Happiness from hoppiness?

Comparing emotional response to sensory properties of beer between the UK and Spain

Curtis Eaton
The University of Nottingham, UK

Dr Carolina Chaya
Technical University of Madrid, Spain

Prof Katherine Smart
SABMiller plc, UK

Prof Joanne Hort
The University of Nottingham, UK

SAB MILLER

Product differentiation

Product **A**

Product **B**

Product differentiation

Product **A**

Product **B**

Emotions and sensory properties

• Previous research has shown that differences in emotional response are found within product categories

Thomson *et al.* (2010)

Ng *et al.* (2013)

Chaya *et al.* (submitted)

Emotions and sensory properties

• Previous research has shown that differences in emotional response are found within product categories

Thomson *et al.* (2010)

Ng *et al.* (2013)

Chaya *et al.* (submitted)

• Sensory properties have been implicated in driving emotional response

Emotional response across cultures

- Very little research into emotional response across cultures

- Implications for global products

- Different beer consumption behaviours in Spain and the UK

Do sensory properties of beer elicit the same emotional responses across cultures?

Controlling sensory properties

1	**Control**	Commercial lager
2	**Bitter**	Aroxa iso-α-acids
3	**Hoppy**	Aroxa kettle hop extract
4	**Light struck**	Aroxa 3-methyl-2-butene-1-thiol
5	**Isoamyl acetate**	Aroxa isoamyl acetate
6	**DMS**	Aroxa dimethyl sulphide
7	**Low CO$_2$**	Decarbonated
8	**Sweet**	Dextrose

9	**Non-alcohol control**	Commercial non-alcohol lager
10	**High alcohol**	Ethanol

- Samples were evaluated by an expert beer sensory panel
- Each manipulation was found to be significantly different to the control for the relevant sensory property

Generating emotion lexicons

- Verbal self-report

- Focus groups of consumers in each country

- Nostálgico
- Placentero
- Positivo

- Happy
- Content
- Disappointed

Lexicons

Spain (44 terms)

Aburrido

Agradable

Alegre/chispeante/contento

Amistoso

Animado

Ansioso

Apetecible

Asqueado/disgustado

Auténtico

Clásico

Conforme

Contrariado

Curioso

Decepcionado

Desagradable

Desilusionado/desencantado

Desmotivado

Divertido

Emocionado

Engañado

Esperado/normal

Extrañado/raro/atípico

Festivo

Fresco

Fuerte

Inapetente

Incómodo

Indeseable

Indiferente

Insatisfecho

Intenso

Ligero/suave/flojo

Mal

Natural

Negativo

Nostálgico

Placentero

Positivo

Potente

Reacio/rechazo/repulsión

Relajado/tranquilo

Satisfecho

Sorprendido/inesperado

Tradicional

United Kingdom (43 terms)

Alarmed

Bored

Calm

Cheated

Comfortable

Comforted

Confused

Content

Curious

Desirous

Disappointed

Disgusted

Dissatisfied

Enjoyment

Enthusiastic

Excited

Fulfilled

Fun

Good

Happy

Horrible

Impressed

Interested

Nice

Nostalgic

Optimistic

Overwhelmed

Pleasant

Pleasantly surprised

Pleased

Relaxed

Relieved

Repulsed/repelled

Safe

Satisfied

Shocked

Strange/weird

Tame

Underwhelmed

Unpleasant

Unpleasantly surprised

Want

Warm

Emotion categories

Linguistic checks and cluster analysis were used to group similar terms into emotion categories:

Spain
1) Disillusionment
2) Disappointment
3) Disgust
4) Nostalgia
5) Pleasure
6) Desire
7) Classic
8) Fun
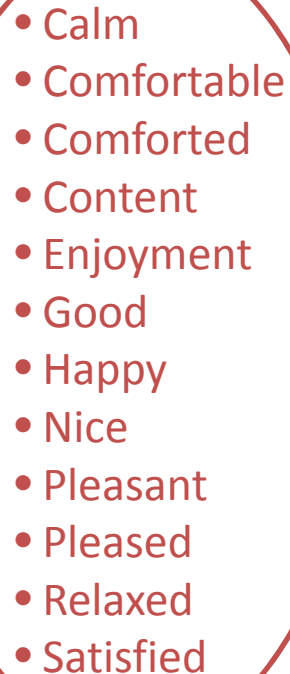9) Excitement
10) Mildness
11) Indifference
12) Intensity

United Kingdom
1) Disconfirmation
2) Disgust
3) Shock
4) Tame/Safe
5) Nostalgia
6) Contentment
7) Excitement
8) Boredom
9) Underwhelmed

Emotion categories

Linguistic checks and cluster analysis were used to group similar terms into emotion categories:

Spain
1) Disillusionment
2) Disappointment
3) Disgust
4) Nostalgia
5) Pleasure
6) Desire
7) Classic
8) **Fun**
9) Excitement
10) Mildness
11) Indifference
12) Intensity

- Happy/cheerful
- Lively
- Curious
- Enjoyment
- Festive

United Kingdom
1) Disconfirmation
2) Disgust
3) Shock
4) Tame/Safe
5) Nostalgia
6) Contentment
7) Excitement
8) Boredom
9) Underwhelmed

Emotion categories

Linguistic checks and cluster analysis were used to group similar terms into emotion categories:

Spain
1) Disillusionment
2) Disappointment
3) Disgust
4) Nostalgia
5) Pleasure
6) Desire
7) Classic
8) Fun
9) Excitement
10) Mildness
11) Indifference
12) Intensity

- Calm
- Comfortable
- Comforted
- Content
- Enjoyment
- Good
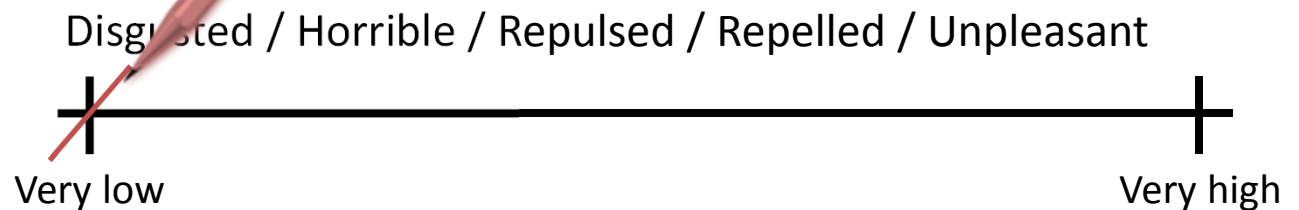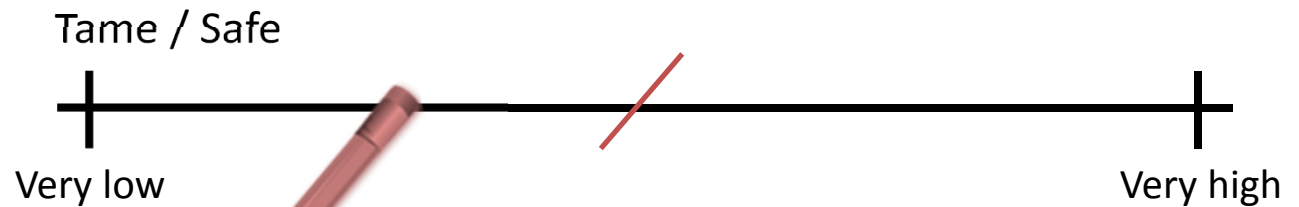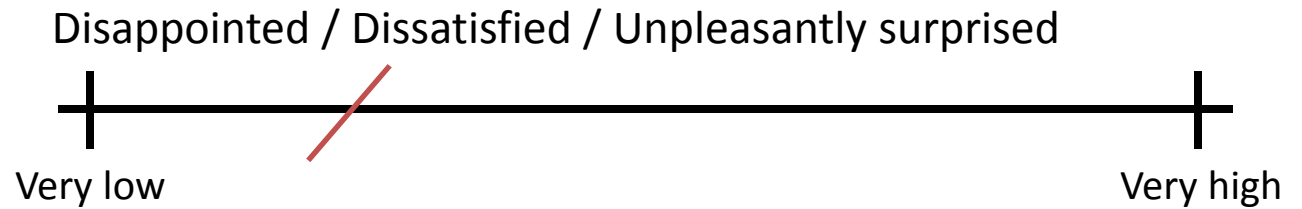- Happy
- Nice
- Pleasant
- Pleased
- Relaxed
- Satisfied

United Kingdom
1) Disconfirmation
2) Disgust
3) Shock
4) Tame/Safe
5) Nostalgia
6) **Contentment**
7) Excitement
8) Boredom
9) Underwhelmed

