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# THE ASSESSMENT OF EATING PLEASURE AMONG OLDER ADULTS: DEVELOPMENT AND PRELIMINARY VALIDATION OF THE ANTICIPATORY AND CONSUMMATORY EATING PLEASURE (ACEPS)

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## **Abstract**

**Objective:** Maintaining eating pleasure as long as possible is one of the determinants that contributes to and encourages good nutrition in the ageing population. Our study aimed to translate, adapt to the context of food and validate the Temporal Experience of Pleasure Scale (which distinguishes anticipatory and consummatory experiences of pleasure) in a food dependent older French population. **Design:** Prospective validation study. **Setting:** 199 participants dependent for their meals, over 65 years old and living at home. **Measurements:** A pool of 16 self-reported items constituted the initial version of the anticipatory and consummatory eating pleasure scale (ACEPS). Demographic data, nutritional status, appetite and depressive mood were also assessed. **Results:** The exploratory factorial analysis and also the confirmatory factor analysis highlighted a two-factor model: anticipatory eating pleasure (four items) and consummatory eating pleasure (four items). The ACEPS showed good internal consistency. A higher score on the ACEPS positively correlated with appetite. Consummatory eating pleasure positively correlated with nutritional status and negatively correlated with depressive moods. The oldest-old and also those receiving a meals-on-wheels service had lower scores for anticipatory pleasure ( $r=-.14$ ,  $p<.03$ ). **Conclusion:** To our knowledge, the ACEPS is the first comprehensive measure of eating pleasure distinguishing anticipatory and consummatory pleasure. This short measure, easily applicable on older people with vulnerability, allows early identification and intervention preventing malnutrition

and decline in health. Specifically, encouraging anticipatory eating pleasure may be a first step to improving food intake among older adults.

**Key words**

Appetite, eating pleasure, nutritional status, older adults, validation.

## **Introduction**

Theorists have emphasized that the capacity of pleasure (hedonia) is essential to well-being (1) while loss of pleasure (anhedonia) is a predominant feature of depression (2). In the food context, maintaining pleasure is one of the determinants that contributes to and encourages good nutrition in the ageing population (3). Eating pleasure factors have previously been identified as factors associated with higher levels of involvement with food (4-5) which in turn leads to maintaining a better nutritional status. Therefore, preserving eating pleasure as long as possible is a challenge because, with aging, people are increasingly likely to face impediments to their eating pleasure. Indeed, for an older person, a decrease in functional autonomy in daily activities directly affects being able to obtain, prepare, and sometimes even eat food (6). As a consequence, many people become “culinary dependent” and are obliged to delegate these tasks to others: delegation of shopping and/or preparation of meals to a helper (family helper, home help) or to a meals-on-wheels service. As several authors have already pointed out, delegation of all or part of food provision to others affects the relationship between older adults and their food and their nutritional status (7-9). In this context, the risk of losing control of feeding oneself might diminish the pleasure of eating. Given the specific nutritional problems linked to an aging population, it seems important to have a reliable and valid tool to provide a better understanding of eating pleasure which can be used by public health nutrition practitioners and researchers.

In the last 10 years, research in neuroscience (10-12) and clinical psychology (13-17) has provided accumulated evidence that pleasure is a complex cognitive and emotional processes involving wanting and liking. Particularly, researchers have argued that the experience of pleasure can be divided into two distinct phases: anticipation of pleasure (i.e., wanting) and consumption of pleasure (i.e. liking) (10). Anticipatory pleasure involves predicting the pleasure from a future reward and the experience of pleasure associated with a positive prediction; in contrast, consummatory pleasure involves the at-the-moment experience of pleasure in the presence of the reward. This differentiation may facilitate engaging in the motivational process. To our knowledge, most of the pleasure self-report measures only assess consummatory pleasure while none assess specifically food pleasure. Among the recent scales, the Temporal Experience Pleasure Scale (TEPS) (18) distinguishes consummatory pleasure from anticipatory pleasure and has demonstrated good psychometric properties (factor analysis, internal consistency and temporal stability) among normative samples (19-20), at-risk samples like schizophrenia patients (21-24) or depressive disorders (25). TEPS

