

# Knowledge is Power

## Adult Audience Preferences for Learning and Engagement at a Science Festival

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# Lectures vs Dialogue

What format do adult audiences at science festivals prefer, and why?

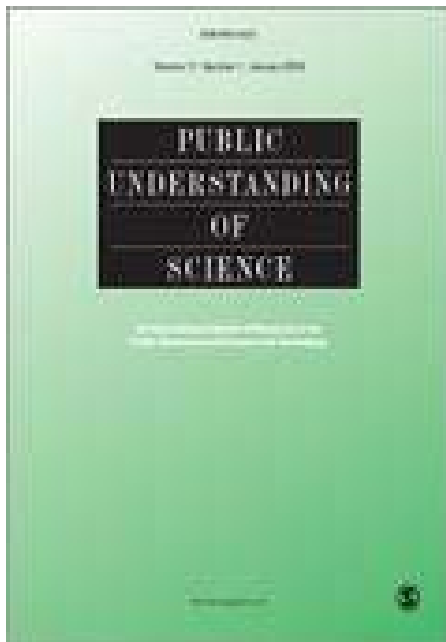


# PUS vs PES

## Public Understanding of Science

Bodmer Report (1985)

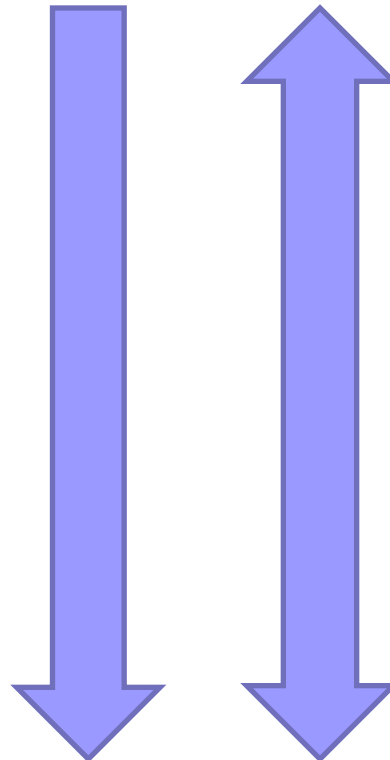
Deficit



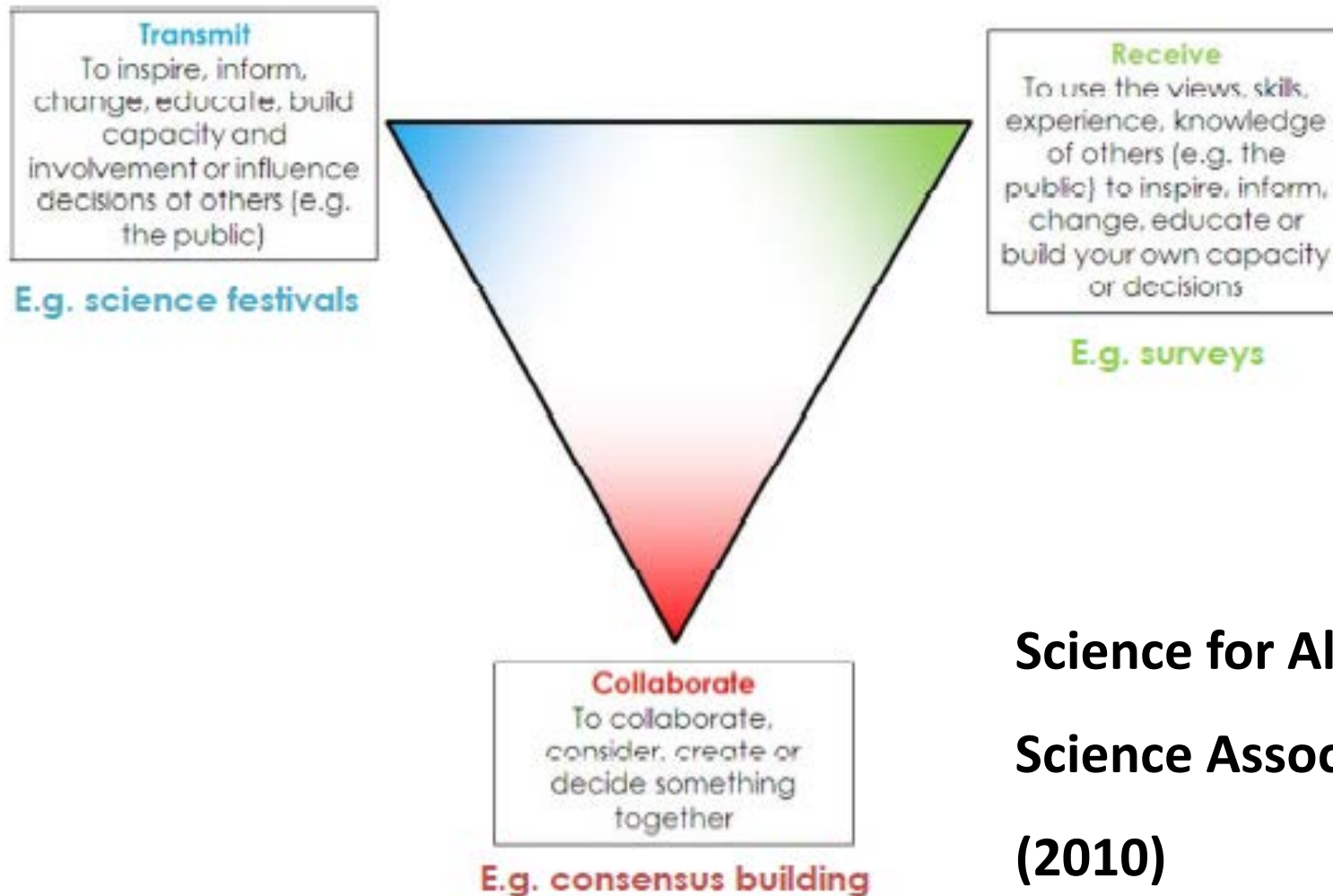
## Public Engagement with Science

House of Lords HMSO (2000)

Dialogue



# Two-way engagement



**Science for All, British  
Science Association  
(2010)**

# Literacy and Engagement

Level 1	Level 2	Level 3	Author
Cultural scientific literacy	Functional scientific literacy	True scientific literacy	Laugksch (2000)
Functional health literacy	Interactive health literacy	Critical health literacy	Nutbeam (2000)
First order Engagement	Second order engagement	Third order engagement	Irwin (2008)