Consumer study

n = 113 (Spain)
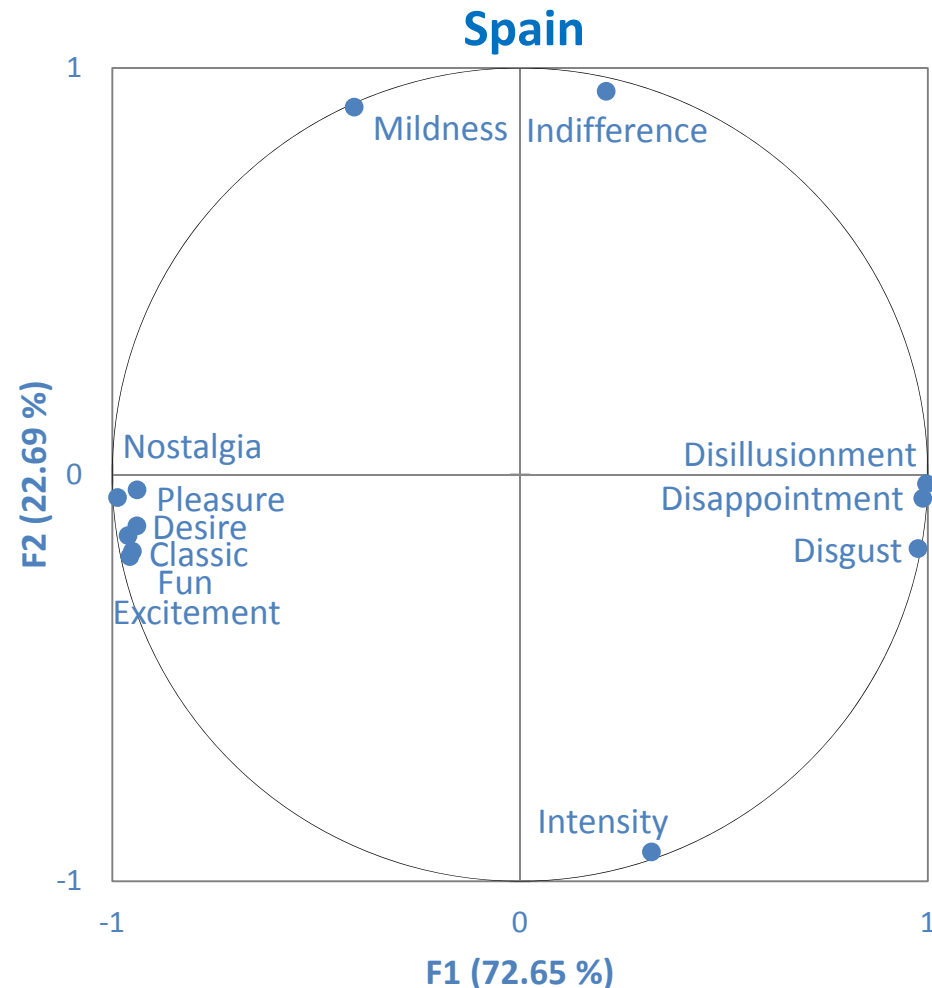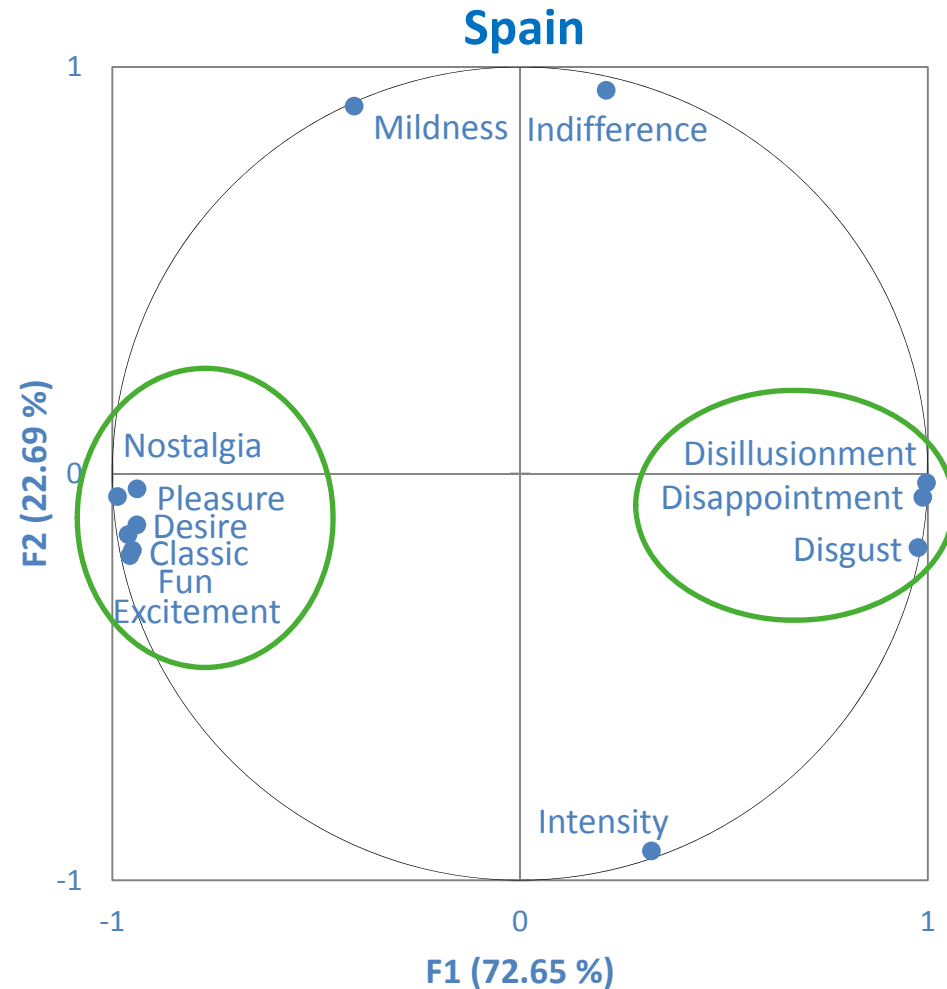*n* = 109 (UK)

144

Disappointed / Dissatisfied / Unpleasantly surprised

Very low   Very high

Tame / Safe

Very low   Very high

Disgusted / Horrible / Repulsed / Repelled / Unpleasant

Very low   Very high

Principal Components Analysis

PCA is a statistical procedure to show the underlying structure of the data

Spain

F2 (22.69 %)

F1 (72.65 %)

Mildness · Indifference · Nostalgia · Pleasure · Desire · Classic · Fun · Excitement · Disillusionment · Disappointment · Disgust · Intensity

Principal Components Analysis

Spain

Mildness   Indifference

Unpleasant

Pleasant

Nostalgia

Pleasure
Desire
Classic
Fun
Excitement

Disillusionment
Disappointment
Disgust

Intensity

F2 (22.69 %)

F1 (72.65 %)

Principal Components Analysis

Spain

Low engagement

Unpleasant

Pleasant

High engagement

F2 (22.69 %)

F1 (72.65 %)

Mildness Indifference

Nostalgia

Pleasure
Desire
Classic
Fun
Excitement

Disillusionment
Disappointment
Disgust

Intensity

Principal Components Analysis

United Kingdom

F1 (75.03 %), F2 (19.61 %)

Underwhelmed, Boredom, Tame/Safe, Disconfirmation, Disgust, Shock, Nostalgia, Contentment, Excitement

Spain

F1 (72.65 %), F2 (22.69 %)

