

Bug Appétit: Manipulating the emotional response to entomophagy

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Bug Appétit: Manipulating the emotional response to entomophagy

In order to reduce our CO2 footprint on Earth we will need to reduce our meat consumption, especially in the Western world. Insects are promising as an alternative protein. However, consumer reactions to edible insects have mainly been one of disgust. The main objective of this research is to understand the emotional response to entomophagy and to what extent this emotional response can be manipulated based on different cognitive appraisals. A small experimental survey using vignettes showed, that when eating insects are congruent with ones goals or motives, compared to incongruent, significantly less disgust and significantly higher levels of positive emotions, such as excitement, joy, interest, and liking are felt. The results emphasise that the emotional response to insects does not have to be disgust, and marketers should align consumer goals and motives with the benefits of edible insects in order to elicit positive emotions and convince consumers to put insects on their plates.

Keywords: Entomophagy; marketing communications; cognitive appraisal.

Track: Advertising & Marketing Communications

1 Introduction

The vast majority of scientists would agree that in order to reduce CO₂ emissions and our carbon footprint on Earth, we, especially in the Western world, will have to change our consumption habits and our eating patterns (Buckwell & Nadeu, 2018). Especially our current meat consumption is unsustainable (Buckwell & Nadeu, 2018). Insects are a sustainable alternative protein source, but Western consumers are often very negative towards them, and display a high degree of disgust (Hamerman, 2016; Looy & Wood, 2006). It is necessary to understand this emotional response better, in order to be able to market edible insect products in a more persuasive manner to consumers. The main objective of this research is to understand the emotional response to entomophagy and to what extent this emotional response can be manipulated based on different cognitive appraisals.

2 Theoretical framework

The entomophagy literature so far has mostly been concerned with the attitude towards edible insects as predictor of intention and behaviour (e.g. Hartmann, Shi, Giusto, & Siegrist, 2015; Lensvelt & Steenbekkers, 2014; Menozzi, Sogari, Veneziani, Simoni, & Mora, 2017). When the emotional response has been examined, it has been with disgust as the central emotion (e.g. Hamerman, 2016; Looy & Wood, 2006). Recent research has shown that the attitude towards edible insects contains both a positive and a negative component (La Barbera et al., 2020), and that even the consumers that are most likely to adopt edible insects display a highly ambivalent attitude. It is therefore problematic to infer behaviour from attitude, when the attitude is multidimensional, and sometimes consisting of components with both positive and negative valence.

Research on ambivalent emotions and their influence on behaviour has been an under-researched area in the marketing literature, and “how consumers act on mixed emotions, and mixed positive and negative emotions specifically, remains an important topic for consumer research and marketing” (Ruth et al., 2002: 54). The context of novel foods and edible insects in particular create an ideal setting to study this topic.

One of the major theories on how emotions are elicited is cognitive appraisal theory. According to cognitive appraisal theory, emotions are elicited from an individual’s evaluation or appraisal of a certain situation or object. An emotion is a response to a stimuli that the individual

has a certain interpretation about (Scherer, 1999). The term cognitive has been widely debated, as many researchers question whether a consumer is actually cognitively aware of their evaluation of a certain stimuli on which they base their emotion (Nyer, 1997). Other researchers argue that a consumer do not have to be consciously aware of the appraisal for it to happen, this process can happen subconsciously (Nyer, 1997). Today the general consensus among researchers is that you do not have to be consciously aware of an appraisal for it to have an effect on your emotions.

Outcome desirability and agency are the most important antecedents of emotions (Watson & Spence, 2007). Outcome desirability is defined as “the initial cognitive appraisal of whether the outcome of a situation is good or bad (positive or negative) with respect to personal well-being” (Watson & Spence, 2007: 491). This is often tied to goal attainment or goal relevance, since what is good in a given situation will depend on the goals the individual is trying to achieve. A goal is a driver of motivation and Watson and Spence (2007: 496) emphasise that “evaluations and motivational responses combine to create the concept of outcome desirability”.

Agency is a concept determining how much control one has over a situation: “The causal agent is who or what had control over the stimulus event. The agent may be perceived by the appraiser to be oneself, someone else or circumstances” (Watson & Spence, 2007: 496).

Together outcome desirability and agency are the key appraisals that determine the emotion and appear capable of predicting a wide range of consumption emotions (Watson & Spence, 2007). Figure 1 displays the structure of the emotions and the emotional effects of the appraisals as developed by Roseman (1991). Disgust is for instance an emotional response that is driven by motive-inconsistency and agency attributed to circumstance.