# Science festival formats



**Unique  
environment  
combining  
many formats  
Jensen &  
Buckley (2012)**



## **Brain Day**

- **Lectures**
- **Discussions**
- **Community Expo**
- **Hands-on experiments**
- **Good day out**



# Brain Day Auckland



<https://www.youtube.com/watch?v=DrVw2COmbgQ#action=share>

## Science Labs

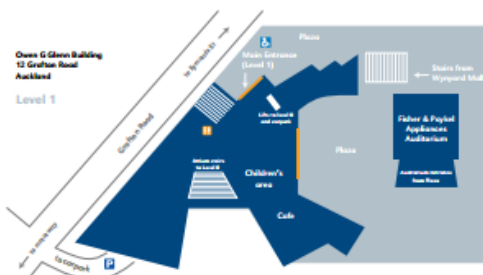
### Explore your brain's potential with our Mind Map tour of Brain Day

Practising psychologists, clinicians and neuroscientists will explain how your brain works with fun science experiments. Take part in sensory games, brain teasers and activities for all the family.

## Brain Day location

Owen G Glenn Building  
12 Grafton Road, Auckland

- \$5 underground parking available
- Disabled parking by lifts
- Easy access on all floors
- Cafe facilities on site



## Guardian Trust

Auckland Brain Day has been generously supported by the Ted and Mollie Carr Endowment Fund proudly administered by the Guardian Trust.