Mildness, Indifference, Nostalgia, Pleasure, Desire, Classic, Fun, Excitement, Disillusionment, Disappointment, Disgust, Intensity
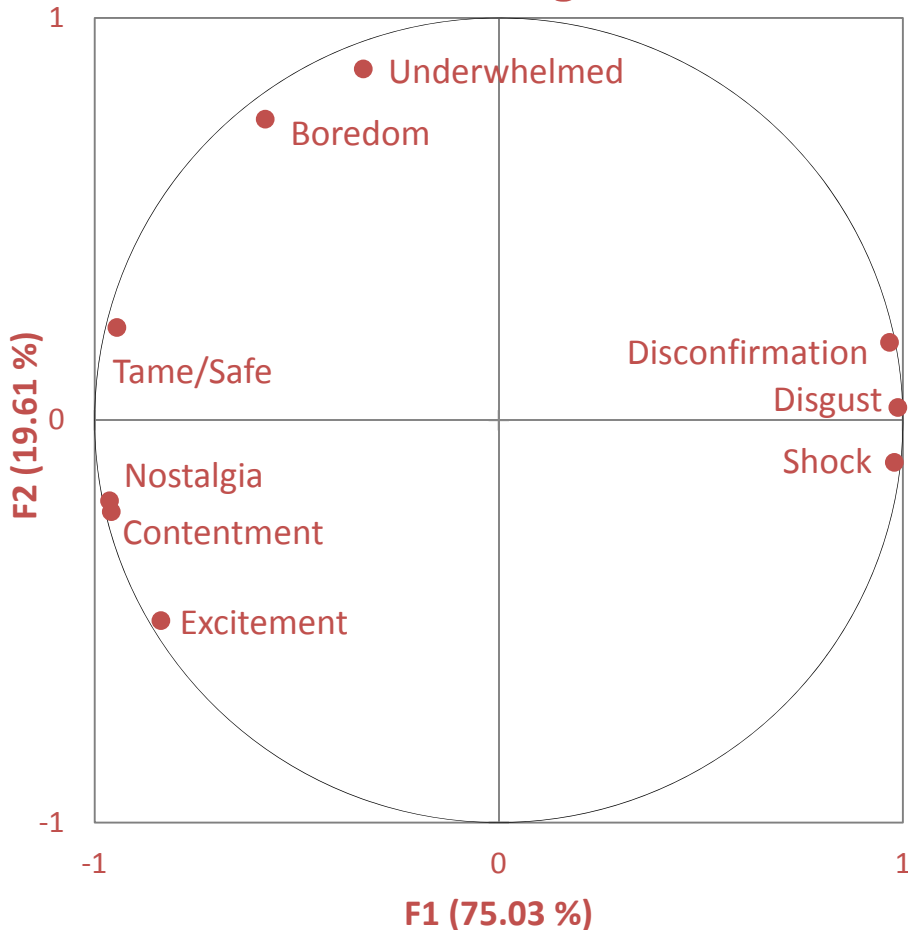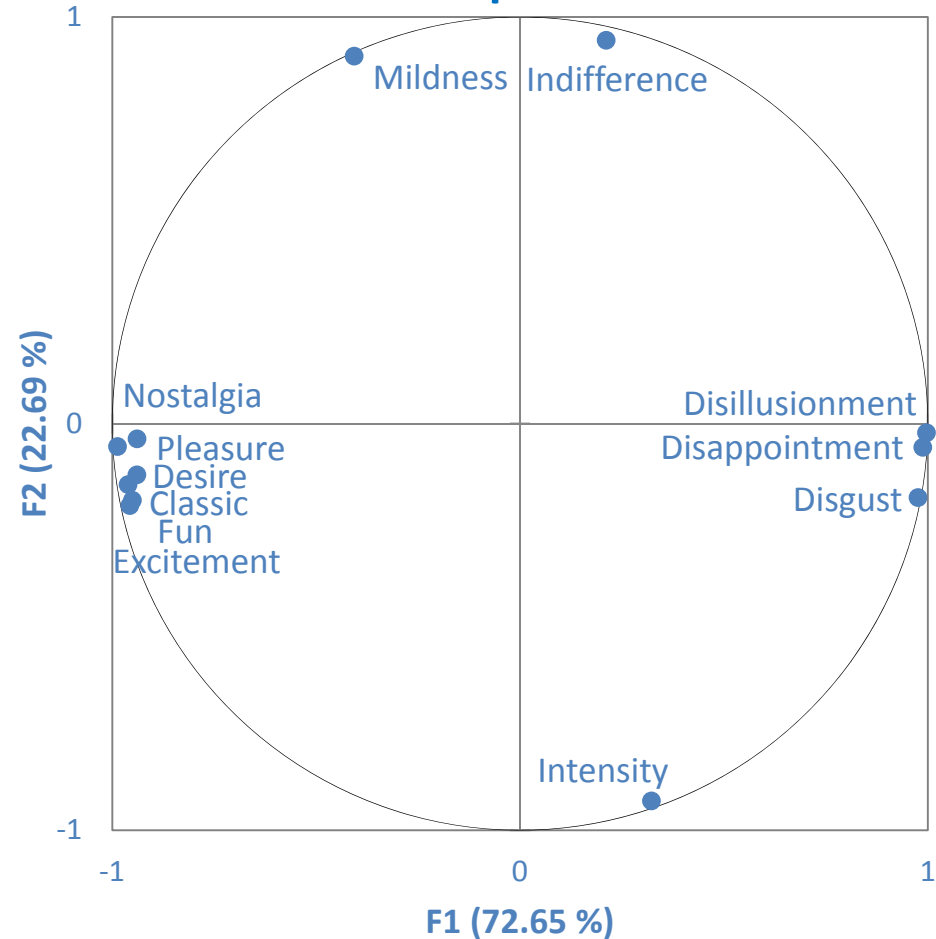
Multiple Factor Analysis

MFA is a statistical technique to compare multiple data sets

┌─────────────────────┐
│ ● Spain   │
│   │
│ ● United Kingdom   │
└─────────────────────┘