Figure 1: Levels of appraisals and their predicted emotional response (Roseman, 1991)

(Circumstance-Caused)	Positive Emotions		Negative Emotions		
	Motive-Consistent		Motive-Inconsistent		
	Appetitive	Aversive	Appetitive	Aversive	
Unexpected	Surprise				
Uncertain	Hope		Fear		Weak
Certain	Joy	Relief	Sadness	Distress, Disgust	
Uncertain	Hope		Frustration		Strong
Certain	Joy	Relief			
Other-Caused	Liking		Dislike		Weak
Uncertain			Anger		Strong
Certain			Shame, Guilt		Weak
Self-Caused			Pride		Regret
Uncertain					
Certain					

Cognitive appraisal theory aims “to predict what emotions should be elicited in a given context as well as how evoked emotions affect behaviour” (Watson & Spence, 2007: 490). For marketers of novel food products, this theory could be key, both in understanding the current consumer response to novel food products, but also in potentially manipulating the emotions elicited by communications or advertisements leading perhaps to a higher intention to eat.

In order to diminish or change the emotion of disgust, figure 1 outlines two approaches. First, changing the agency appraisal from circumstance-caused to other-caused should change the emotional response from disgust to disliking. Even this slightly less negative emotional reaction to insects would be an improvement. Second, changing the motive-consistency from inconsistent to consistent should change the disgust to joy/relief. If both appraisals are manipulated at the same time, the emotion should change from disgust to liking. Two hypotheses will be tested in this study.

H₁: A motive-consistent cognitive appraisal compared to a motive-inconsistent appraisal will elicit a higher level of the positive emotions.

H₂: An agency cognitive appraisal of other-caused compared to a circumstance-caused will elicit higher feelings of disliking as opposed to disgust.

3 Method

An online experimental survey was distributed to a Danish convenience sample in one of the author's network. The experimental design is a 2 (motive-consistent vs. motive-inconsistent) by 2 (circumstance-caused vs. other-caused) between-subjects design. The survey was translated into Danish.

3.1 Respondents

The questionnaire was distributed in one of the author's network. The sample size came to 107 respondents (84 females, 78.5%), and an overweight of the sample was below 35 years old (71.0%).

3.2 Measures

The respondents were presented to a short vignette describing a third person character that come to eat a dish with insects. Two dimensions were manipulated: motive-consistency and agency. Motive-consistency was manipulated by having the person in the story being open to trying new dishes and foods (motive-consistent) or being a picky eater, sticking to the dishes the person knew and had tried before (motive-inconsistent). The manipulation was written based on wordings and traits of the food neophobia scale (Pliner & Hobden, 1992). Agency was manipulated by having the person in the story eating a dish with insects because of it being served to them by their friends (other-caused) or it being served because of it being the last option, due to unforeseen events (circumstance-caused). The vignettes were made gender-specific, so female respondent would read a vignette about the character Marie, and male respondents would read a vignette about the character Carl.

The emotional response measure consisted of list of emotional terms, mostly taken from the literature. Excitement and joy were measured by items from the consumption emotion set (Richins, 1997). Disliking and disgust were measured by items inspired by Roseman (2001). Liking and interest were also measured. The list of terms were randomised and measured on a seven-point Likert scale. The respondents were asked to rate to what extent the person in the story that they had just read, were feeling the listed feelings.

Intention was measured by three items: "How likely is it that the person in the story will taste insects again in the future?", "How likely is it that the person in the story will buy insects in the future?", and "How likely is it that you will taste insects in the future?". One item was added,

asking “How much do you look like the person in the story?”. All these items were measured on seven-point Likert scales.

Manipulation checks were measured by items from the literature: situational control, pleasantness, other-agency, and self-agency were all measured by items from Ruth, Brunel and Otnes (2002). Motive-consistency was measured by an item adopted from a goal relevance measure by Nyer (1997).

Four items on knowledge of entomophagy were added: “Edible insects are healthy, as they contain much protein and many vitamins”, “Edible insects are a speciality”, “If you are allergic to shellfish then you might also be allergic to edible insects”, and “It can be dangerous to eat insects”. Two items on the respondents own food goals were added: “I actively try to reduce my intake of meat”, and “I think about the impact the food I eat have on the environment”. All six items were measured on a seven-point Likert scale, going from 1 Totally disagree to 7 Totally agree.

