



## Original Research Article

# Development of Thai emotion lexicon for coffee drinking using word association and check-all-that-apply methods.

**Ammaraporn Pinsuwan<sup>1</sup>, Suntaree Suwonsichon<sup>1\*</sup>, Penkwan Chompreeda<sup>1</sup> and Witoon Prinyawiwatkul<sup>2</sup>**

<sup>1</sup>Kasetsart University Sensory and Consumer Research (KUSCR) Center, Department of Product Development, Faculty of Agro-Industry, Kasetsart University, Bangkok 10900, Thailand

<sup>2</sup>School of Nutrition and Food Sciences, Louisiana State University, Agricultural Center, Baton Rouge, LA, USA.

### ARTICLE INFO

#### Article history:

Received 31 July 2018

Received in revised form 20 October 2018

Accepted 22 October 2018

#### Keywords:

Coffee  
Emotion  
Lexicon  
Thai

### ABSTRACT

A lexicon had been developed to identify and describe emotional feelings occurring during coffee drinking; however, those emotion terms were in English. Translation of those terms into Thai to be used with Thai consumers is not easy because each language has a structure that is unique to it. Some terms that are commonly used to describe feelings of people of western culture may not apply to those of Thai culture, and vice versa. The objective of this research was to develop Thai emotion lexicon for coffee drinking through a sequence of two methods; word association and check-all-that-apply (CATA). In the first part, the word association method was used to gather all possible terms that described emotional feelings and experiences related to coffee drinking of Thai respondents. One hundred Thai coffee drinkers participated in the interview in which the respondents were asked to freely identify terms that described their emotional feelings before, during and after drinking a good and a bad cup of coffee. Fifty-eight emotion terms were obtained from the interview. In the second part, emotion terms generated from such interview and those from the EsSense Profile™ (ESP), WellSense Profile™ and Coffee Drinking Experience (CDE) profile were combined into a list of 98 terms. The terms from the ESP, WellSense Profile™ and CDE profile were carefully translated into Thai by a linguist and then translated back to English by another linguist to verify the accuracy of translation. The combined terms were further refined by 130 Thai coffee drinkers using check-all-that-apply (CATA) method via online questionnaires. A frequency of 20% was chosen as a cut-off point. The final list comprised of 32 terms, 18 being generated by Thai coffee drinkers and 14 terms from the ESP, WellSense Profile™ and CDE profile. The list of emotions could be applied toward future emotion research with Thai coffee users.

© 2018 School of Agro-Industry, Mae Fah Luang University. All rights reserved.

\* Corresponding author: Tel.: +66-2562-5017; fax: +66-2562-5004.

E-mail address: [fagjsru@ku.ac.th](mailto:fagjsru@ku.ac.th)



## INTRODUCTION

Emotions are intense feelings being developed very quickly in response to a specific stimulus (Giboreau and Meiselman, 2018). Emotions are one of the key factors that affect a person's food choice (Kanjanakorn and Lee, 2017). Due to a high competitiveness in the market nowadays, it is not sufficient to evaluate product performance based on overall liking of the sensory properties of a product. The connection between sensory perception and emotional experiences elicited during product consumption has gained attention from many researchers (Bhumiratana *et al.*, 2014), and emotion measurement has become one of the tools being used extensively in product development process. King and Meiselman (2010) developed and validated an EsSense Profile™ (ESP) for emotion measurement. The ESP consisted of 39 emotion terms related to general food consumption and was used extensively by emotion researchers. The ESP was also used to measure emotional response to foods such as the works done by Cardello *et al.* (2012), Jaeger and Hedderley (2013) and Kanjanakorn and Lee (2017), among others. Another instrument, WellSense Profile™ was developed by King *et al.* (2015) to measure consumer wellness associated with foods. The profile described consumer wellness in five dimensions: emotional, intellectual, social, physical and spiritual.

Coffee is one of the most popular beverages around the world. In Thailand, coffee consumption has increased dramatically each year and coffee has become an important part of Thai's daily life. In 2007, approximately 0.55 million 60-kg bags of coffee had been consumed and the consumption had increased to 1.3 million 60-kg bags of coffee in 2017 (Statista, 2018). It was estimated that an average growth of coffee consumption in Thailand was about 10% per year (Arunmas, 2012).

People drink coffee not only because they love the taste of coffee, but also because coffee has effects on their emotions and feelings, for example, coffee helps people feel energized and awake. Therefore, it is important to explore the emotions related to coffee drinking to have a better understanding of coffee acceptance and consumption behaviour. An emotion lexicon for describing feelings that occurred during coffee drinking was developed by Bhumiratana *et al.* (2014) using emotion terms that were generated by focus groups of the U.S. coffee drinkers in combination with those from the ESP. Their final lexicon consisted of 44 emotion terms, of which 17 terms were from the ESP.

Emotion terms were initially developed and expressed in English, and using such terms with people whose native languages are not English could pose a problem. Doi (1974), a Japanese psychologist, discussed the differences in how Japanese and English speakers expressed their emotions, putting particular emphasis on the role of language. He pointed out that "the typical psychology of a given nation can be learned only through familiarity with its native language". Similar to the case of Japanese, translation of English emotion terms into Thai to be used with Thai consumers is not easy because each language has a structure that is unique to it. Some terms that are commonly used to describe feelings of people of western culture may not apply to those of Thai culture, and vice versa.

