

Why measure emotional response?

Products equally 'liked'



Product A



Product B

Why measure emotional response?

Product differentiation

Deeper insights into consumer relationship with beer



Product A



Product B

Measuring Emotion Response to Food & Drink

- EsSense Profile (King & Meiselman, 2010)

38 emotion terms

- Consumer-oriented product-specific lexicon (Thomson et al, 2010); Ng, Chaya & Hort, 2013)
 - Long lexicons cumbersome/fatiguing for respondents and resource intense for industry

36 emotion terms

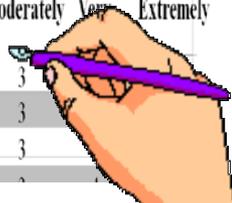
Adventurous Good-natured Pleased Daring
 Active Happy Satisfied Eager
 Affectionate Interested Secure Guilty
 Calm Joyful Tender Mild
 Energetic Loving Warm Polite
 Enthusiastic Merry Whole Steady
 Free Nostalgic Bored Tame
 Friendly Peaceful Disgusted Understanding
 Glad Pleasant Worried Wild
 Good Aggressive

6 summary emotion categories

- Perfume industry adopted a reduced lexicon approach e.g. GEOS (Chrea et al, 2009) & ScentMove™ (Porcherot et al, 2010)

– Categories of terms with similar meaning

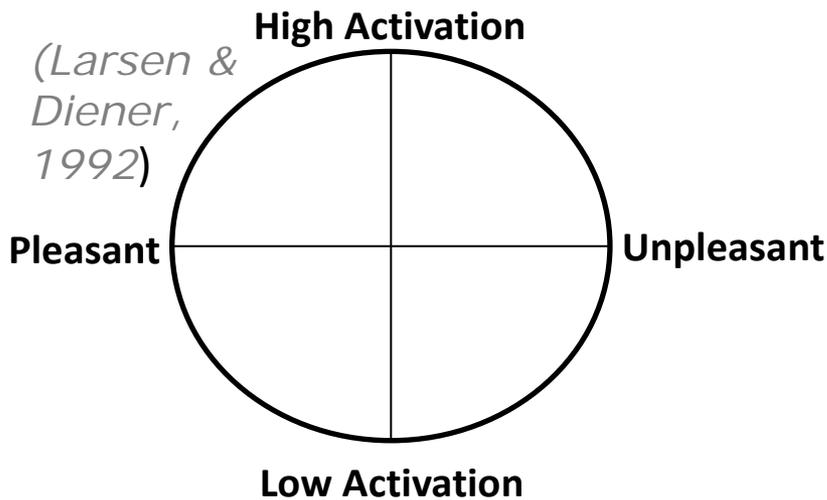
Feeling	Not at all	Slightly	Moderately	Very	Extremely
Active	1	2	3	4	5
Adventurous	1	2	3	4	5
Affectionate	1	2	3	4	5



Research Question?

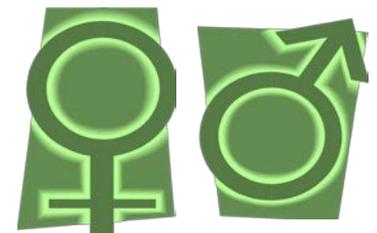
Does using a reduced lexicon result in a loss of consumer response information?

- Aim: Compare relative effectiveness of full (long) versus reduced (short) lexicon to evaluate emotional response to beer
 - Are the emotional spaces comparable?
 - How is product discrimination affected?
 - Can differences between consumer segments be identified?



18-34yrs

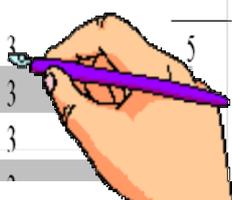
35yrs +



Methods



Feeling	Not at all	Slightly	Moderately	Very	Extremely
Active	1	2	3	4	5
Adventurous	1	2	3	4	5
Affectionate	1	2	3	4	5

A cartoon illustration of a hand holding a purple pen, pointing towards the table.

