THE IMPACT OF 'LABELLING' ON THE BELIEFS, ATTITUDES, AND BEHAVIOURS OF CONSUMERS WITH FOOD ALLERGY : A MULTILEVEL PERSPECTIVE

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The presentation will be based on the following :

EuroPrevall 2006-2010

DunnGalvin A, Gaffney A, Hourihane JO. Developmental pathways in food allergy: a new theoretical model. Allergy 2009;64:560-568.

UK Food Standards Agency 2014-2015

The preferences of those with food allergies and/or intolerances when eating out. Report

Safe Food Ireland 2015

Impact of food labelling practices on individuals with food allergy & food intolerance . Report

FARRP 2013-2016

Communicating risk via labelling and thresholds : impact, understanding, and concerns. Report

iFAAM 2013 -2017

DunnGalvin A, Chan C-H, Crevel R, Grimshaw K, Poms R, Schnadt S, et al. Precautionary allergen labelling: perspectives from key stakeholder groups. Allergy 2015;70:1039-51.

- Food allergy is influenced by biological, psychological and environmental factors

  ➤ It can best be understood by considering the interactions of variables that cut across multiple levels
  ➤ Need for joined up and integrated approach to developing responses and solutions to present and future challenges
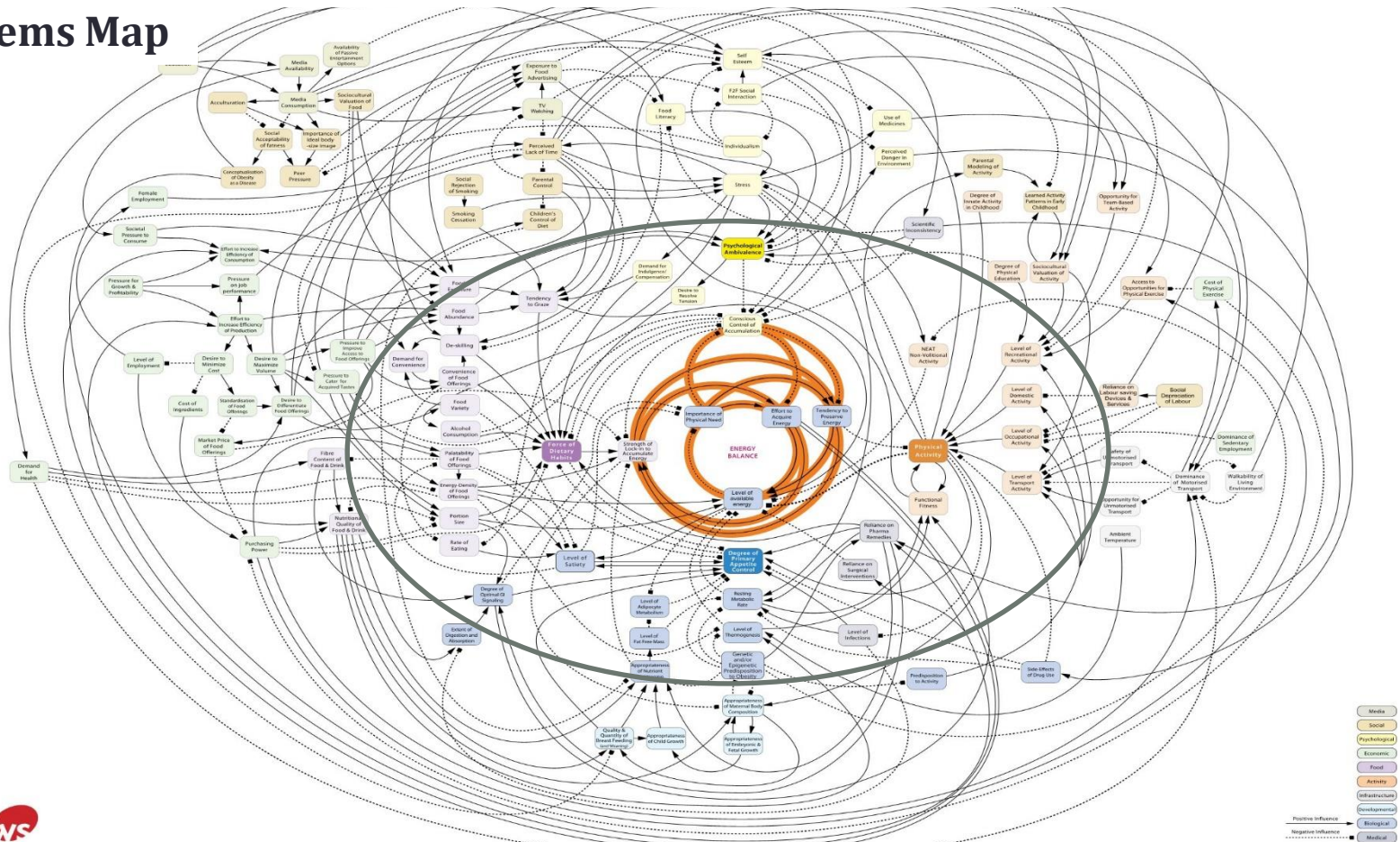
Consumer Behaviour is complex !