Word association (WA) is one of projective techniques being used in consumers/marketing research to provide insights on perceptions and attitudes, with a deeper understanding of what consumers really think and feel about a product (Soares *et al.*, 2017). In this method, the interviewees must indicate the first words, images, or thoughts that come to their mind through the stimulus (Rodrigues *et al.*, 2017). This methodology assumes that the first associations that come to the respondents' mind may be the most relevant for consumers' decisions related to product purchase (Esmerino *et al.*, 2017). WA method is fast and easy to apply. Recently, Soares *et al.* (2017) used WA method to investigate the effects of regional diversity aspects related to consumers' perceptions of *coalho* cheese. The method was also used by Guerrero *et al.* (2010) to identify European consumers' association to the concept of "traditional" in a food context.

The present study aimed to develop Thai emotion lexicon for describing feelings and experiences related to coffee drinking of Thai consumers since such lexicon is still lacking. The study consisted of two parts. In the first part, WA method was used to generate Thai emotion terms related to coffee drinking experiences. In the second part, the terms generated from the first part and those from the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and Coffee Drinking Experience (CDE) profile (Bhumiratana *et al.*, 2014) were compiled into one list. Then the terms were further refined using check-all-that-apply (CATA) method.

## MATERIALS AND METHODS

### Part 1: Generating Thai emotion terms related to coffee drinking

Thai consumers were recruited for the study. One-on-one interview was conducted starting with a series of questions related to gender, age and weekly coffee consumption frequency of each participant. The participants who were 18-64 years of age and drank coffee at least 3-5 times a week were considered as "qualified" participants of the study. The qualified participants (n=100) were also asked the time of the day they drank coffee, types of coffee (black coffee or coffee with added sugar/sweeteners /milk/non-dairy creamer) they drank, their most favorite cup of coffee and place(s) to buy and drink coffee. Then they were inquired to freely describe their emotional feelings before drinking a cup of coffee, as well as during and after drinking a 'good' and a 'bad' cup of coffee. This was to capture all of the possible emotions triggered by various coffee types and experiences. The interviewer recorded all of the identified terms.

Data were analyzed using content analysis. Terms with similar meaning were grouped together.

### Part 2: Refining Thai emotion terms related to coffee drinking

The terms obtained from the interview with 100 Thai consumers and those from previously published profiles including the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and CDE profile (Bhumiratana *et al.*, 2014) were compiled into one list. The terms from the published profiles were carefully translated from

English into Thai by a linguist and then translated back by another linguist to check the accuracy of translation before being compiled with those from the interview. Terms with similar meaning were grouped together.

The compiled terms were further refined by 130 Thai consumers who were 18-64 years of age and drank coffee at least 3-5 times a week using CATA method. Each participant was instructed to check the terms that described their emotional feelings before drinking a cup of coffee, as well as during and after drinking a 'good' and a 'bad' cup of coffee. The study was conducted using online questionnaires. The usage frequency for each term was summed up and terms with the frequency lower than 20% (frequency = 26) were eliminated.

Data were analyzed using XLSTAT-Sensory software Version 2017 (Addinsoft, New York, NY). Cochran's Q test was performed to determine if usage frequency of each term was significantly different ( $p \leq 0.05$ ) among states of consumption (before drinking coffee, during drinking a good cup of coffee, after drinking a good cup of coffee, during drinking a bad cup of coffee and after drinking a bad cup of coffee). Additionally, correspondence analysis (CA) was performed to illustrate the relationship between states of coffee drinking and emotion terms using chi-square distances (Oliver *et al.*, 2018).

## RESULTS AND DISCUSSION

### Socio- demographic of participants

Consumers (n=100), who participated in the generation of Thai emotion terms related to coffee drinking using WA method, consisted of 56% females and 44% males. About 15, 53 and 32% of the participants were 18-24, 25-44 and 45-64 years of age, respectively. In term of their occupations, most of them (30%) were government officers and self-employees (21%). The rest were employees of private organizations (18%), students (16%), housewives (7%) and freelancer (6%). Few participants (2%) were unemployed. Regarding their weekly coffee consumption frequency, 19% of the participants drank coffee more than once daily, while 48% of them drank coffee once daily and 33% drank coffee at least 3-5 times a week. According to Bhumiratana *et al.* (2014), consumers who drank coffee at least once daily were classified as 'heavy' users. While those who drank coffee 3-5 times and 1-2 times a week were classified as 'medium' and 'light' users, respectively. Given the same criteria as Bhumiratana *et al.*'s, participants of this study consisted of 67% heavy users and 33% medium users.

Consumers (n=130), who participated in the refinement of Thai emotion terms using CATA method, consisted of 68% females and 32% males. About 7, 52 and 41% of the participants were 18-24, 25-44 and 45-64 years of age, respectively. In term of their occupations, most of them were government officers (37%) and employees of private organizations (29%). The rest were self-employees (12%), students (10%), and housewives (7%). Few participants (5%) were unemployed. For their weekly coffee consumption frequency, 28% of the participants drank coffee more than once daily, while 49% of

them drank coffee once daily and 22% drank coffee at least 3-5 times a week. Based on Bhumiratana *et al.*'s criteria (2014), participants of the CATA study consisted of 78% heavy users and 22% medium users.