Samples

Commercial beer spiked or modified ethanol/carbonation level representing range of sensory properties in beer:

'Control'	Commercial lager
Hoppy	Aroxa kettle hop extract
Malty	Aroxa 2-acetyl pyridine
Light struck	Aroxa 3-methyl-2-butene-1-thiol
Isoamyl acetate	Aroxa isoamyl acetate
Diacetyl	Aroxa diacetyl
DMS	Aroxa dimethyl sulphide
Acetaldehyde	Aroxa acetaldehyde
Bitter	Aroxa iso- α -acids
Sweet	dextrose
Low CO₂	recarbonated to ~1.6 units
High CO₂	recarbonated ~4 units
Non-alcohol control	Commercial non-alcohol lager
High alcohol	ethanol added to 8% ABV

Lexicon development

17 subjects (18-65 years, 3 groups) generated emotional terms using group triadic elicitation



Clarified terms were '*emotions felt*' by subjects as opposed to '*properties*' of beer e.g. horrible

Final Emotion terms (n= 43)

- Alarmed
- Cheated
- Confused
- Overwhelmed
- Shocked
- Strange/weird
- Bored
- Calm
- Comfortable
- Comforted
- Content
- Enjoyment
- Good
- Happy
- Nice
- Pleasant
- Pleased
- Relaxed
- Satisfied
- Curious
- Enthusiastic
- Excited
- Fulfilled
- Fun
- Impressed
- Interested
- Optimistic
- Pleasantly surprised
- Want
- Warm
- Desirous
- Nostalgic
- Relieved
- Disappointed
- Dissatisfied
- Disgusted
- Horrible
- Repulsed/repelled
- Unpleasant
- Unpleasantly surprised
- Tame
- Underwhelmed
- Safe

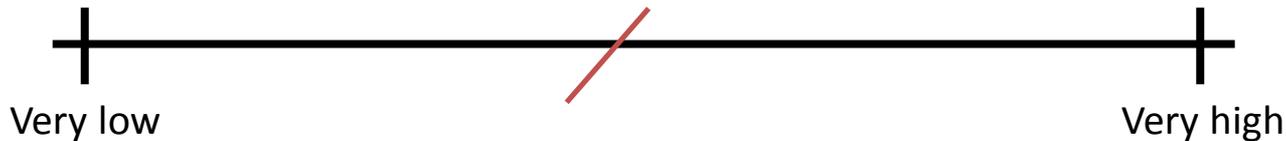
9 emotion categories

Category (cronbach's α)	Terms
Shock (0.96)	Alarmed/Cheated/Confused/ Overwhelmed/Shocked
Boredom	Bored
Contentment (0.99)	Calm/Comfortable/Comforted Content/Enjoyment/Good/Happy Nice/Pleasant/Pleased/Relaxed
Excitement (0.99)	Curious/Enthusiastic/Excited Fulfilled/Fun/Impressed/Interested Optimistic/Pleasantly surprised/Want
Nostalgia (0.91)	Desirous/Nostalgic/Relieved
Disconfirmation (0.97)	Disappointed/Dissatisfied/ Unpleasantly surprised
Disgust (0.99)	Disgusted/Horrible Repulsed/repelled
Tame/safe (0.95)	Tame/Safe
Underwhelmed	Underwhelmed

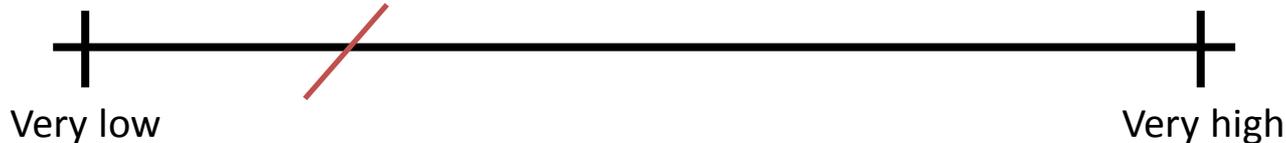
Lexicon Comparison

- 109 beer consumers (54% female, 68% 18-34 yrs) recruited
- Subjects attended 2 sessions counterbalanced for lexicon type
 - Dummy sample to avoid inflated first order effects
- 10ml beer samples served at 4°C
 - Cracker and mineral water as palate cleansers

