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Understanding the role of personal aspects in positive and negative meal experiences: psychological needs, values, and emotions.

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Abstract

The aim of this research was to study most positive and negative personal meal experiences in terms of experienced emotions, psychological needs, values, as well as the meal context. 64 participants wrote qualitative descriptions of their most positive and negative recent meal experiences and rated their personal experiences quantitatively using the PANAS method for experienced emotions, and questionnaires probing the salience of contextual aspects, psychological needs, and values. The results highlighted the psychological needs of relatedness and autonomy, both hedonistic and conservation values, and the emotions "interested" and "enthusiastic" as especially salient in most positive meal experiences. The qualitative results indicated that social aspects ("the meeting") and the food and drink product were the most prominent aspects affecting both most positive and most negative meal experiences. The role of accompanying persons was especially salient in positive experiences and the role of meetings with service personnel in negative experiences. Issues related to the personal context ("the self") were mentioned as factors affecting meal experiences in about 35 % of most positive experiences and 40 % of descriptions of most negative experiences. The results highlight the benefits of including the personal context in studies of meal experiences along with traditionally studied aspects.

Keywords: meal experience; psychological needs; values; emotions; personal context

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Introduction

Given the large number of meals consumed worldwide every day, research on subjective, personal meal experiences has been surprisingly scarce. The structure of meal experiences and all the different factors affecting the experiences are still not fully understood. According to a common view, eating is not only for nutritional purposes but constitutes lived experiences that influence behavior (Kauppinen-Räisänen et al., 2013). Generally, consumers want more than just the delivery of the product or service. For example, they often seek consumption encounters to accompany the products and services that create unique, memorable experiences (Walls et al., 2011). Service encounters and meal experiences are currently considered as one of the main research areas in the field of hospitality research (Gjerald et al., 2021), and food and gastronomy related experiences also constitute an important part of tourism experiences research (Björk et al., 2021). A more advanced understanding of different factors affecting meal experiences can be used for improving the overall level of service in restaurants in the experiential sense or, for example, designing psychologically tailored customer experiences for different kinds of food services using experiential design.

Previous literature presents models for categorizing the aspects affecting the customers' meal experiences. In the restaurant context, The Five Aspects Meal Model (FAMM) and Customers' Meal Experience Model (CMEM) are the most commonly used descriptive models of meal experiences (Gustafsson et al., 2006; Hansen et al., 2005). In these models, customers' meal experiences are characterized by five aspects, of which four are

included in both models: the core product (food & drink), the restaurant interior, the social meeting with the service personnel or other customers, and the atmosphere of the restaurant. In CMEM, the fifth aspect is the company, while in FAMM the company is represented by its management control system. Recently, Sthapit et al. (2019) extended the memorable tourism experiences (MTE) construct to studying memorable food experiences and found that servicescapes (e.g. architecture and atmosphere), experience co-creation with service personnel, and experience intensification using photos and souvenirs are factors, which can make food experiences more memorable.

The most popular meal experience models (e.g. FAMM and CMEM) have been formulated from the experience provider's (e.g. restaurant's) point of view and focus on aspects, which the service provider can change to better the serve the customer's experience. There are also studies, which have focused on the service personnel's experiences of the service meetings (e.g. Lundberg, 2011). However, it has been long known in the field of experience design that good design often requires a more holistic view of different factors affecting customers' experiences. For example, Norman (2004) suggested that when designers describe people only as customers or consumers, they are risking their ability to do good design. Experiences are affective, subjective, and personal processes, and those processes should be understood and taken into account, when doing good design. In the field of meal experience research, the importance of such processes has been acknowledged, but is not in large visible in research carried out. For example, Gustafsson et al. (2006) noted the presence of individual needs and circumstances of customers, while presenting their FAMM model, even though they are not explicitly included in the model. In addition, Andersson and Mossberg (2004) explored the

importance of customers' social, physiological, and intellectual needs in restaurant dining experiences.

The current study builds on previous meal experience research so that it aims at augmenting the meal experience aspects presented in the FAMM and CMEM models with a close investigation into the personal aspects of meal experiences. We aim at achieving this by systematically studying three major subjective dimensions quantitatively in the context of positive and negative meal experiences: emotions, psychological needs, and values. To this end, questionnaire methods originating mostly from psychological studies are introduced to meal experience research. Personal aspects as part of meal experiences are also studied using qualitative methods. Thus, the current study aims at being different from existing meal experience studies in both scope and methods. In the following chapters, we briefly summarize past research on meal experiences, introduce the above-mentioned subjective dimensions, and present the aims and hypotheses of the current study.

Related work

Meal experiences

The main attributes affecting positive and negative meal experiences have been examined both in restaurant contexts and more generally in everyday life. For example, Harrington et al. (2012) identified critical attributes affecting positive and negative dining experiences of generation Y consumers, in different restaurant contexts: quick-service restaurants, casual restaurants, and fine dining restaurants. The four most important individual attributes perceived as important in both positive and negative experiences were the quality of food, quality of service, friendliness of staff, and speed of service. In

addition, the atmosphere was important in positive experiences and lack of cleanliness was an important factor in negative experiences. The core product and the social and service meetings were overall the two attribute categories perceived as most important in positive and negative dining experiences.

In contrast, Kauppinen-Räisänen et al. (2013) studied the remembered positive eating and food experiences qualitatively by using focus group interviews. The participants were asked to share their positive experiences related to eating. The remembered eating experiences were very personal in nature and could be related, for example, to a meaningful event (e.g. birthday) or place (e.g. a cottage). The memorized experiences originated mainly from sensory, emotional and social bases and were typically related to commercial eating. The researchers found that remembered eating experiences are described by five main constructs: self, place, food, context, and time. Of these constructs, self and time are concepts less often included in other models applied to studying eating experiences. The self as a construct can include, for example, one's own perceived role in the dining session and emotional and physiological responses. Time can be, for example, indicative of childhood or adulthood or weekday vs. weekend or holiday, or between ordinary and extraordinary (e.g. special occasions).

Previous studies have used slightly varying terminology in the context of studying food and eating related experiences (see e.g. Gomez-Corona & Valentin, 2019). Commonly used concepts include meal experience (Hansen et al., 2005; Gustafsson et al., 2006); dining experience (Andersson & Mossberg, 2004; Harrington et al., 2012), and eating experience (e.g. Kauppinen-Räisänen et al., 2013). On the other hand, terms such as food experience (Desmet & Schifferstein, 2008) and product experience (Desmet & Hekkert,

2007) have also been used in the context of sensory food experience research or, for example, when studying direct affective responses to tasting food. In the current study, we settled on using the term meal experience, as it is used in the most popular existing models and seems to appropriately capture the holistic focus of the current study.

Methodologically, common approaches in existing meal experience research have included, for example, interviews and focus groups (e.g. Andersson & Mossberg, 2004; Hansen et al., 2005; Kauppinen-Räisänen et al., 2013) and lately also mining user generated online content using automated methods (e.g. Jia, 2019). Questionnaire methods have been used in studying meal experiences, for example, by Harrington et al. (2012) and Sthapit et al. (2019). In addition, there are questionnaire methods such as the DINESERV method (Stevens et al., 1995) and the MEEEI method (Hansen, 2014), which are oriented towards studying perceived service and restaurant quality. When compared to these studies, the current study has a stronger focus on subjective, felt experiences and existing questionnaire methods are used to study the three experience related dimensions of emotions, psychological needs, and values. These dimensions and methods are presented in the following sections.