### Generation of Thai emotion terms related to coffee drinking

Fifty-eight terms were generated by Thai coffee drinkers using WA method to describe their feelings and experiences related to coffee drinking (Table 1). Of the 58 terms, 30 terms were similar to those from the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and CDE profile (Bhumiratana *et al.*, 2014). While 28 terms were newly generated in this study, including afraid (เข็ดหลาบ), angry (โกรธ/โมโห), bad mood (อารมณ์เสีย), confuse (มึน/มึนงง), conscious (มีสติ), depressed (หดหู่/สิ้นหวัง), displeased (ไม่พึงพอใจ), exhausted (ไม่มีแรง/ไม่มีพลัง), feel good (รู้สึกดี), fidget (กระสับกระส่าย), good mood (อารมณ์ดี), impressed (ประทับใจ), inert (เฉื่อย), inspired (มีแรงบันดาลใจ), lazy (ไม่กระตือรือร้น), lethargic (ไม่กระปรี้กระเปร่า), not alert (ไม่ตื่นตัว), not impressed (ไม่ประทับใจ), not refreshed (ไม่สดชื่น), remembered (จำฝังใจ), sleepy (ไม่ตื่น/ง่วง), terrible (รู้สึกไม่ดี/รู้สึกแย่), unenthusiastic (ไม่กระตือรือร้น), unfortunate (เสียตาย), unhappy (ไม่มีความสุข), unready (ไม่พร้อม(ทำงาน)), vigorous (กระปรี้กระเปร่า) and wistful (โหยหา). It should be noted that the terms covered both positive and negative feelings and experiences. This was because in the interviews the participants were asked to freely describe their feelings before drinking a cup of coffee, as well as during and after drinking a 'good' and a 'bad' cup of coffee.

### Refining Thai emotion terms related to coffee drinking

The 58 terms obtained from the interview with 100 Thai consumers were compiled into one list with those from previously published profiles including the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and CDE profile (Bhumiratana *et al.*, 2014). This resulted in a total of 98 terms as shown in Table 1. The compiled terms were further refined by 130 Thai coffee users using CATA method.

Results from CATA refinement showed that there were 32 words being commonly used to describe feelings and experiences of Thai consumers related to coffee drinking (usage frequency  $\geq 20\%$ ) (Table 2). It should be noted that almost all of the selected terms were generated by Thai coffee users except for one term (Unfulfilled; ไม่เต็มเต็ม) that was from WellSense Profile™ (King *et al.*, 2015). Among the 31 terms that were developed by Thai coffee users, 13 terms were similar to those from the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and CDE profile (Bhumiratana *et al.*, 2014). Among the 18 terms developed by Thai coffee users, half of them were truly new including bad mood (อารมณ์เสีย), feel good (รู้สึกดี), good mood (อารมณ์ดี), inert (เฉื่อย), lethargic (ไม่กระปรี้กระเปร่า), terrible (รู้สึกไม่ดี/รู้สึกแย่), unfortunate (เสียตาย), vigorous (กระปรี้กระเปร่า), wistful (โหยหา); while the rests were negative version of the terms from the ESP (King and Meiselman, 2010), WellSense Profile™ (King *et al.*, 2015) and CDE profile (Bhumiratana *et al.*, 2014).

**Table 1.** A list of 98 emotion terms obtained from the interviews of coffee users and those from the EsSense Profile™ (ESP), WellSense Profile™ and Coffee Drinking Experience (CDE) profile.