The following demographic variables were measured: gender, age, region, people in the household, and children in the household. Two items measuring the respondent’s previous experience with entomophagy were administered: “Have you eaten whole insects before?”, and “Have you eaten products where insects were an ingredient before?”. Both items had a dichotomous, yes/no reply.

3.3 Procedure

The survey was conducted online. After an introduction to the purpose of the survey, the respondents were asked about their gender and age. The gender-variable was used in order for the vignettes to be gender-specific. Following these initial demographics, respondents saw the following message: “You will now see a short story. You are asked to read this story and as far as possible put yourself in the persons place. After the story you will be asked a series of questions about it. There is no right or wrong answer as it is only your opinions we are interested in”. In the next screen, the respondent saw one of the four vignettes, which was randomly assigned. Immediately following the vignette were the emotion measures, followed by the intention measures, the manipulation checks, the knowledge measures, and finally the rest of the demographic items.

4 Results

Hypothesis 1 was tested using one-way ANOVA. According to hypothesis 1, a motive-consistent condition were hypothesised to elicit higher levels of positive emotions. Statistically significant differences were found for all positive emotions: Excitement ($F(3,103)=27.202, p=.000$), joy ($F(3,103)=25.866, p=.000$), interest ($F(3,103)=19.327, p=.000$), and liking ($F(3,103)=26.606, p=.000$). Table 1 displays the means of the four vignettes for each positive emotion and superscripts show the significant differences.

Table 1: ANOVA, multiple comparisons (n=107)

	Vignette: circumstance-motive consistent (n=28)	Vignette: circumstance-motive inconsistent (n=24)	Vignette: other-motive consistent (n=27)	Vignette: other-motive inconsistent (n=28)
Excitement	4.29 ^{ab}	2.96 ^{ac}	4.90 ^{cd}	2.42 ^{bd}
Joy	4.27 ^{ab}	2.90 ^{ac}	4.75 ^{cd}	2.33 ^{bd}
Interest	5.18 ^{ab}	4.08 ^{ac}	5.70 ^{cd}	3.25 ^{bd}
Liking	4.61 ^{ab}	2.75 ^{ac}	4.44 ^{cd}	2.25 ^{bd}

Note: Scheffe used for multiple comparisons as homogeneity of variance confirmed. Superscripts show significant differences. All emotions measured on a seven-point scale.

Hypothesis 1 is confirmed as the vignettes with motive-consistency resulted in significantly higher levels of positive emotions compared to the motive-inconsistent ones.

The test of hypothesis 2 is conducted in the same way, only now the focus is on the negative emotions. According to hypothesis 2, an other-caused agency appraisal compared to a circumstance-caused one, will elicit less disgust and higher levels of disliking instead. The one-way ANOVA's for both disgust ($F(3,103)=15.211, p=.000$) and disliking ($F(3,103)=19.986, p=.000$) are significant, but there are no significant differences between the ratings for the respondents that saw the circumstance-caused and the other-caused. Table 2 shows the results.

Table 2: ANOVA, multiple comparison (n=107)

	Vignette: circumstance-motive consistent (n=28)	Vignette: circumstance-motive inconsistent (n=24)	Vignette: other-motive consistent (n=27)	Vignette: other-motive inconsistent (n=28)
Disgust	2.25 ^{ab}	4.08 ^{ac}	2.16 ^{cd}	4.01 ^{bd}
Disliking	2.36 ^{ab}	4.31 ^{ac}	2.35 ^{cd}	4.40 ^{bd}

Note: Scheffe used for multiple comparisons as homogeneity of variance confirmed. Superscripts show significant differences. All emotions measured on a seven-point scale.

The significant differences found are based on motive-consistency as in the test for hypothesis 1. Therefore, hypothesis 2 is rejected. These results could be due to a weak manipulation of agency.

5 Implications

This study currently have a range of limitations, the biggest one being the very small, non-representative sample size. Further studies are planned in the beginning of 2020, to elaborate on the trends found here and to explore other manipulations of the emotional response to entomophagy. Another limitation is the use of the vignette method which works under the assumption that the respondents were “emotionally engaged while performing the imagery task” (Smith & Lazarus, 1993: 262), which means that we both assume they follow instructions and imagined themselves in the scenario and also that they accurately described their (imagined) emotional response. Both these assumption could be questioned. Also, when using a vignette with a third person character, one is essentially testing the respondents’ “theories of emotion contain elaborate, specific, and shared hypotheses concerning the emotional consequences of specific appraisals” (Smith & Lazarus, 1993: 262). The next steps will include research designs that test the individual respondents emotional response.