Emotions

It is widely agreed that emotions are centrally involved in human experiences and guide human behavior. Emotions can be studied as dimensions (e.g. positive – negative; calm – highly aroused) or as discrete categories of emotions. In the context of food and eating, it has been found that positive emotions and lack of negative emotions are among main sources of customers' satisfaction with restaurant services (Ladhari et al., 2008). The specific emotions that had the highest positive or negative correlations with ratings of

service quality were happiness and pleasure (positive emotions), and boredom and disgust (negative emotions). Desmet and Schifferstein (2008) examined sources of positive and negative emotions in food experiences. Emotions were experienced by students in response to eating or tasting different food items. The results showed that customers described their recollected past food experiences by using pleasant emotions more often than unpleasant ones. Satisfaction, enjoyment, and desire were experienced most often, and sadness, anger, and jealousy least often. Vice versa, there is also evidence that emotions and moods can even affect how the taste of the food is perceived (Platte et al., 2013). While there is some research on the role of individual emotions in food and meal experiences, there is still no consistent information on the most prominent individual emotions, which are typically felt in especially positive and negative meal experiences.

One of the most widely used categorical methods for evaluating experienced emotions has been the Positive Affect Negative Affect Schedule (PANAS, Watson et al., 1988), which studies experiences through a balanced set of ten positive and ten negative emotions (e.g. inspired, excited, scared, distressed). PANAS was chosen as the emotion measurement instrument for the current study because it fits the holistic scope of the current study well, as it measures emotions as they engage in everyday life (Magyar-Moe, 2009). There is also evidence about the reliability and validity of the method in a general population (e.g. Crawford & Henry, 2004). The method also enables calculating salience scores separately for positive and negative emotions, as well as an affect balance score.

This is especially useful, as there is evidence that people can experience both positive and negative emotions in relation to the same experience (Russell & Carroll, 1999).

Psychological needs

Another central concept in understanding human experiences is the concept of psychological needs. Self-determination theory (Deci & Ryan, 2014, Ryan & Deci, 2000) suggests that three needs are of central importance: autonomy (to actively participate in determining own behavior without external influence), competence (to experience oneself as capable and competent in controlling the environment and being able to reliably predict outcomes), and relatedness (to care for and be related to others). Sheldon et al. (2001) presented a model of ten candidate psychological needs extending the self-determination theory with seven needs: self-actualization-meaning, physical thriving, pleasure-stimulation, money-luxury, security, self-esteem, and popularity-influence. They also presented a questionnaire method for studying the degrees of fulfilment for the ten needs using 30 statements (three statements for each need) and applied the method in two studies on the most and least satisfying experiences of college students in two different cultural settings. The results showed that autonomy, competence, and relatedness were consistently among the most salient needs, together with self-esteem needs. Psychological needs have been found to be important in food choice and eating regulation (e.g. Verstuyf et al., 2012), but have not been systematically studied in the context of positive and negative meal experiences.

Values

Values are a concept, which has gained increased attention in the past few decades. Like psychological needs, personal values have been found to be related to emotions and

experiences (e.g. Desmet & Hekkert, 2007). In an early explorative study in the context of consumer experiences, Laverie et al. (1993) found that consumers' values can be related to both positive and negative emotions. Schwartz (1992, 2015) presented a well-known model of ten universal values based on extensive empirical studies in multiple countries: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, conformity, tradition, and security. Recently, Partala and Kujala (2016) presented a quantitative approach aimed for evaluating personal values in relation to products and services systematically based on Schwartz's model of ten universal values. This approach offers a possibility for theory-based evaluation of values as part of experiences using quantitative methods. In the context of meal experiences, values have been previously studied mostly using qualitative methods. For example, Jensen and Hansen (2007) made a distinction between five value categories among restaurant customers: excellence, harmony, emotional stimulation, acknowledgement, and circumstance value.

Current aims and hypotheses

The current study aims at contributing towards an advanced understanding of meal experiences especially by giving new information on the role of the personal context and the related subjective dimensions in the experiences. In the current study, we analyzed the personal context alongside the five FAMM aspects in the qualitative analysis. The personal context was defined for the purposes of this study as any aspects specific for the meal consumer, including the consumers' mood, emotions, values, needs, wants, expectations, personal meanings, as well as the personal temporal context including, for example, level of hurriedness. This definition is in line with existing definitions of personal context, for example, the definition by Radomski (2008). The personal context

covered the new aspects of the current study when compared to previous studies on meal experiences.

In order to achieve these aims, we take a holistic approach and systematically study emotions, psychological needs, values, and contextual factors related to meal experiences, as well as analyze qualitative descriptions of the reported experiences. One aim is to study the relative importance of different emotions, psychological needs, and values in most positive and negative meal experiences and the role of different contextual variables in the experiences. Thus, the current research spans different levels from lower level physiology-related constructs such as emotional responses to higher-level constructs such as self-actualization or self-esteem. On the other hand, the aim is to also compare the relative importance of the personal aspects in meal experiences with different constructs such as the five main FAMM concepts by analyzing qualitative data. By experimenting with quantitative and qualitative methods for studying meal experiences, we also aim at producing a new kind of methodological insight into how different kinds of information about meal experiences can be gathered.

Because of the large number of variables measured and the explorative approach of the current study, we did not form research hypotheses at the level of single variables. However, our overall expectations for the main results were as follows. Based on our past experiences in gathering qualitative experiential data and based on previous studies (e.g. Andersson & Mossberg, 2004), we hypothesized that personal context related issues affecting meal experiences would constitute a category of notable size in the qualitative analysis. For the quantitative data, we hypothesized that experienced emotions, fulfilment of psychological needs, and concordance with values would differ significantly between positive and negative meal experiences and we would also find certain emotions, needs,

and values, which are especially pronounced in meal experiences. Similar findings have been made using the same methods in other contexts (e.g. Hassenzahl et al., 2010; Partala & Saari, 2015). Based on previous research from positive psychology on psychological needs in general life experiences (e.g. Ryan & Deci, 2000; Sheldon et al., 2001) we hypothesized that the self-determination theory related needs of autonomy, competence, and relatedness would be among the most salient needs in positive meal experiences. In line with this, we also hypothesized that psychological needs and values would be more closely correlated with positive emotions than with negative emotions as in some previous studies outside the meal context (e.g. Sheldon et al., 2001; Hassenzahl et al., 2010).

In the current study, the critical incident technique is adopted for studying most positive and negative meal experiences, inspired by a number of previous studies using the technique successfully, often with the mixed methods approach. The critical incident technique has been utilized in studying meal experiences, for example, in the study by Harrington et al. (2012) described above. Methodologically, we drew from positive psychology and user experience research (e.g. Hassenzahl et al., 2010; Partala & Kallinen, 2011; Partala & Kujala, 2016; Partala & Saari, 2015; Sheldon et al., 2001). The methods for studying emotions (Watson et al., 1988), psychological needs (Sheldon et al. 2001), and values (Partala & Kujala, 2016) were selected based on this literature as described above in the previous sections. In addition, contextual statements were developed to study personal and temporal aspects of meal experiences. The methods were structured to a five-part questionnaire consisting of a qualitative description of the meal experience,

followed by quantitative parts studying meal context, emotions, psychological needs, and values, respectively.

Method

Participants

64 participants (15 male and 49 female students) participated in the current study and completed both parts of the study with satisfactory responses. Out of the original 67 responses received, three responses were discarded due to quality of the responses (insufficient qualitative descriptions or monotonic quantitative ratings). An analysis of the reported meal experiences confirmed that the remaining experiences were unique for each participant, as instructed. The age distribution of the participants was as follows: 11 participants were aged 18-20 years, 33 participants fell into the 21–30 years age group, ten participants into the 31–40 years age group, six participants into the 41–50 years age group, and four participants into the 51-60 years age group.