# Community Expo

## Central Area, Level 0

Acoustic Neuroma Association	Huntingtons Auckland
Active Movement (Sport Auckland)	Laughter Yoga
Alzheimers Auckland	Mental Health Foundation
Aphasia Association of New Zealand	Mind Warriors
Attention Deficit Hyperactivity Disorder	Mobility Assistance Dogs Trust (Mobility Dogs)
Auckland University of Technology	Motor Neurone Disease Association
Brain Injury Association Auckland	Multiple Sclerosis Society Auckland
Brainwave Trust	Muscular Dystrophy Association
Cerebral Palsy Society of New Zealand	National Foundation for the Deaf
Community Alcohol and Drugs Service	Neurological Foundation
Dyspraxia Support Trust	Human Brain Bank
Epilepsy New Zealand	New Zealand Dystonia Patient Network
Essential Tremor Support Group	New Zealand Stewart Centre Trust
Green Prescriptions (Sport Auckland)	Post Polio Support Society
Guardian Trust	Parkinsons New Zealand
Guillain-Barre Syndrome Support Group	Raukauri Music Therapy Centre
Hearing Voices Network	Stroke Foundation Northern Region
Hope Foundation	SPELD (dyslexia support)

## More information

### Brain Day 2011

The University of Auckland Owen G Glenn Building  
12 Grafton Road, Auckland

Phone: 0508 BRAINS (272 467)

Email: [cbr@auckland.ac.nz](mailto:cbr@auckland.ac.nz)

Web: [www.cbr.auckland.ac.nz](http://www.cbr.auckland.ac.nz) | [www.brainweek.co.nz](http://www.brainweek.co.nz)

# Brain Day 2011

## Saturday 19 March



# Brain Day Auckland

## Lectures

Presentations by scientific and clinical experts on brain health topics. Lectures run for thirty minutes with time afterwards for questions. All lectures are held in the Fisher and Paykel Appliances Auditorium.

9.30am	<b>Brain chatter: brain cell communication in learning, health and disease</b> <b>Dr Johanna Montgomery, Neuroscientist</b> Your brain is made up of 10 billion brain cells. These cells are very 'sociable', constantly talking to each other in order to maintain a healthy brain. In this talk we will show you how scientists eavesdrop on brain cells to understand how they talk to each other, how this underlies learning and memory, and how this occurs differently when brain cells are altered by developmental or neurodegenerative disease.
10.00am	
10.30am	<b>Myths of the brain</b> <b>Professor Richard Fault, Neuroscientist; Professor Mike Corballis, Cognitive Psychologist; Professor Louise Nicholson, Neuroscientist</b> Understanding the brain is the last frontier of medical research and one of the most challenging areas in medicine. By unlocking the secrets of the brain we learn more about ourselves, who we are and our future. Yet how much do we really know about the brain? Do we only use 10%? Are men and women different? Can we repair the brain? Here a panel of experts will discuss these questions and answer yours.
11.00am	
11.30am	<b>The science of autism</b> <b>Dr Rosamund Hill, Neurologist</b> Autism Spectrum Disorders including Autism and Asperger's Syndrome affect up to 1 in 150 individuals! This presentation will discuss our current understanding of the neuroscience of this condition - including the structural differences in the brain and the rapidly growing understanding of the genetics of this fascinating developmental condition. The talk will also dispel myths around how people can and can't get autism.
12.00pm	
12.30pm	
1.00pm	<b>The changing brain</b> <b>Dr Cathy Steinar, Neuroscientist</b> Your brain changes as you use it, through a process called neural plasticity. New technologies present information to our brains in new and exciting ways, and our use of technology may unintentionally change how our brains work. Is this a good thing or has this already become a problem for society?
1.30pm	
2.00pm	<b>Sleep: science, disorders and practical issues</b> <b>Dr Antonio Fernando, Insomnia Specialist</b> All of us sleep but for many, sleep remains a mysterious phase of our daily life. Learn about the basic science of sleep along with the different types of sleep disorders like insomnia and sleep apnoea. This talk will reveal some practical tips on better sleep.
2.30pm	
3.00pm	<b>Alcohol, tobacco and "P" - effects on babies and their brains</b> <b>Dr Trecia Woudes, Neuroscientist</b> Drugs such as alcohol, tobacco and "P" are increasingly being used by NZ women during pregnancy. In addition, mothers who continue to use drugs during their pregnancy may be dealing with stressors such as mental illness and poverty. All of these factors may impact a child's developing brain. Learn how drugs and the lifestyle of a mother who uses drugs can affect the developing brain and behaviour of her child.