Systems Map
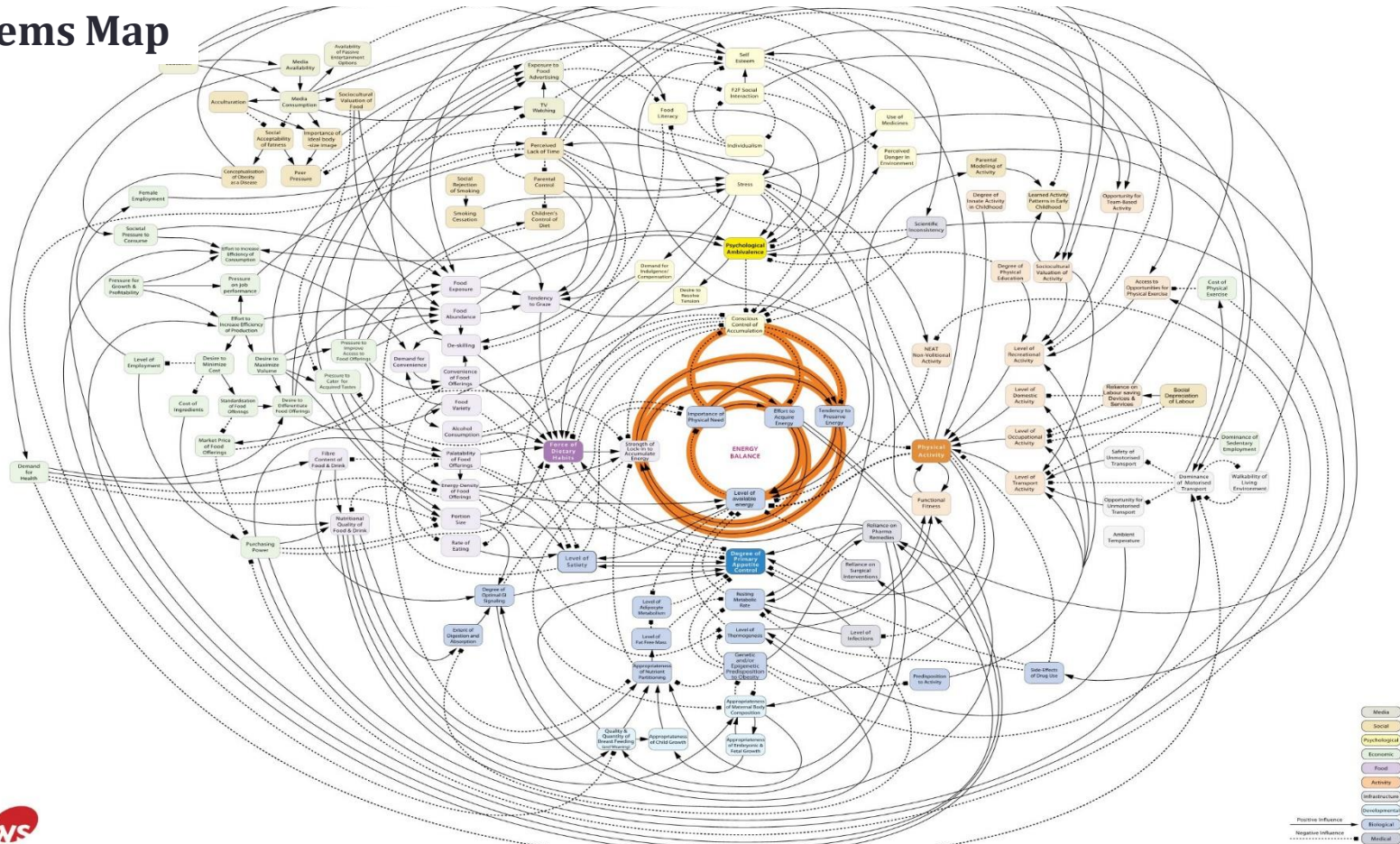
Food Allergy perceptions, decision making, and behaviours
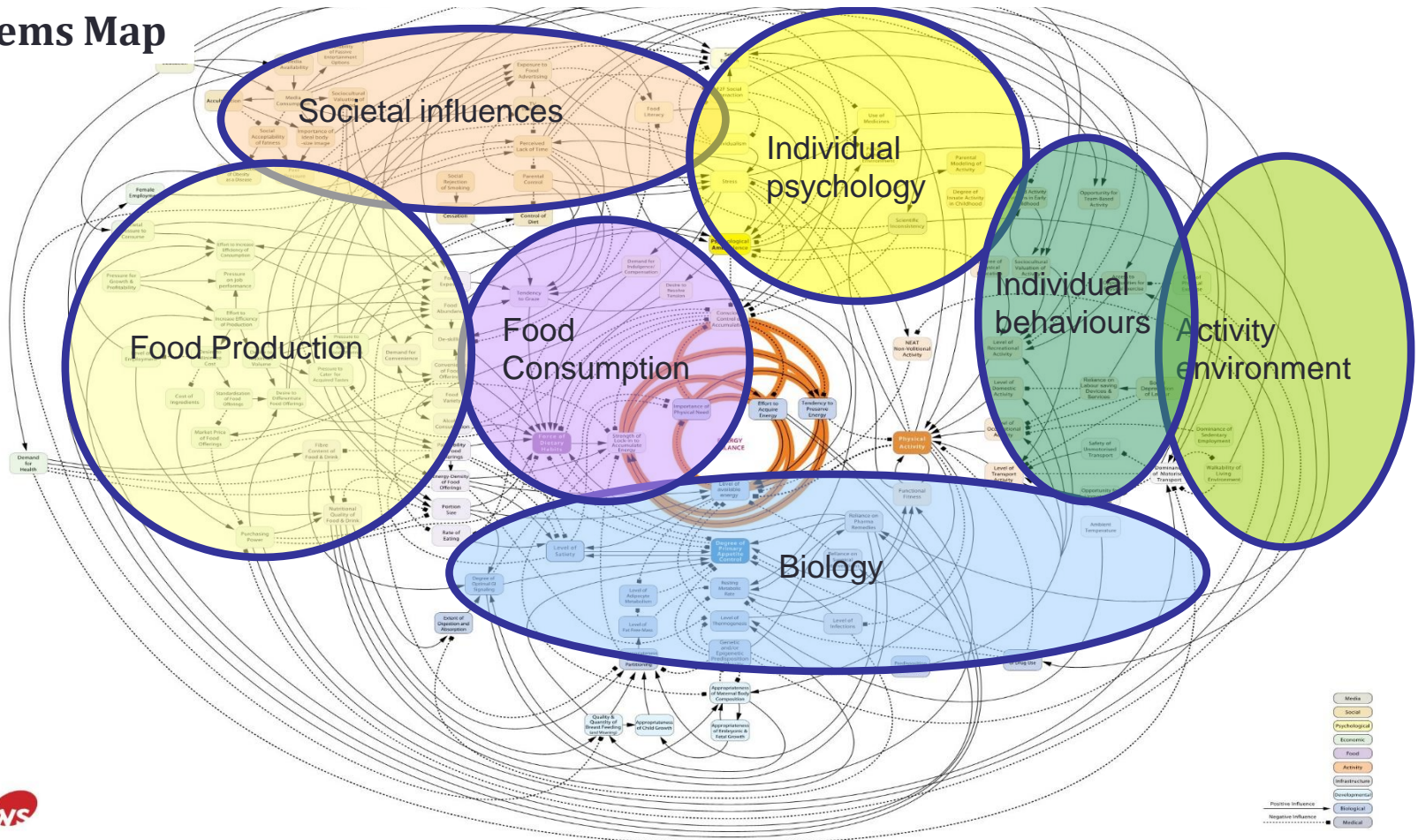## 7 major sub-systems at core

Systems Map

Food Allergy perceptions, decision making, and behaviours
7 major sub-systems at core

Systems Map

'Living with uncertainty'

The theory of 'choice under uncertainty' implies that the attitude an individual has towards risk is strongly predictive, in a variety of contexts, of individual behaviour.

➢ For industry, for consumers, for clinicians, for regulators, and for health professionals (including nutritionists, dieticians, nursing staff, and psychologists).

'Living with uncertainty'

Stacey RD. Strategic management and organizational dynamics. London:
Pitmann Publishing; 1996.
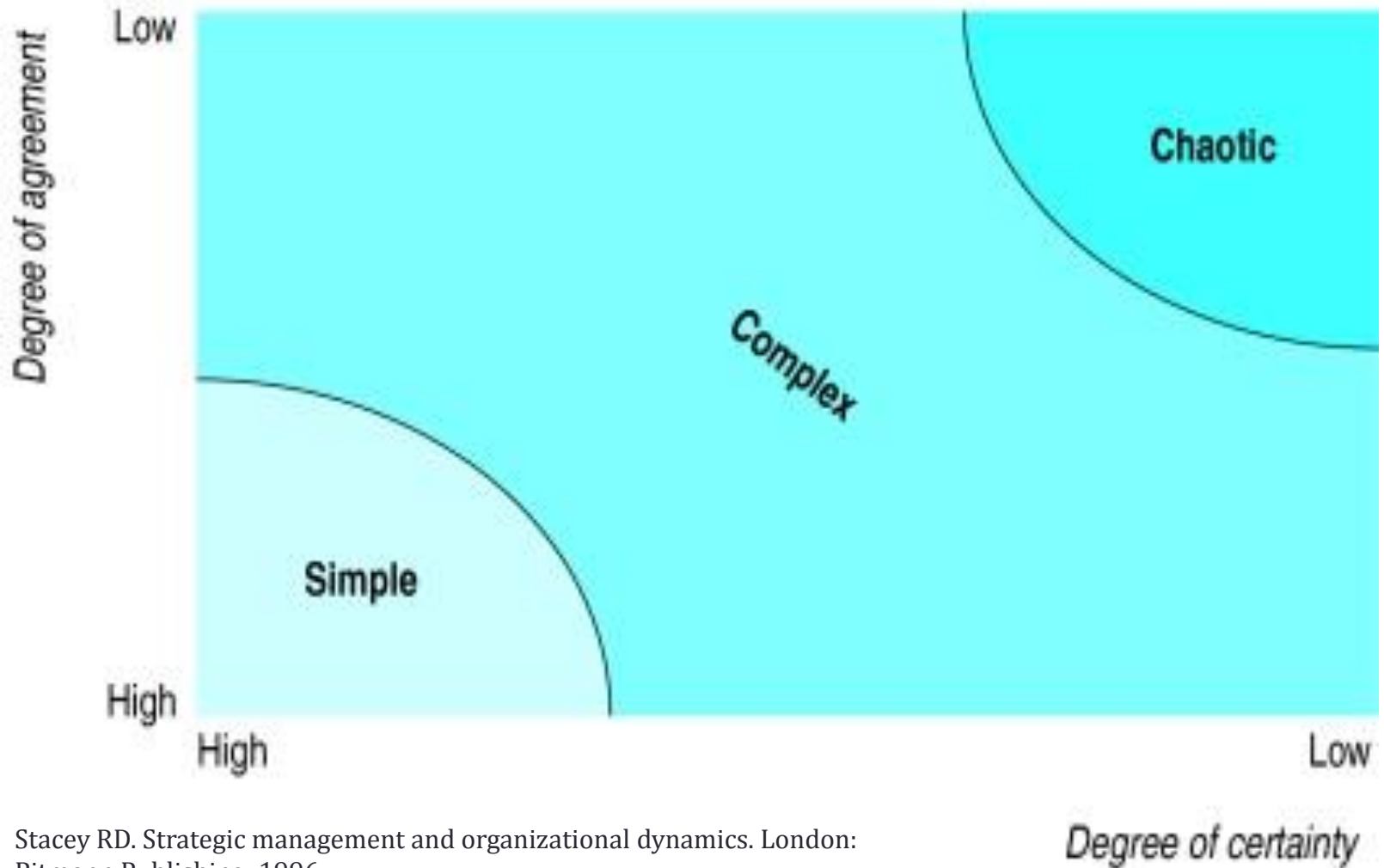
IMPACT OF LABELLING PRACTICE ON INDUSTRY