Terms from the interviews (58 terms)		Terms from the ESP, WellSense Profile™ and CDE profile (40 terms)	
Active <sup>a,b,c,d</sup> (กระฉับกระเฉง)	Grouchy <sup>a,d</sup> (หงุดหงิด)	Accepted <sup>c</sup> (เป็นที่ยอมรับ)	Lonely <sup>c</sup> (เหงา)
Afraid <sup>a</sup> (เข็ดหลาบ)	Happy <sup>a,b,c</sup> (มีความสุข)	Accomplished <sup>c</sup> (สำเร็จลุล่วง)	Merry <sup>b,d</sup> (รื่นเริง)
Alert <sup>a,c</sup> (ตื่นตัว)	Impressed <sup>a</sup> (ประทับใจ)	Adventurous <sup>b</sup> (ผจญภัย)	Mild <sup>b</sup> (อ่อนโยน)
Angry <sup>a</sup> (โกรธ/โมโห)	Inert <sup>a</sup> (เฉื่อย)	Aggressive <sup>b</sup> (ก้าวร้าว)	Nervous <sup>d</sup> (ประหม่า)
Awake <sup>a,d</sup> (ตื่น/หายง่วง)	Inspired <sup>a</sup> (มีแรงบันดาลใจ)	Annoyed <sup>d</sup> (รำคาญ)	Nostalgic <sup>b</sup> (คิดถึงความหลัง)
Bad mood <sup>a</sup> (อารมณ์เสีย)	Joyful <sup>a,b,c,d</sup> (สบายใจ)	Attentive <sup>c</sup> (ตั้งใจ)	Off-balance <sup>d</sup> (เสียสมดุล)
Bored <sup>a,b,d</sup> (เบื่อ/เซ็ง)	Jump start <sup>a,d</sup> (พร้อม(ทำงาน))	Balanced <sup>d</sup> (สมดุล)	Polite <sup>b</sup> (สุภาพ)
Calm <sup>a,b,c</sup> (สงบ)	Lazy <sup>a</sup> (ไม่กระฉับกระเฉง)	Compassionate <sup>c</sup> (เห็นอกเห็นใจ)	Resilient <sup>c</sup> (ฟื้นตัว)
Clear minded <sup>a,d</sup> (ปลอดโปร่งโล่งใจ)	Lethargic <sup>a</sup> (ไม่กระปรี้กระเปร่า)	Concerned for others <sup>c</sup> (นึกถึงคนอื่น)	Rested <sup>c,d</sup> (ได้พัก)
Comfortable <sup>a,d</sup> (สบาย)	Not alert <sup>a</sup> (ไม่ตื่นตัว)	Curious <sup>c,d</sup> (รู้สึกสนใจใคร่รู้)	Rewarded <sup>d</sup> (ได้รับรางวัล)
Confuse <sup>a</sup> (มึน/มึนงง)	Not impressed <sup>a</sup> (ไม่ประทับใจ)	Daring <sup>b</sup> (ใจกล้า)	Secure <sup>b,c</sup> (มั่นคง/ปลอดภัย)
Conscious <sup>a</sup> (มีสติ)	Not refreshed <sup>a</sup> (ไม่สดชื่น)	Educated <sup>d</sup> (มีการศึกษา)	Special <sup>d</sup> (พิเศษ)
Creative <sup>a,c</sup> (มีความคิดสร้างสรรค์)	Pleased <sup>a,b,d</sup> (พึงพอใจ)	Friendly <sup>b,c</sup> (เป็นมิตร)	Steady <sup>b</sup> (สม่ำเสมอ/หนักแน่น)
Depressed <sup>a</sup> (หดหู่/ซึมเศร้า)	Refreshed <sup>a,c</sup> (สดชื่น)	Fun <sup>d</sup> (สนุก)	Supported <sup>c</sup> (ได้รับการสนับสนุน)
Disappointed <sup>a,d</sup> (ผิดหวัง)	Relaxed <sup>a,c,d</sup> (ผ่อนคลาย)	Grateful <sup>c</sup> (รู้สึกขอบคุณ)	Tender <sup>b</sup> (นุ่มนวล)
Disgusted <sup>a,b,d</sup> (ขยะแขยง)	Remembered <sup>a</sup> (จำฝังใจ)	Guilty <sup>b,d</sup> (รู้สึกผิด)	Understanding <sup>b,d</sup> (เข้าใจ)
Displeased <sup>a</sup> (ไม่พึงพอใจ)	Sad <sup>a,c</sup> (เศร้า/เสียใจ)	Healthy <sup>c</sup> (ดีต่อสุขภาพ)	Unfulfilled <sup>c</sup> (ไม่เต็มเต็ม)
Eager <sup>a,b</sup> (จดจ่อ/กระตือรือร้น)	Sleepy <sup>a</sup> (ไม่ตื่น/ง่วง)	In control <sup>d</sup> (อยู่ในการควบคุม)	Uninterested <sup>c</sup> (ไม่น่าสนใจ)
Energetic <sup>a,b,c,d</sup> (มีแรง/มีพลัง)	Sociable <sup>a,c</sup> (ได้เข้าสังคม)	Interested <sup>b</sup> (รู้สึกสนใจ)	Warm <sup>b,d</sup> (อบอุ่น)
Enthusiastic <sup>a,b</sup> (กระตือรือร้น)	Stimulated <sup>a,c</sup> (มีแรงกระตุ้น)	Jolted <sup>d</sup> (ทำให้ตกใจ)	Worried <sup>b,d</sup> (รู้สึกกังวล)
Exhausted <sup>a</sup> (ไม่มีแรง/ไม่มีพลัง)	Tense <sup>a,c</sup> (เครียด)		
Fatigued <sup>a,c</sup> (เหนื่อย/ล้า)	Terrible <sup>a</sup> (รู้สึกไม่ดี/รู้สึกแย่)		
Feel good <sup>a</sup> (รู้สึกดี)	Tired <sup>c</sup> (เพลีย)		
Fidget <sup>a</sup> (กระสับกระส่าย)	Unenthusiastic <sup>a</sup> (ไม่กระตือรือร้น)		
Focused <sup>a,c</sup> (มีสมาธิ)	Unfortunate <sup>a</sup> (เสียตาย)		
Free <sup>a,b,d</sup> (ปลดปล่อย/เป็นอิสระ)	Unhappy <sup>a</sup> (ไม่มีความสุข)		
Fulfilling <sup>a,d</sup> / Fulfilled <sup>a,c</sup> (เต็มเต็ม)	Unready <sup>a</sup> (ไม่พร้อม(ทำงาน))		
Glad <sup>b</sup> (ดีใจ)	Vigorous <sup>a</sup> (กระปรี้กระเปร่า)		
Good Mood <sup>a</sup> (อารมณ์ดี)	Wistful <sup>a</sup> (โหยหา)		

<sup>a</sup> Terms are from the interviews with 100 Thai coffee drinkers.

