary Materials (Table S1).

3.2. Intercorrelations

Table 2 presents Spearman zero-order correlations among the main variables in the final analytic sample ($N = 223$).

3.3. Latent profile analysis

As can be seen in Table 3, solutions with 5–8 classes had model-estimated profile sizes of less than 25 cases. In keeping with best practices in LPA (Spurk et al., 2020), we decided not to retain those profile solutions and examine the remaining ones. The four-class solution

Table 1
Sample characteristics.

Characteristics	$N = 232$
Educational Attainment, n (%)	
Master or equivalent level	79 (34.05%)
Upper secondary education	65 (28.02%)
Bachelor or equivalent level	62 (26.72%)
Doctorate or equivalent level	8 (3.45%)
Lower secondary education	8 (3.45%)
Post-secondary non-tertiary education	5 (2.16%)
Primary education	3 (1.29%)
Less than primary education	2 (0.86%)
Employment Status, n (%)	
At work	163 (70.26%)
Pupil/student/further training/unpaid work experience	36 (15.52%)
In retirement	16 (6.90%)
Other type of inactivity	6 (2.59%)
Unemployed	6 (2.59%)
Fulfilling domestic tasks and care responsibilities	5 (2.16%)
Net Monthly Household Income, n (%)	
At or above medium household income	109 (46.98%)
Below medium household income	99 (42.67%)
Prefer not to answer	24 (10.34%)
Place of Residence, n (%)	
Urban area	176 (75.86%)
Rural area	56 (24.14%)
Marital Status, n (%)	
Married	115 (49.57%)
Never married	88 (37.93%)
Divorced	19 (8.19%)
Prefer not to answer	6 (2.59%)
Separated	2 (0.86%)
Widowed	2 (0.86%)
Romantic Status, n (%)	
In a romantic relationship	119 (51.29%)
Not in a romantic relationship	88 (37.93%)
Prefer not to answer	25 (10.78%)

demonstrated lower SABIC, BIC, and AIC values than the ones with 2–3 classes. The model with four classes also exhibited adequate entropy (0.777), as well as a BLRT p -value that indicated its superiority, relative to the profile solution with only three classes. Furthermore, the profile solution with four classes provided improved theoretical meaningfulness than the one with three classes, the latter failing to identify the latent profile characterized by very low food responsiveness, behavioral, and cognitive emotion-related impulsivity. Given improved fit indices, theoretical meaningfulness, and profile differentiation, we retained the four-class solution as the best fitting one, consistent with our hypotheses.

We labeled the four profiles based on model-estimated z-scored means of appetitive and emotion-related impulsivity traits (see Table 4 and Fig. 1). Raw descriptive statistics of appetitive and emotion-related impulsivity traits, across eating profiles, are shown in Supplementary Materials (Table S2). Resilient Eaters (23.30%) demonstrated the lowest levels of food responsiveness, behavioral and cognitive emotion-related impulsivity. They were also characterized by lower enjoyment of food and about average food avoidance traits. Moderate Eaters (46.27%) showed the highest food avoidance traits, lower food approach, higher behavioral emotion-related impulsivity, and about average cognitive emotion-related impulsivity. Hedonic Eaters (14.03%) exhibited the highest enjoyment of food, higher food responsiveness, as well as lower food avoidance, and emotion-related impulsivity traits. Impulsive Eaters (16.40%) reported the highest levels of food responsiveness, behavioral and cognitive emotion-related impulsivity, as well as lower food avoidance traits.

3.4. Profile differences

As shown in Table 5, latent profiles differed in age and social desirability responding. The classes did not exhibit any differences with respect to lifetime presence of overweight or BMI.

Given that age was the only sociodemographic or weight-related variable that significantly differed across latent classes, ANCOVA and post-hoc analyses were conducted using mean-centered age, as a covariate (for main outcomes, see Tables 6–7). Additional outcomes are reported in Supplementary Materials (Tables S3–S5). ANCOVA results revealed statistically significant differences across latent eating profiles, with respect to general and ED-specific flexibility (the capacity to adaptively shift thoughts and actions in everyday situations and in contexts specifically related to eating), general ED pathology, eating-related psychosocial impairment, binge eating, body dissatisfaction, body focus, food selectivity, purging, depression, anxiety, and stress.