Disappointed

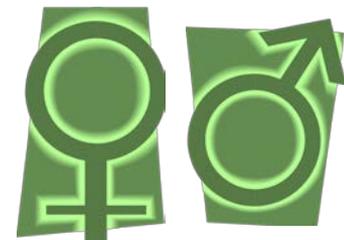
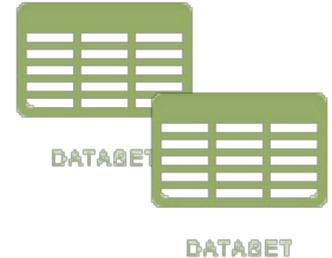


Disappointed / Dissatisfied / Unpleasantly surprised



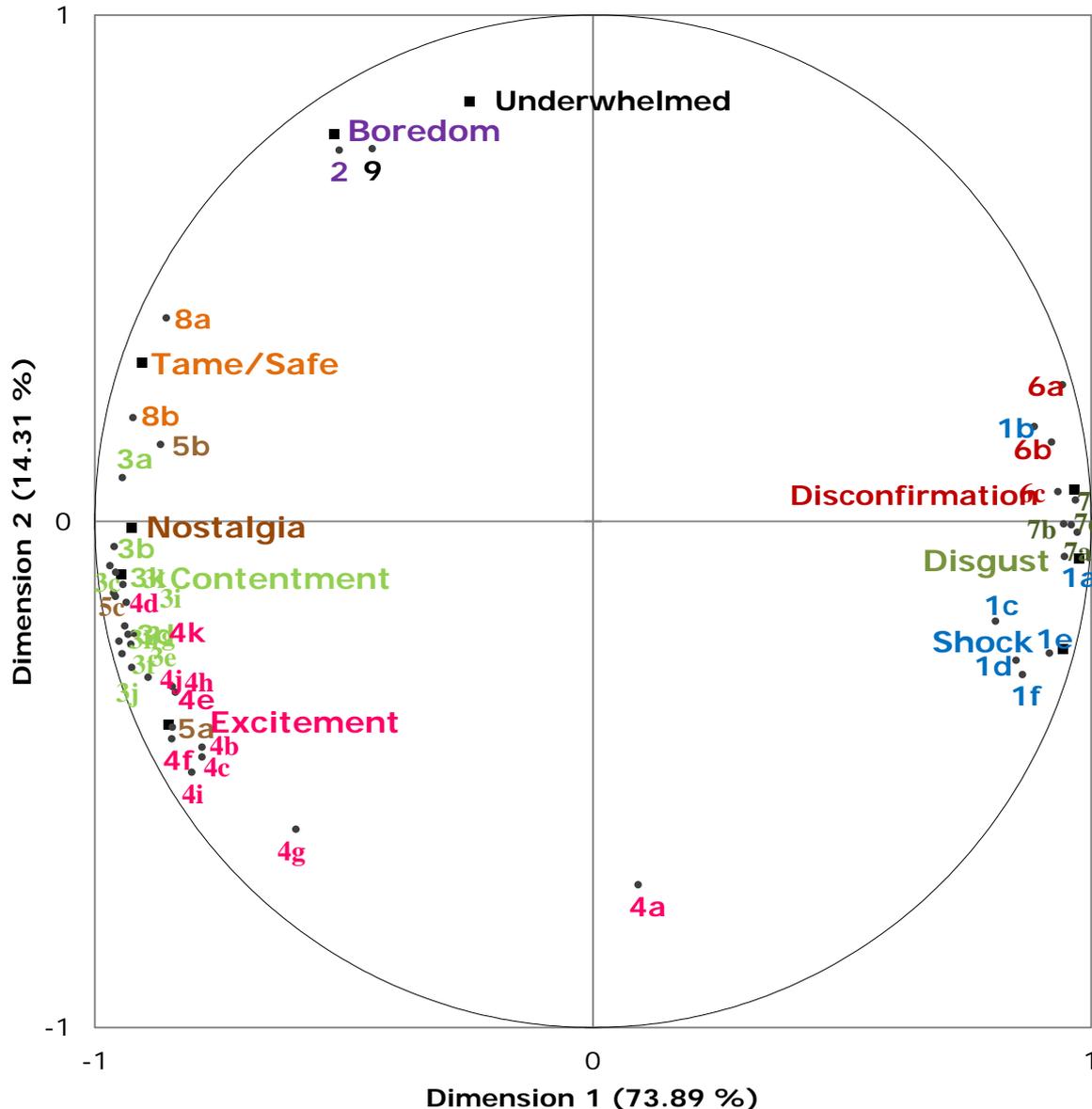
Data Analysis

- Multiple Factor Analysis (MFA) used to compare emotional space and product positioning from two lexicon data sets
- Mixed Model Analysis of Variance (ANOVA)
 - To investigate effect of lexicon length on sample differences, and gender, age and sample interaction effects in terms of emotional response and discrimination