<sup>b</sup> Terms are from EsSense Profile™ (King and Meiselman, 2010).

<sup>c</sup> Terms are from WellSense Profile™ (King et al., 2015).

<sup>d</sup> Terms are from Coffee Drinking Experience (CDE) profile (Bhumiratana et al., 2014).

Some terms from the interviews are also listed on EsSense Profile™ (ESP), WellSense Profile™ and Coffee Drinking Experience (CDE) profile. Thai word is provided in bracket for each term.

**Table 2.** The selected list of 32 terms related to coffee drinking feelings and experiences of Thai consumers.

Active <sup>a,b,c,d</sup> (กระฉับกระเฉง)	Feel good <sup>a</sup> (รู้สึกดี)	Lethargic <sup>a</sup> (ไม่กระปรี้กระเปร่า)	Terrible <sup>a</sup> (รู้สึกไม่ดี/รู้สึกแย่)
Alert <sup>a,c</sup> (ตื่นตัว)	Good Mood <sup>a</sup> (อารมณ์ดี)	Not alert <sup>a</sup> (ไม่ตื่นตัว)	Unenthusiastic <sup>a</sup> (ไม่กระตือรือร้น)
Awake <sup>a,d</sup> (ตื่น/หายง่วง)	Grouchy <sup>a,d</sup> (หงุดหงิด)	Not impressed <sup>a</sup> (ไม่ประทับใจ)	Unfortunate <sup>a</sup> (เสียตาย)
Bad mood <sup>a</sup> (อารมณ์เสีย)	Happy <sup>a,b,c</sup> (มีความสุข)	Not refreshed <sup>a</sup> (ไม่สดชื่น)	Unfulfilled <sup>c</sup> (ไม่เต็มเต็ม)
Bored <sup>a,b,d</sup> (เบื่อ/เซ็ง)	Inert <sup>a</sup> (เฉื่อย)	Pleased <sup>a,b,d</sup> (พึงพอใจ)	Unhappy <sup>a</sup> (ไม่มีความสุข)
Disappointed <sup>a,d</sup> (ผิดหวัง)	Joyful <sup>a,b,c,d</sup> (สบายใจ)	Refreshed <sup>a,c</sup> (สดชื่น)	Unready <sup>a</sup> (ไม่พร้อม(ทำงาน))
Displeased <sup>a</sup> (ไม่พึงพอใจ)	Jump start <sup>a,d</sup> (พร้อม(ทำงาน))	Relaxed <sup>a,c,d</sup> (ผ่อนคลาย)	Vigorous <sup>a</sup> (กระปรี้กระเปร่า)
Energetic <sup>a,b,c,d</sup> (มีแรง/มีพลัง)	Lazy <sup>a</sup> (ไม่กระฉับกระเฉง)	Sleepy <sup>a</sup> (ไม่ตื่น/ง่วง)	Wistful <sup>a</sup> (โหยหา)

Some terms are from more than one sources

<sup>a</sup> Terms are from the interviews with 100 Thai coffee drinkers.

<sup>b</sup> Terms are from EsSense Profile™ (King and Meiselman, 2010).

<sup>c</sup> Terms are from WellSense Profile™ (King et al., 2015).