RV coefficient = 0.763
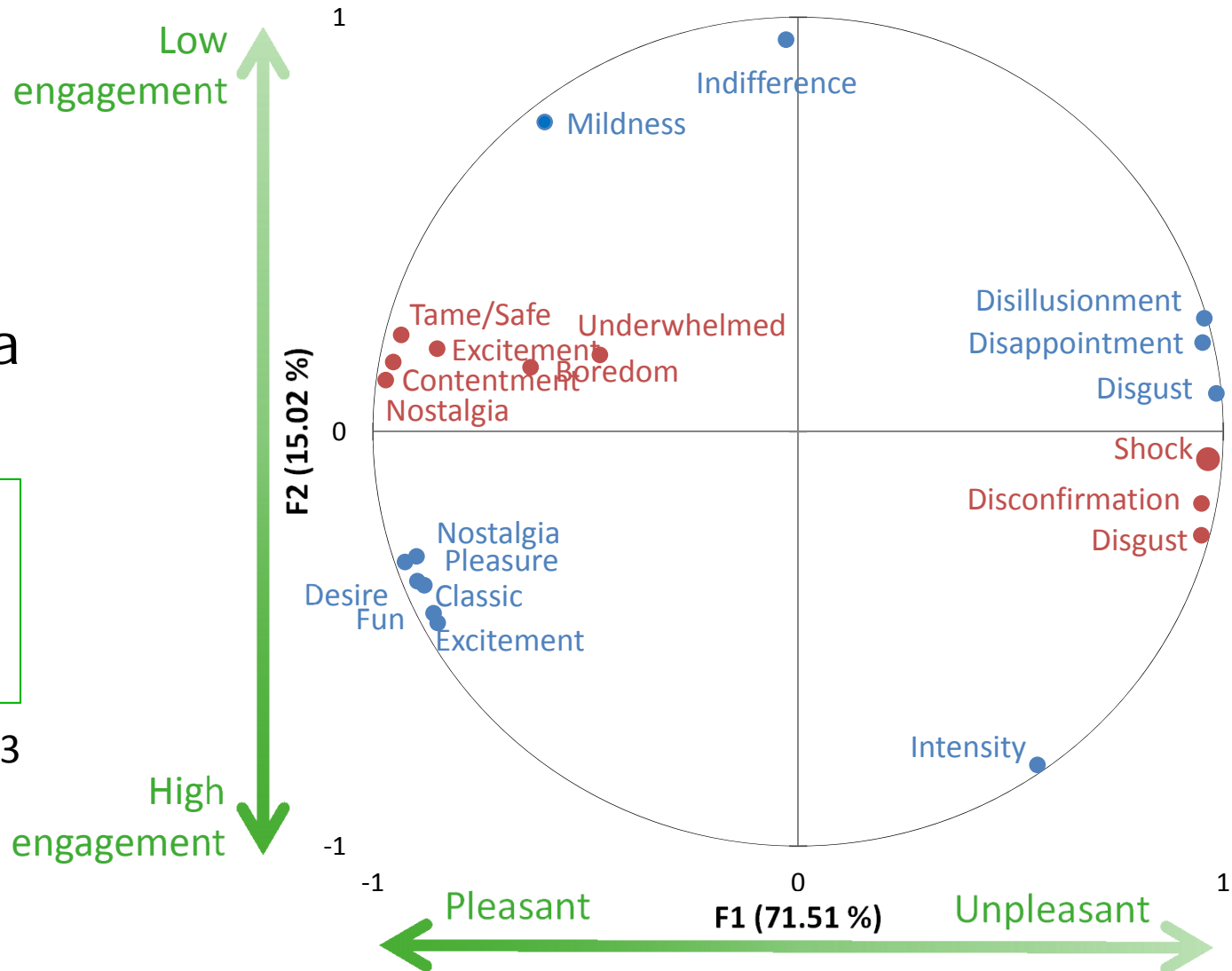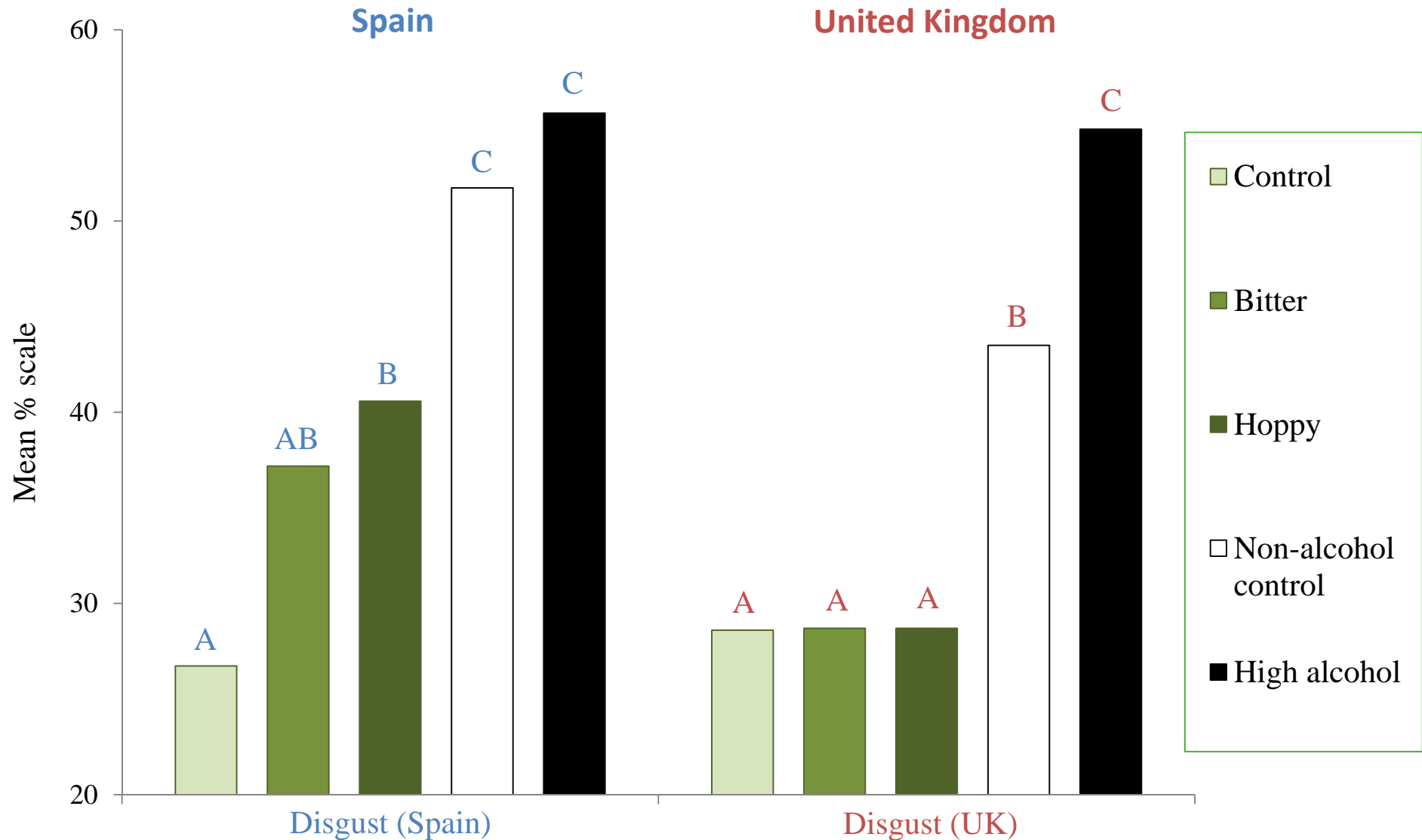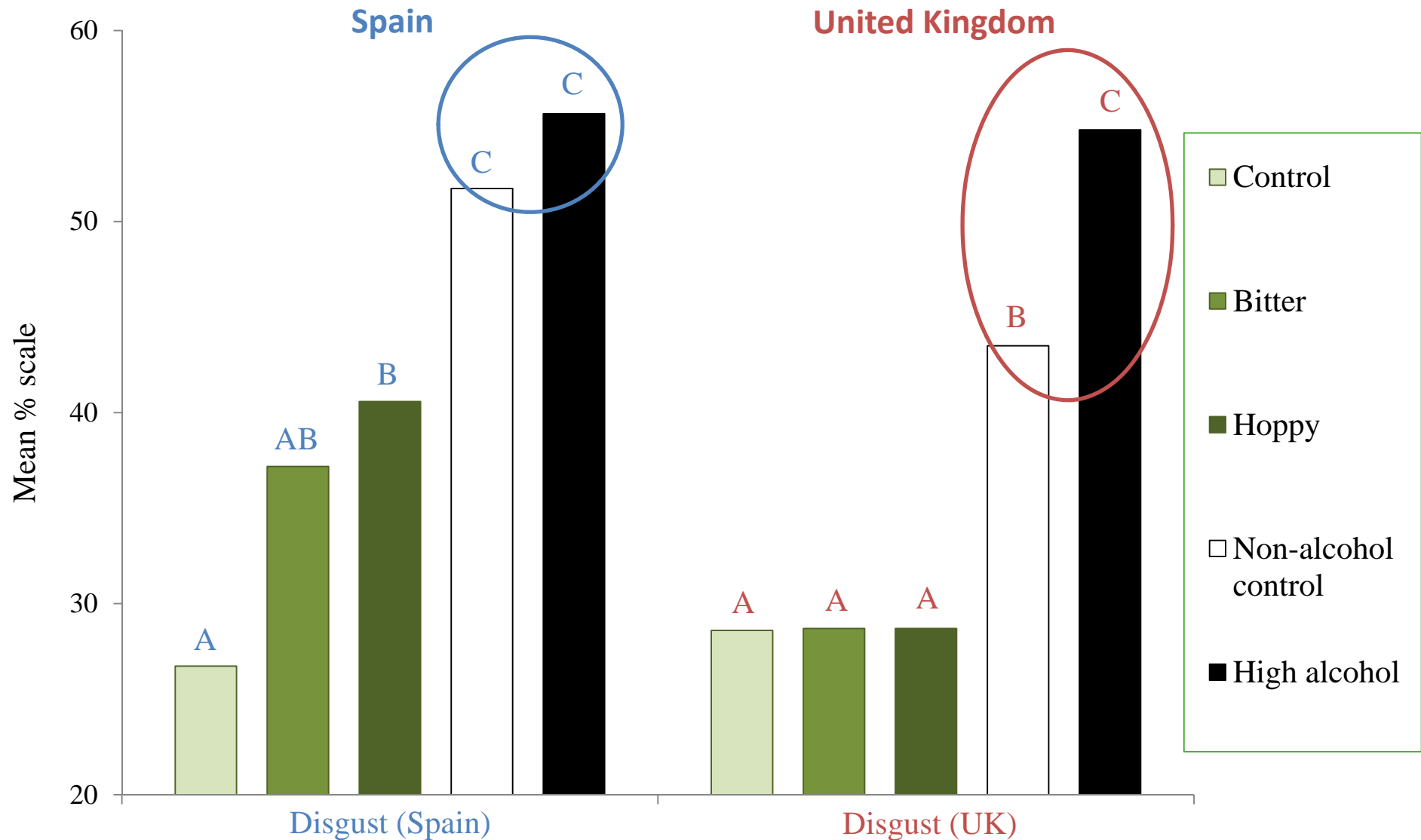
Low engagement

High engagement

Pleasant   **Unpleasant**

F1 (71.51 %)

F2 (15.02 %)