has been validated in French (21, 26) and Chinese (20) populations. Assessing eating pleasure to maintain food involvement is an important first step to combating malnutrition in the ageing population. Our study aimed to translate, adapt to the food context and validate the English version of the TEPS for a meals-dependent older population. The overall goal is to facilitate early identification of older French people at risk of malnutrition in order to implement an effective treatment approach.

## **MATERIAL AND METHODS**

### **Participants and data collection**

Data presented in this study were obtained from the RENESSENS project: “Make a sustainable success of a well-balanced diet sensorially adapted for Seniors” (<https://www2.dijon.inra.fr/senior-et-sens>). In 2015, a sample of 319 adults over 65 years old were recruited in France among three categories: (1) older adults living at home with help for food purchasing and/or cooking for at least three meals a week (n=91); (2) older adults living at home with meals-on-wheels for at least three meals a week (n=108); (3) older adults living in nursing homes (n=120). Participants suffering from an acute pathological episode at the time of the survey were not included. For older adults living at home, participants had to score at least 21 on the Mini Mental State Examination (MMSE; (27)) to be included in the survey. No such criteria were set for the nursing home subjects to recruit a more representative sample of institutionalized older adults. The present study aimed to validate a scale of eating pleasure and thus required a minimum amount of cognitive capacity, therefore the present study concerned only older people living at home (N=199). The experimental protocols were approved by the local research ethics committee (#2014-A00775-42).

### **Measure**

Socio-demographic characteristics of the participants including age, gender, living alone or not, previous occupational status, financial satisfaction and meal dependence (help for shopping or preparing meals versus a meals-on-wheels service) were recorded.

Nutritional Status was assessed using the Mini nutritional assessment (MNA®) (28). The MNA is a screening and assessment tool used to identify malnutrition among older adults. In the screening section a score out of 30 was calculated which indicated possible malnutrition

or not. A score above 24 categorizes people as well-nourished, a score between 17 and 23.5 indicates a risk of malnutrition and a score <17 identifies malnourished people.

Appetite was assessed using the first three items of the SNAQ (29) and two items were added “I’m hungry outside of meals” and “when I sit down to eat, I get hungry”. Each question was answered on a 5-point Likert scale scoring 1 “poor appetite” to 5 “very good appetite”. In the present sample, the internal consistency was: .63.

Depressive mood was measured using the short form of the Geriatric Depression Scale (GDS-15 (30)) consisting of 15 dichotomous questions in which participants are asked to respond by yes or no according to how they had felt over the previous week. Scores could range from 0 to 15, with higher scores indicating a more depressive mood. The psychometric qualities of the GDS-15 are well established and documented (31). In the present sample, the internal consistency of the GDS was .74.

### **Development of the ACEPS (Anticipatory and consummatory eating pleasure scale)**

Items written to assess anticipatory pleasure of eating reflected the pleasure experienced in anticipation of a positive or pleasurable eating stimulus (thinking about eating, imagining appetizing meals, smelling and seeing food, etc.). Items written to assess consummatory pleasure of eating reflected the “at the moment” pleasure in response to an eating stimulus (liking eating, taking pleasure in eating, etc.). A pool of 16 items were selected to represent pleasure of eating (8 for anticipatory and 8 for consummatory). Within these items, four items were replicated from Gard’s TEPS (18).