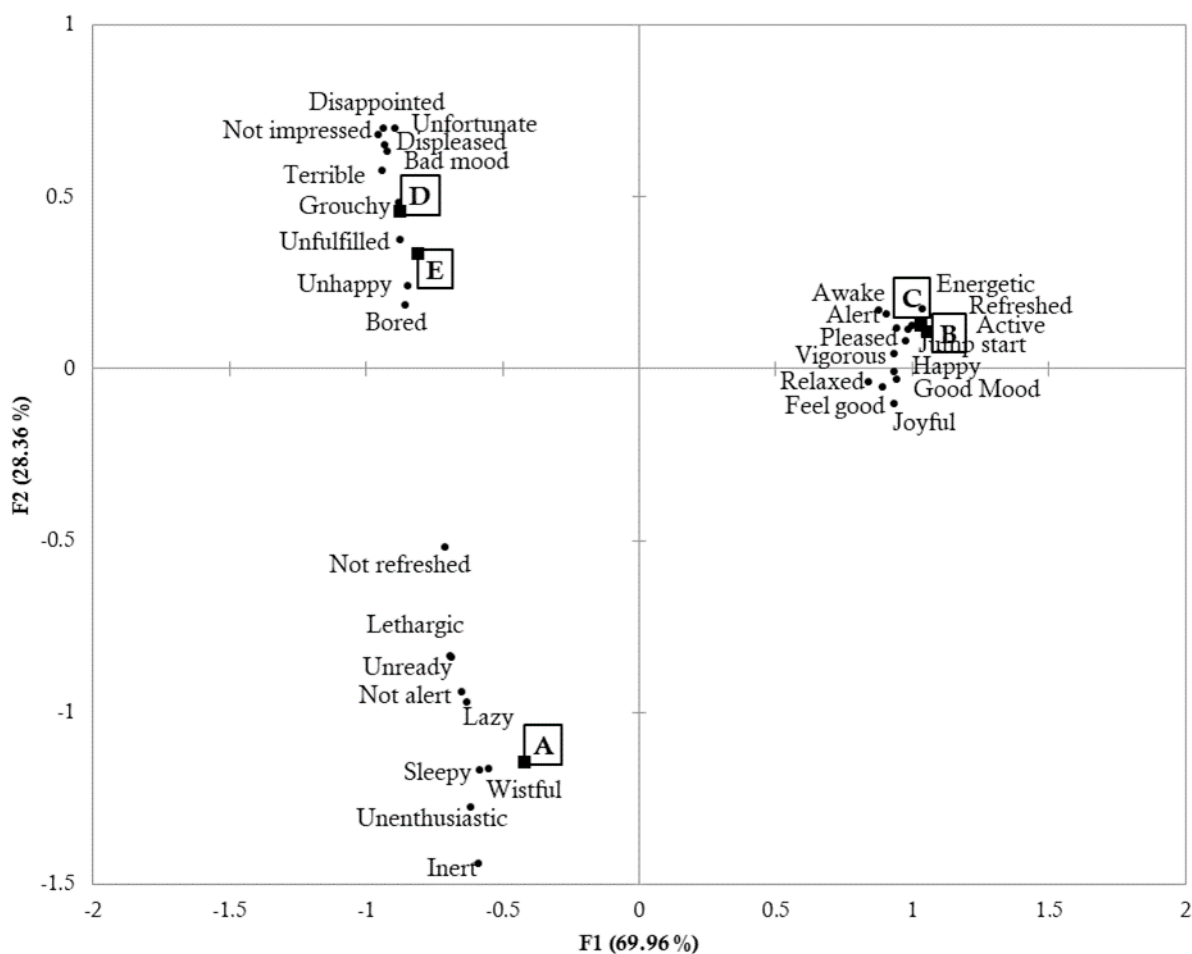
<sup>d</sup> Terms are from Coffee Drinking Experience (CDE) profile (Bhumiratana et al., 2014).

Thai word is provided in bracket for each term.

**Table 3.** Frequency of the selected 32 terms describing feelings and experiences of Thai consumers related to coffee drinking at different states