Choice and risk reasoning

Are non-regulated precautionary labelling statements 'fit for purpose' ?

The case of ROI (FSAI)

- Out of the 106 samples without any allergen declarations, 11% were found to contain <u>at least one</u> of the specified food allergens.

- Only 6.5 % of foods with a PAL tested were found to contain the specific food allergen(s) mentioned on the label.

  - E.g. 5/75 samples with a PAL (nut) contained peanut (7 %), and one out of 18 and 30 samples contained egg (6 %) and soya (3 %) respectively.

The case of the UK (RSSL)

Products that **contained** a detectable allergen without having a PAL statement

	(%)	Number of samples
Gluten	3.3	18/542
Milk	2.1	10/474
Hazelnut	0	0/988
Peanut	0	0/950

Products that **did not contain** allergens but had a PAL statement on label

	(%)	Number of samples
Gluten	19	97/509
Milk	18	77/435
Hazelnut	44	472/959
Peanut	45	430/948

Likelihood of conducting risk assessment to inform PAL

- How likely a company is to apply PAL will depend on its ability to conduct thorough **risk assessments**

- Based on the interviews with key executives, the **dairy sector** is the most likely to apply PAL

No 37%

Yes 63%
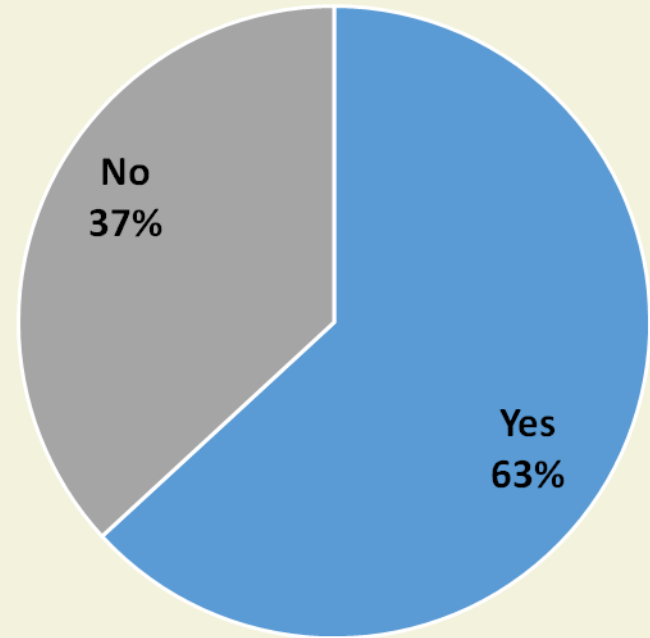
Percentage of participants that perform a risk assessment before adding PAL (n=29).

The manufacturer's dilemma

- Precautionary allergen labelling (PAL) was developed by the food industry to manage and communicate risk

- The food industry recognises that PALs have spread
  - ❖ EG 65% of Australian retail food products from selected categories were found to have PALs

- Application, and associated level of risk, inconsistent across industry.

The manufacturer's dilemma

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  ➤ Unintended consequences

    ❖ reduces the food choices for consumers with food allergies
    ❖ shopping experience more stressful and time consuming.
    ❖ heightens uncertainty
    ❖ Impact on quality of life

The manufacturer's dilemma

'Actual risk'

❖ Can the use of ED10, ED05 or ED01 derived reference doses be used to limit use of precautionary allergen labelling ?

  ❖ Eg definition of hypoallergenic milk formula, which must be tolerated by 95% of children with cow's milk allergy.
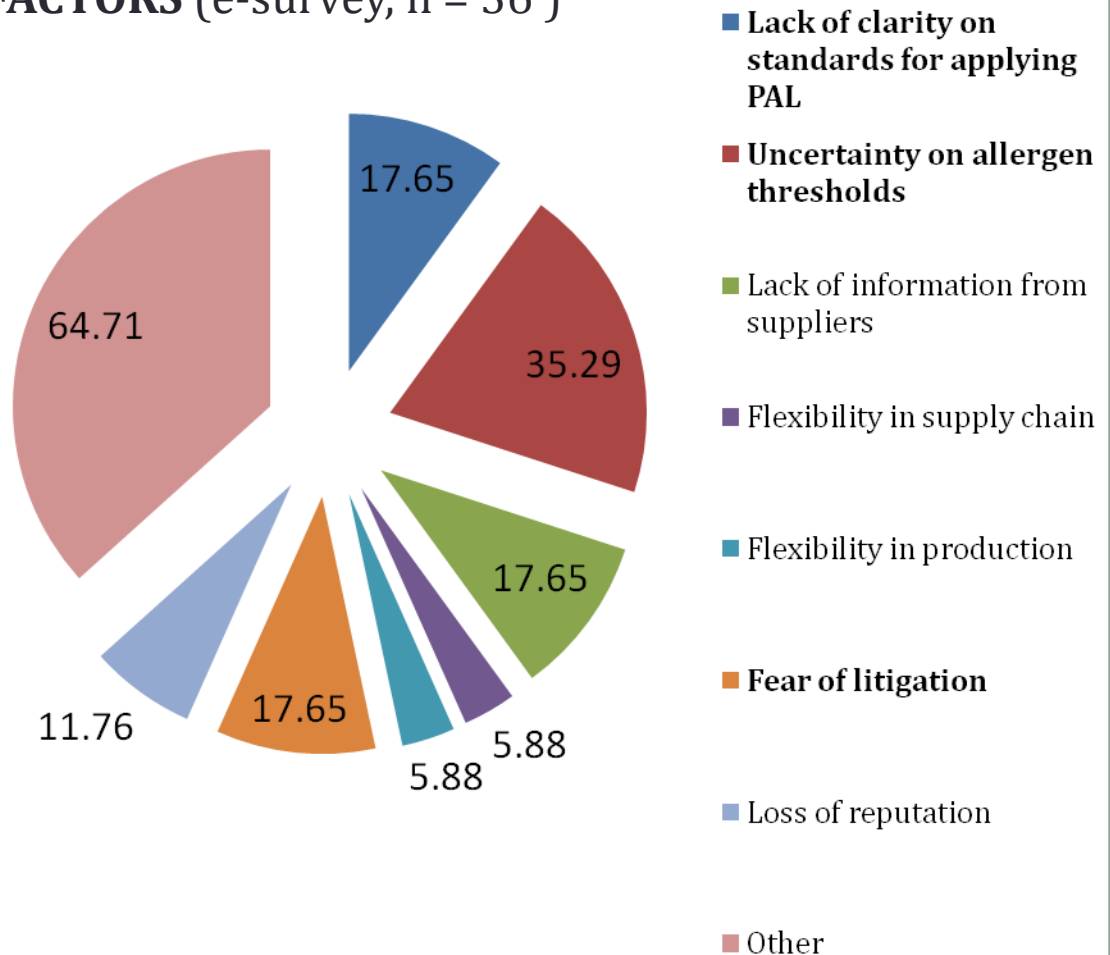
The manufacturer's dilemma