Four experts in gerontology and eating behaviors (authors VW, IM, NB and CSR) reviewed the pool of items and construct definitions and provided feedback on: (a) the construct label and substantive meaning for each component of pleasure; (b) the extent to which each item represented the intended components of the pleasure construct; and (c) the readability and clarity of items. Considering the aims of the Renessens project, the scale could be used on less autonomous populations. However, due to the fatigue and annoyance effect specific to this older population (oldest-old) and further comparison with them, we decided to construct a short scale. In creating these items, we were careful to avoid choosing items that were not specific to an older group. For example, use of terms like “snack bar/fast food store” or “meal preparation” or “shopping for meals” were removed due to their lack of relevance for an aging dependent population. The final pool of 16 items (Table 2) constituted the initial version of

the scale. The instructions of the ACEPS invited respondents to rate the degree to which they agreed with each statement using a 4-point Likert scale (“No” (1), “Rather no” (2), “Rather yes” (3) or “Yes” (4)).

### **Data analysis**

Descriptive statistics are reported as means + standard deviations or percentages. Analyses were conducted in three stages: 1) preliminary analysis of data and identification of a preliminary factor structure, 2) confirmation of the factor structure, and 3) relationship of scale with sociodemographic and food-related outcomes. Firstly, using data from the full sample with only older people living at home (N=199), the following analyses were performed: item distributions were examined to identify and remove items with restricted variability or excessive skewness. To analyze the structural validity of the pleasure to eat scale, we randomly divided the study sample into two subsamples. Data for the first half of the sample (N=100) were used for principal component analysis (PCA) with Varimax rotation. With a sample size of 100, the subject-to-item ratio was 6.25 ranging between a recommended ratio of 5:1 and 10:1 (32). Sample adequacy was further assessed using the Kaiser-Meyer-Olkin (KMO) measure and Barlett’s test of sphericity. To determine the number of factors, parallel analysis (PA) tests were performed following the procedure described by O’Connor (33). We preferred PA to Kaiser’s eigenvalue because the arbitrary rule of one seems to be problematic and inefficient to determine the number of factors (34). Items with factor loadings less than .40 or with factor loadings of .40 or higher on more than one factor were deleted. Secondly, confirmatory factor analysis (CFA) was performed with the second half (N=99) of the data to verify the factor structure of the scale. We performed CFA under the maximum likelihood method to examine the goodness-of-fit statistics. Good model fit was determined based on a normed chi-square ( $\chi^2/df \leq 3$ ), Comparative Fit Index (CFI) and Tucker-Lewis index (TLI)  $\geq 0.90$ , root mean square error of approximation (RMSEA)  $\leq 0.08$  with a 90% confidence interval and standardized root mean square residual (SRMR)  $\leq 0.06$  (35- 36). Internal consistency coefficients (Cronbach’s alpha) were calculated for each component of pleasure to eat. Finally, using the full sample (n=199), for each scale means and standard deviations (SD) were calculated and compared according to scores for nutrition, appetite and depression. In addition, correlations were used to examine links between the pleasure scale with age, sex, living alone and type of dependent situation for meals (help at home for shopping or preparing meals versus a meals-on-wheels service).

Analyses were conducted using Mplus version 7.3 and additional data analyses were conducted using SPSS version 22.0.

## **RESULTS**

Descriptive characteristics of the 199 participants are presented in Table 1. The mean age was  $83.70 + 7.62$  with 141 women (70.9%,  $M$  age =  $84.11 + 7.43$ ) and 58 men (29.1%,  $M$  age =  $82.72 + 8$ ). Regarding marital status, a large majority of our participants lived alone (80.4 %, 160). The main categories for previous occupational status were office workers (45.3%, 91) and executives (15.9%, 32). Finally, a meals-on-wheels service concerned 54.3% (108) of our participants, while 45.7% (91) had help for shopping or preparing meals. There was no significant difference between the two samples (Table 1).