RESULTS

Results: MFA plot representing combined Emotional space



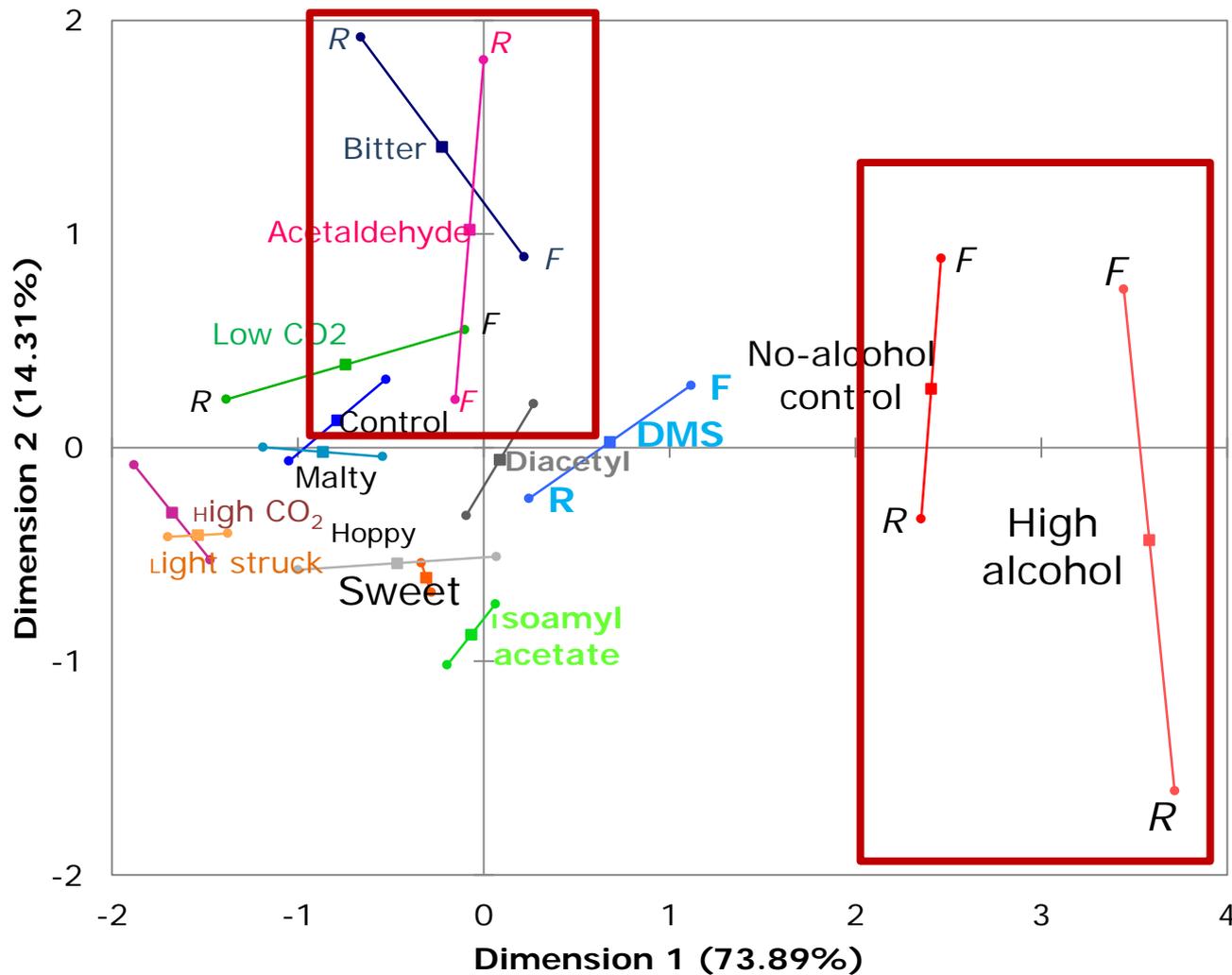
MFA plot combining data from full (numbered data) and reduced lexicon (category)

