

Impacts of face coverings on hearing and communication

Gabrielle Saunders, Iain Jackson & Anisa Visram



Manchester Centre for Audiology and Deafness (ManCAD)

University of Manchester, UK



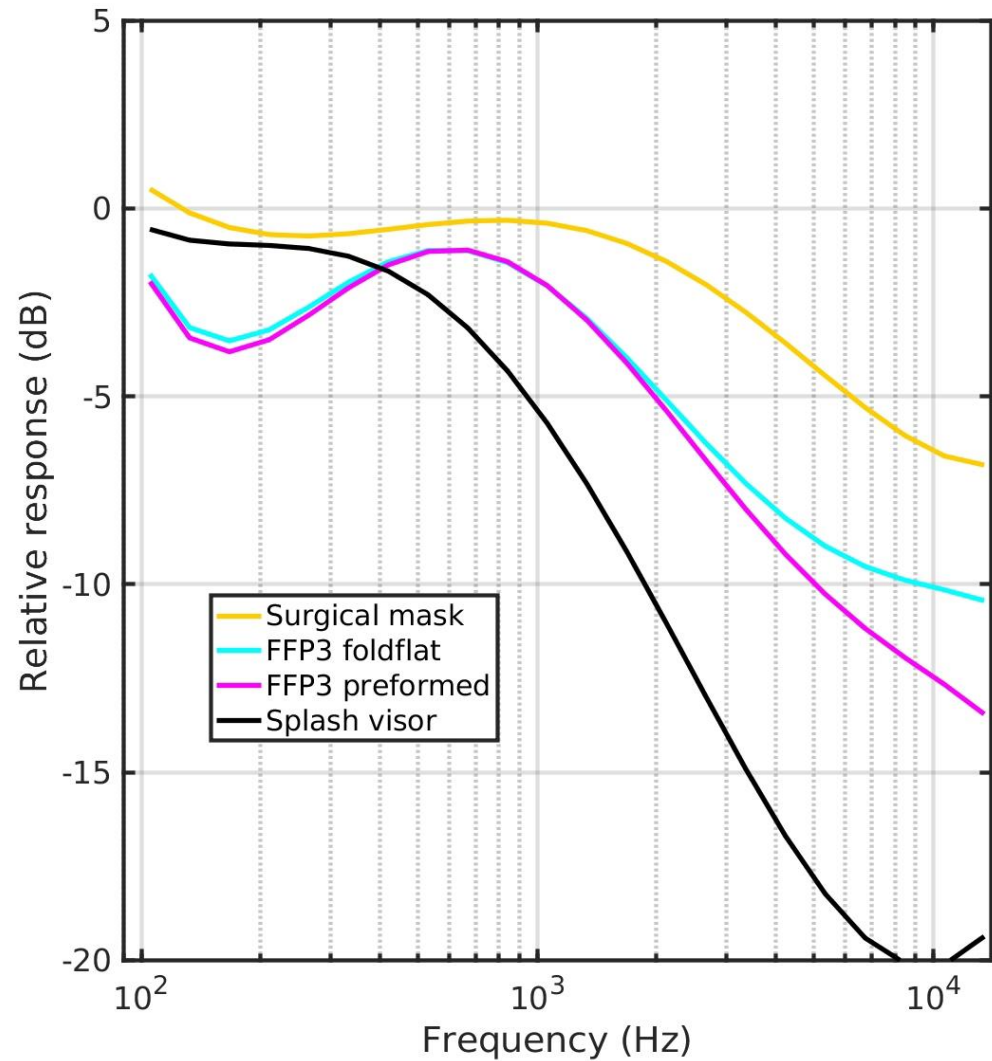
What I actually see on a daily basis...