### **Determination of factor structure (Exploratory factor analysis) - Internal consistency**

Firstly, item distributions were examined to identify and remove items with restricted variability or excessive skewness. Data were screened for skewness and kurtosis, data meeting acceptable levels were  $< 2.0$  for both. In addition, no cases were found to be multivariate outliers through Mahalanobis distance ( $p < 0.001$ ). Second, the KMO measure was found to be 0.86, while Barlett's test of sphericity was significant with  $\chi^2(55) = 384.6; p < 0.001$ , thus fulfilling the prerequisites for conducting PCA. The PA specified that two factors should be extracted. It should be noted that three factors had eigenvalues over Kaiser's criterion of 1, but the scree plot began to tail off after two factors. In line with theory, the -factor solutions were retained. Results are presented in Table 2. The oblique rotation method yielded the same factor loadings. The factors explained 44.15% of the variance among the scale items (33.03 % and 11.12%). Factor 1 included five among the eight consummatory pleasure (eigenvalue = 5.60) and Factor 2 included five among eight anticipatory items (eigenvalue = 1.78). Item 8 (The prospect of a good meal puts me in a good mood) loaded equally on the two factors and was close to threshold (.40), we therefore decided to delete it. Internal consistency of the four remaining anticipatory pleasure and the four remaining consummatory items were .78 and .77, respectively. The correlation between the two scales was .49 ( $p < .001$ ).

## **Confirmatory factor analysis**

CFA was conducted on the second subsample (N=99). The measure presented the following model fit indices: Chi-square = 37.15; df = 18 ( $\chi^2/df = 2.06$ ;  $p = .007$ ); CFI = .91; TLI = .86; RMSEA = .09 [.05, .14] and SRMR = .08. The model fit indices met the criteria standards for  $\chi^2/df$  and CFI, but RMSEA, SRMR and TLI were lower than the expected thresholds. Inspection of the modification indices suggested that the model would be improved if a one-error variance was allowed to be correlated (item 5 and item 6). The presence of correlated error may be due to a certain degree of overlap. Indeed, some sentences are redundant: “When I think of something tasty, like a chocolate chip cookie, I really want to have one” and “When I see an appetizing dish, I can’t wait to taste it” have redundant contents. Thus, a model was computed in which the error measures were freely estimated. The revised model had a satisfactory fit, as all the values were within the threshold of acceptability: Chi-square = 26.917, df = 18 ( $\chi^2/df = 1.49$ ;  $p < .08$ ), CFI = 0.95, TLI = 0.93, RMSEA = 0.07 [0.01 - 0.09] and SRMR = .06. With one exception (item 5), standardized factor loadings were consistently greater than .40, ranging from 0.43 to 0.86.

## **Correlations with participant characteristics and food-related measures**

For the total sample, the mean of the four consummatory items was 2.78 (SD=.56) and the mean of anticipatory items was 1.97 (SD = 0.55). Table 3 shows the correlations between the eating pleasure scale, the participant characteristics and food-related measures. The oldest-old had lower scores for anticipatory pleasure ( $r = -.15$ ,  $p < .05$ ) and this was also the case for those who received a meals-on-wheels service ( $r = -.14$ ,  $p < .03$ ). Participants with higher mean scores on MNA and lower mean scores on depression had higher mean scores on consummatory pleasure ( $r = .20$ ,  $p < .01$ ;  $r = -.42$ ,  $p < .01$ ). Higher scores on appetite correlated with higher anticipatory and consummatory pleasure ( $r = .18$ ,  $p < .05$ ;  $r = .34$ ,  $p < .01$ ). No differences for sex or living alone were observed for pleasure in eating.

## **DISCUSSION**

This study outlines the development and preliminary validation of a brief measure of eating pleasure based on a theoretically grounded model of pleasure. The first psychometric properties of the ACEPS are fairly robust. The scale confirms a two-factor model of eating

pleasure, has a good internal consistency, and ACEPS scores are related to food and health measures.