Upon inspecting post-hoc results, Resilient Eaters displayed the most adaptive profile, with higher levels of general and ED-specific flexibility, as well as lower general ED pathology, body focus, purging, depression, anxiety, and stress, relative to Moderate and Impulsive Eaters. Resilient Eaters also showed decreased eating-related psychosocial impairment, binge eating, and body dissatisfaction, compared to all the other profiles. Moderate and Hedonic Eaters displayed intermediate levels of ED symptomatology and psychological distress, the only statistically significant differences between the two classes being that Hedonic Eaters exhibited more general and ED-specific flexibility, as well as decreased purging. Impulsive Eaters displayed the most maladaptive profile, characterized by the lowest general and ED-specific flexibility and the highest eating-related psychosocial impairment, binge eating, depression, anxiety, and stress. Of note, Impulsive Eaters also showed heightened excessive exercise and substance abuse, as well as more adverse childhood experiences, compared to Resilient Eaters.

4. Discussion

Our findings provide a nuanced understanding of how appetitive and emotion-related impulsivity traits combine to shape complex eating profiles that show greater depression, anxiety, stress, and eating-related

Table 2
Correlations among main variables.

Variable	1	2	3	4	5	6	7	8	9
1. Food responsiveness	1.00								
2. Enjoyment of food	0.55***	1.00							
3. Satiety responsiveness	-0.15*	-0.35***	1.00						
4. Slowness in eating	-0.13	-0.23***	0.36***	1.00					
5. Behavioral emotion-related impulsivity	0.42***	0.13	0.07	-0.10	1.00				
6. Cognitive emotion-related impulsivity	0.46***	0.20**	0.10	-0.05	0.66***	1.00			
7. General and ED-specific flexibility	-0.30***	-0.03	-0.12	-0.09	-0.52***	-0.57***	1.00		
8. General ED Pathology	0.28***	0.15*	0.04	-0.12	0.41***	0.50***	-0.46***	1.00	
9. Eating-related psychosocial impairment	0.35***	0.21**	-0.02	-0.12	0.46***	0.47***	-0.52***	0.68***	1.00

Note. Spearman correlations are reported. *N* = 223.

* *p* ≤ .05.
 ** *p* ≤ .01.
 *** *p* ≤ .001.

Table 3
Model fit statistics.

No. of profiles	LL	BIC	AIC	SABIC	BLRT(<i>p</i>)	Entropy	Smallest profile size (<i>n</i>) ^a
2	-1800.734	3704.204	3639.468	3643.991	<i>p</i> < .001	0.824	60.348
3	-1767.642	3675.870	3587.284	3593.473	<i>p</i> < .001	0.841	38.388
4	-1735.975	3650.387	3537.950	3545.806	<i>p</i> < .001	0.777	31.291
5	-1714.959	3646.205	3509.918	3519.440	<i>p</i> < .001	0.806	16.109
6	-1700.125	3654.387	3494.250	3505.438	<i>p</i> < .001	0.802	10.137
7	-1683.183	3658.353	3474.366	3487.221	<i>p</i> < .001	0.814	11.492
8	-1672.870	3675.577	3467.740	3482.261	.667	0.832	2.121

Note. *N* = 223. LL = Log-Likelihood. BLRT(*p*) = *p*-Value for the Bootstrapped Likelihood Ratio Test.

^a Model-estimated profile sizes are reported.

Table 4
Indicator means and SEs for the four eating profiles.

Indicator	Resilient eaters	Moderate eaters	Hedonic eaters	Impulsive eaters
Satiety responsiveness	-0.08 (0.54)	0.34 (0.11)	-0.79 (0.20)	-0.18 (0.32)
Slowness in eating	0.04 (0.33)	0.23 (0.16)	-0.33 (0.26)	-0.44 (0.66)
Enjoyment of food	-0.46 (0.38)	-0.50 (0.20)	1.25 (0.19)	1.00 (0.25)
Food responsiveness	-0.90 (0.37)	-0.20 (0.24)	0.56 (0.29)	1.36 (0.40)
Behavioral emotion-related impulsivity	-0.97 (0.57)	0.20 (0.48)	-0.49 (0.24)	1.23 (0.14)
Cognitive emotion-related impulsivity	-0.97 (0.56)	0.14 (0.48)	-0.37 (0.24)	1.31 (0.20)

Note. Model-estimated, *z*-standardized means and SEs of the indicators, across eating profiles.