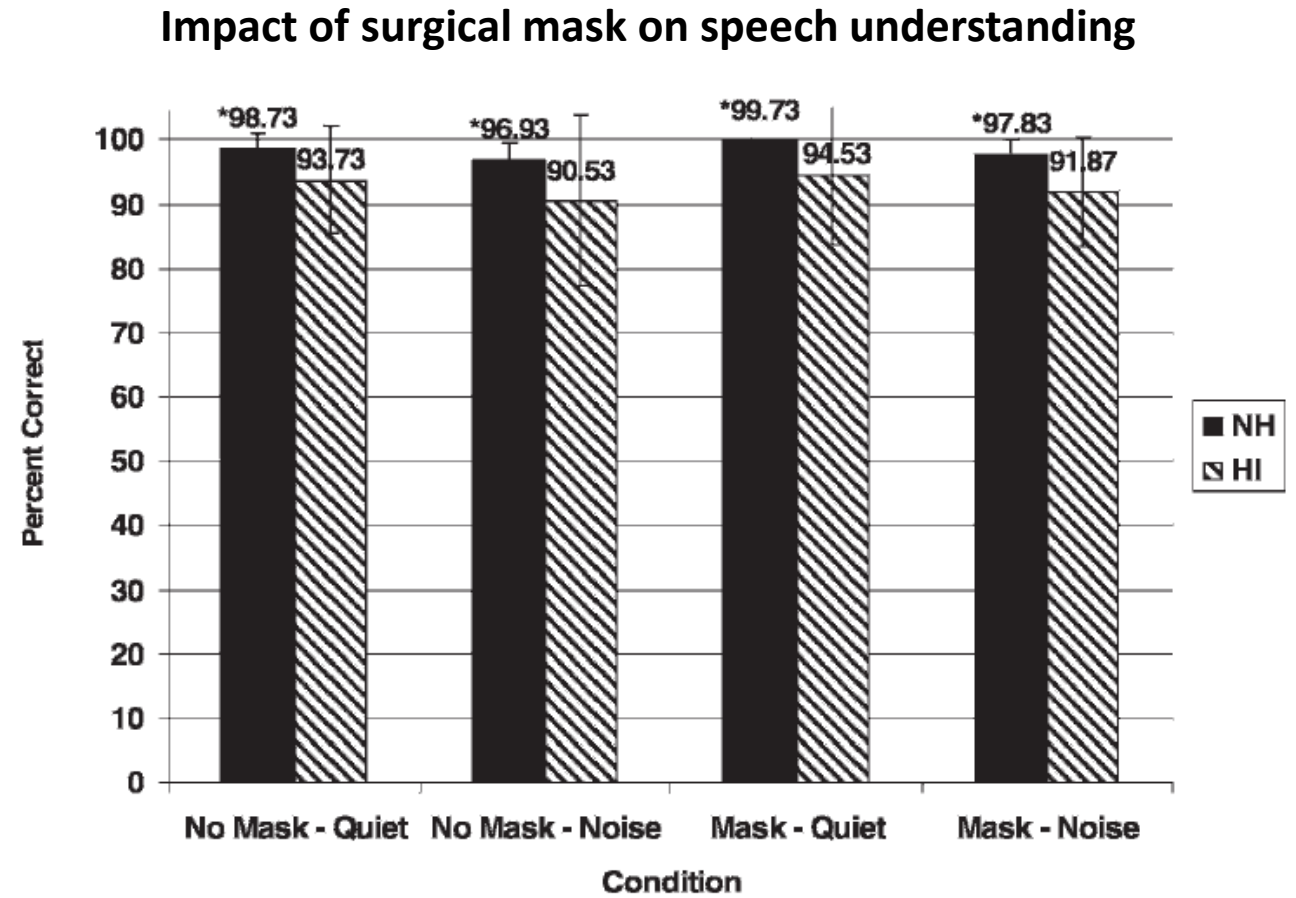
Face coverings – background to study



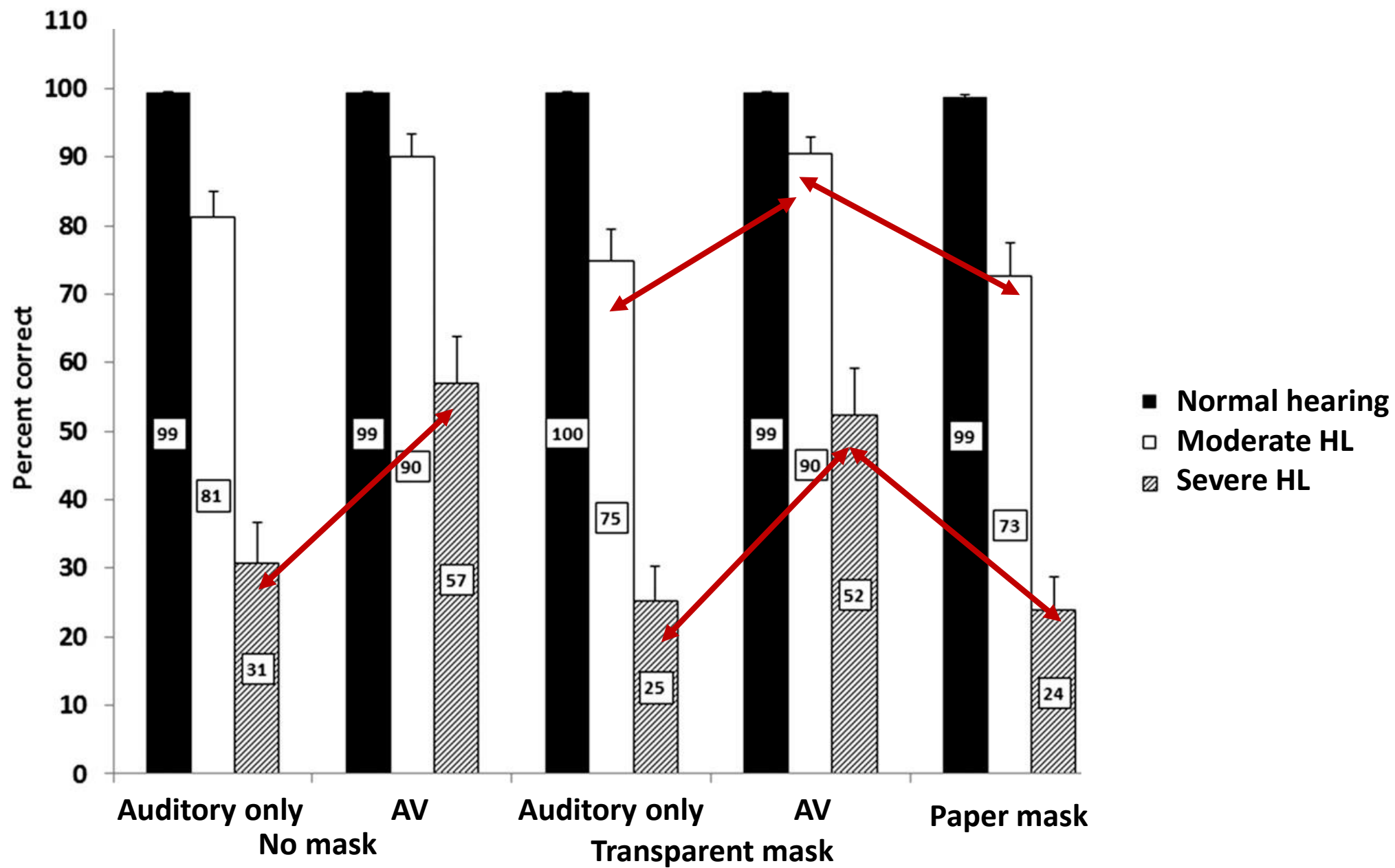
Impacts of face coverings



Stone & Munro (2020) ENT & Audiology News May 7



Mendel et al. (2008) JAAA 19:686-695



But what are the real-world impacts of face coverings on communication?