Procedure

The current research was carried out at South-Eastern Finland University of Applied Sciences, Finland before the global coronavirus crisis had emerged. The participants were Bachelor's and Master's degree students of hospitality management at this university. The research was carried out in the context of three different university level courses "Customer-oriented hospitality services", "Basics of research and development work" (both Bachelor's level courses) and "Customer experience: research and development" (Master's level course targeted for persons already in working life). The courses were selected so that the students could be assumed to have the required skills for analyzing meal experiences using introspective methods and capabilities for understanding the

scales used in the current study. The participants received course credit equivalent to one course exercise (compensating two hours of course work).

All the participants signed up for the current study in the Moodle online learning environment, and they were identified using their university network IDs. The instructions for the study were made available for the students about a week before the questionnaire was published and the students were prompted to start reflecting on their most positive and most negative recent meal experiences. The questionnaire was carried out as a web questionnaire using the Webropol survey tool. The participants were provided links to the questionnaire in Moodle, and after the questionnaire was opened, they had about a further week to submit their responses. On the "Customer-oriented hospitality services" course, the students also had a possibility of filling in the questionnaire during a two hour course exercise session. During this session, the lecturer ensured that each of the students carried out the exercise individually. On the other two courses, the questionnaire was realized as a remote assignment. The language of the questionnaire was Finnish, which was the official language on the three courses. The scales probing emotions, needs, and values were translated verbatim from English utilizing existing translations where available. The responses of the questionnaire were analysed anonymously and fully confidentially.

Tasks and materials

The participants were instructed to think about their meal experiences from the past three months and identify the individual experiences that they regarded as the most positive and the most negative overall. They were instructed to focus on their personal experiences of the events and choose the most positive and negative meal experiences in any way that made sense to them (following Sheldon et al., 2001). However, they were instructed to

focus only on their experiences as meal consumers, as food preparation experiences were out of the scope of this study. The participants filled in two different versions of the similar six-page questionnaire, once for the chosen most positive recent meal experience and once for the chosen most negative recent meal experience.

On the first page of the questionnaire, the participants were given detailed instructions for the questionnaire and they were also instructed to choose their sex and age from the alternatives presented. To further promote anonymity, we did not ask the participants' exact ages (because we might have recognized some students based on that information), but they were instructed to choose a correct age range (18-21 years, 21–30 years, 31–40 years, 41–50 years, or more than 50 years).

On the second page, a qualitative description of the most positive (or negative) meal experience was given. The participants were prompted to write the description of their most positive (negative) recent meal experience into a text field. They were specifically prompted to describe the course of events, the nature of the meal experience, and factors contributing towards making this event an especially positive (negative) experience. The descriptions were instructed to be about 5–10 sentences long.

On page three, the participants analyzed the context of the reported most positive (or negative) experience by answering to questions and evaluating statements. First, the participants selected the type of meal or the closest option (breakfast, lunch, dinner, or supper) and the place where the experience took place (restaurant, home, other public place, other private place). They were also prompted to shortly describe qualitatively the place, in which the experience took place. After that, the participants were asked to enter the number of persons in their company during the experience, the number of additional persons present, and their approximation of the length of the meal experience in minutes.

After these six questionnaire items, the participants evaluated their overall experience and selected aspects of the personal, temporal, and social contexts of their experience using 12 statements. The contextual statements and the related 1-9 scales are presented in Appendix A. Page three also included 10 other (e.g. food-related) statements not reported in this article due to not contributing to the selected focus of the article.

On page four of the questionnaire, the participant was instructed to evaluate the extent (s)he experienced 20 different emotions (10 positive and 10 negative emotions) using 1–9 scales (1 = not at all, 9 = very much). The emotions were taken from the PANAS system (Watson et al., 1988) and presented in the original mixed order. The positive emotions were: determined, alert, inspired, attentive, active, interested, excited, enthusiastic, proud, and strong. The negative emotions were: upset, hostile, ashamed, nervous, afraid, distressed, irritable, scared, guilty, and jittery. Nine point scales were used as opposed to the five point scales used in the original method in order to get a more fine grained conception of the respondents' emotions and psychological needs related to their meal experiences and to avoid problems related to response interpolation (e.g. Finstad, 2010). Nine point (1–9) scales were also systematically used in the other evaluations involving quantitative scales.

On page five, the participants evaluated the salience of different psychological needs in their reported most positive (or negative) meal experiences. The model of 10 candidate psychological needs by Sheldon et al. (2001) was used for that purpose and their questionnaire method consisting of 30 statements (three statements for each psychological need) was used in the current questionnaire with very minor adjustments to fit the current study (Appendix A). The 10 psychological needs were: autonomy, competence, relatedness, self-actualization-meaning, physical thriving, pleasure-

stimulation, money-luxury, security, self-esteem, and popularity-influence. The respondents gave their ratings using 1–9 scales and the original scale anchors: 1 = not at all, 9 = very much. All the statements probing psychological needs started with "During this meal experience I felt" instead of "During this event I felt" used in the original questionnaire by Sheldon et al. (2001). For example, the first evaluation was: "During this meal experience I felt that my choices were based on my true interests and values." (autonomy).

Finally, on page six, the participants evaluated the extent that their reported most positive and negative meal experiences were in line with the most important personal values. Schwartz's theory of ten universal values (Schwartz, 2006) was used as the underlying theory and the statements by Partala and Kujala (2016) – developed based on Schwartz's theory – were used as the research method, again with very minor adjustments to fit the current study. The related 30 statements are presented in Appendix A. As for psychological needs, a 1–9 scale (1 = not at all, 9 = very much) was used and the statements started with "During this meal experience I felt" instead of "This product/service supports feeling…" of the original method (which focused on evaluating products and services instead of experiences). An example of an evaluation: "During this meal experience I felt that I had a high social status in my community" (power). On pages 4 to 6 of the questionnaire, there was also an optional possibility at the bottom of the page for the participants to give any qualitative comments on how emotions, psychological needs and values, respectively, manifested in their experiences.

Data analysis

Quantitative results were analyzed so that the data of selected single variables were averaged to form new variables as follows: positive emotions (average rating of the ten

positive PANAS emotions), negative emotions (average rating of the ten negative PANAS emotions), need fulfillment (average rating of the ten psychological needs), and value concordance (average rating of the ten personal values). Affect balance scores were calculated by subtracting the personal averages for the negative emotions from the personal averages for the positive emotions before averaging over participants.

Friedman's rank tests were used to compare the participants' ratings across multiple categories (e.g. the ten psychological needs) for significant differences and Wilcoxon's matched pairs signed ranks tests were used in pairwise comparisons. These tests were selected because the data on most of the scales were not normally distributed (confirmed using Shapiro-Wilk and Lilliefors tests). Spearman correlations were used in correlational analyses. Cronbach's α scores were calculated to estimate the reliability of the scales consisting of multiple items.

The qualitative analysis was carried out using thematic analysis. The three authors of this paper independently analyzed the qualitative descriptions of most positive and most negative meal experiences and identified themes (text fragments) based on a framework, which consisted of six categories. The categories included the five FAMM categories (room, meeting, product, atmosphere, and management control system) and the personal context, which was included as a sixth category for the purposes of this study. The FAMM categories were defined according to Gustafsson et al. (2006), the definitions were printed on the analysis sheet and all the researchers familiarized themselves with the definitions before carrying out the analysis. The definition of the personal context is presented earlier in this paper in section "Current aims and hypotheses". The three authors of this paper coded, whether each of the six categories is included in a description as an aspect affecting the experience positively, negatively, or not at all. If at least two out of the three authors

agreed that an aspect affected the reported meal experience positively or negatively based on the description, the finding was maintained in the results. Finally, the results were analyzed so that percentages of incidence in participants' most positive and most negative descriptions were calculated for the six categories. Fleiss' kappa scores were calculated in order to estimate the inter-rater reliability of the qualitative analysis.