Terms (English/Thai)	Before drinking a cup of coffee	During drinking a good cup of coffee	After drinking a good cup of coffee	During drinking a bad cup of coffee	After drinking a bad cup of coffee	p-values*
Active/กระฉับกระเฉง	4 <sup>b</sup>	30 <sup>a</sup>	36 <sup>a</sup>	2 <sup>b</sup>	2 <sup>b</sup>	0.000
Alert/ตื่นตัว	5 <sup>b</sup>	54 <sup>a</sup>	48 <sup>a</sup>	4 <sup>b</sup>	8 <sup>b</sup>	0.000
Awake/ตื่น/หายง่วง	4 <sup>b</sup>	41 <sup>a</sup>	40 <sup>a</sup>	5 <sup>b</sup>	6 <sup>b</sup>	0.000
Bad mood/อารมณ์เสีย	2 <sup>b</sup>	0 <sup>b</sup>	1 <sup>b</sup>	39 <sup>a</sup>	49 <sup>a</sup>	0.000
Bored/เบื่อ/เซ็ง	28 <sup>c</sup>	0 <sup>d</sup>	1 <sup>d</sup>	68 <sup>a</sup>	47 <sup>b</sup>	0.000
Disappointed/ผิดหวัง	0 <sup>b</sup>	0 <sup>b</sup>	1 <sup>b</sup>	44 <sup>a</sup>	49 <sup>a</sup>	0.000
Displeased/ไม่พึงพอใจ	2 <sup>b</sup>	0 <sup>b</sup>	1 <sup>b</sup>	53 <sup>a</sup>	60 <sup>a</sup>	0.000
Energetic/มีแรง/มีพลัง	2 <sup>b</sup>	35 <sup>a</sup>	36 <sup>a</sup>	2 <sup>b</sup>	2 <sup>b</sup>	0.000
Feel good/รู้สึกดี	12 <sup>b</sup>	42 <sup>a</sup>	38 <sup>a</sup>	3 <sup>b</sup>	1 <sup>b</sup>	0.000
Good Mood/อารมณ์ดี	12 <sup>b</sup>	48 <sup>a</sup>	43 <sup>a</sup>	3 <sup>b</sup>	0 <sup>b</sup>	0.000
Grouchy/หงุดหงิด	8 <sup>b</sup>	0 <sup>b</sup>	2 <sup>b</sup>	48 <sup>a</sup>	40 <sup>a</sup>	0.000
Happy/มีความสุข	8 <sup>b</sup>	33 <sup>a</sup>	33 <sup>a</sup>	1 <sup>b</sup>	2 <sup>b</sup>	0.000
Inert/เฉื่อย	35 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>	5 <sup>b</sup>	5 <sup>b</sup>	0.000
Joyful/สบายใจ	10 <sup>b</sup>	32 <sup>a</sup>	29 <sup>a</sup>	0 <sup>b</sup>	1 <sup>b</sup>	0.000
Jump start/พร้อม(ทำงาน)	8 <sup>b</sup>	45 <sup>a</sup>	62 <sup>a</sup>	0 <sup>b</sup>	6 <sup>b</sup>	0.000
Lazy/ไม่กระฉับกระเฉง	34 <sup>a</sup>	1 <sup>c</sup>	0 <sup>c</sup>	6 <sup>bc</sup>	16 <sup>b</sup>	0.000
Lethargic/ไม่กระปรี้กระเปร่า	33 <sup>a</sup>	0 <sup>c</sup>	0 <sup>c</sup>	13 <sup>b</sup>	13 <sup>b</sup>	0.000
Not alert/ไม่ตื่นตัว	50 <sup>a</sup>	1 <sup>cd</sup>	0 <sup>d</sup>	17 <sup>b</sup>	16 <sup>bc</sup>	0.000
Not impressed/ไม่ประทับใจ	1 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	52 <sup>a</sup>	53 <sup>a</sup>	0.000
Not refreshed/ไม่สดชื่น	52 <sup>a</sup>	1 <sup>c</sup>	1 <sup>c</sup>	26 <sup>b</sup>	39 <sup>b</sup>	0.000
Pleased/พึงพอใจ	5 <sup>b</sup>	47 <sup>a</sup>	34 <sup>a</sup>	3 <sup>b</sup>	4 <sup>b</sup>	0.000
Refreshed/สดชื่น	8 <sup>b</sup>	80 <sup>a</sup>	72 <sup>a</sup>	4 <sup>b</sup>	5 <sup>b</sup>	0.000
Relaxed/ผ่อนคลาย	9 <sup>b</sup>	29 <sup>a</sup>	30 <sup>a</sup>	2 <sup>b</sup>	3 <sup>b</sup>	0.000
Sleepy/ไม่ตื่น/ง่วง	54 <sup>a</sup>	1 <sup>b</sup>	1 <sup>b</sup>	13 <sup>b</sup>	11 <sup>b</sup>	0.000
Terrible/รู้สึกไม่ดี/รู้สึกแย่	4 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	41 <sup>a</sup>	28 <sup>a</sup>	0.000
Unenthusiastic/ไม่กระตือรือร้น	30 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>	4 <sup>b</sup>	8 <sup>b</sup>	0.000
Unfortunate/เสียดาย	0 <sup>b</sup>	0 <sup>b</sup>	2 <sup>b</sup>	31 <sup>a</sup>	28 <sup>a</sup>	0.000
Unfulfilled/ไม่เต็มเต็ม	8 <sup>b</sup>	0 <sup>b</sup>	1 <sup>b</sup>	30 <sup>a</sup>	28 <sup>a</sup>	0.000
Unhappy/ไม่มีความสุข	11 <sup>bc</sup>	1 <sup>c</sup>	0 <sup>c</sup>	29 <sup>a</sup>	24 <sup>ab</sup>	0.000
Unready/ไม่พร้อม(ทำงาน)	26 <sup>a</sup>	0 <sup>c</sup>	0 <sup>c</sup>	6 <sup>bc</sup>	15 <sup>ab</sup>	0.000
Vigorous/กระปรี้กระเปร่า	9 <sup>b</sup>	40 <sup>a</sup>	53 <sup>a</sup>	1 <sup>b</sup>	5 <sup>b</sup>	0.000
Wistful/โหยหา	34 <sup>a</sup>	1 <sup>b</sup>	1 <sup>b</sup>	5 <sup>b</sup>	10 <sup>b</sup>	0.000

<sup>a-d</sup> Frequencies within the same row followed by different letters are significantly different ( $p \leq 0.05$ ).



**Figure 1.** Correspondence map of feelings and experiences of Thai consumers related to coffee drinking at different consumption states (A= before drinking a cup of coffee, B= during drinking a good cup of coffee, C= after drinking a good cup of coffee, D= during drinking a bad cup of coffee and E= after drinking a bad cup of coffee)

### Emotion profile of Thai consumers related to coffee drinking at different consumption states

Table 3 shows frequencies of the selected 32 terms describing feelings and experiences of Thai consumers related to coffee drinking at different states including 1) before drinking a cup of coffee, 2) during drinking a good cup of coffee, 3) after drinking a good cup of coffee, 4) during drinking a bad cup of coffee and 5) after drinking a bad cup of coffee. Results based on Cochran's Q test revealed that usage frequencies of all terms were significantly different ( $p \leq 0.05$ ) depending on states of consumption. Correspondence map (Figure 1) clearly showed changes in emotions at each state of coffee consumption. Before drinking a cup of coffee, feelings of the consumers were characterized as being inert (เฉื่อย), lazy (ไม่กระตือรือร้น), lethargic (ไม่กระปรี้กระเปร่า), not alert (ไม่ตื่นตัว), not refreshed (ไม่สดชื่น), sleepy (ไม่ตื่น/ง่วง), unenthusiastic (ไม่กระตือรือร้น), unready (ไม่พร้อม(ทำงาน)) and wistful (โหยหา). While the terms active (กระตือรือร้น), alert (ตื่นตัว), awake (ตื่น/หายง่วง), energetic (มีแรง/มีพลัง), feel good (รู้สึกดี), good mood (อารมณ์ดี), happy (มีความสุข), joyful (สบายใจ), jump start (พร้อม(ทำงาน)), pleased (พึงพอใจ), refreshed (สดชื่น),

relaxed (ผ่อนคลาย) and vigorous (กระปรี้กระเปร่า) described feelings and experiences during and after drinking a 'good' cup of coffee. On the other hand, the terms bad mood (อารมณ์เสีย), bored (เบื่อ/เซ็ง), disappointed (ผิดหวัง), displeased (ไม่พึงพอใจ), grouchy (หงุดหงิด), not impressed (ไม่ประทับใจ), terrible (รู้สึกไม่ดี/รู้สึกแย่), unfortunate (เสียค่าย), unfulfilled (ไม่เต็มเต็ม), and unhappy (ไม่มีความสุข) described feelings and experiences during and after drinking a 'bad' cup of coffee.