Factors that induce food manufacturers to apply PAL Labelling

FACTORS

(from discussions with key executives)

1. The uncertainty over the risk posed even by very small quantities of allergen and its effect on consumers
2. Insurance driven by cost of failure – Litigation
3. Restrictions on flexibility of future production

FACTORS (e-survey, n = 36)

Legend:
- Lack of clarity on standards for applying PAL
- Uncertainty on allergen thresholds
- Lack of information from suppliers
- Flexibility in supply chain
- Flexibility in production
- Fear of litigation
- Loss of reputation
- Other

Pie chart values: 17.65, 35.29, 17.65, 5.88, 5.88, 17.65, 11.76, 64.71

"Other" included the 4 'C's :
Barriers to the use of population based reference doses

Cross contamination
- Potential cross contamination in supply chain of raw materials and/or in manufacturing plant.
- RA determines that there is a risk of unavoidable cross-contamination

Concentration
- Food or beverage may contain (varying concentrations) of unintended allergens
- Consumer has an allergic reaction (varying severity- threshold and cofactors)

Cleaning
- Products are processed on the same equipment and equipment cannot be wet cleaned between batches
- Unable to clean effectively in a dry environment
- Human error in clean down

Communication
- Good practice and legislation requirement
- Consumers are well informed and guidance provided
- Need for healthcare professionals to understand and communicate actual risk

IMPACT OF LABELLING PRACTICE ON CONSUMERS

Choice and risk reasoning

Living with food allergy

Parents, children, teens, families & adults report that their feeling of risk is always present

Burden on quality of life (physical, psychological, social)

'Uncertainty' is a central theme in food allergy

- Avery, King, Knight, and Hourihane 2003
- Primeau et al. 2000
- Rosa et al., 2004,
- Rashid et al.2005
- Furlong&Sicherer 2006
- Leffler et al.,, 2007
- Whitaker, et al.,2009
- Grimshaw et al. 2010
- DunnGalvin, et al., 2010
- Flokstra deBlok et al., 2010
- Roma et al. 2010
- Barnett et al., 2011
- Ostblom, et al. 2008
- Hattersler&Ward 2013
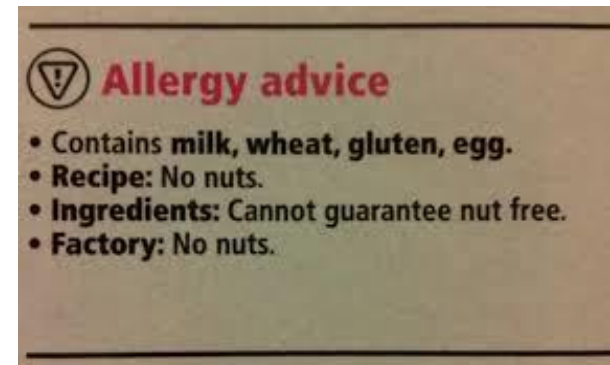- DunnGalvin & Hourihane 2015,2016
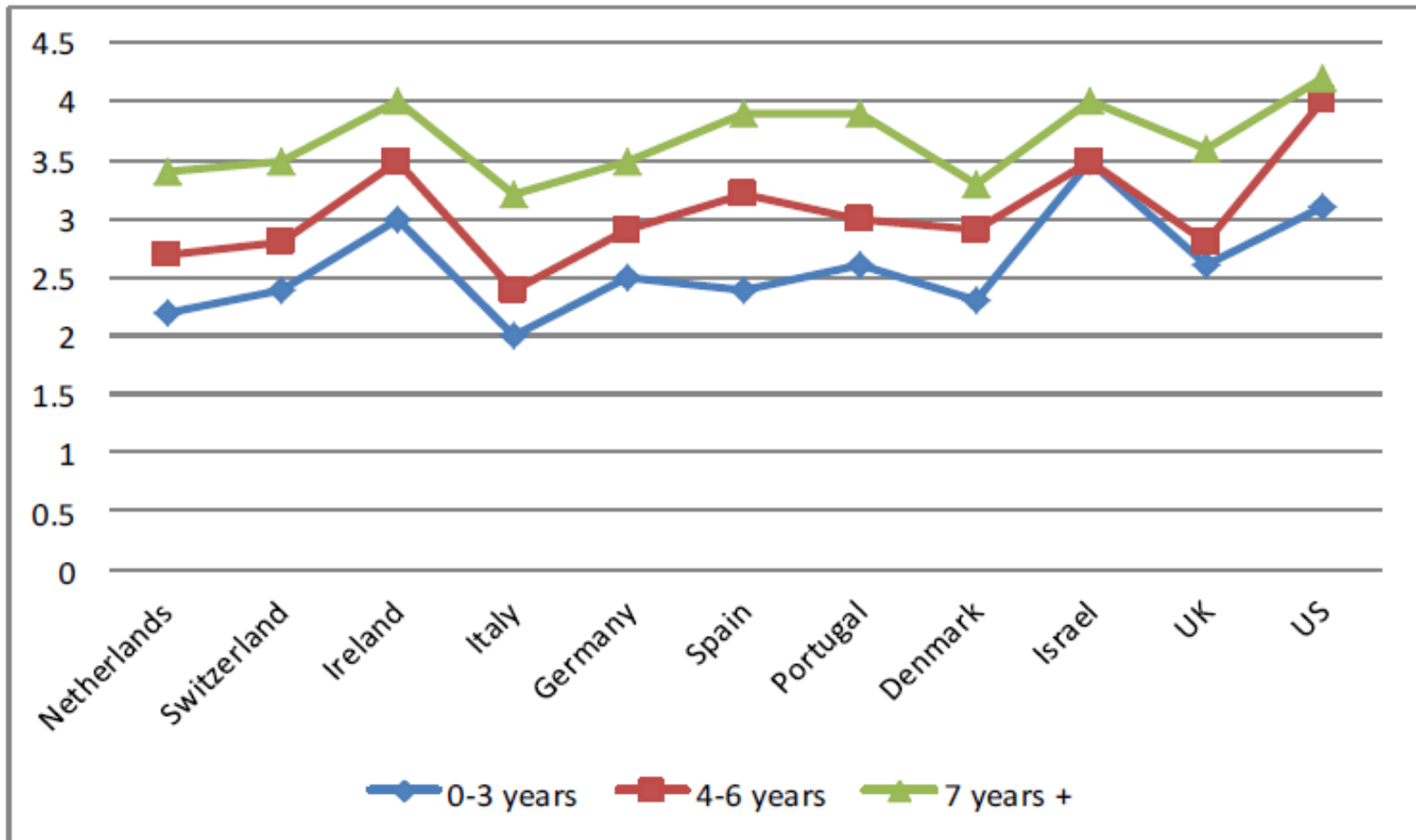
An examination of the Food Allergy Quality of Life Questionnaire performance in a Countrywide American Sample of Children between 0-12 Years : Cross cultural differences in age and impact in the US and Europe .
DunnGalvin et al., (under review)

Do consumers feel confident in managing food allergy ?