1

0

-1

-1   0   1

Indifference

Mildness

Disillusionment
Disappointment
Disgust
Shock
Disconfirmation
Disgust

Tame/Safe
Underwhelmed
Excitement
Contentment
Boredom
Nostalgia

Nostalgia
Pleasure
Desire
Classic
Fun
Excitement

Intensity

Unpleasant emotion categories
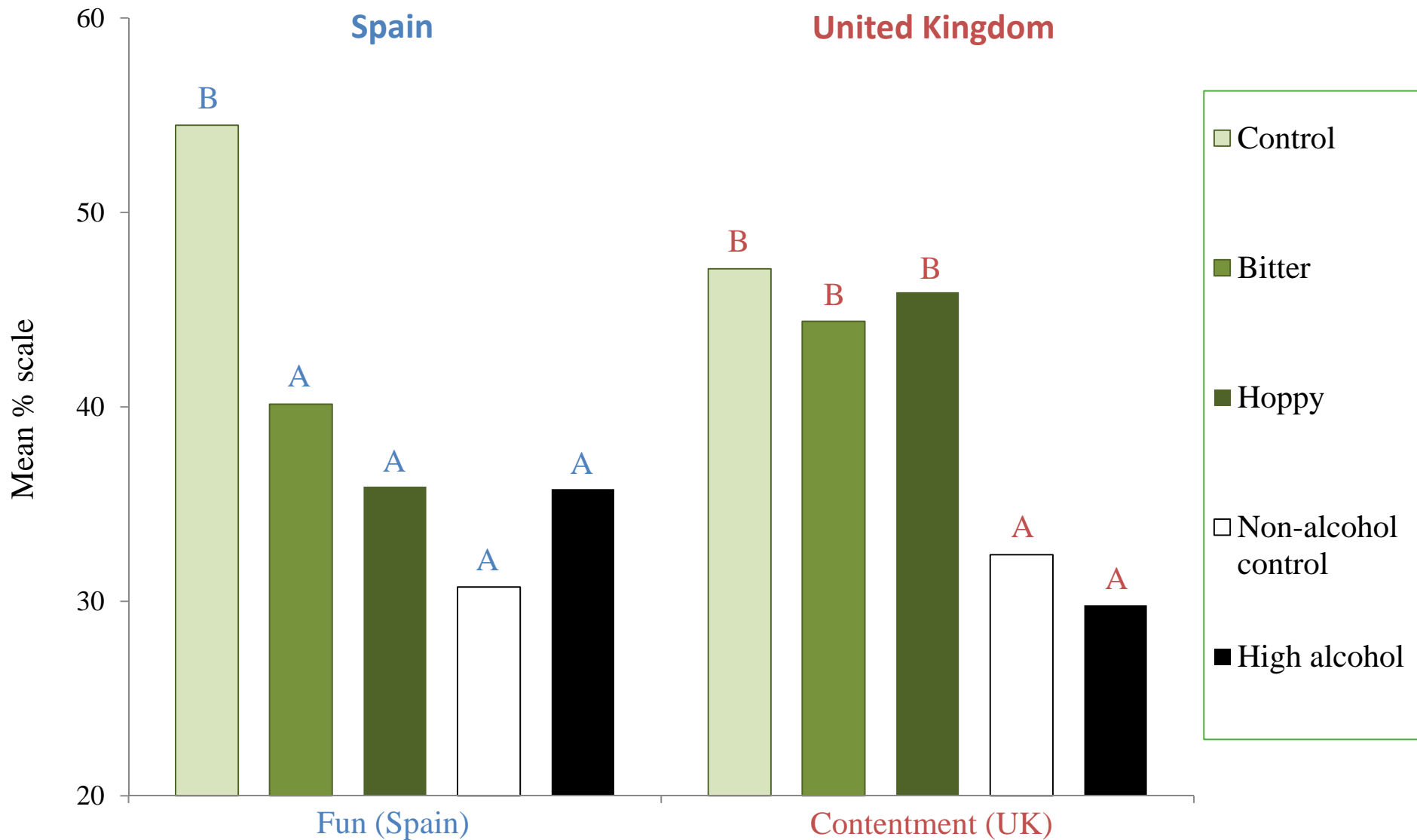
Unpleasant emotion categories
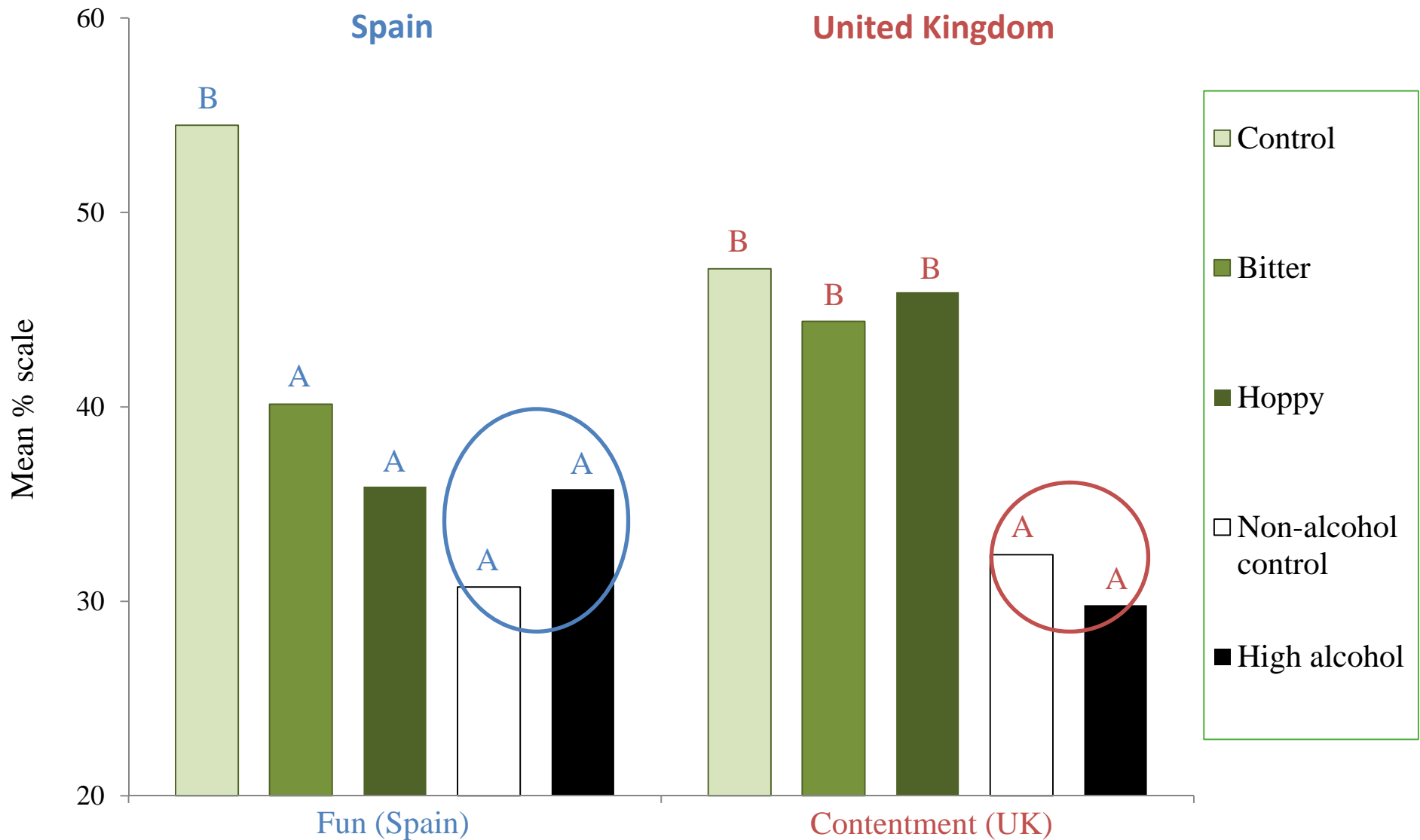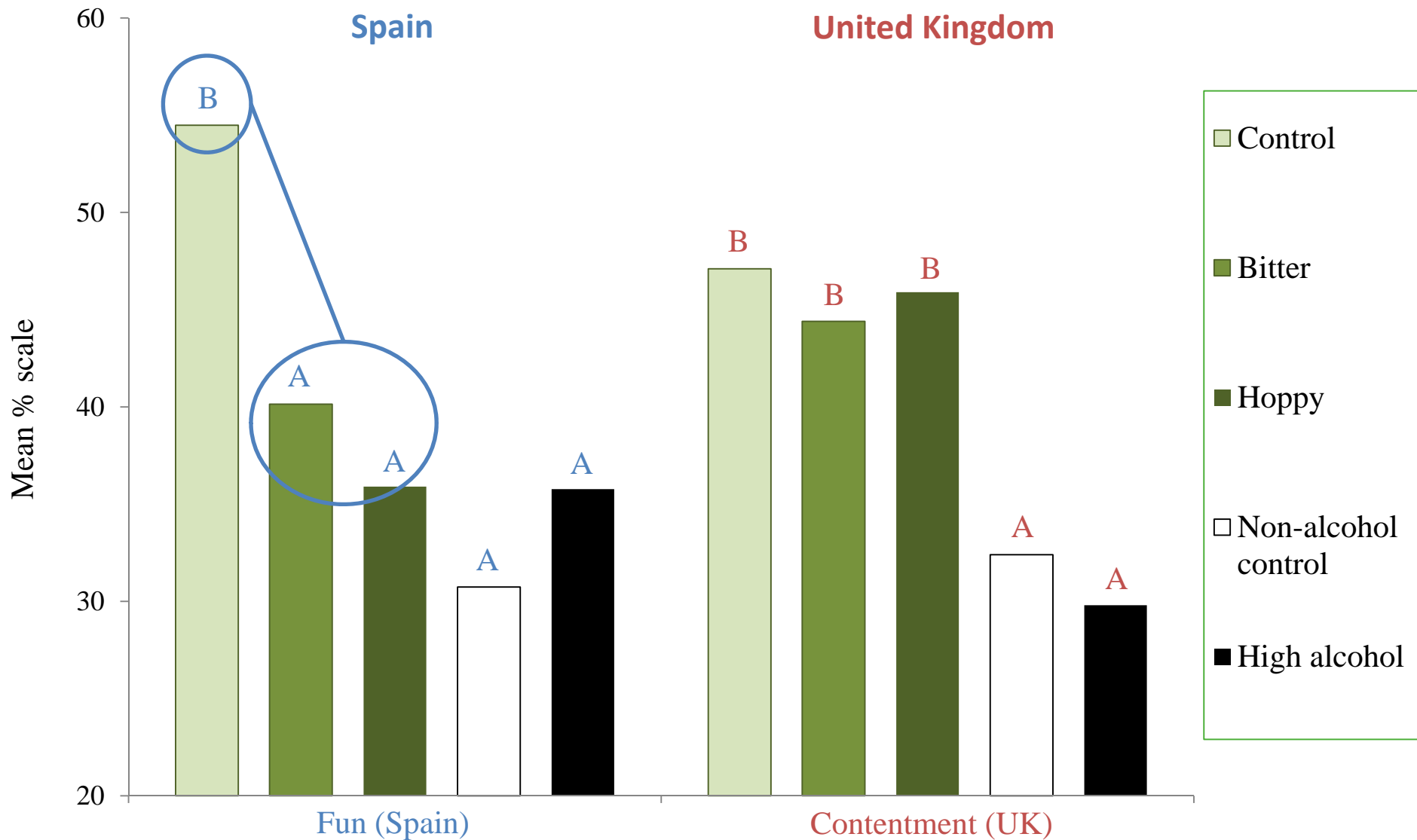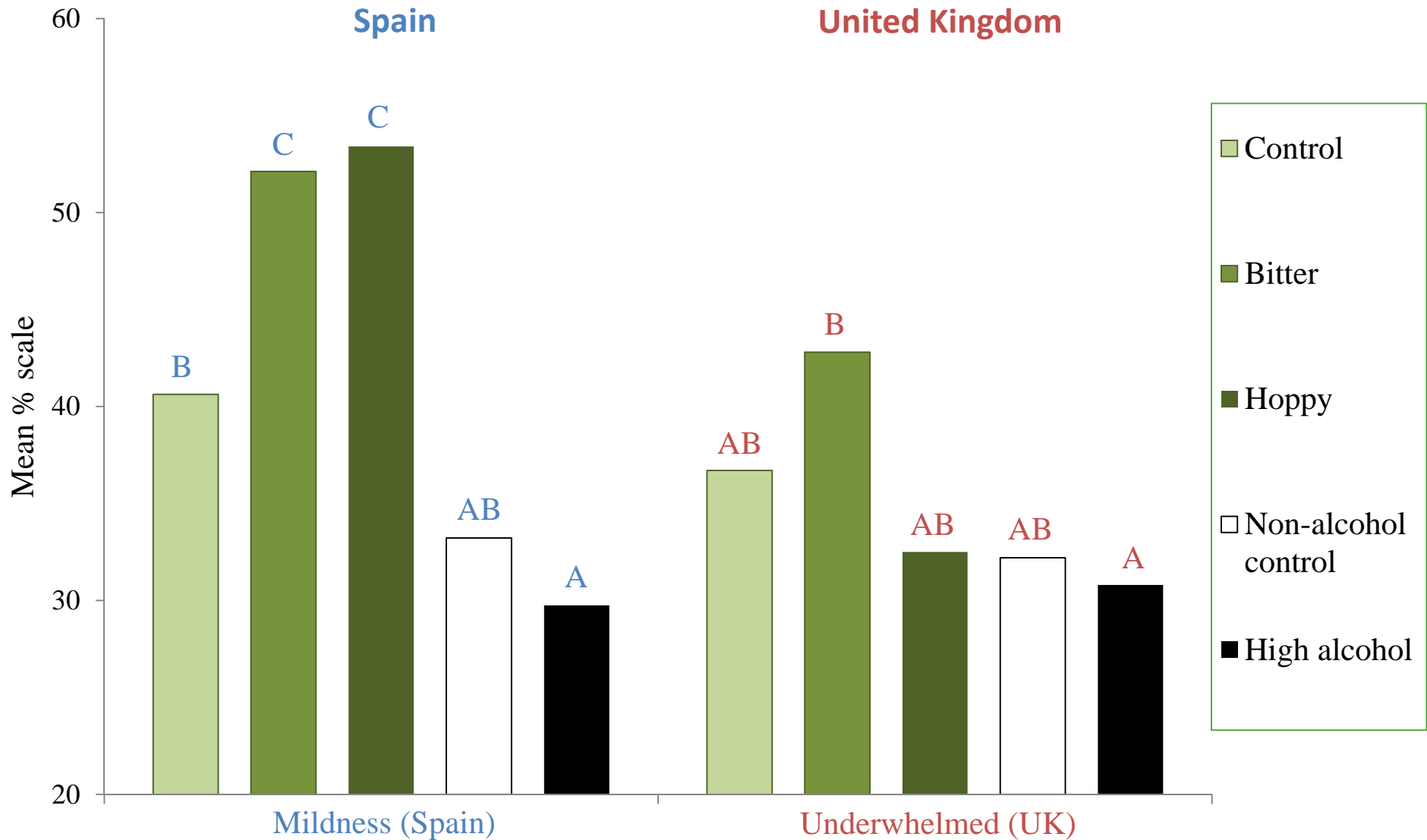
Unpleasant emotion categories