Results

Overview

Out of the reported 64 most positive meal experiences, the participants reported that 27 experiences were suppers, 24 were dinners, 11 were lunches, and 2 were breakfasts. In contrast, of the reported 64 most negative meal experiences 31 were lunches, 18 were dinners, and 13 were suppers. Most of the reported meal experiences, 47 of the most positive and 55 of the most negative meal experiences, took place in a restaurant. In addition, ten of the most positive experiences took place at home, three in other public places (e.g. in a café), and four in other private places (e.g. a private club and a hut in the nature). Of the most negative meal experiences, five experiences took place at home and four in other public places (e.g. at a fair stand).

An overview of the quantitative results for emotions, psychological needs, values, expectations, and recommendations is presented in Table 1 below. Z values from pairwise comparisons between the most positive and most negative experiences are also presented in a separate column (asterisks denote significance levels).

Table 1. Overview of the descriptive results. Mean ratings and standard errors for both most positive and most negative meal experiences and Z values for differences between them. Scale 1-9 in all ratings.

Concept	Variable	Most positive experience		Most negative experience		Z
		Mean	Std. Error	Mean	Std. Error	
Emotions	Positive emotions	5.6	.2	4.3	.2	4.2***
	Negative emotions	1.5	.1	3.6	.2	6.5***
	Affect balance	4.1	.2	.7	.2	6.7***
Needs	Need fulfillment	5.5	.2	3.9	.2	6.5***
Values	Value concordance	6.0	.2	4.6	.2	6.2***
Overall experience	Exceeding expectations	7.6	.2	2.4	.2	6.9***
	Recommendation	8.4	.3	3.0	.3	6.8***

Note. *** Difference significant at p < .001.

Meal context

Mean ratings and standard errors of the means for the 10 statements probing the social, temporal, and person context are presented in Table 2 below for both most positive and most negative experiences. In addition, the same information is presented for the following estimates: the number of accompanying persons (in respondent's own company) during the meal, the number of other persons present (e.g. in the same restaurant), and estimated length of the meal in minutes.

Table 2. Mean contextual ratings and standard errors for both most positive and most negative meal experiences and Z values for differences between them. Scale 1-9 in all ratings except for the following variables: accompanying persons, others present, and length of meal. See Appendix A for statements and scales used

Context	Variable	Most positive experience		Most negative experience		Z
		Mean	Std. Error	Mean	Std. Error	
Social	Accompanying persons	4.6	.6	4.0	.8	1.9
	Others present (no of persons)	16.4	2.4	26.1	4.1	1.8
	Effect of company	8.5	.1	7.2	.3	4.5***
	Effect of others present	6.6	.2	4.3	.3	5.4***
	Effect of service personnel	7.6	.2	3.7	.3	6.3***
Time	Length of meal (minutes)	83.7	5.7	47.3	3.5	4.8***
	Meal too short - too long	5.3	.2	5.8	.2	1.7
	Lots of waiting	2.2	.2	5.9	.4	6.1***
	Plenty of time (vs. hurry)	8.2	.2	5.9	.3	5.2***
Person	Mood	7.0	.2	6.1	.3	2.4*
	Personal meaning	7.1	.3	4.6	.3	5.1***
	Wish to dine differently	1.9	.2	6.7	.3	6.6***
	Trouble in arrangements	2.0	.2	5.0	.3	5.9***

Note. * Difference significant at p < .05, ** p < .01, *** p < .001.

Experienced emotions

Average ratings for the ten positive and ten negative PANAS emotions are presented in Figures 1 and 2 below for most influential experiences related to both positive and negative meal experiences. The statistical tests performed confirmed that there were significant differences between ratings of the ten positive emotions for both positive meal experiences $\chi_F^2 = 243.7$, $p < .001$ and negative meal experiences $\chi_F^2 = 113.6$, $p < .001$. Similarly, variations in the ratings of negative emotions differed significantly for both positive meal experiences $\chi_F^2 = 109.6$, $p < .001$ and negative meal experiences $\chi_F^2 = 176.9$, $p < .001$.
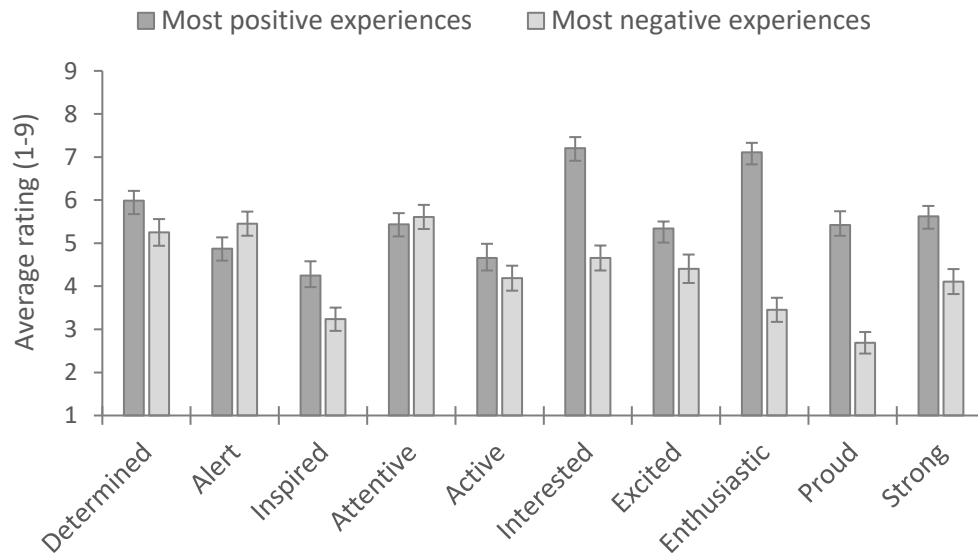
Figure 1. Average ratings of positive emotions during the evaluated meal experiences (1 = not at all – 9 = very much; error bars denote standard errors of the means).
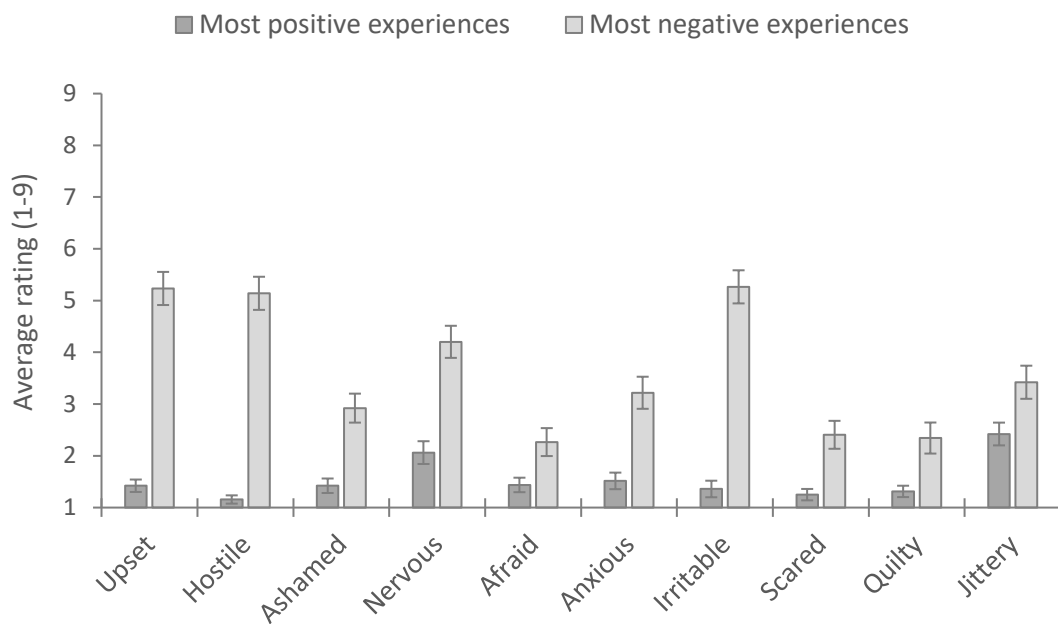

Figure 2. Average ratings of negative emotions during the evaluated meal experiences (1 = not at all – 9 = very much; error bars denote standard errors of the means).