## Discussions

Listen to a panel of experts discuss an issue and answer your questions. Held in OGG84.

9.30am	
10.00am	<b>Preventing and recovering from a stroke</b> <b>Professor Alan Barber, Neurologist</b> <b>Stroke Foundation Northern Region</b> <b>Mike Brown, stroke survivor</b>
10.30am	
11.00am	
11.30am	<b>Maintaining your memory</b> <b>Dr Phil Wood, Geriatrician</b> <b>Mary Lythe, Alzheimers Auckland</b>
12.00pm	
12.30pm	
1.00pm	<b>The developing brain and developmental disorders</b> <b>Associate Professor Karen Waidie, Cognitive Psychologist</b> <b>Bonnie Williams, Dyspraxia Support Group of New Zealand</b> <b>Dr Simon Rowley, Brainwave Trust</b>
1.30pm	
2.00pm	<b>Noise pollution - protecting your hearing</b> <b>Professor Peter Thorne, Neuroscientist</b> <b>Dangerous Decibels</b>
2.30pm	
3.00pm	<b>When muscle control goes wrong - Parkinsonism</b> <b>Clinical Associate Professor Barry Snow, Neurologist</b> <b>Susan Yoffe, NZ Essential Tremor Support Group</b> <b>Dave Mitchell, NZ Dystonia Patient Network</b>

## Workshops

Demonstrations of activities for brain fitness with participation encouraged.

9.30am	<b>Exercise for your brain</b> Demonstration session for all ages with The University of Auckland Clinics - OGG85
10.00am	<b>Active Movement, Sport Auckland</b> Parents and small children are invited to join in with this fun movement programme designed to help brain development. - Science Lab Patio (rain venue Caseroom 1)
10.30am	
11.00am	<b>The Neuron Play</b> Children are invited to take part in this exciting performance to learn more about how the brain works! (Workshop takes 1.5 hours) - Caseroom 3
11.30am	
12.00pm	<b>CeleBRation Choir workshop</b> Join in with this social singing group to find out what singing can do for your brain! - Caseroom 1
12.30pm	<b>Exercise for your brain</b> Demonstration session for all ages with The University of Auckland Clinics - OGG85
1.00pm	<b>The Neuron Play</b> Children are invited to take part in this exciting performance to learn more about how the brain works! (Workshop takes 1.5 hours) - Caseroom 3
1.30pm	<b>Mobility Dogs demonstration</b> Mobility Dogs provide invaluable help to people with a range of neurological conditions. Join the team to learn what these amazing dogs can do! - Caseroom 1
2.00pm	
2.30pm	<b>Exercise for your brain</b> Demonstration session for all ages with The University of Auckland Clinics - OGG85
3.00pm	<b>The Neuron Play</b> Children are invited to take part in this exciting performance to learn more about how the brain works! (Workshop takes 1.5 hours) - Caseroom 3