Unpleasant emotion categories

Pleasant emotion categories

Pleasant emotion categories

Mean % scale

Spain   United Kingdom

Fun (Spain)   Contentment (UK)

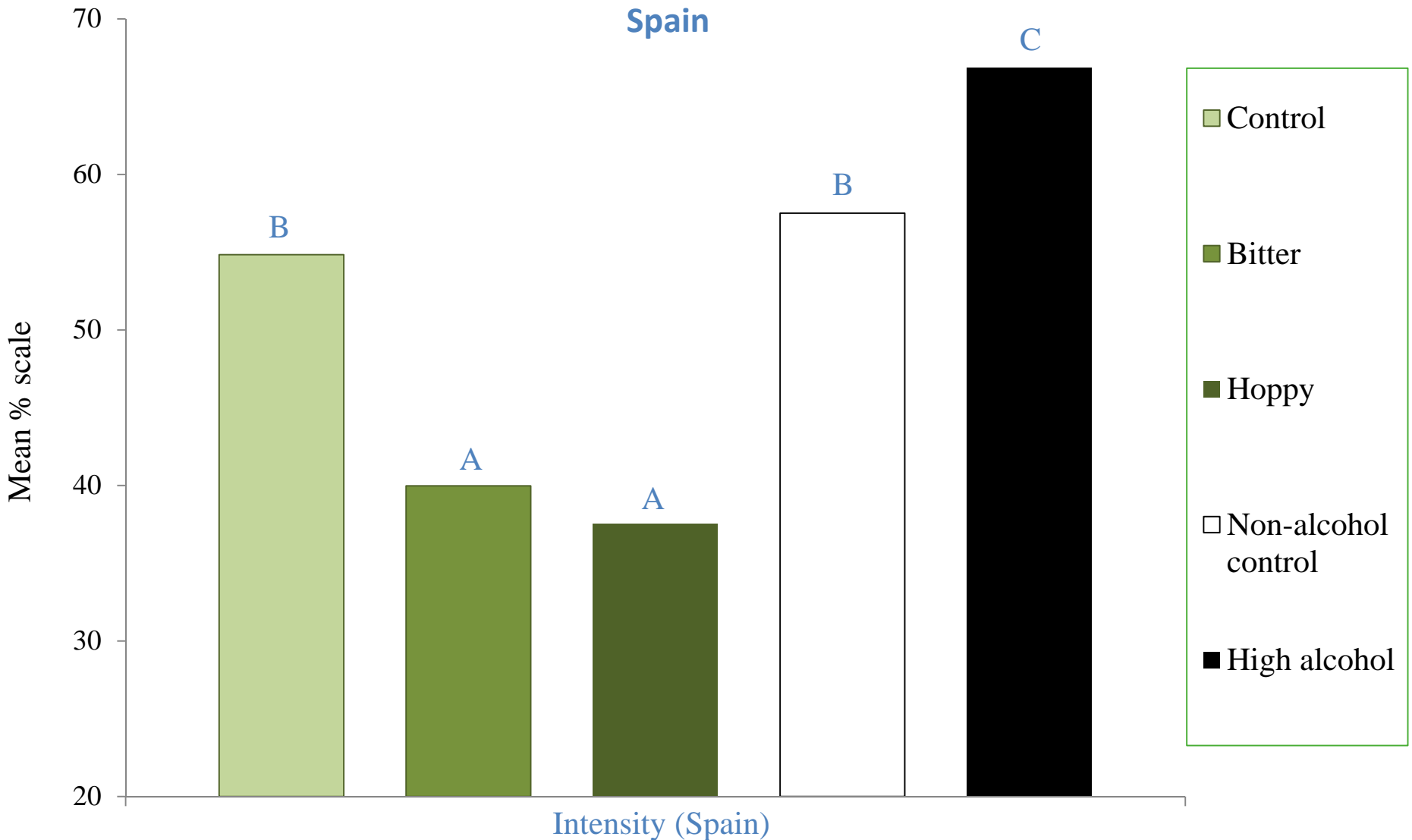Legend: Control, Bitter, Hoppy, Non-alcohol