Reduced Categories match up to associated individual terms in the emotional space

RV coefficient 0.79

Individual terms appear to have similar level of pleasantness within a category but varying levels of engagement

MFA comparative product plot



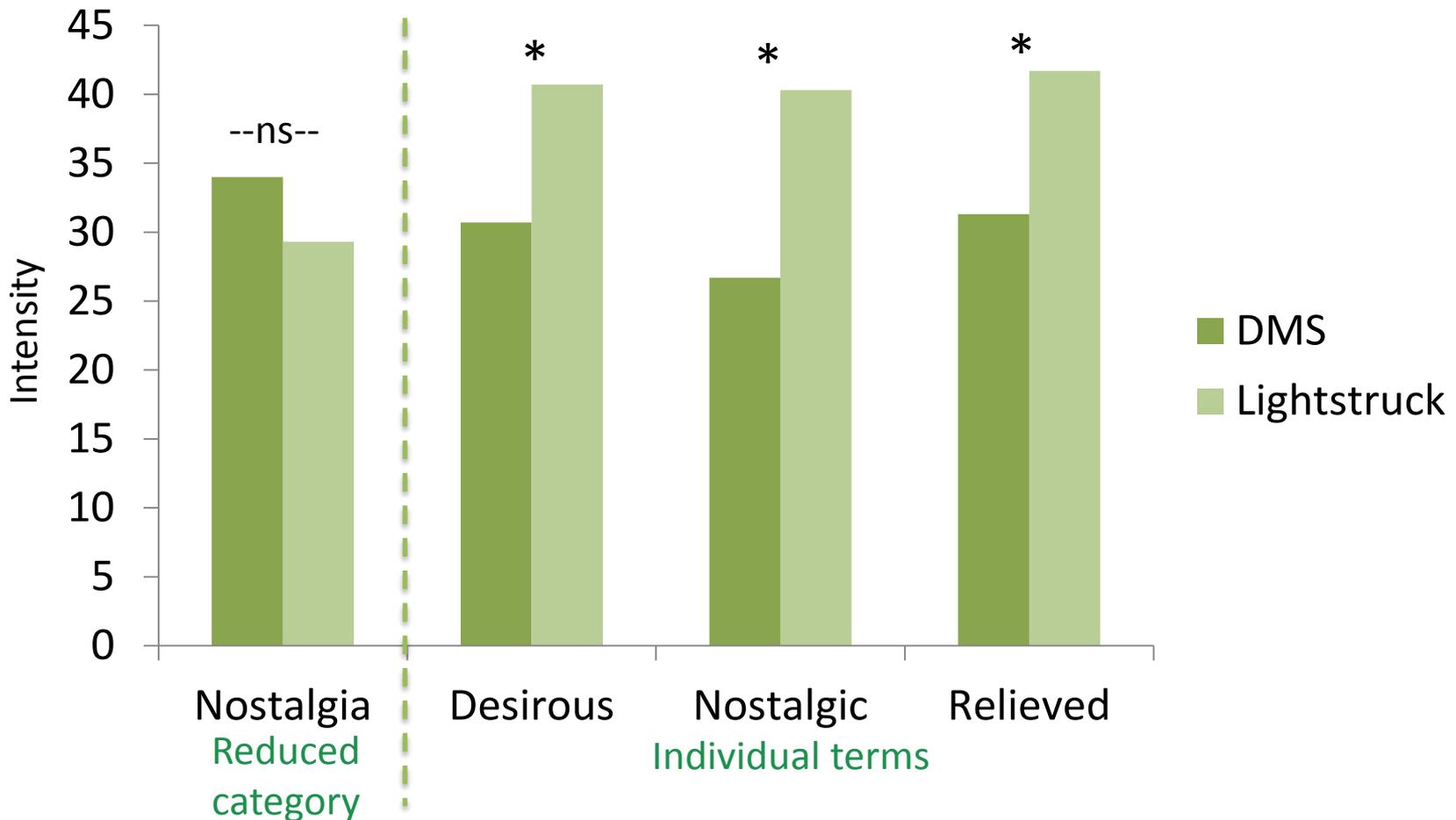
Comparing Product positioning for Reduced & Full lexicon