- Difficult for consumers to make an informed choice on whether a product is safe or should be avoided.

  ❖ Labelled to minimise liability ?
  ❖ Labelled/not labelled due to adequate risk assessment or allergen management ?
  ❖ Regulated and mandatory/non-regulated and voluntary ?
  ❖ Correlation between 'may contain' statement and allergen content ?
  ❖ Restaurant staff level of awareness ?
  ❖ Menu's ?

Ⓥ **Allergy advice**
- Contains **milk, wheat, gluten, egg.**
- **Recipe:** No nuts.
- **Ingredients:** Cannot guarantee nut free.
- **Factory:** No nuts.

Do consumers feel confident in managing food allergy ?

DunnGalvin, Hourihane, Greenhawt, et al., Assessment of Self-Efficacy in Food Allergy JACI in press

Do consumers feel confident in managing food allergy ?

	Level of stress	Expectation of outcome	Confidence in managing a reaction	Trust in reliability of labelling	Eat a wide variety of foods	Trust in restaurants and chefs etc.	Enjoyment in eating out	Safety in eating out
FAQLQ -AF*	.72	.60	- .73	-.90	-.86	-.78	-.77	-.84
FAQLQ-PF*	.90	.82	-.70	-.84	-..85	-.74	-.79	-.80

recognising a reaction

treating a reaction

reading labels

identifying cross contamination

safe at school

safe with others

can control environment to prevent reaction

teach others

have resources and support needed

DunnGalvin, Hourihane, Greenhawt, et al., Assessment of Self-Efficacy in Food Allergy JACI in press

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recognising a reaction · treating a reaction · reading labels · identifying cross contamination · safe at school · safe with others · can control environment to prevent reaction · teach others · have resources and support needed

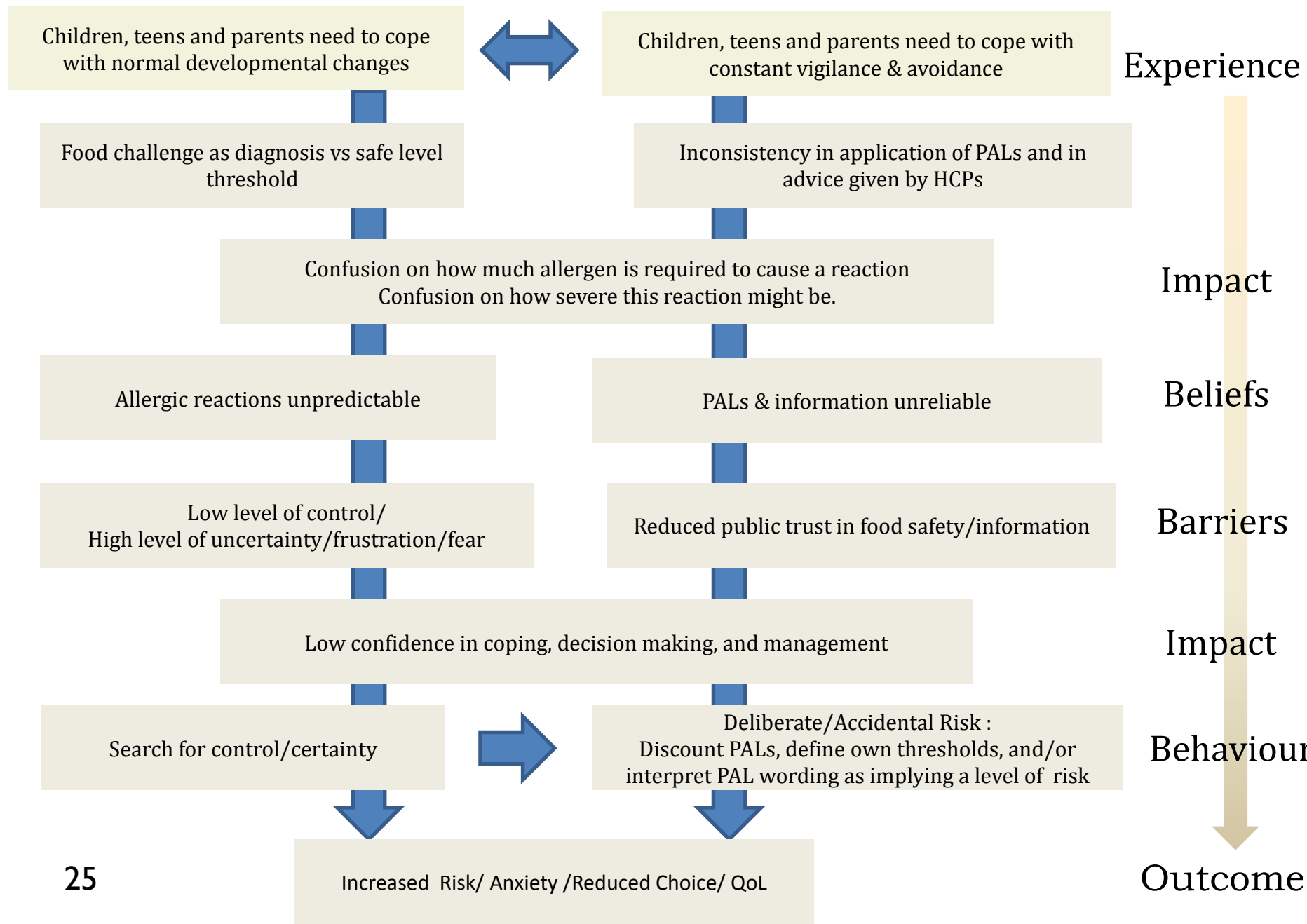DunnGalvin, Hourihane, Greenhawt, et al., Assessment of Self-Efficacy in Food Allergy JACI in press

Living with uncertainty

- Precautionary labelling can lead to both increased anxiety and/or risk

  ➢Is the product safe or not safe for me - or for my child ?
  ➢If I (or my child) reacts, how severe will that reaction be ?

'choice under uncertainty' : food allergy

Children, teens and parents need to cope with normal developmental changes	⟷ Children, teens and parents need to cope with constant vigilance & avoidance	**Experience**
Food challenge as diagnosis vs safe level threshold	Inconsistency in application of PALs and in advice given by HCPs	
Confusion on how much allergen is required to cause a reaction. Confusion on how severe this reaction might be.		**Impact**
Allergic reactions unpredictable	PALs & information unreliable	**Beliefs**
Low level of control/ High level of uncertainty/frustration/fear	Reduced public trust in food safety/information	**Barriers**
Low confidence in coping, decision making, and management		**Impact**
Search for control/certainty →	Deliberate/Accidental Risk : Discount PALs, define own thresholds, and/or interpret PAL wording as implying a level of risk	**Behaviour**
Increased Risk/ Anxiety /Reduced Choice/ QoL		**Outcome**

25

Level of confidence in type of PAL

Scale : 1 to 5

Label Type	Median
Not suitable for someone with X allergy	1
May contain traces of X	3
May contain	3
Packaged in a facility that also processes X	4
Manufactured on equipment that process X	5

Characteristics that aid decision making in whether a product safe to buy

Characteristic	Median
Quality of labelling	2
Eaten it before and experienced no reaction	2
Brand trust	3
Trust in supermarket	5
Freshness	6
Brand from well-known producer	6
Smell of product	7
If possible, I taste a little bit and see what happens	7
Judge the texture (smooth, grainy, etc.)	8
Country of Origin	9

Why do consumers use labelling when deciding to buy a food product ?