Initially, a scale of 16 items (eight for anticipatory eating pleasure and eight for consummatory eating pleasure) was drawn up which selected items according to their appropriateness for older people who were dependent for their meals. Principal component analysis and confirmatory factor structure confirm a two-factor model which includes four items reflecting consummatory eating pleasure and four items reflecting anticipatory eating pleasure. Selected items of consummatory eating pleasure focused on “at-the-moment” eating experience in response to an eating stimulus (i.e., positive sensation provided by eating: taste of food as well as a moment of conviviality). Selected items of anticipatory eating pleasure reflected the anticipatory pleasurable eating experiences (i.e., thinking about food pleasure). In accordance with current theory in neurosciences (10-12) and psychopathology (13-17)), our work supports the importance of distinguishing between anticipatory and consummatory pleasure experiences, and particularly in an elderly food-related context.

Beyond the factorial structure of eating pleasure, our results highlight the links between ACEPS and food measures, thereby heightening the validity of our scale. Indeed, our results indicate that the greater a person’s appetite, the more he/she has eating pleasure, for both anticipatory and consummatory pleasure. In addition, while consummatory eating pleasure is positively correlated with nutritional status, anticipatory eating pleasure is not. A link between eating pleasure and nutritional status has previously been demonstrated in the French Aupalesens project (3), but to our knowledge no studies have explored the impact of anticipatory eating pleasure on nutritional status. Further studies are needed to explore and improve understanding of these relationships, we can, however, assume that the impact of a decline in anticipatory eating pleasure affects long term nutritional status. Otherwise, the association between ACEPS and depressive symptoms revealed two contrasting results: a negative association with consummatory eating pleasure, while no link was found with anticipatory eating pleasure. Most of the previous research conducted on depressed people has focused on consummatory pleasure and findings have highlighted a deficit in consummatory pleasure in depressed people compared to healthy controls (37-39). In the classification of mental disorders (DSM-V, 2015), “loss of interest or pleasure in all or almost all activities is part of the clinical signs of depression”. We can therefore assume that depression also leads to a loss of pleasure in eating. In addition, the loss of consummatory eating pleasure among depressed people is congruent with research in the literature on malnutrition among an aging

population (40-42) in which depression is considered as the primary cause of malnutrition (43). Contrary to our result, the few studies assessing anticipatory pleasure indicate that depressed participants reported dulled levels of anticipatory pleasure compared to healthy controls (16, 18, 25). Our results may be explained in part by the characteristics of the study population. Indeed, all participants were meal dependent and so were deprived of all or part of procuring their own food and meal preparation. Over and above depressive symptoms we can assume that the delegation of food-related tasks constrained the anticipation of eating pleasure. In order to be motivated to engage in an eating process, older adults need to feel involved even though this life stage is one in which people are more likely to experience difficulties in procuring food, preparing meals and eating (4-6). In keeping with these results, we highlighted that anticipatory eating-pleasure was greater in people with caregivers or home helpers than with people receiving a meals-on-wheels service. Anticipatory pleasure is inevitably more complicated when your meals are controlled by a catering service rather than by caregivers or home helpers.

Although this study provides additional information on eating pleasure among older adults, some limitations should be mentioned. Firstly, further research on the psychometric properties of this instrument should involve larger samples in different groups of older adults, taking into account physical, medical and sensorial factors (44-46). Factors including loss of autonomy, impairment status, medications, loss of taste and olfaction all seem essential to understanding better pleasure in eating in aging people. In the same way, mental disorders, especially depression could be assessed more precisely. In our study, we chose the GDS scale because it had already been validated in an older population. However, it is possible that the GDS scale is not the most appropriate tool to assess depression in this population. Most of the previous studies on pleasure used the Major Depressive Disorders to identify depressed people (16-38). Secondly, the validity of the ACEPS needs to be confirmed in other cultural contexts. The pleasure afforded by eating has previously been reported as a common source of pleasure for many individuals, but with substantial differences between countries. For example, in a sample of adults and college students, Americans were the most health- and the least pleasure-oriented and French the least health- and the most pleasure-oriented (47). Similarly, the Chinese validation of TEPS (20) suggested a four-factor model instead of the original two-factor model ascertained from Western samples in the United States. Thirdly, pleasure is intrinsically complex, being driven by multiple causal mechanisms.