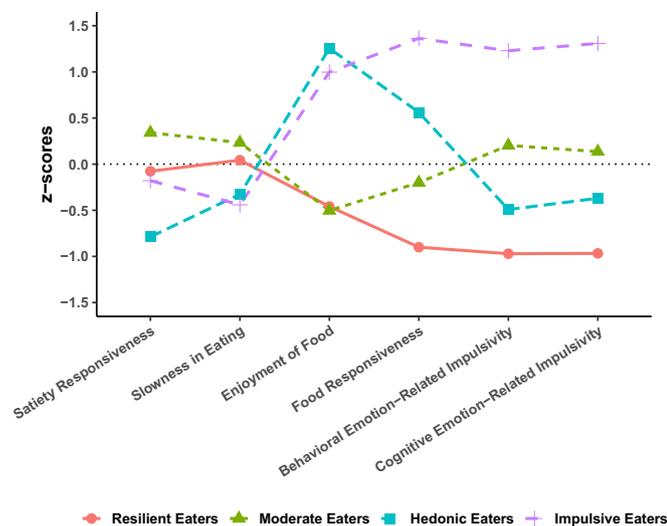


Fig. 1. Indicator means for the four eating profiles. Note. Depicted are model-estimated, *z*-standardized means of appetitive and impulsivity subscales across eating profiles.

psychosocial impairment, thus advancing mechanism-based models of eating styles.

The four latent classes we identified map onto previous LPA results (e.g., Coakley et al., 2022; Francis et al., 2022; He et al., 2020). Resilient Eaters appear to represent a highly functioning group consistently observed in prior research, characterized by low emotion-related impulsivity and food approach traits, along with average food avoidance. This class showed the lowest levels of binge eating, ED psychopathology, and eating-related psychosocial impairment. They resemble the Moderate Eaters of Coakley et al. in their lower levels of food approach, parallel Francis et al.'s Highly-Regulated Behavior and Appetite cluster in exhibiting lower impulsivity and food approach, and partially overlap with He et al.'s Moderate Eating profile. This subgroup also shows similar characteristics to the resilient/high functioning subtype discussed in the ED literature (e.g., Boone et al., 2014; Soidla & Akkermann, 2020), hence its name. Overall, the pattern of traits exhibited by Resilient Eaters aligns with the High Impulse and Appetite Self-Regulation profile that we anticipated.

Moderate Eaters' combination of higher food avoidance and behavioral emotion-related impulsivity, as well as lower food approach, may indicate a decreased tendency toward binge eating, but a mild tendency of acting out under intense affect. Therefore, this latent class seems to capture the subgroup characterized by appetite self-regulation and minor impulse dysregulation, in congruence with the cluster that Francis

Table 5
Latent profile differences.

Characteristic	Resilient eaters	Moderate eaters	Hedonic eaters	Impulsive eaters	Test statistic
Female gender	35 (71.43%)	89 (83.18%)	19 (61.29%)	28 (77.78%)	$\chi^2(3) = 7.41$
≥Medium personal income	38 (84.44%)	78 (77.23%)	21 (77.78%)	21 (65.62%)	$\chi^2(3) = 3.77$
≥Medium household income	23 (51.11%)	48 (50.00%)	19 (73.08%)	15 (46.88%)	$\chi^2(3) = 5.09$
High ability to pay expenses	25 (54.35%)	59 (60.82%)	17 (62.96%)	16 (50.00%)	$\chi^2(3) = 1.68$
≥Medium expenditures planning	35 (76.09%)	87 (84.47%)	23 (76.67%)	29 (85.29%)	$\chi^2(3) = 2.30$
≥Bachelor's level education	35 (71.43%)	71 (66.36%)	23 (74.19%)	17 (47.22%)	$\chi^2(3) = 7.15$
Ever overweight	24 (48.98%)	65 (60.75%)	17 (54.84%)	25 (69.44%)	$\chi^2(3) = 4.00$

	M (SD)	M (SD)	M (SD)	M (SD)	
Age	44.20 (12.10) _d	44.90 (15.00) _{cd}	36.30 (13.00) _b	34.50 (14.90) _{ab}	$F(3, 219) = 6.99^{***}$
BMI	25.10 (4.76)	25.70 (5.24)	25.80 (5.14)	25.70 (5.34)	$F(3, 219) = 0.17$
Social desirability responding	24.20 (1.61) _{bcd}	22.20 (2.46) _{ad}	21.70 (2.85) _{ad}	19.90 (2.46) _{abc}	$F(3, 82.35) = 31.36^{***}$

Note. Reported are the results of Chi-square tests for categorical variables and ANOVAs for continuous variables. Analyses for age and BMI were conducted using standard ANOVAs, followed by Tukey post-hoc tests. For social desirability responding, we used Welch's ANOVA and Games-Howell post-hoc test. Ever Overweight = Whether participants have ever been overweight by 4.5 kg or more. Subscripts indicate which class each group differs from, based on post-hoc tests: a = Resilient, b = Moderate, c = Hedonic, d = Impulsive.