Low and high alcohol samples rated more engaging with Reduced form but bitter and acetaldehyde less engaging

Low Co₂ and DMS samples rated more pleasant with reduced lexicon

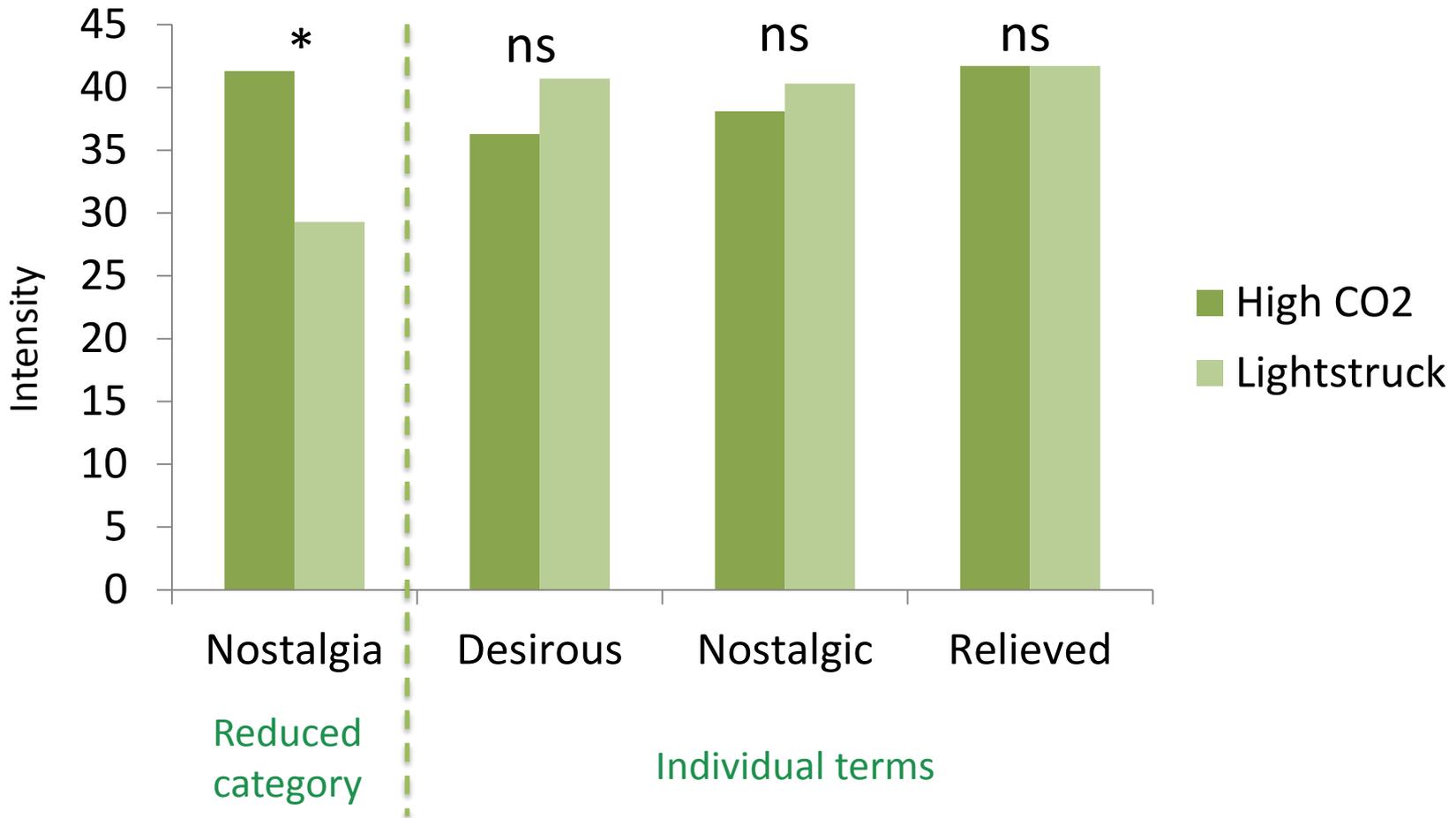
Product discrimination – some losses...