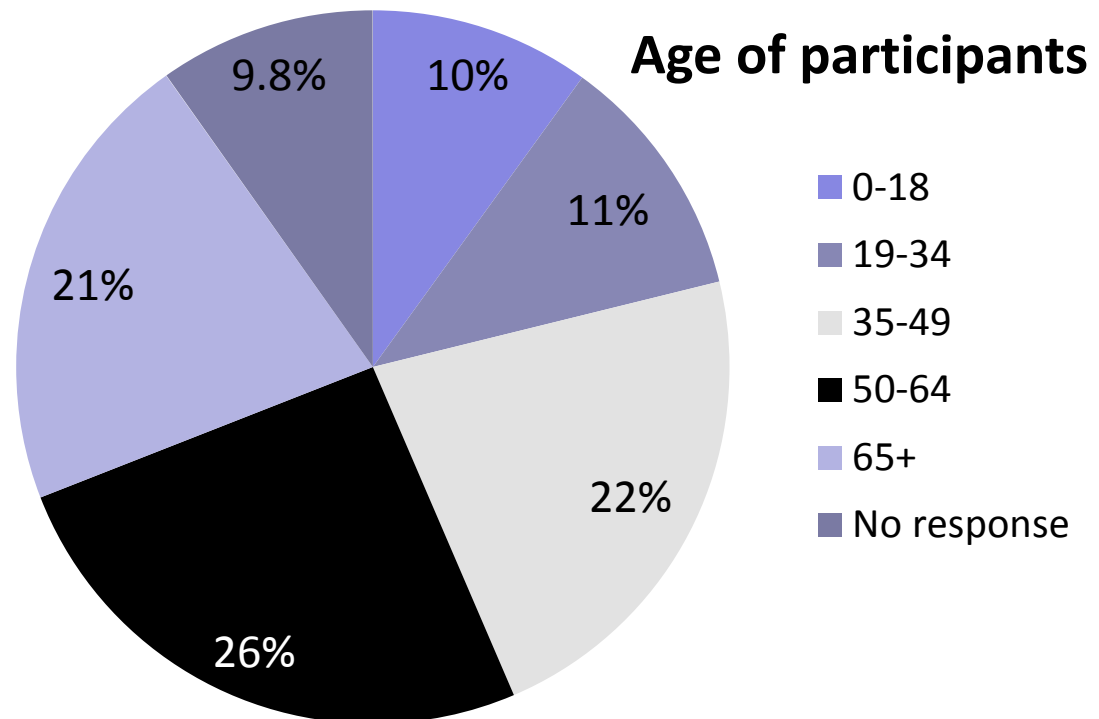
# Evaluation

- **2011, 2012, and 2013**
- Cross-sectional questionnaire
- Quantitative Rank and Likert scale questions
- Qualitative open response questions
- **$N = 661$  with annual cohorts**  
**of  $X = 220.3$   $SD = 24.6$**



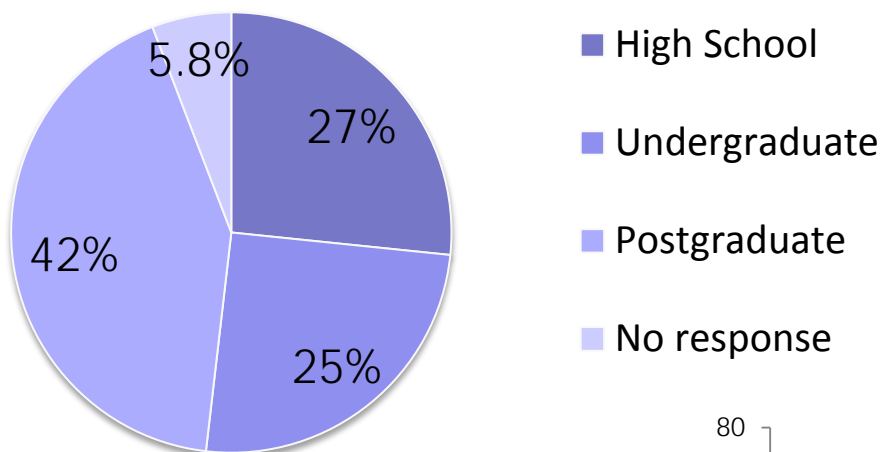
# Sample characteristics

- 66% female
- Ages ranged from 7 to 87 years
- 47% aged over 50 years
- $X = 48.5$  years  $SD = 19.3$  years