control, High alcohol
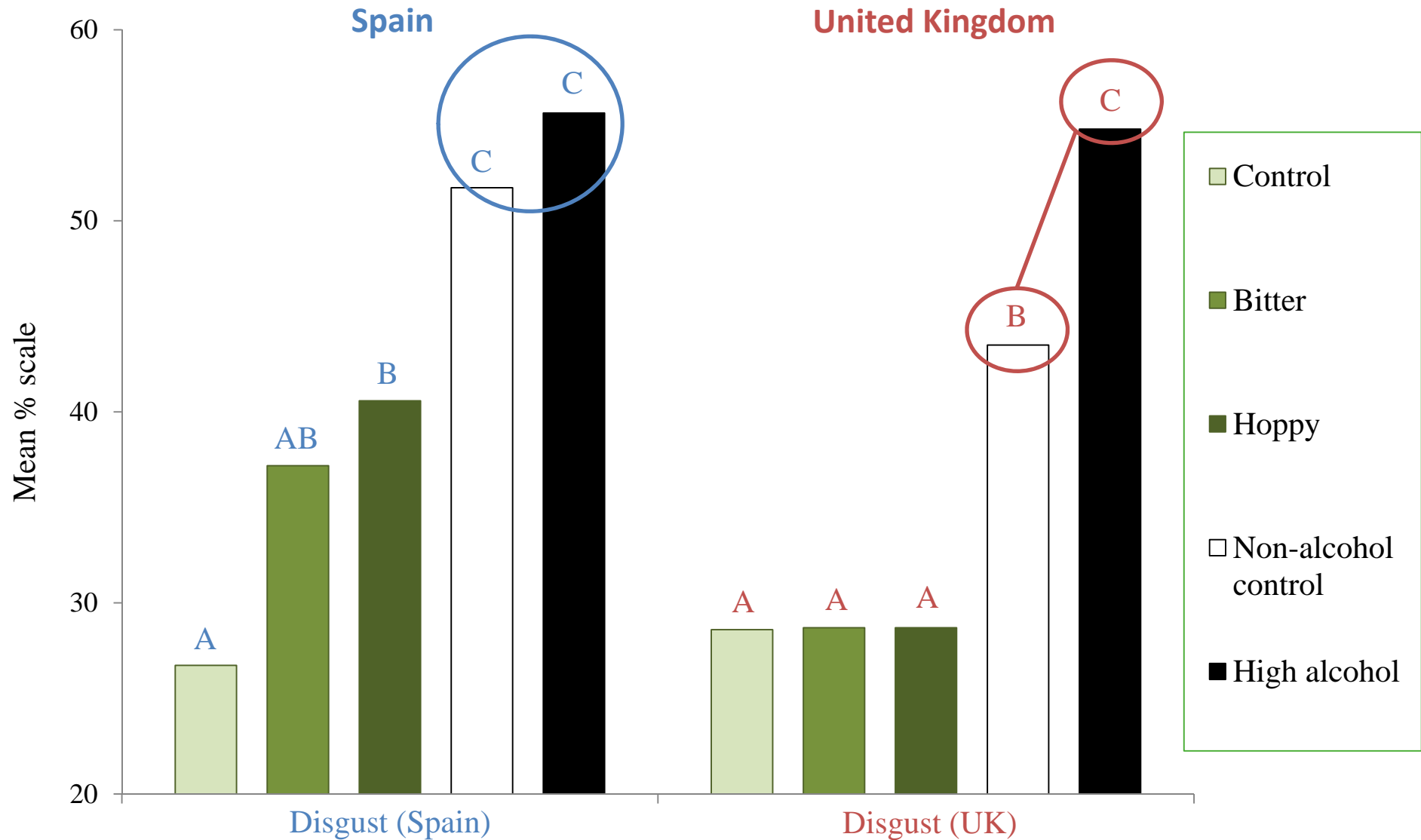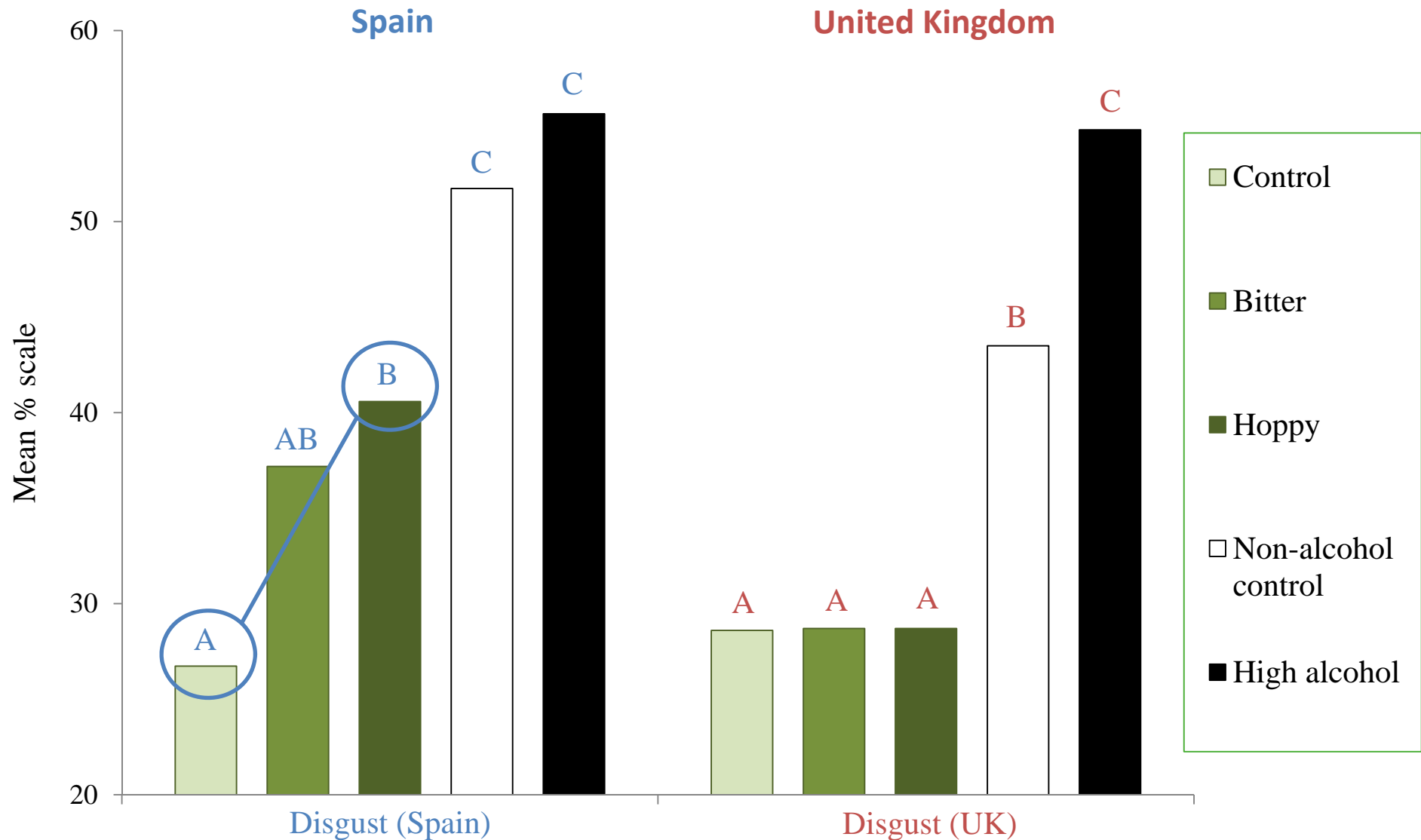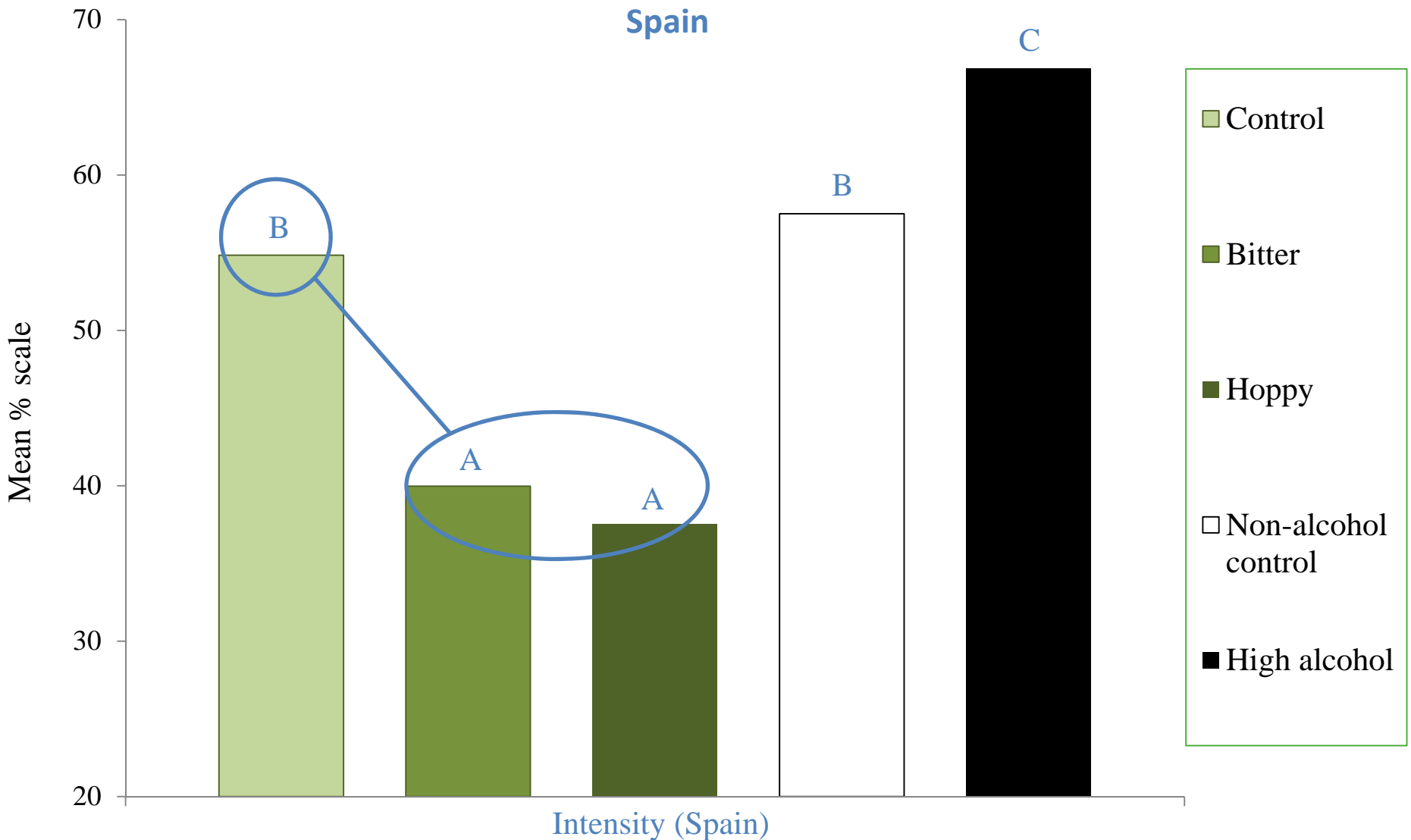
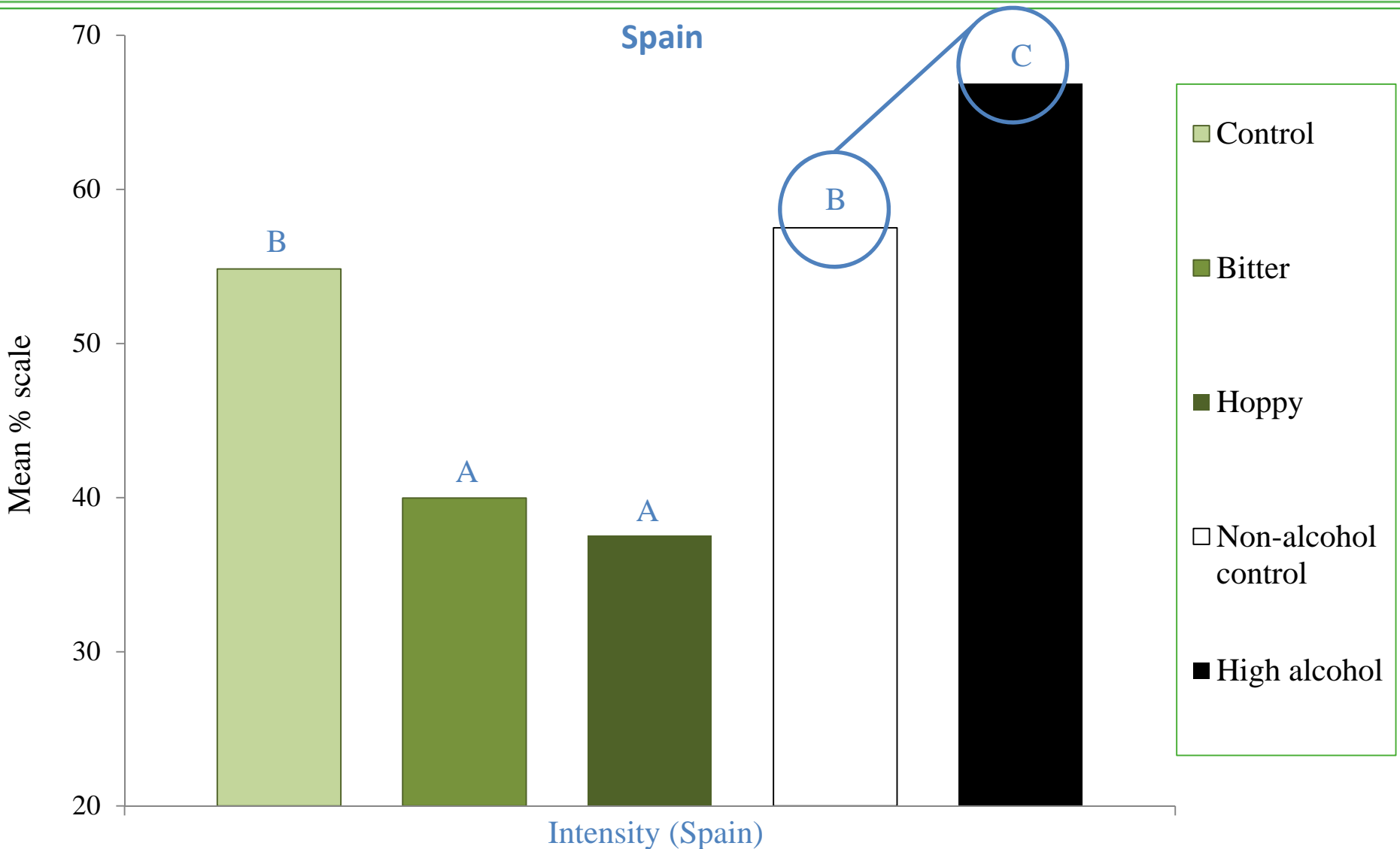# Pleasant emotion categories

