



# READING BEYOND THE HEADLINES

My take on *that* study  
everyone is talking about...

Comparing the Respirable Aerosol Concentrations and  
Particle Size Distributions Generated by Singing,  
Speaking and Breathing: Gregson; Watson; Orton;  
Haddrell; McCarthy; Finnie; et al. (2020)

@VOCOLGYIRELAND

# WHY WAS THIS STUDY DONE?

Breathing, speaking,  
singing, and coughing all  
produce particles of varying  
sizes that can potentially  
carry SARS-CoV-2



**droplets**  
(which are heavy enough  
to fall to the ground)

**aerosols**  
(which remain airborne)

...how many aerosols are  
produced by each activity?

...does one produce way more  
than others?



# HOW WAS THIS STUDY DONE?

## 25 professional performers

- 6 musical theatre, 5 opera, 5 choral, 2 gospel, 2 rock, 2 jazz, 1 pop, 1 soul, 1 actor with singing interest

Performed activities into a funnel, which measured how many aerosols they produced and what size they were

but how did they *know* it was definitely from those activities and not just in the air around them?



They used the clean air environment of an operating theatre to be sure the aerosols were not changed by the environment



# WHAT WAS BEING MEASURED?

NUMBER OF AEROSOLS

+

SIZE OF AEROSOLS

TOTAL MASS  
CONCENTRATION OF  
AEROSOLS

...why is this important?

Counting the number of aerosols is only half the story. Knowing their size as well gives us the 'total mass concentration,' which is important to assess how much potential risk there is that the aerosols could carry SARS-CoV-2



# WHAT DID THE PERFORMERS DO?

1. Sing a sustained 'ah' in their mid-range (medium volume)
2. Sing a sustained 'ah' an octave higher (medium volume)
3. Speak 'Happy birthday' at a low, medium & high volume
4. Sing 'Happy birthday' at a low, medium & high volume
5. Breathe in through their nose and out through their mouth quietly
6. Breathe in through their nose and out through their nose quietly
7. Sing a sustained 'ah' in their mid-range again (medium volume)
8. Cough

'Dear Susan' got  
all the birthday  
wishes!



# WHAT WERE THE STUDY RESULTS?

AT THE QUIETEST VOLUME



There was no significant difference between speaking, singing, & breathing

In comparison to breathing:

AT THE LOUDEST VOLUME



Speaking produced 24 times more aerosol mass

Singing produced 36 times more aerosol mass



# WHAT WERE THE STUDY RESULTS?

AT THE  
LOUDEST  
VOLUME

There were no significant differences in aerosol production between voice type or between genres

There was no link between participants' BMI or peak flow rate and the aerosols they produced

SINGING  
VS  
SPEAKING

When at similar volumes, singing produced 1.5 - 3.4 more mass concentration of aerosols than speaking



# WHAT DOES THIS MEAN?

Both speaking loudly AND singing loudly are 20-30 times more risky than speaking/singing quietly (or breathing normally)

...why again?

HIGHER TOTAL MASS  
CONCENTRATION

=

MORE POTENTIAL FOR  
CARRYING SARS-COV-2





# SO...WHAT SHOULD WE DO?

ENVIRONMENT



How good is the ventilation in the venue?

DURATION



How long is the rehearsal/performance?

**ASSESSING  
RISK**

How many participants of the vocal activity are there?

What volume is the vocalisation?

SOURCE



How many audience members are there?

VOLUME



# \*REMEMBER\*

Reading a headline will never give you the full context



"SINGING 'NO RISKIER THAN TALKING' FOR VIRUS SPREAD"

*BBC News 20/08/20*

This could also have been written as:



"TALKING IS AS RISKY AS SINGING FOR VIRUS SPREAD"



This article has not been peer-reviewed yet, which means it should not be relied upon too heavily until then

here's looking at you noisy pubs...



This study was very clear in what it intended to investigate. While it may not be the answer we wanted, it is at least an answer. However, it is only one study - so here's hoping there are many more studies of this quality in future!