### CONCLUSIONS

Emotions and experiences related to coffee drinking of Thai consumers could be described using Thai lexicon developed in this study. The lexicon consisted of 32 Thai terms that were generated and refined by Thai consumers. Of the 32 terms, 14 terms were similar to those of published emotion lexicon (the ESP, WellSense Profile™ and CDE profile), while 18 terms were newly developed in this study. The lexicon could be used for future research to measure emotional responses related to coffee drinking of Thai consumers to allow better understanding of coffee acceptance and consumption behavior.

## ACKNOWLEDGEMENTS

The authors are deeply grateful to Assistant Professor Dr. Boonjeera Chiravate, Department of English, Faculty of Arts, Silpakorn University and Assistant Professor Dr. Todsapon Suranakkharin, Department of English, Faculty of Humanities, Naresuan University for their helps with the translations.

## REFERENCES

- Arunmas P. 2012. Thailand's coffee sector 'must focus on specialties'. Retrieved July 11, 2018 from: <https://www.bangkokpost.com/business/economics/323620/thailand-coffee-sector-must-focus-on-specialties>.
- Bhumiratana, N., Adhikari, K. and Chambers IV, E. 2014. The development of an emotion lexicon for the coffee drinking experience. *Food Research International* 61: 83–92.
- Cardello, A. V., Meiselman, H. L., Schutz, H. G., Craig, C., Given, Z., Leshner, L. L. and Eicher S. 2012. Measuring emotional responses to foods and food names using questionnaires. *Food Quality and Preference*, 24, 243–250.
- Doi, T. 1974. *The Anatomy of Dependence*. New York: Kodansha International.
- Esmerino, E. A., Ferraz, J. P., Tavares Filho, E. R., Pinto, L. P. F., Freitas, Q. F., Cruz, A. G., and Bolini, H. M. A. 2017. Consumers' perceptions toward 3 different fermented dairy products: Insights from focus groups, word association, and projective mapping. *Journal of Dairy Science*, 100: 8849–8860.
- Giboreau A. and Meiselman H. L. 2018. Emotions before and after a meal in a natural eating situation. *Food Quality and Preference* 65: 191–193
- Guerrero, L., Claret, A., Verbeke, W., Enderli, G., Biemans, S. Z., Vanhonacker, F., Issanchou, S., Sajdakowska, M, Granli, B. S., Scalvedi, L., Contel, M. and Hersleth, M. 2010. Perception of traditional food products in six European regions using free word association. *Food Quality and Preference* 21: 225–233.
- Jaeger, S. R. and Hedderley D. I. 2013. Impact of individual differences in emotional intensity and private body consciousness on EsSense Profile® responses. *Food Quality and Preference* 27: 54–62
- Kanjanakorn, A. and Lee, J. 2017. Examining emotions and comparing the EsSense Profile® and the Coffee Drinking Experience in coffee drinkers in the natural environment. *Food Quality and Preference* 56: 69–79.
- King, S. C., and Meiselman, H. L. 2010. Development of a method to measure consumer emotions associated with foods. *Food Quality and Preference* 21: 168–177.
- King, S. C., Snow, J., Meiselman, H. L., Sainsbury, J., Carr, B. T., McCafferty, D., Serrano, D., Gillette, M., Millard, L., and Li, Q. 2015. Development of a questionnaire to measure consumer wellSense associated with foods: The WellSense Profile™. *Food Quality and Preference* 39: 82–94.
- Oliver, P., Cicerale, S., Pang, E. and Keast, R. 2018 Check-all-that-applies as an alternative for descriptive analysis to establish flavors driving liking in strawberries. *Journal of Sensory Studies* 33: e12316.
- Rodrigues, H., Cielo, D. P., Gomez-Corona, C., Silveira, A. A. S., Marchesan, T. A., Galmarini, M. V., and Richards, N. S. P. S. (2017). Eating flowers? Exploring attitudes and consumers' representation of edible flowers. *Food Research International*, 100: 227–234.
- Statista. 2018. Total coffee consumption in Thailand from 1990 to 2017. Retrieved July 11, 2018 from: <https://www.statista.com/statistics/314998/thailand-total-coffee-consumption/>.
- Soares, E. K.B., Esmerino, E. A., Ferreira, M. V. S., Da Silva, M. A. A. P., Freitas, M. Q. and Cruz, A. G. 2017. What are the cultural effects on consumers' perceptions? A case study covering *coalho* cheese in the Brazilian northeast and southeast area using word association. *Food Research International* 102: 553–558.