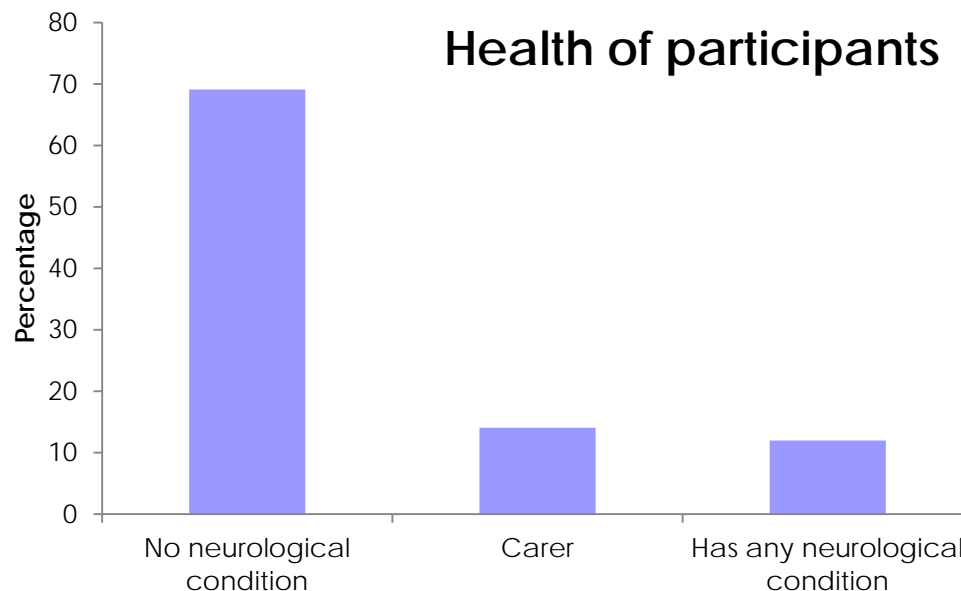


# Sample characteristics

## Education level of participants



## Health of participants



# Which format attracted you to the festival?

- **77% of the adult audience was most attracted to lectures**
  - Significantly higher than other formats
  - Regardless of age, gender, ethnicity or education
- **84% found lectures significantly more useful than other formats**
- **Please cite:** Fogg-Rogers, L., Bay, J. and Purdy, S.C. (2014). *Adult audience preferences for learning and engagement at a science festival*. Engage Conference 2014. Bristol, UK.

# Why was this?

## Non-formal learning

### Interested in learning (33% of responses)

- *Afflicted with curiosity. Male, age 59, NZ European*
- *Acquisition of knowledge and understanding. Female, (age not given), European*
- *I'm interested in learning. Male, age 16, NZ European*
- *I find the lectures very interesting and on topics that I haven't learnt about in previous education. Also think the lectures are not only informative but also entertaining. Female, age 45, NZ European*

# Non-formal learning

## Knowledge is power (26% of responses)

- *Knowledge and information increases sense of power i.e. decreases sense of helplessness in having a progressive incurable disease. Male, age 64, NZ European*
- *I am aging and concerned that both my brain and body age 'well'! Husband had a stroke so always interested. Knowledge is stimulating and power! Female, age 72, NZ European*

# Non-formal learning

## Research and expert opinion (20% of responses)

- *Opportunity to hear lecturers on topics they are passionate about and they talk with knowledge and enthusiasm. Female, age 54, Asian*
- *The quality of speakers/professors available was too good an opportunity to miss. I think their research is absolutely amazing and fascinating. Female, age 35, Pacific Peoples*
- *Because of the variety of choice available, free to the public, marvellous opportunity to learn new/latest research without cost. Female, age 64, NZ European*

# Non-formal learning

## Career and professional development (16% of responses)

- *Talking to scientists - because I have many options to study at uni but not sure which one to take. If I experience it for myself I would know what I would be doing at the end of the day. Male, (age not given), African*
- *I'm a pharmacist and I'm interested in understanding diseases and conditions as I'm usually involved in a multidisciplinary team. Female, age 37, NZ European.*
- *As an occupational therapist I am working with people with cognitive decline, so the lectures are very relevant and important. Female, age 36, NZ European*