- Some 'information' was lost when employing the reduced form:



Some gains.....

- Here the nostalgia category discriminated the high CO₂ sample from lightstruck:



Comparing sample discrimination of lexicons

- Similar pattern to 'Nostalgia' across many of the categories/individual terms
- No notable differences between discriminability of Overwhelmed and Boredom (same term on both lexicons)
- No overall significant effect of one lexicon over another in terms of product discrimination

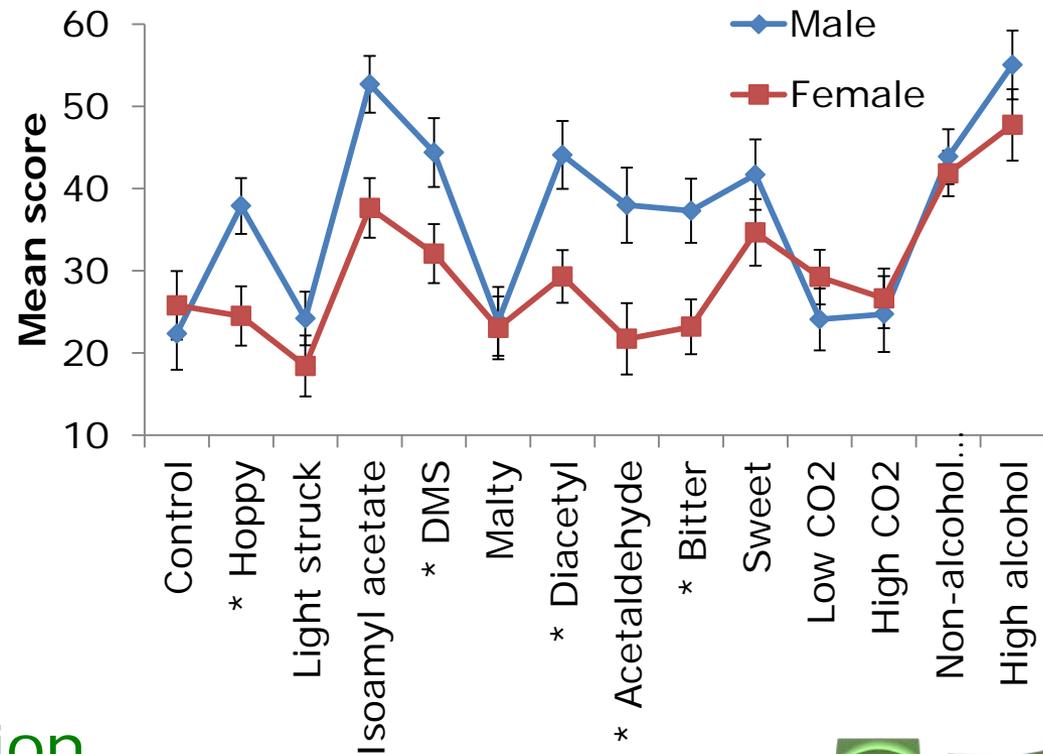


Consumer segmentation: Gender

- Full lexicon highlighted male tendency to score higher. Not evident using reduced lexicon.

e.g. 'Strange/weird'
(* $p < 0.05$)