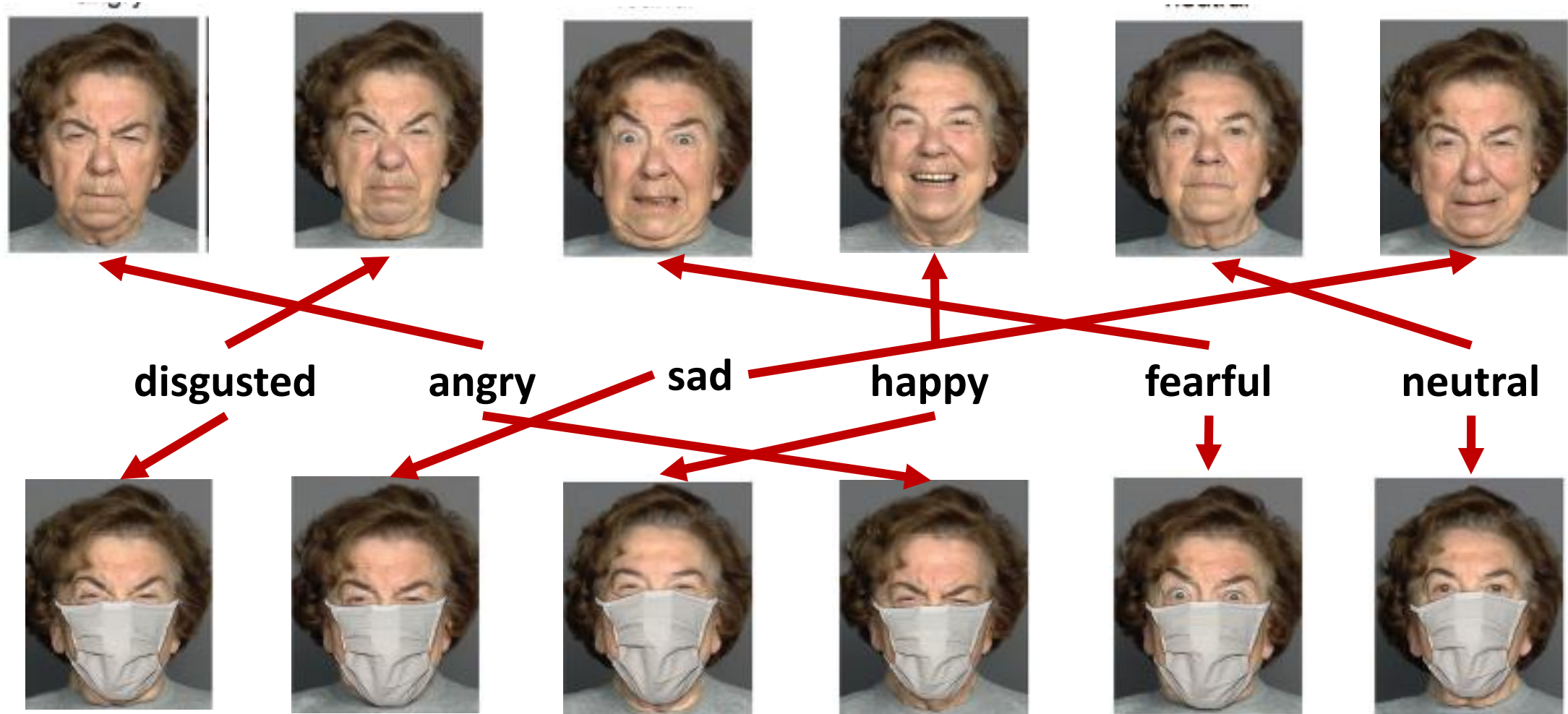


Why might there be potential impacts beyond acoustics?

- Speechreading
- Facial expressions and emotions

Emotion recognition

Emotion recognition



Confusion matrix of emotions

perceived emotion	no mask					
	sad	4.5 %	3.5 %	0.4 %	0.2 %	2.8 %
	neutral	4.1 %	0.2 %	0.2 %	0.4 %	93.1 %
	happy	0.0 %	0.0 %	0.2 %	98.8 %	0.8 %
	fearful	0.4 %	0.4 %	92.5 %	0.2 %	0.6 %
	disgusted	7.3 %	93.9 %	4.5 %	0.0 %	0.4 %
	angry	83.7 %	2.0 %	3.3 %	0.4 %	2.2 %
	sad	8.1 %	3.9 %	0.4 %	1.8 %	3.0 %
	neutral	8.3 %	4.3 %	0.2 %	20.9 %	93.1 %
	happy	0.6 %	8.3 %	0.6 %	74.2 %	1.0 %
	fearful	2.6 %	2.0 %	93.5 %	0.4 %	1.8 %
	disgusted	10.8 %	43.7 %	3.0 %	0.6 %	0.0 %
	angry	69.5 %	37.8 %	2.4 %	2.2 %	1.0 %
expressed emotion						
	angry	disgusted	fearful	happy	neutral	sad

Without mask:
All accept 'sad' identified well

With mask:
Problematic to identify everything except for fearful and neutral

Real-world impact

Physicians and face coverings

- Physician perceived as being less empathic when wearing a face covering than when not wearing one
- No impact on satisfaction with medical appointment

Conducted a survey of general public June - August 2020

- **Demographics and hearing**
- **Communicating with someone wearing a face covering.** Impact on hearing, understanding, feelings of being engaged in the conversation and feeling connected with the talker for various listening situations
- **Communicating when wearing a face covering.** Impact on content and nature of communication.