# Non-formal learning

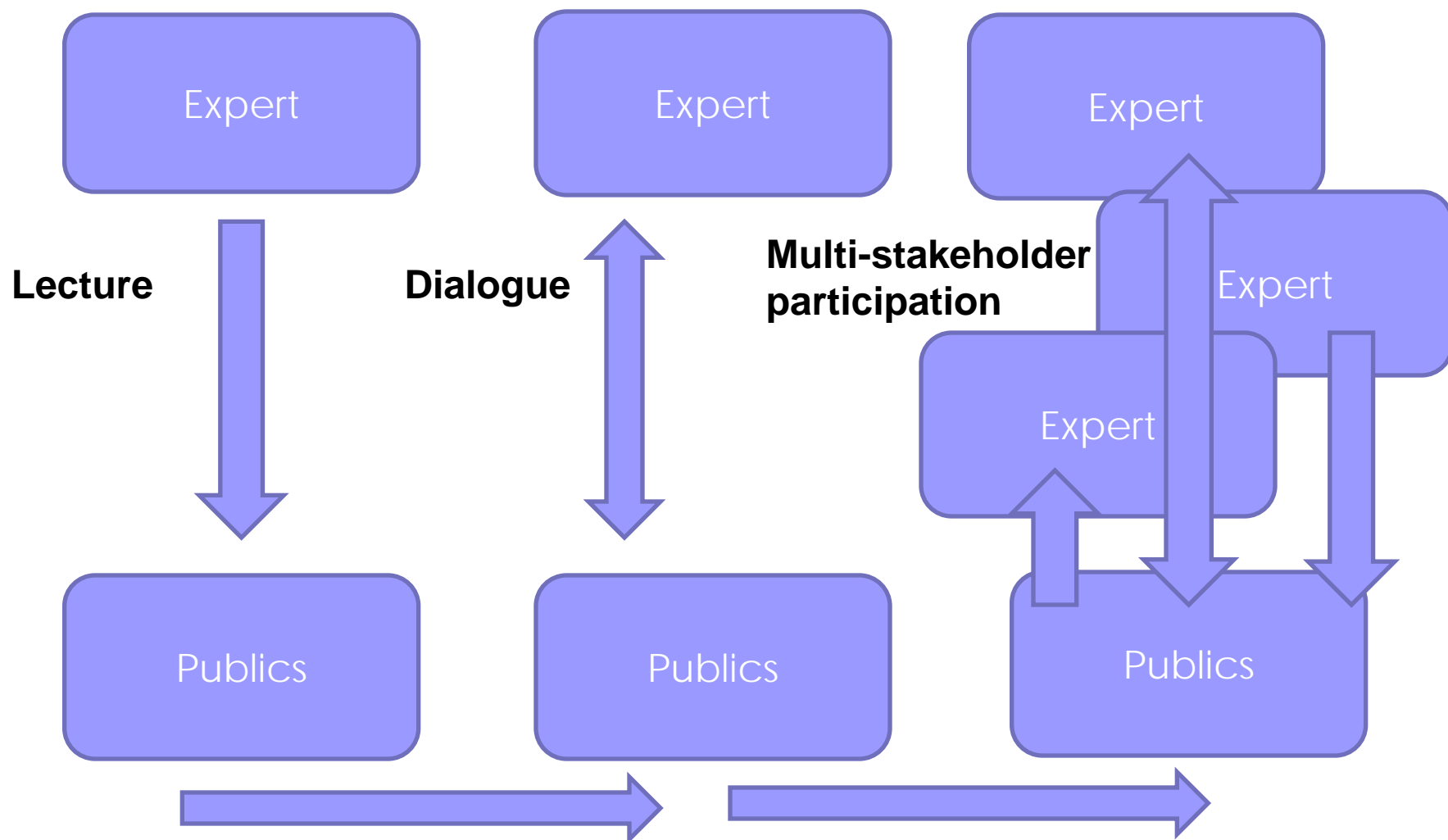
## Engaging in curiosity (5% of responses)

- *I wanted to engage my daughter in curiosity about the human brain. Female, age 33, NZ European.*
- *Great for children to speak to scientists. Female, age 40, NZ European*
- *I chose science lab experiments because I think having to learn with a hands-on experience is fun but you also learn sooo [sic] much. Female, age 13, Asian*

# Limitations

- Sample?
  - Highly educated audience
  - Not engaging under-represented audiences e.g. Māori
  - Questionnaire doesn't reach everyone?
- Festival topic of health science may attract an already-interested broad audience
- BUT reaching over 3000 people, with thousands attending lectures

# Conclusion: temporal engagement?



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