When the participants' ratings for the positive emotions (Figure 1) were compared pairwise between most positive and most negative meal experiences, it was found that for

six out of ten emotions, the participants gave higher ratings in the context of most positive meal experiences (Inspired $Z = 2.3$, $p < .05$; Interested, $Z = 5.5$, $p < .001$; Excited $Z = 2.4$, $p < .05$; Enthusiastic $Z = 6.5$, $p < .001$; Proud $Z = 5.4$, $p < .001$; Strong $Z = 4.2$, $p < .001$). For determined, alert, attentive, and active there were no statistically significant differences, however, the difference for determined approached statistical significance ($Z = 1.9$, $p = .053$).

The ratings of negative emotions (Figure 2) were significantly higher in the reported most negative meal experiences, when compared to corresponding ratings for most positive meal experiences, in the case of all ten emotions (Upset $Z = 6.3$, $p < .001$; Hostile $Z = 6.3$, $p < .001$; Ashamed $Z = 4.3$, $p < .001$; Nervous $Z = 4.8$, $p < .001$; Afraid $Z = 2.9$, $p < .01$; Anxious $Z = 4.7$, $p < .001$; Irritable $Z = 6.4$, $p < .001$; Scared $Z = 3.8$, $p < .001$; Quilty $Z = 3.2$, $p < .01$; Jittery $Z = 2.7$, $p < .01$).

Psychological needs

Figure 3 illustrates the average ratings for the fulfillment of the ten psychological needs for both most positive and most negative meal experiences. The statistical analyses showed significant differences among the ratings for the ten psychological needs both in the context of most positive $\chi_F^2 = 255.7$, $p < .001$ and most negative $\chi_F^2 = 129.2$, $p < .001$ meal experiences.
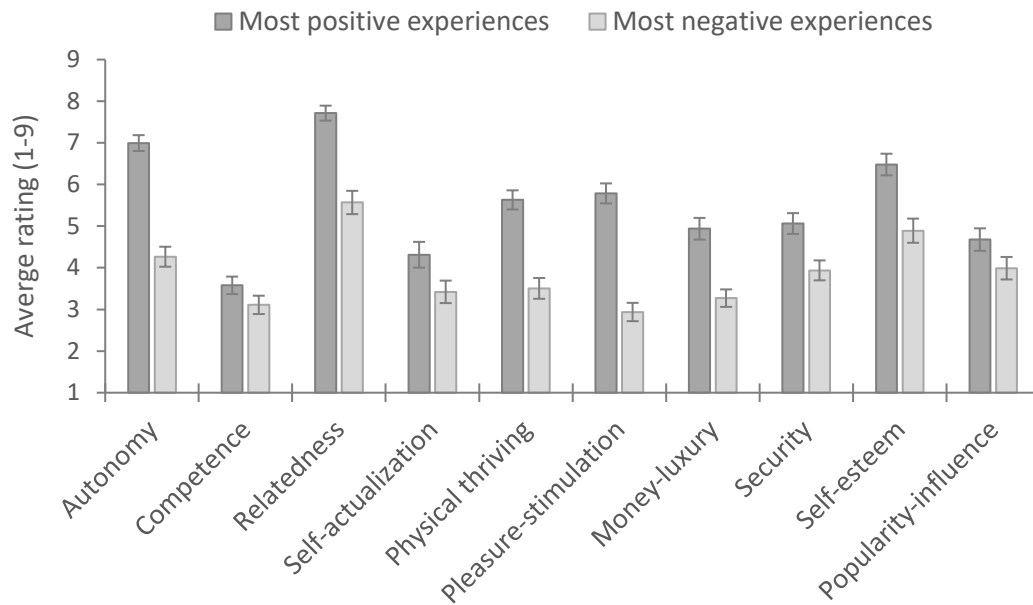
Figure 3. Average ratings for the statements probing the fulfillment of psychological needs (1 = not at all – 9 = very much; error bars denote standard errors of the means).

Pairwise comparisons between most positive and most negative meal experiences showed that need fulfillment ratings for nine of the ten needs were higher in the context of most positive meal experiences (Autonomy $Z = 6.2$, $p < .001$; Relatedness $Z = 5.7$, $p < .001$; Self-actualization $Z = 2.6$, $p < .05$; Physical thriving $Z = 5.7$, $p < .001$; Pleasure-stimulation $Z = 6.5$, $p < .001$; Money-luxury $Z = 5.1$, $p < .001$; Security $Z = 4.0$, $p < .001$; Self-esteem $Z = 5.1$, $p < .001$; Popularity-influence $Z = 2.1$, $p < .05$). For competence, no statistically significant difference were found.

Value concordance

Figure 4 illustrates the average ratings for the concordance of the experience with the ten universal values for both most positive and most negative meal experiences. The statistical analyses showed significant differences among the ratings for the ten universal values both in the context of most positive $\chi_F^2 = 191.5$, $p < .001$ and most negative $\chi_F^2 = 59.8$, $p < .001$ meal experiences.
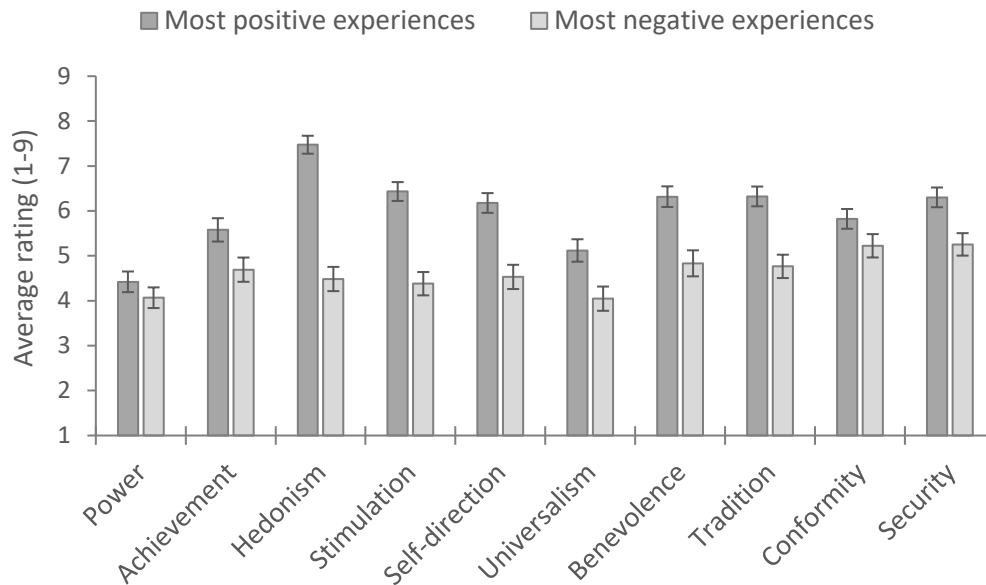
Figure 4. Average ratings for the statements probing concordance with personal values

(1 = not at all – 9 = very much; error bars denote standard errors of the means).

Pairwise comparisons showed that the participants reported higher concordance with nine of the ten values in the context of most positive meal experiences, when compared to most negative meal experiences (Achievement $Z = 3.6$, $p < .001$; Hedonism $Z = 6.4$, $p < .001$; Stimulation $Z = 6.0$, $p < .001$; Self-direction $Z = 5.4$, $p < .001$; Universalism $Z = 4.4$, $p < .001$; Benevolence $Z = 5.4$, $p < .001$; Tradition $Z = 4.8$, $p < .001$; Conformity $Z = 2.1$, $p < .05$; Security $Z = 4.9$, $p < .001$). For the power value, no statistically significant difference was found.