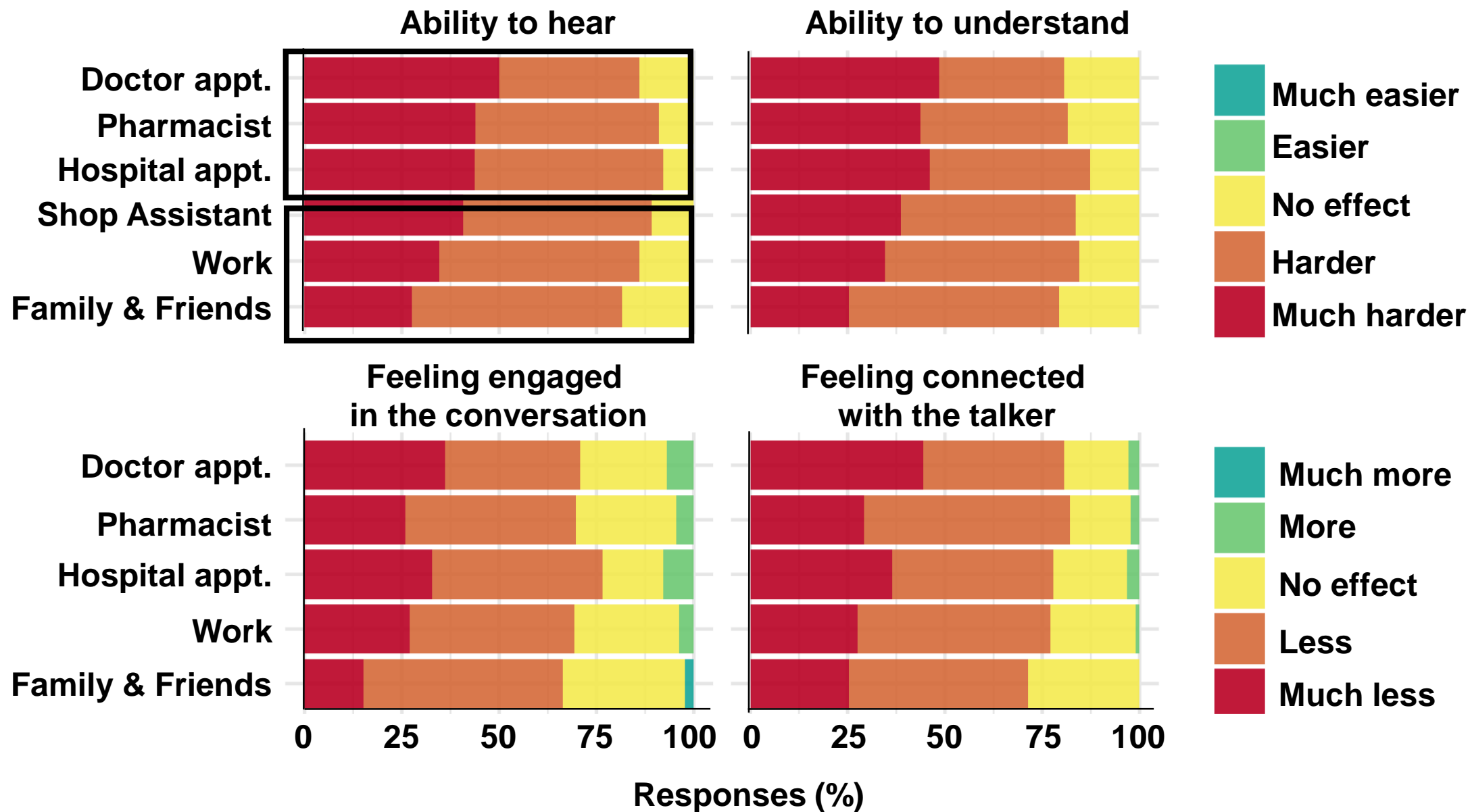
Closed-set (answered on a 5-point Likert scale) and open-ended questions