Predictor		B	SE	β
Full Model **				
Age		-0.10	0.04	-0.09**
Safety		0.14	0.07	0.04*
Nutrition		0.07	0.05	0.10*
Influence		0.67	0.04	0.74**
Understand		0.08	0.03	0.09*
Adjusted R^2	0.60***			

Controlling for : type of hypersensitivity, number of symptoms, number of foods to which sensitive, age, parent/adult, level of understanding, diagnosis, and gender.
*p <.05, **p <.001
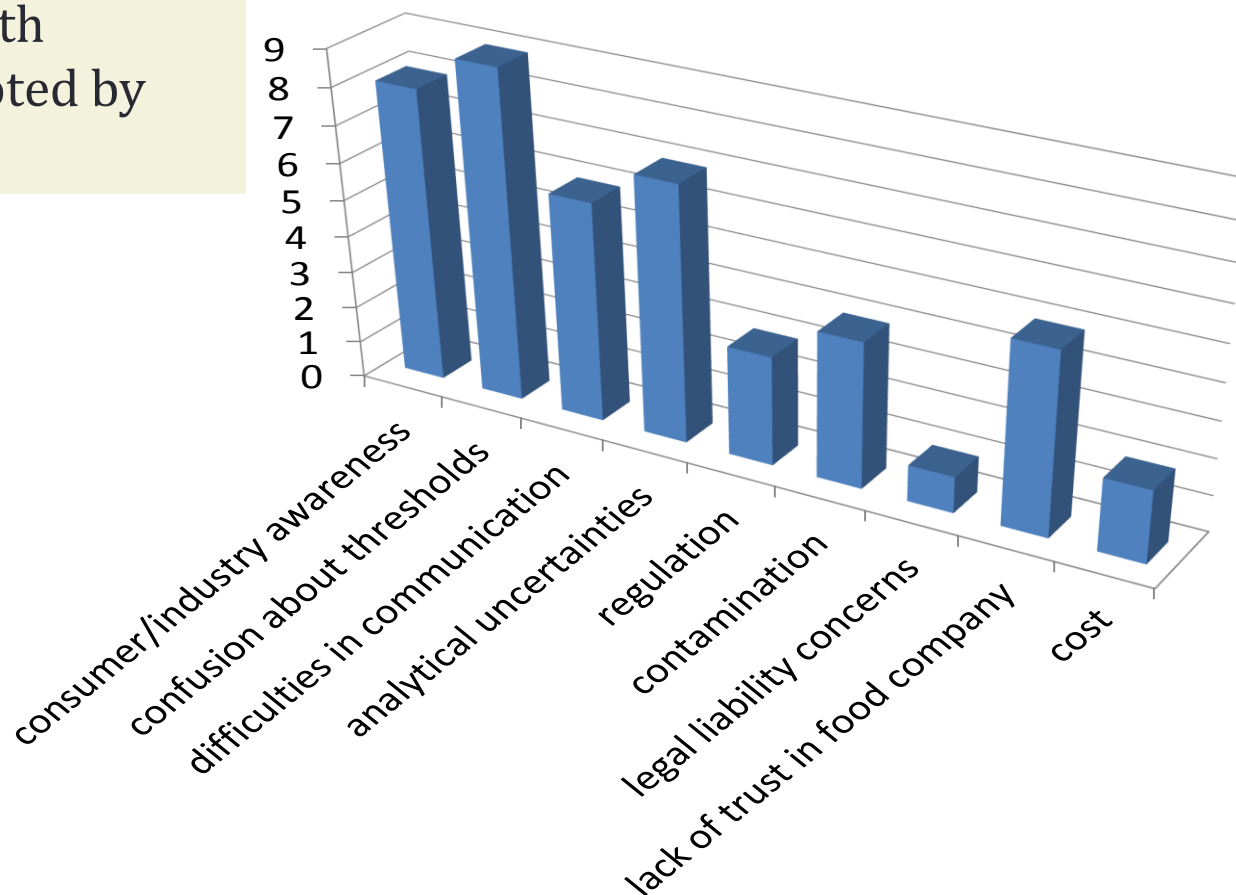
Why do consumers use labelling when deciding to buy a food product ?

Predictor		B	SE	β
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The most important predictor of how much labelling is used (over and above all other factors) is how much a consumer feels convinced by the usefulness and reliability of labelling in general in relation to **actual risk**.

Controlling for : type of hypersensitivity, number of symptoms, number of foods to which sensitive, age, parent/adult, level of understanding, diagnosis, and gender.
*p <.05, **p <.001