- No effect of lexicon type on *extent* of product discrimination by gender



Consumer Segmentation: Age

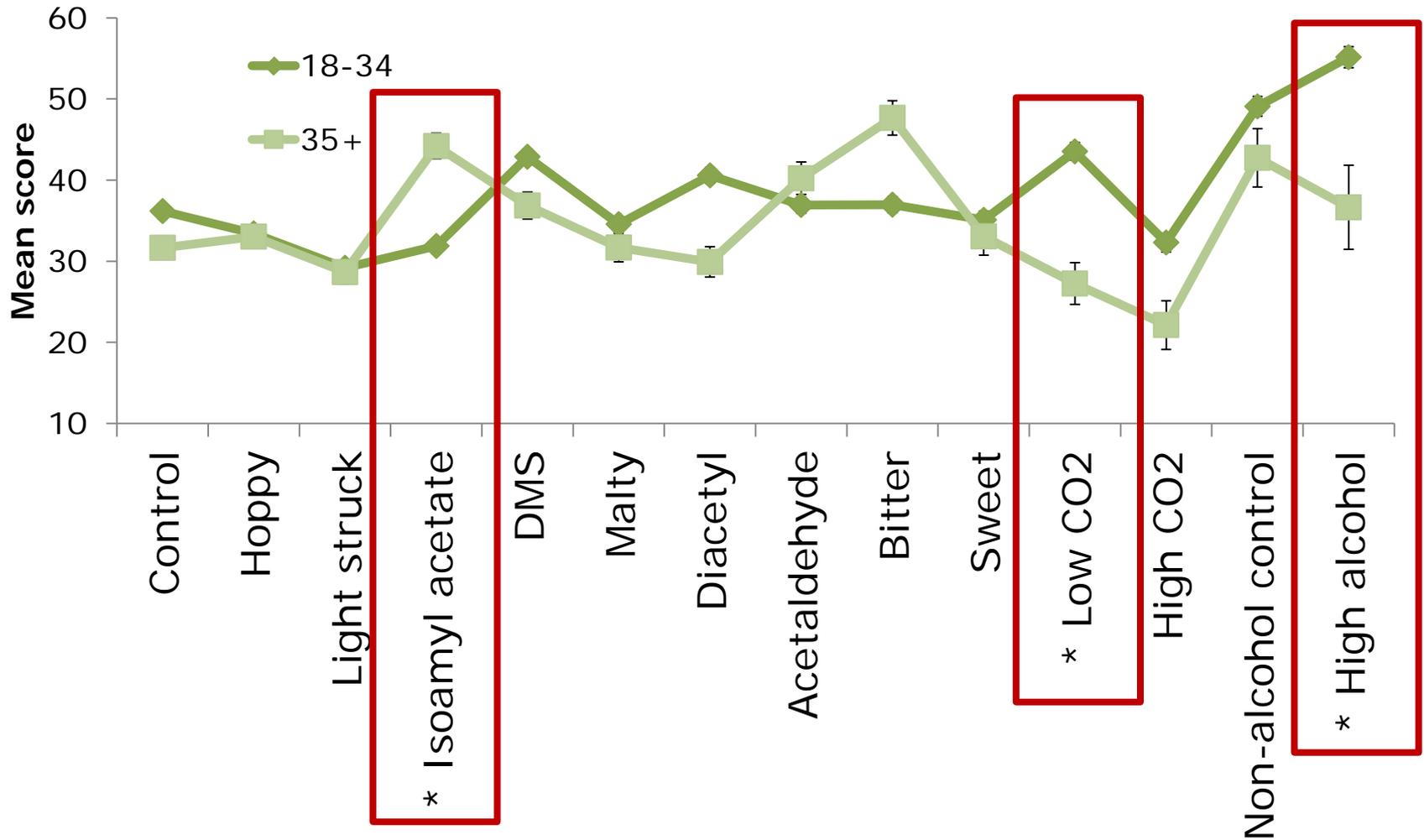
- In general Full lexicon revealed more significant effects of age group
 - E.g. Disconfirmation and Tame/safe Categories: no effect of age, but 18-34yrs scored samples higher for associated single terms on full lexicon
- Full lexicon revealed more interactions between age and sample
 - Reduced lexicon: only Excitement Category revealed an interaction where 18-34yrs rated bitter, acetylaldehyde and Diacetyl samples higher, but others lower.
 - Sweet sample rated higher on full form for excited, fun interested by young group but not by Excitement category on reduced lexicon

18-34yrs

35yrs +

Consumer segmentation: Age

Disappointed



Closing remarks

- Measuring Emotional response gives rich insight into consumer relationship with beer
- Reduced lexicon produced similar emotional space as full lexicon
- No major differences in sample discrimination, certainly no specific effect of lexicon
- Full form revealed more effects of consumer segmentation
- Reduced form is a cost effective approach but full lexicons may be more valuable if particular interest in consumer segmentation





Any questions?