Psychological mechanisms underlying eating pleasure like BIS/BAS (functioning of behavioral inhibition or activation systems), capacity to imagine prospective rewards and also personality need further investigation. Finally, it is also still unclear whether eating-pleasure is a stable or state construct. Even if TEPS is considered by Gard as a personality trait, we can assume that pleasure in eating fluctuates depending on environmental conditions or the ageing process.

## CONCLUSION

Pleasure is a strong motivational factor that drives food choices and appetite. Given the nutritional problems in ageing, maintaining eating pleasure as long as possible is a challenge. To our knowledge, the ACEPS is the first comprehensive measure of eating pleasure distinguishing anticipatory and consummatory pleasure. This short measure, easily applicable on aging vulnerable people, allows for early identification and intervention preventing malnutrition and decline in health. Specifically, encouraging anticipatory eating pleasure may be the first step towards enhancing food intake among older adults.

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**Ethical Standards:** This study complies with the current laws on research in France.

**Conflicts of Interest:** No

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**Table 1**  
Characteristics of participants

	Total sample (N=199)	Sample 1(N=100)	Sample 2(N=99)	P value
Mean age (SD)	83.70 (7.62)	83.46 (7.9)	83.95 (7.03)	.68
Women % (N)	70.9% (141)	72% (72)	69.7% (69)	.84
Living alone % (N)	80.4% (160)	79%(79)	81.8% (81)	.88
Financial satisfaction * [1-5]	3.22 (1.17)	3.24 (0.98)	3.19 (1.2)	
Previous occupational status % (N)				.36
Office Workers	45.3% (91)	43% (43)	48.5% (48)	
Middle managers	12.4% (25)	12% (12)	13.13% (13)	
Executives	15.9% (32)	16% (16)	16.16% (16)	
Workers	6% (12)	7% (7)	5.05% (5)	
Craftspeople	6% (12)	5% (5)	7.07% (7)	
Non-paid work/house wife	12.6% (25)	15% (15)	10.10% (10)	
Meal dependence % (N)				.61
Help for shopping or preparing meals	45.7% (91)	48% (48)	43.4% (56)	
Meals-on-wheels service	54.3% (108)	52% (52)	56.6% (43)	
Nutritional Status (MNA**)				.81
Mean (SD)	20.97(2.97)	20.92(2.99)	21.02(2.44)	
Malnourished [<17]	3.5% (7)	3%(3)	4%(4)	
Risk of malnutrition [17-23.5]	85.4% (170)	83% (83)	87.9%(87)	
Well-nourished [>24]	11.1% (22)	14%(14)	8.1%(8)	
Depressive moods (GDS**) [0-15]	5 (3.11)	4.9 (3.09)	5.10 (3.15)	.65
Appetite [5-25]	14.82 (2.85)	14.44(2.98)	15.17(2.68)	.30

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\*Financial satisfaction was assessed by the question: “How would you describe your present financial situation” on a Likert-type scale ranging from 1 (very difficult) to 5 (not difficult);

\*\*MNA: Mini Nutritional Assessment – GDS: Geriatric Depression Scale \*\*\* For categorical variables such as gender, living alone or meal dependence a Chi-squared test was used. For quantitative variables such as age, nutritional status or depression, a Student’s t-test was used.