The consumer's dilemma :
Barriers to the use of population based reference doses
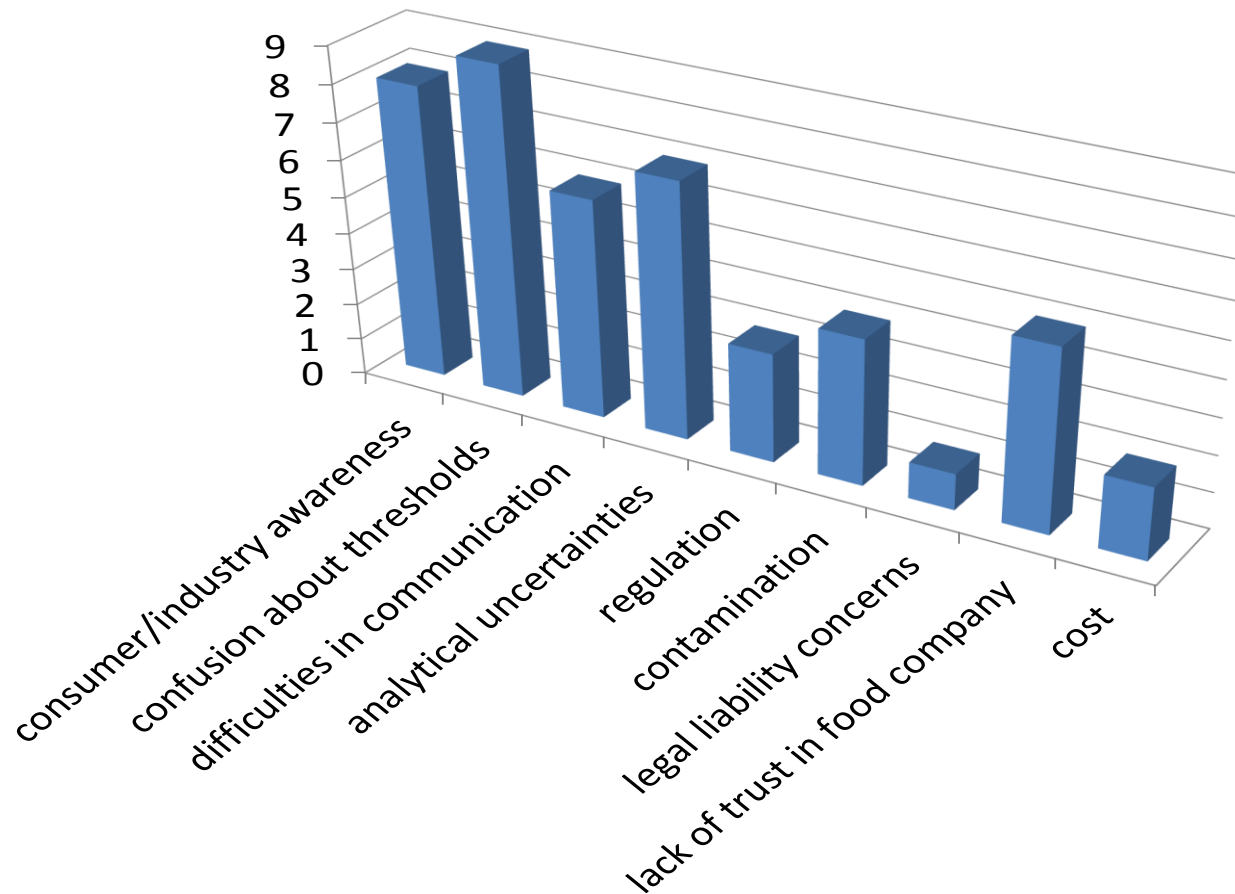
The consumer's dilemma :
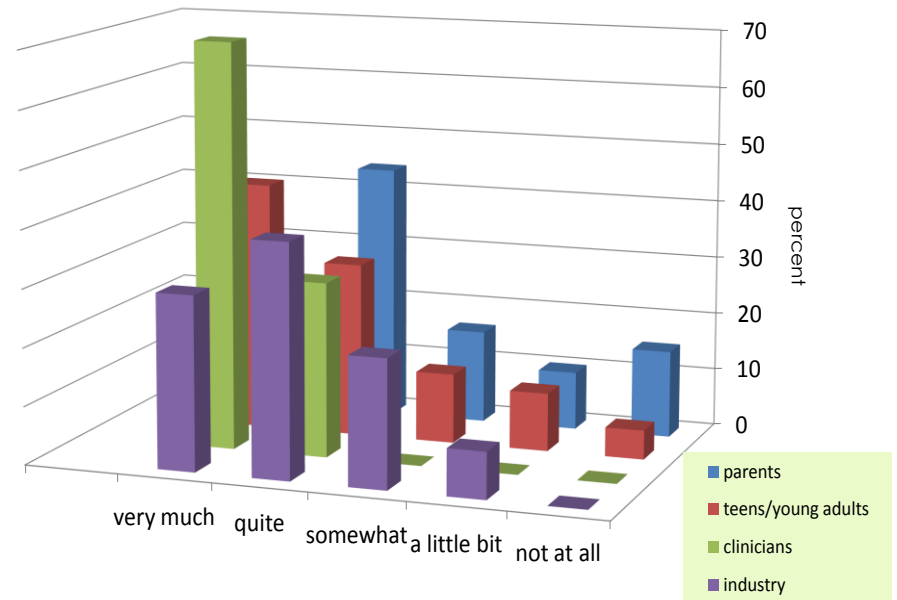## Barriers to the use of population based reference doses

Overlap with barriers noted by industry

Communication & guidance is vital
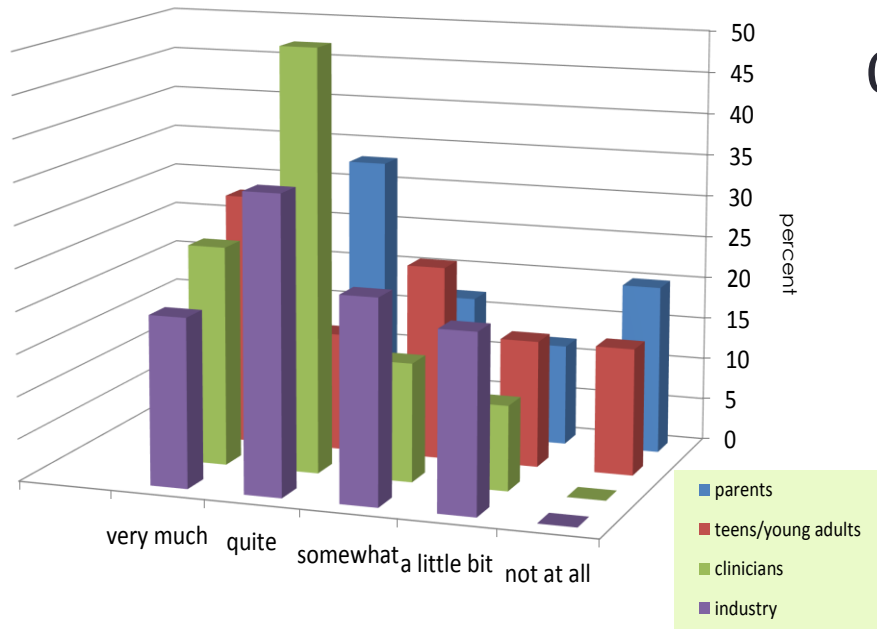
*How well do you understand what population thresholds mean ?*

How well do you understand what population risk stratification means ?

# Most helpful characteristics of labelling for consumers when deciding to buy a product.

	Product without PAL	Product with PAL
Helpful to allergic consumers	**1. Product without PAI with low or no risk of inducing an allergic reaction, ie is safe** • Proper risk assessment by the food manufacturer • Conclusion that the allergen is not present in the product at a level that is likely to cause an allergic reaction	**2. Product with PAL with a real risk of inducing an allergic reaction, ie unsafe to consume** • Proper risk assessment by the food manufacturer • Conclusion that the allergen may be present in the product despite allergen management and GMP (good manufacturing practice)
Not helpful to allergic consumers	**3. Product without PAL with unknown risk of inducing an allergic reaction, ie may be safe or unsafe to consume** •No proper risk assessment by food manufacturer resulting in possible allergen presence without being mentioned on the label •No conclusion can be drawn about the presence of the allergen	**4. Product with PAL with unknown risk of inducing an allergic reaction, ie may be safe or unsafe to consume** • No proper risk assessment and allergen management to reduce the risk of unintended presence by manufacturer • No conclusion can be drawn about the presence of the allergen **5. Product with PAL with low or no risk of inducing an allergic reaction** • Proper risk asseement by manufacturer • Decision to use PAL nethertheless by risk adverse manufacturer