Correlation analysis

The results from correlation analyses between psychological needs, values, positive emotions, negative emotions, and affect balance are presented in Table 3 below for both most positive and most negative meal experiences.

Table 3. Spearman correlations between psychological needs and values correlated with positive emotions. negative emotions. and affect balance.

	Most positive experience			Most negative experience		
	Positive emotions	Negative emotions	Affect balance	Positive emotions	Negative emotions	Affect balance
Needs						
Autonomy	.39**	-.23	.46**	.35**	-.01	.37**
Competence	.56**	.29*	.44**	.50**	.26*	.15
Relatedness	.36**	-.04	.36**	.32**	-.13	.42**
Self-actualization	.29*	.07	.24	.58**	.06	.38**
Physical thriving	.30*	-.09	.33**	.48**	-.11	.53**
Pleasure-stimulation	.47**	-.09	.43**	.47**	.07	.31*
Money-luxury	.28*	.16	.28*	.51**	.17	.22
Security	.35**	.20	.30*	.40**	-.17	.47**
Self-esteem	.39**	-.03	.38**	.47**	-.26*	.66**
Popularity-influence	.42**	.27*	.31*	.51**	.08	.31*
Values						
Power	.27*	.12	.24	.43**	.10	.22
Achievement	.56**	.13	.53**	.37**	-.05	.40**
Hedonism	.36**	-.17	.39**	.32*	-.19	.50**
Stimulation	.34**	.02	.34**	.47**	.05	.34**
Self-direction	.44**	.09	.40**	.48**	-.09	.48**
Universalism	.39**	.01	.33**	.39**	-.12	.39**
Benevolence	.42**	-.04	.40**	.30*	-.18	.39**
Tradition	.40**	.03	.38**	.35**	-.14	.39**
Conformity	.37**	.17	.36**	.37**	-.05	.25*
Security	.34**	-.11	.41**	.40**	-.09	.40**

Note. * Correlation significant at $p < .05$, ** $p < .01$, *** $p < .001$.

Reliability analysis

Cronbach's α scores were calculated for the all the constructs, which were measured using multiple scales, i.e. the ten psychological needs and universal values. For the psychological needs, Cronbach's α scores were as follows in the context of most positive meal experiences: Autonomy $\alpha = .88$, Competence $\alpha = .69$, Relatedness $\alpha = .91$, Self-actualization $\alpha = .93$, Physical thriving $\alpha = .70$, Pleasure-stimulation $\alpha = .78$, Money-luxury $\alpha = .77$, Security $\alpha = .75$, Self-esteem, $\alpha = .95$, and Popularity-influence $\alpha = .90$.

The corresponding scores in the context of most negative meal experiences were: Autonomy $\alpha = .79$, Competence $\alpha = .80$, and Relatedness $\alpha = .94$, Self-actualization $\alpha = .92$, Physical thriving $\alpha = .82$, Pleasure-stimulation $\alpha = .76$, Money-luxury $\alpha = .69$, Security $\alpha = .80$, Self-esteem, $\alpha = .96$, and Popularity-influence $\alpha = .91$.

For the ten universal values, Cronbach's α scores were as follows in the context of most positive meal experiences: Power $\alpha = .82$, Achievement $\alpha = .88$, Hedonism $\alpha = .90$, Stimulation $\alpha = .86$, Self-direction $\alpha = .85$, Universalism $\alpha = .86$, Benevolence $\alpha = .85$, Tradition $\alpha = .77$, Conformity $\alpha = .71$, and Security $\alpha = .78$. The corresponding scores in the context of most negative meal experience were: Power $\alpha = .82$, Achievement $\alpha = .94$, Hedonism $\alpha = .88$, Stimulation $\alpha = .86$, Self-direction $\alpha = .86$, Universalism $\alpha = .86$, Benevolence $\alpha = .89$, Tradition $\alpha = .77$, Conformity $\alpha = .79$, and Security $\alpha = .87$.

Thus, all but two of the reliability scores calculated were above or equal to .70, indicating internal reliability ranging from satisfactory to excellent. Both of the remaining scores (at .69) were also very close to satisfactory reliability (at .70 or more according to a commonly used definition). All the Cronbach's α scores were also higher than any of the average interscale correlations between concepts, suggesting adequate divergent validity for both most positive and negative meal experiences.

Qualitative results

The results of the qualitative analysis for most positive meal experiences are presented in Figure 5 below. Social meetings were mentioned in 89% of the reported most positive experiences as a factor with positive effects on the meal experience. The described social meetings were most often positive interactions with one's own company during the meal (e.g. friends, family, or colleagues) and the service personnel. The product consisting of food, drinks, and their combinations was mentioned as a positive factor in 78% of

descriptions of the most positive experiences. The rest of the categories, including the personal context category added for this study, were visible as positive factors in more than 30% of the responses. In the descriptions of most positive experiences, the meeting and room categories were mentioned a few individual times as negative factors. Examples of qualitative responses are presented in Appendix B.
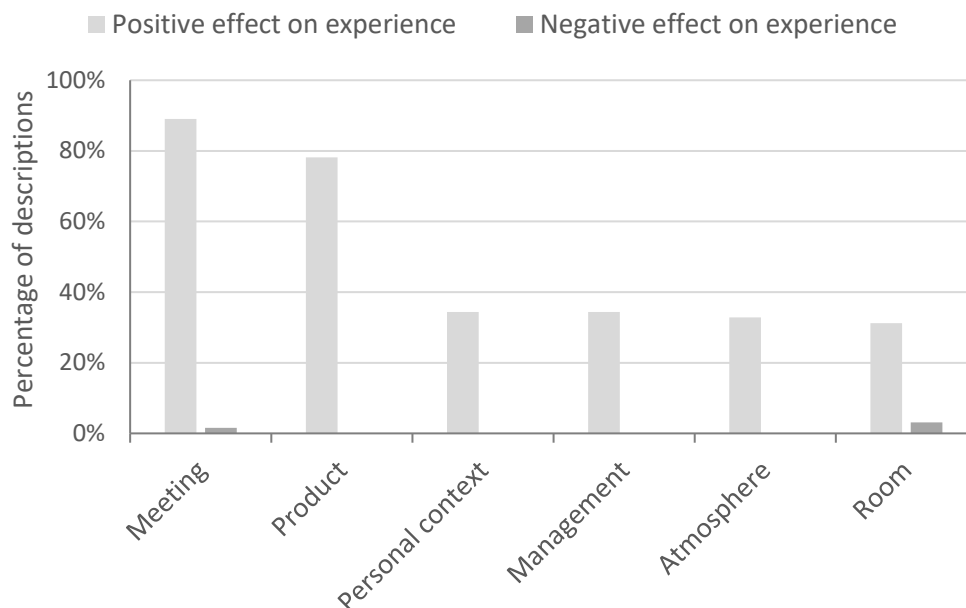

Figure 5. The most prominent aspects in the descriptions of most positive meal experiences.