*** $p < .001$.

Table 6
ANCOVA results for main validators.

Outcome	Predictor	df	F	Partial η^2
General and ED-specific flexibility	Age (linear)	1, 218	2.05	0.009
	Profile	3, 218	21.75***	0.270
General ED pathology	Age (linear)	1, 218	3.96	0.020
	Profile	3, 218	10.59***	0.150
Eating-related psychosocial impairment	Age (linear)	1, 218	1.99	0.010
	Profile	3, 218	18.22***	0.270
Depression	Age (linear)	1, 217	18.16***	0.110
	Age ² (quadratic) ^a	1, 217	9.27**	0.050
	Profile	3, 217	16.17***	0.290
Anxiety	Age (linear)	1, 217	5.86	0.060
	Age ² (quadratic) ^a	1, 217	14.85***	0.090
	Profile	3, 217	10.88***	0.240
Stress	Age (linear)	1, 218	12.56***	0.050
	Profile	3, 218	16.49***	0.240
Adverse childhood experiences	Age (linear)	1, 218	2.62	0.010
	Profile	3, 218	3.8	0.080

Note. ANCOVAs were conducted with heteroskedasticity-consistent standard errors (HC3 adjustment), controlling for mean-centered age.

^a Models for depression and anxiety also included quadratic age terms to account for non-linear relationships between age and the outcomes.

** $p < .01$.

*** $p < .001$.

et al. (2022) named Dysregulated Behavior but Regulated Appetite. This profile is also remarkably similar to the Moderately Impulsive class reported by Soidla and Akkermann (2020), in higher impulsivity and moderate ED symptomatology.

Hedonic Eaters are differentiated by their increased enjoyment of food, coupled with lower food avoidance and decreased emotion-related

impulsivity. Compared to Resilient Eaters, Hedonic Eaters showed increased binge eating, which may be explained by their combination of elevated enjoyment of food and lower food avoidance. Their decreased emotion-related impulsivity may account for their relatively low levels of depression, anxiety, and stress. They match the Impulse Self-Regulation and Appetite Dysregulation class that we anticipated, based on Francis et al.'s (2022) previous findings. Moreover, this class bears strong similarities with Coakley et al.'s (2022) Food Seekers and He et al.'s (2020) Approaching Eaters.

Impulsive Eaters showed the highest ED and general psychopathology. They were differentiated by strong food responsiveness, low food avoidance, high emotion-related impulsivity, and exhibited increased binge eating, eating-related psychosocial impairment, depression, anxiety, and stress, therefore highlighting the most maladaptive profile. They map directly onto Francis et al.'s (2022) Dysregulated Behavior and Appetite subgroup, as well as onto the widely discussed under-controlled subtype in the ED literature (Wildes & Marcus, 2013).

On a different note, the four latent classes differed in social desirability responding, with Resilient Eaters reporting the highest levels and Impulsive Eaters the lowest, while Moderate and Hedonic Eaters fell in between. Overall, this pattern suggests that impression management tendencies may form part of the broader psychological configuration of these profiles and should be considered when interpreting class differences.

To the best of our knowledge, this is the first study conducted in an adult sample to illustrate that eating profiles based on impulse and appetite self-regulation show clinically meaningful differences across a broad range of domains central to contemporary, comprehensive models of ED psychopathology (Forbush et al., 2017; Sellbom et al., 2022). These domains span various ED-related dimensions (ranging from cognitive-affective to behavioral features), as well as common comorbidities, personality traits, and psychological distress. Moreover, our findings extend prior research by emphasizing the importance of emotion-related impulsivity as an additional indicator of latent eating profiles. Notably, profiles characterized by comparable appetitive traits, but differing in levels of emotion-related impulsivity (e.g., Hedonic and Impulsive Eaters) diverged substantially in ED symptomatology and psychological distress, thereby reinforcing the role of impulse self-regulation in distinguishing eating styles that might otherwise seem equivalent based on appetite self-regulation alone.

These four eating styles may inform early detection of individuals vulnerable to complex forms of ED psychopathology by identifying the profiles of appetite and impulse self-regulation that are associated with mild, moderate, or severe ED symptomatology, clinical impairment, and

Table 7
Main validators across latent eating profiles.