Most helpful characteristics of labelling for consumers when deciding to buy a product.
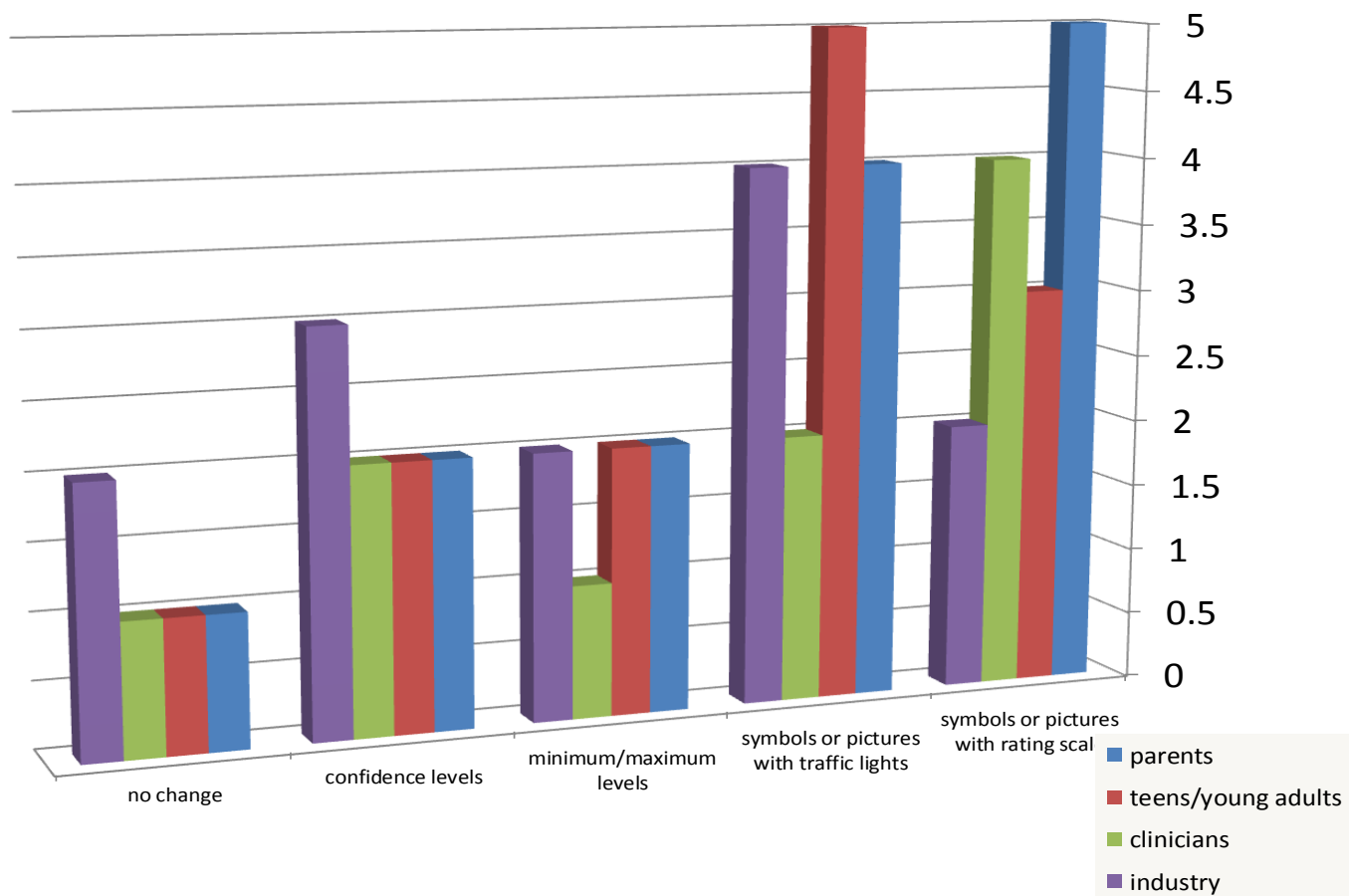
Most helpful characteristics of labelling for consumers when deciding to buy a product.

'contains X allergen'
'not suitable for someone with X allergy'
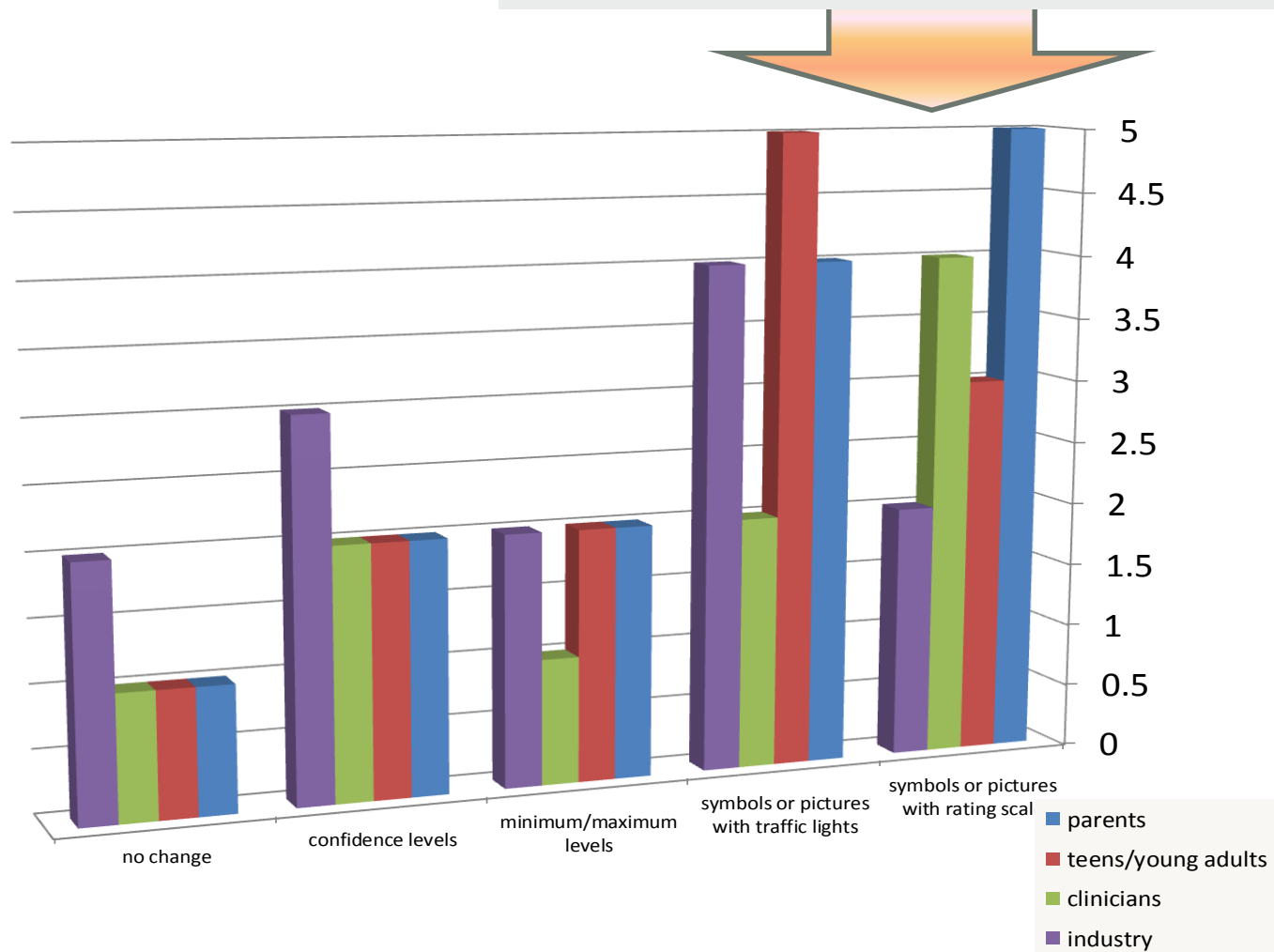
CONCLUSIONS

How do we make Precautionary Allergen Labelling work?

- Precautionary allergen labelling needs to be made credible

- Communicate a clear and consistent message:

    ✓ risk that the food contains a significant amount of allergen

    ✓ risk that an allergic consumer has a significant allergic reaction

- Identify ways to make it easier for the allergic consumer to find and understand the allergen information provided on prepacked foods to make safer food choices.

- Develop targeted & consistent educational/communication strategies for food industry, consumers and healthcare professionals

How do we make Precautionary Allergen Labelling work?

- Develop reliable analytical techniques for assessing allergen content in food products

- Evaluate how the use of ED10, ED05 or ED01 derived reference doses might be used to limit use of precautionary allergen labelling

- Determine the relationship between reference doses and severe reactions for different allergens/Determine how co-factors might influence threshold doses.

- Identify patients with clinically significant reaction to allergen levels below proposed reference doses.

- Wet Cleaning In Place (CIP) is effective for many food matrices, however more efficient ways to clean a 'dry' production process such as bakery or dried powder system

- Common standards need to be adopted across the food industry, including suppliers

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EUROPEAN ACADEMY OF ALLERGY
AND CLINICAL IMMUNOLOGY

iFAAM

Precautionary allergen labelling: perspectives from key stakeholder groups

Authorship

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Thank you !
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