**Table 2**  
Results of Principal Component Analyses  
(sample 1, N = 100)

	Mean (S.D.)	Factor 1 Consummatory Eating Factor	Factor 2 Anticipatory Eating Factor
Item 1 - When I think about my favorite food. I can almost taste how good it is* (Quand je pense à mon plat préféré, je peux ressentir à quel point c'est bon)	2.93 (1.26)	-.05	.3 5
Item 2 – I like the smell of a meal being prepared (J'aime sentir l'odeur d'un repas que l'on prépare/qui se prépare)	3.36 (1.05)	.26	.3 8
Item 3 - When I see an appetizing recipe on television or in a magazine I really feel like eating it. (Quand je vois à la télévision ou dans un magazine une recette de cuisine appétissante, cela me fait envie)	2.78 (1.27)	.35	.6 0
Item 4 - I really enjoy going to a restaurant or a festive meal (Je me réjouis à l'idée au restaurant ou d'aller à un repas festif)	3.06 (1.21)	.22	.0 8
Item 5 - When I think of something tasty, like a chocolate chip cookie, I really want to have one* (Quand je pense à quelque chose de délicieux comme un gâteau au chocolat, j'en veux un absolument)	1.84 (1.11)	.00	.8 2
Item 6 - When I see an appetizing dish, I can't wait to taste it (Quand je vois un plat appétissant, je suis impatient de le goûter)	2.57 (1.26)	.27	.7 6
Item 7 - When ordering something off the menu, I imagine how good it will taste* (Quand je commande quelque chose à partir d'un menu, j'imagine combien cela va être bon)	2.68 (1.27)	.33	.5 3
Item 8 - The prospect of a good meal puts me in a good mood (La perspective d'un bon repas me met de bonne humeur)	3.14 (1.12)	.45	.4 2
Item 9 - Eating is one of my great pleasures in life (Manger fait partie des plaisirs importants de ma vie)	2.68 (1.33)	.23	.1 5
Item 10 – I enjoy all the senses that are associated with a good meal (Je prends plaisir aux sensations qui accompagnent un bon repas)	3.29 (1)	.70	.2 7
Item 11 - I am not in a hurry to leave the table when having a meal (En général, je ne suis pas pressé de sortir de table)	2.38 (1.28)	.32	.2 3
Item 12 - It is important for me to eat delicious food (C'est important pour moi de manger des aliments savoureux)	3.72 (.64)	.21	.3 8
Item 13 - In general, I take pleasure from food	3.42 (.94)	.77	.22

/in eating (En général, je prends plaisir à manger)			
Item 14 - I enjoy the conviviality associated with mealtimes (J'apprécie les moments de convivialité autour d'un repas)	3.58 (.84) .	62	- .1 2
Item 15 - When I eat, I am usually in a good mood (Quand je mange, je suis généralement de bonne humeur)	3.55 (.76)	.72	.1 7
Item 16 - It is important for me that food is presented in an attractive way (C'est important pour moi que les plats soient joliment présentés)	3.15 (1.15) .	29	.1 5
Eigenvalues		5.60	1. 78
Percentage of the variance		33.03%	11 .1 2%

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\* Items replicated from TEPS (Gard et al., 2006).

**Table 3**

Correlations between eating pleasure scale, participant characteristics and food-related measures

	1	2	3	4	5	6	7	8
1. ANT Pleasure								
2. CONS Pleasure	.41**							
3. MNA	-.02	.20**						
4. Appetite	.18*	.34**	.34**					
5. Depressive moods (GDS)	-.08	-.42**	-.16*	-.28**				
6. Age	-.15*	-.12	-.03	-.10	.02			
7. Sex	.05	-.08	-.05	.09	.04	.08		
8. Living Alone	.01	.10	.07	.04	-.12	.05	-.21**	
9. Meals dependence	-.14*	-.11	-.06	.07	.16**	.04	-.14*	-.03

ANT Pleasure = anticipatory eating-pleasure / CONS Pleasure = consummatory eating-pleasure /  
MNA = Mini nutritional assessment / GDS: Geriatric depression scale; Sex: 1 = men , 2 = women /  
Living alone: 0 = Living with a partner = 1 /Meals dependence: 1 := Help for shopping or preparing  
meals, 2:= Meals-on-wheels service; \*p<.05 - \*\* p < .01