Low engagement emotion categories
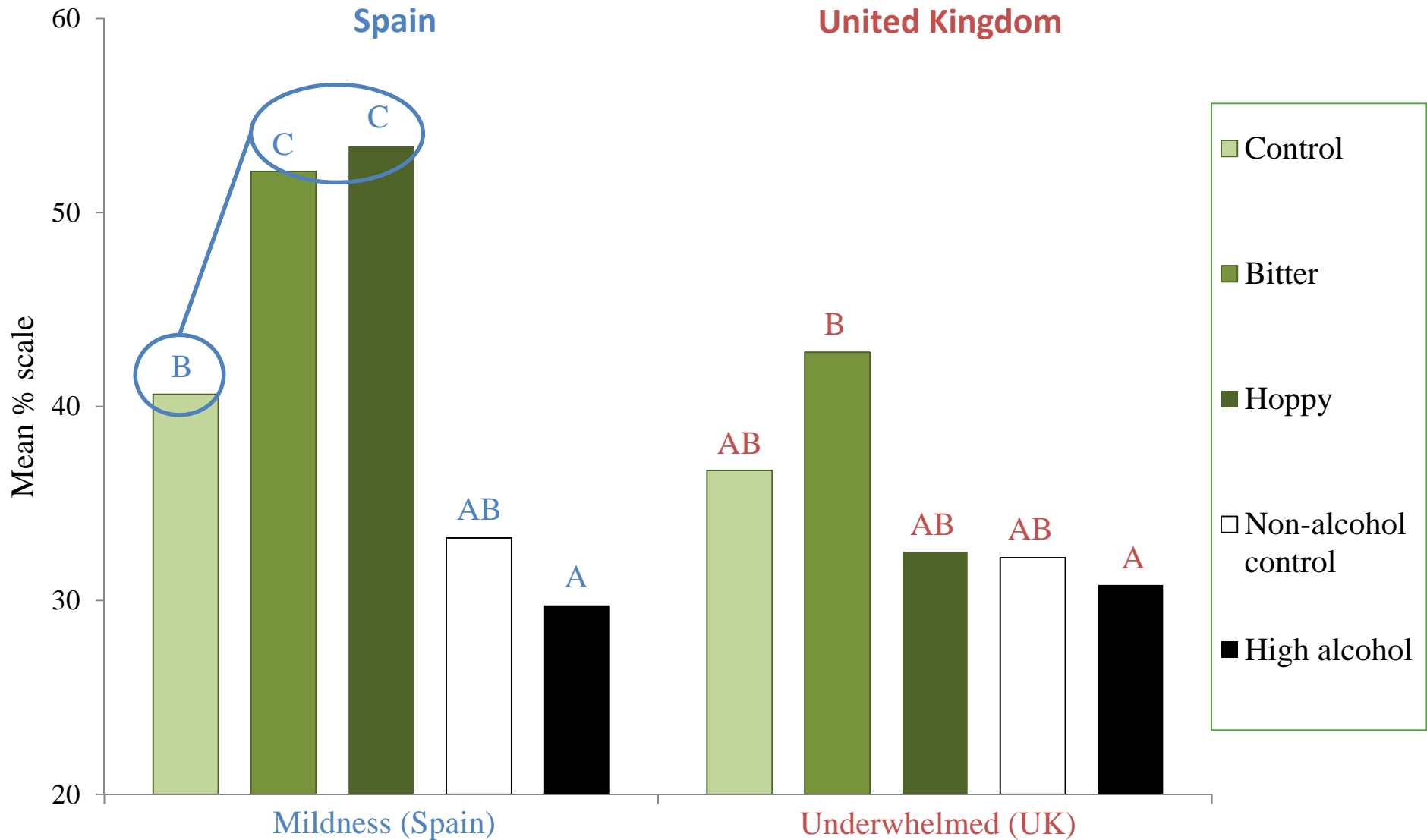
Intensity (high engagement)

Intensity (high engagement)

Intensity (high engagement)

Do sensory properties of beer elicit the same emotional responses across cultures?

Summary

Do sensory properties of beer elicit the same emotional responses across cultures?

- Similarities across cultures in pleasantness

Summary

Do sensory properties of beer elicit the same emotional responses across cultures?

- Similarities across cultures in pleasantness

- Engagement is a more integral part of the emotional experience of a product in Spain than the UK

Summary

Do sensory properties of beer elicit the same emotional responses across cultures?

- Similarities across cultures in pleasantness

- Engagement is a more integral part of the emotional experience of a product in Spain than the UK

- There is a need to understand variation in emotional response across cultures in global products

Happiness from hoppiness?

- ## No!

  - ### Disgust and mildness from hoppiness in Spain

  - ### No difference to control in the UK

Happiness from hoppiness?

- No!

  - Disgust and mildness from hoppiness in Spain

  - No difference to control in the UK

- Indeed, manipulation of any of the selected sensory properties in this study did not increase consumer happiness

Thank you

Questions?