The results of the qualitative analysis for most negative meal experiences are presented in Figure 6 below. In the descriptions of the most negative meal experiences, the social meeting and the product were again the two most prominent categories. They were mentioned as negative factors in 66% and 61% or the experiences, respectively. The social meetings mentioned were mainly unsatisfactory interactions with the service personnel. In approximately 40% of the descriptions, the management control system and personal context were prominent negative factors, while room and atmosphere were less frequently mentioned with 14% and 5%. While being an important negative factor in many responses, the food product was also mentioned five times (8%) as a positive factor

in most negative meal experiences. In all of these descriptions, negative service experiences outweighed the positive effects related to the food products.
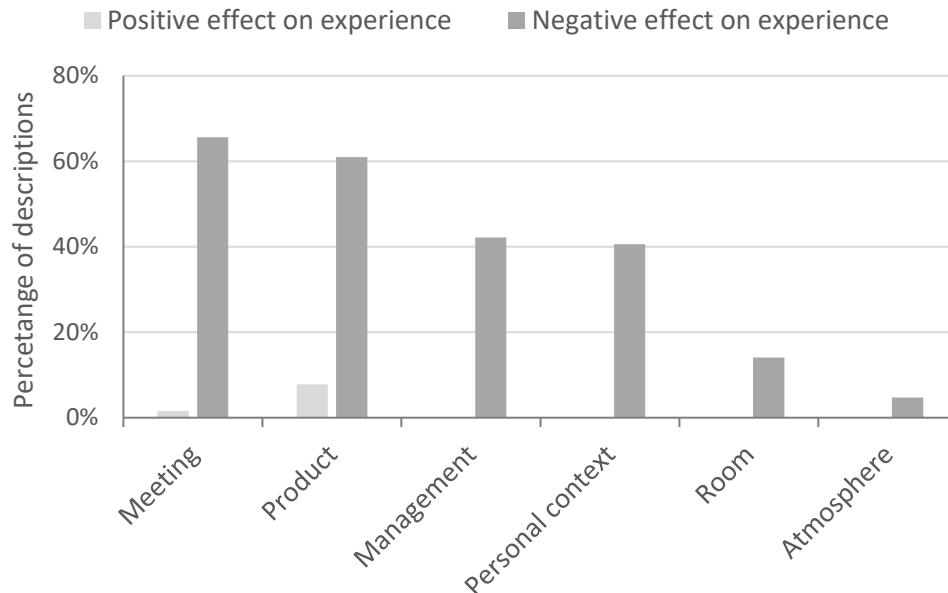

Figure 6. The most prominent aspects in the descriptions of most negative meal experiences.

Reliability analysis of the qualitative analysis suggested acceptable inter-rater reliability (Fleiss' kappa = .67, p < .001, n = 384 for the descriptions of most positive meal experiences; Fleiss' kappa = .71, p < .001, n = 384 for the descriptions of most negative meal experiences).

Discussion

As expected, the quantitative results of this study showed significant differences in fulfilment of psychological needs, concordance with values, experienced emotions, and contextual aspects between the positive and negative meal experiences. The most prevalent psychological needs in positive meal experiences were relatedness, autonomy, and self-esteem. These results are in line with the self-determination theory (Deci & Ryan, 2000) with the exception that competence, a central need in the self-determination

theory, was rated to have relatively low fulfilment in both positive and negative meal experiences. This may be at least partly explained by the fact that almost all of the reported experiences were service experiences, in which competence needs typically do not become very important. If preparation of food was part of the meal experience, the role of competence needs would be likely to be more pronounced. The analysis of values highlighted the role of openness to change values (hedonism, stimulation, and self-determination), but also conservation values such as tradition and security, as well as benevolence as drivers of positive experiences.

The fulfilment of psychological needs and values had significant correlations with positive emotions and the overall affect balance, but fulfilment of needs and concordance with most of the values did not significantly correlate with negative emotions. Broadly taken, these findings are in line with the results of more general experience studies on needs and emotions by Sheldon et al. (2001) and values and emotions by Laverie et al. (1993). In the current study on meal experiences all the needs and values had significant correlations with positive emotions and only competence and self-esteem had significant correlations with negative emotions. Thus, the current results suggest the link between needs and values and positive emotions even more broadly than in most previous studies in different contexts. The current results suggest that understanding psychological needs and values is highly relevant when designing for positive meal experiences, while negative experiences are more direct consequences of or reactions to events perceived as negative (e.g. poor service, distractions, and waiting). In the current study, the most salient positive emotions were "interested" and "enthusiastic", of which interest can be seen as a reference to the notions of intellectual needs and intellectual pleasure, which have been discussed earlier, for example, by Andersson and Mossberg (2004) in the

context of meal experiences and Dube and LeBel (2003) more generally. However, their role in the context of meal experiences is largely unexplored and provides an opportunity for further research.

In the qualitative analysis, the social meeting and the food/drink product emerged clearly as the most important factors in both positive and negative meal experiences. These results are very well in line with the results by Harrington et al. (2011), who also found the quality of food/drink and social aspects (quality of service, friendliness of staff) as the two main drivers of positive meal experiences, and these aspects were also among the four most important drivers of negative meal experiences in their study. The importance of social aspects was especially emphasized in the current results. We noted that social meetings with the staff were more commonly reported in the descriptions of negative meal experiences (e.g. ignorant or neglecting staff behavior), while in positive experiences the positive effects of one's own company during the meal was emphasized. In the quantitative ratings, one's own company (accompanying persons) was rated as a positive aspect in both positive and negative experiences, while meetings with service personnel were on average rated as positive in positive experiences, and negative in negative experiences. The role of service personnel and accompanying persons has been discussed in length in the existing literature (e.g. Spence & Piqueras-Fiszman, 2014), but the current findings seem to offer new insight on how these aspects are typically experienced.

The qualitative results support the validity of the FAMM meal model (Gustafsson et al., 2006) in highly positive and negative meal experiences, as all the aspects of the model were clearly visible in the qualitative descriptions of this study. The prevalence of the

specific focus of this article, the personal aspects of the meal experience, was also supported by the qualitative analysis, as those aspects could be found in 30-40% of the descriptions. Finally, the temporal aspects of meal experiences also gained some importance in both quantitative and qualitative analyses. Thus, the current results are also in line with the model of remembered eating experiences by Kauppinen-Räisänen et al. (2013), who included "the self" and time as major components in the model based on their study. However, in contrast to their model, the temporal context emerged in the current study mostly as a momentary factor (e.g. plenty of time vs. hurry at the time of the experience).

The current results provide some methodological insights into studying meal experiences. Most of the quantitative methods were used in the current study outside their original development contexts (e.g. psychological research). Psychological needs, values, and to some extent emotional experiences are difficult to reflect on spontaneously (cf. Wilson & Dunn, 2004), which was visible in the qualitative data of the current study. However, the significant variations in most of the related ratings given using the quantitative methods suggested that the participants could use these methods in detailed evaluation of their meal experiences, and the selected methods seemed to work well in this context. Besides these general questionnaires with strong theoretical background, tailored theory-based quantitative methods designed specifically for understanding meal experiences might provoke even more accurate results in the future.

In all, the quantitative results suggest that the personal context in meal experiences can be effectively measured from many different viewpoints such as psychological needs, values, and experienced emotions. Applying existing quantitative methods to study those

aspects of personal meal experiences gave important insight into the participants' meal experiences in the current study in addition to the qualitative descriptions gathered. Thus, the results also encourage the use of mixed methods in studies of meal experiences. By using both qualitative and quantitative methods, it is possible to both gain an overall understanding of factors affecting meal experiences and practical examples of meal experiences in particular contexts.

Limitations

When making inferences based on the current study, its limitations should be acknowledged. The current sample consisted of Bachelor's and Master's students in hospitality, who were young adults on average, however, an adult student group also participated in the study. All the participants were also from Finland and the number of participants was not especially large in this first study on meal experiences using the current detailed methods. Thus, the current results have limitations in their generalizability across age groups and cultures and they should be validated in subsequent research involving diverse participant groups. More research is needed to study, whether the current results can be generalized to entire population. On the positive side, the participants seemed to be capable of understanding the current assignment and scales very well. Another possible limitation is related to the accuracy of the recalled meal experiences. Recalling and rating experiences is also a highly cognitive task and using these methods for rating emotional experiences might be difficult for some subjects. To address these potential limitations, a time window of past three months was chosen for the experiences instead of longer periods used in many other studies. A large part of the qualitative descriptions given were also quite detailed also regarding the meal context, which suggests that the participants were able to recall their experiences relatively accurately.