Outcome	Profile	<i>M</i>	<i>SD</i>	Adj. <i>M</i>	<i>SE</i>
General and ED-specific flexibility	Resilient Eaters	166.47	17.87	166 _{bd}	2.60
	Moderate Eaters	148.06	14.14	148 _{acd}	1.42
	Hedonic Eaters	157.58	17.82	158 _{bd}	3.25
	Impulsive Eaters	136.92	17.39	138 _{abc}	2.87
General ED pathology	Resilient Eaters	1.57	0.31	1.57 _{bd}	0.05
	Moderate Eaters	1.81	0.35	1.82 _a	0.03
	Hedonic Eaters	1.80	0.36	1.78	0.07
	Impulsive Eaters	2.04	0.45	2.02 _a	0.07
Eating-related psychosocial impairment	Resilient Eaters	2.00	3.79	2.12 _{bcd}	0.57
	Moderate Eaters	5.69	6.34	5.85 _{ad}	0.63
	Hedonic Eaters	6.58	7.49	6.29 _{ad}	1.36
	Impulsive Eaters	15.78	11.50	15.40 _{abc}	1.95
Depression	Resilient Eaters	1.22	2.09	0.87 _{bd}	0.33
	Moderate Eaters	3.13	2.61	2.54 _{ad}	0.35
	Hedonic Eaters	3.65	4.74	2.61 _d	0.69
	Impulsive Eaters	7.61	5.00	6.19 _{abc}	0.77
Anxiety	Resilient Eaters	1.51	1.91	1.02 _{bd}	0.29
	Moderate Eaters	3.05	2.26	2.26 _{ad}	0.30
	Hedonic Eaters	2.19	2.01	1.27 _d	0.38
	Impulsive Eaters	5.89	4.65	4.62 _{abc}	0.64
Stress	Resilient Eaters	2.33	2.34	2.45 _{bd}	0.34
	Moderate Eaters	4.44	2.91	4.59 _{ad}	0.29
	Hedonic Eaters	4.16	2.86	3.88 _d	0.52
	Impulsive Eaters	7.86	4.67	7.48 _{abc}	0.71
Adverse childhood experiences	Resilient Eaters	0.65	1.23	0.68 _d	0.18
	Moderate Eaters	1.04	1.41	1.07	0.15
	Hedonic Eaters	1.42	1.82	1.35	0.34
	Impulsive Eaters	2.08	2.06	1.99 _a	0.35

Note. Observed means and *SDs* are based on raw scores. Adjusted means and *SEs* are estimated marginal means from ANCOVAs, controlling for mean-centered age, with heteroskedasticity-consistent (HC3) standard errors. Subscripts indicate which class each group differs from, based on Tukey post-hoc tests of estimated marginal means: a = Resilient, b = Moderate, c = Hedonic, d = Impulsive.

psychological distress. If replicated in larger and more diverse samples, this classification may also inform personalized interventions that directly target the dimensions of appetite and impulse regulation that underlie specific eating profiles. For instance, both Hedonic and Impulsive Eaters may benefit from strategies that tackle appetite dysregulation (Boutelle et al., 2022; Van Beurden et al., 2016), whereas emotion regulation training may be primarily indicated for Impulsive Eaters (Holmqvist Larsson et al., 2020).

Although LPA highlighted meaningful eating profiles, the moderate

sample size may limit the generalizability and stability of the latent classes reported herein. Furthermore, the sample's cultural specificity and gender imbalance may restrict the broader applicability of these findings. Replicating these eating profiles in larger, more diverse, and clinical samples could help establish the robustness of these findings. Another limitation concerns the comparison of latent profiles on external validators using ANCOVAs rather than the three-step approach (e.g., BCH or R3STEP), which is generally recommended to account for classification uncertainty (Asparouhov & Muthén, 2014).

To expand research on this model of eating style classification, future studies should examine the stability of these eating patterns over time and whether they are meaningfully related to outcomes of eating- or weight-related interventions.

5. Conclusion

The present study identified four eating profiles based on the interaction between appetitive and emotion-related impulsivity traits: Resilient, Moderate, Hedonic, and Impulsive Eaters, with the first class consistently showing the most adaptive profile, and the latter exhibiting the highest ED and general psychopathology.

CRedit authorship contribution statement

Maria Gemescu: Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Cezar Giosan:** Writing – review & editing, Validation, Supervision, Project administration. **Carmen Andreea Petre:** Writing – review & editing, Writing – original draft, Formal analysis. **Ana Maria Olguța Barizi:** Writing – review & editing, Data curation. **Brîndușa Diana Paraschiv:** Writing – review & editing, Data curation.

Informed consent

All participants provided their informed consent online, before completing the battery of questionnaires.

Ethics approval

All study procedures were approved by the Research Ethics Committee of a large university in Europe.

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Declaration of competing interest

The authors declare no competing interests.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.eatbeh.2026.102083>.

Data availability

The data is available on Mendeley Data (doi: 10.17632/m6gd7jp776.1).

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