The main contribution of this study is a better understanding of the emotional response to entomophagy, and especially that it can be manipulated. The default response to entomophagy does not necessarily have to be one of disgust. It is possible for the respondents to imagine other emotions in a context when someone is eating insects. Only motive-consistency, and not agency, is the deciding factor in determining the emotional response in this study, and caused significant differences in the emotions measured. This will be important in the way marketers communicate about edible insects, as they need to know the underlying motives and goals of the consumers, in order to align insect eating with these. Future studies will try to manipulate different communication efforts, also using appraisal theory, in order to change the emotional response within the consumers, so that eventually it will be possible to convince consumers to put insects on their plate.

References

Buckwell, A., Nadeu, E. (2018). *What is the Safe Operating Space for EU Livestock?*, RISE Foundation, Brussels

- Hamerman, E.J. (2016). Cooking and disgust sensitivity influence preference for attending insect-based food events, *Appetite*, vol. 96, pp. 319-326
- Hartmann, C., Shi, J., Giusto, A., Siegrist, M. (2015). The psychology of eating insects: A cross-cultural comparison between Germany and China, *Food Quality and Preference*, vol. 44, pp. 148-156
- La Barbera, F., Verneau, F., Videbæk, P.N., Amato, M., Grunert, K.G. (2020). A self-report measure of attitudes toward the eating of insects: Construction and validation of the entomophagy attitude questionnaire, *Food Quality and Preference*, vol. 79, pp. 1-9
- Lensvelt, E.J.S., Steenbekkers, L.P.A. (2014). Exploring consumer acceptance of entomophagy: A survey and experiment in Australia and the Netherlands, *Ecology of Food and Nutrition*, vol. 53, no. 5, pp. 543-561
- Looy, H., Wood, J.R. (2006). Attitudes towards invertebrates: Are educational “bug banquets” effective?, *The Journal of Environmental Education*, vol. 37, no. 2, pp. 37-48
- Menozzi, D., Sogari, G., Veneziani, M., Simoni, E., Mora, C. (2017). Eating novel foods: An application of the theory of planned behaviour to predict the consumption of an insect-based product, *Food Quality and Preference*, vol. 59, pp. 27-34
- Nyer, P.U. (1997). A Study of the Relationships Between Cognitive Appraisals and Consumption Emotions, *Journal of the Academy of Marketing Science*, vol. 25, no. 4, pp. 296-304
- Pliner, P., Hobden, K. (1992). Development of a scale to measure the trait of food neophobia in humans, *Appetite*, vol. 19, pp. 105-120
- Richins, M.L. (1997). Measuring emotions in the consumption experience, *Journal of Consumer Research*, vol. 24, pp. 127-146
- Roseman, I.J. (1991). Appraisal determinants of discrete emotions, *Cognition and Emotion*, vol. 5, no. 3, p. 161-200
- Roseman, I.J. (2001). A Model of Appraisal in the Emotion System. Integrating Theory, Research, and Applications, in Scherer, K.R., Schorr, A., Johnstone, T. (ed.) *Appraisal Processes in Emotion. Theory, Methods, Research*, Oxford University Press, pp. 68-91

Ruth, J.A., Brunel, F.F., Otnes, C.C. (2002). Linking Thoughts to Feelings: Investigating Cognitive Appraisals and Consumption Emotions in a Mixed-Emotions Context, *Journal of the Academy of Marketing Science*, vol. 30, no. 1, pp. 44-58

Scherer, K.R. (1999). Appraisal Theory, in Dalglish T. and Power, M.J. (ed.) *Handbook of Cognition and Emotion*, Wiley, pp. 637-663

Smith, C.A., Lazarus, R.S. (1993). Appraisal Components, Core Relational Themes, and the Emotions, *Cognition and Emotion*, vol. 7, no. 3-4, pp. 233-269

Watson, L., Spence, M.T. (2007). Cause and Consequences of Emotions on Consumer Behaviour. A Review and Integrative Cognitive Appraisal Theory, *European Journal of Marketing*, vol. 41, no. 5/6, pp. 487-511