Conclusion

Numerous restaurants and other providers of food services around the world aim for offering the best possible meal experiences for their customers. In summary, this paper suggested that subjective meal experiences could be understood more closely by including personal aspects into meal experience studies in addition to aspects prevalent in existing meal models (e.g. FAMM and CMEM). The personal aspects studied in the current study included emotional experiences, psychological needs, values, and different contextual aspects such as the temporal context. All these aspects gained some importance, and especially psychological needs and values were found to be important building blocks of positive meal experiences.

In future studies it would be worth investigating to what extent the current findings are similar or different in different cultures, contexts, and samples of participants. The focus could also be extended to experiences including meal preparation or experience co-creation with service personnel. In these experiences, competence needs are likely to be in a more important role than in the current study. Based on the results, there was room for improvement in the behaviour of the service personnel in the negative experiences. Observational methods could be used in conjunction with the current questionnaire methods to more closely understand the dynamics of behaviors that result in positive and negative experiences. Furthermore, an important part of future work is to study, how the research results on meal experiences can be translated into design solutions for future food services. Approaches such as experience-driven design (Desmet & Schifferstein, 2011) and value-sensitive design (Friedman et al., 2007) can be used for designing food services targeted for evoking different kinds of positive experiences such as those identified in the current study.

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Appendix A. The statements used in studying the context, fulfilment of psychological needs, and the concordance of the meal experience with the participant's values.

A.1 Overall experience and the social, temporal, and personal context.

Context	Statement (scale)
Overall experience	In relation to my expectations, the meal experience (1 = fell below my expectations – 9 = exceeded my expectations) I would recommend this way of having a meal to a friend (1 = fully disagree – 9 = fully agree)
Social	The people in my own company affected my meal experience (1 = negatively – 9 = positively) Other people present (in addition to people in my own company) affected my meal experience (1 = negatively – 9 = positively) Meeting with service personnel affected my meal experience (1 = negatively – 9 = positively)
Time	The duration of the meal was, considering my needs… (1 = far too short – 9 = far too long) I had to wait a lot (1 = fully disagree – 9 = fully agree) During the meal, I had… (1 = a big hurry – 9 = plenty of time)
Person	My mood before dining was (1 = very negative – 9 = very positive) The meal occasion had a personal meaning for me (1 = very little – 9 = very much) I wished to have a meal differently than how this meal occurred. (1 = fully disagree – 9 = fully agree) There was a lot of trouble in the arrangements of the meal (1 = fully disagree – 9 = fully agree)

A.2 Psychological needs (Sheldon et al., 2001)

Need	Statement endings to "During this meal experience I felt…"
Autonomy	…that my choices were based on my true interests and values. …free to do things my own way …that my choices expressed my "true self".
Competence	…that I was successfully completing difficult tasks and projects. …that I was taking on and mastering hard challenges. …very capable in what I did.
Relatedness	…a sense of contact with people who care for me, and whom I care for.

	…close and connected with other people who are important to me.
	…a strong sense of intimacy with the people I spent time with.
Self-actualization-meaning	…that I was "becoming who I really am.
	…a sense of deeper purpose in life.
	… a deeper understanding of myself and my place in the universe.
Physical thriving	…that I got enough exercise and was in excellent physical condition.
	…that my body was getting just what it needed.
	…a strong sense of physical well-being.
Pleasure-stimulation	…that I was experiencing new sensations and activities.
	…intense physical pleasure and enjoyment.
	…that I had found new sources and types of stimulation for myself.
Money-luxury	…able to buy most of the things I want.
	…that I had nice things and possessions.
	…that I got plenty of money.
Security	…that my life was structured and predictable.
	…glad that I have a comfortable set of routines and habits.
	…safe from threats and uncertainties.
Self-esteem	…that I had many positive qualities.
	…quite satisfied with who I am.
	…a strong sense of self-respect.
Popularity-influence	…that I was a person whose advice others seek out and follow.
	…that I strongly influenced others' beliefs and behavior.
	…that I had strong impact on what other people did

(Scale: 1 = not at all – 9 = very much)

A.3 Values (Partala & Kujala, 2016)

Value	Statement endings to "During this meal experience I felt…"
Power	… that I had a sense of authority in my community.
	… that I had a high social status in my community
	… that I had a lot of money or other possessions
Achievement	… myself as a successful person in some field of life.
	… myself as a capable person.
	… myself as an ambitious person.
Hedonism	… sensory pleasure.
	… personal happiness.
	… that I was 'enjoying life'
Stimulation	… involved in daring activities.
	… that my life was varied.
	… that my life was exciting.
Self-direction	… myself as a creative individual

	… myself free and independent
	… myself as a curious person interested in finding novel experiences
Universalism	… advancing social justice or equality between individuals
	… myself as a broad-minded and wise person
	… living in unity with the environment nature or protecting the Environment
Benevolence	… myself as a person who wants to help others in my community.
	… that I was advancing the welfare of people near me.
	… that I was advancing friendship between myself and people near me.
Tradition	… that the experience was in line with my cultural and ethnic background.
	… supporting traditions I feel personally important.
	… myself as a moderate and humble person.
Conformity	… myself as a self-disciplined individual.
	… that I was obeying the rules and social norms of my community.
	… myself as a person, who does not cause any disorder in her/his Community
Security	… living a safe life.
	… that I could advance stability in my community.
	… living a healthy life.

(Scale: 1 = not at all – 9 = very much)

Appendix B. Excerpts from the descriptions of the most positive and most negative dining experiences (excerpts translated from Finnish).

Aspect	Most positive experience	Most negative experience
Room	(…) The dining environment was/is new, tidy, and original. There was ample light, which also contributed to comfortability: glass walls and green furniture, which creates a relaxing atmosphere. (…)	Fully packed traffic station during rush hour. Lots of noise and people. (…)
Meeting	Customer service was brilliant. The waiter was a professional and gave an impression of being genuinely interested in his customers, also the smallest members of the family were paid attention to in an appropriate way. (…) The waiter took care of his customers throughout the customer service occasion.	When we entered the restaurant, we were not greeted or paid attention to. The employees were just chatting with each other. When we asked for the menu, we were left with the impression that we were disturbing their chat moment.
Product (food/drink)	My most positive meal experience from the last three months or so is when I went to dine in a restaurant with my boyfriend. Especially positive was the food portion I ordered, it was really beautiful and tasty. (…)	(…) The vegetables were viscous and watery (probably defrosted and heated in a microwave), and the meat was dryish. In addition, the sauce was tasting so tangy and essenceful that I left it uneaten, which is a rare incident for me.
Atmosphere	At a hut, the meal conjured up by a wilderness chef was really etched on my mind. A peaceful atmosphere, no extra noise, nobody in a hurry. Fire itself is a relaxing element. (…)	Dining at home the other Sunday. Stress and the general atmosphere made the environment difficult. (…)
Management control system	(…) The waiter could introduce different dishes and drinks from list to us and knew what the different dishes contain and which wine would go with the food. The meals arrived on time. (…)	The meal was in a fast food restaurant, late at night. I had to wait for my food really long, about 60 min., and I went twice to ask, whether they had forgotten my food. When the portion was finally delivered, it was missing the mayo. The customer servant did not even offer any compensation or apologize the occurred delay and their forgetfulness.
Personal context	(…) On the dining day my emotional state was understandably positive. It should be easy for the restaurant to maintain this feeling and deliver a positive experience. (…) On exit, my emotional state was still positive, even more positive than when we arrived.	(…) I did not expect much, but I was still was irritated by fact that the food was pretty bad. I think I was already tired and hungry so it was not the best possible starting point for a positive meal experience.