Participants

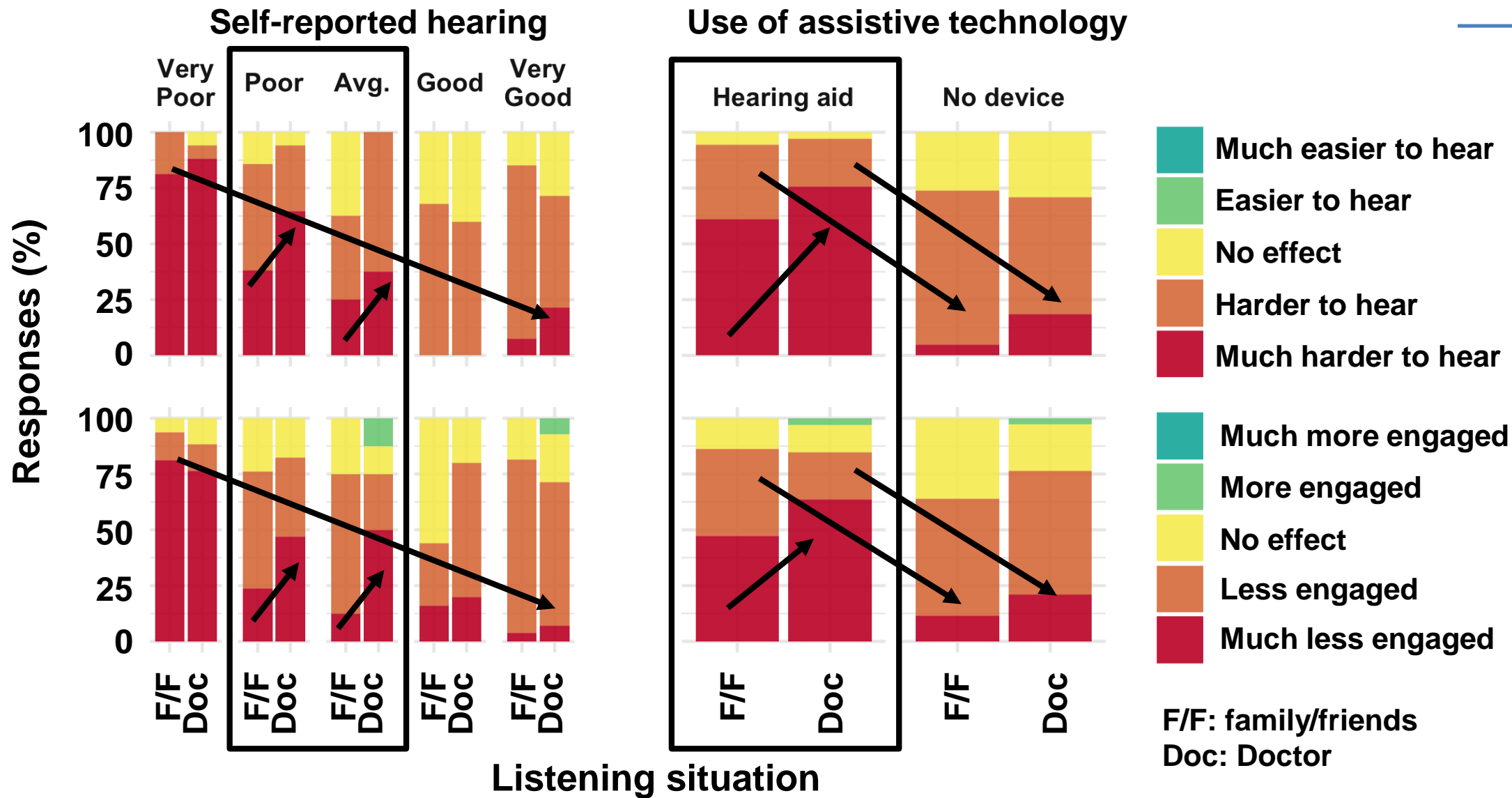
- 460 members of the UK general public
- 79.9% female
- 93.3% white
- Age: <50 yr.: 51.9%
 - 50-69 yr: 39.5%
 - ≥70yr: 8.6%
- 41% used hearing aids, 9% used a cochlear implant (*intentionally oversampled*)
- Even distribution across self-ratings of hearing 'very good' to 'very poor'

***Listener impacts - Communicating
with someone wearing a face covering***

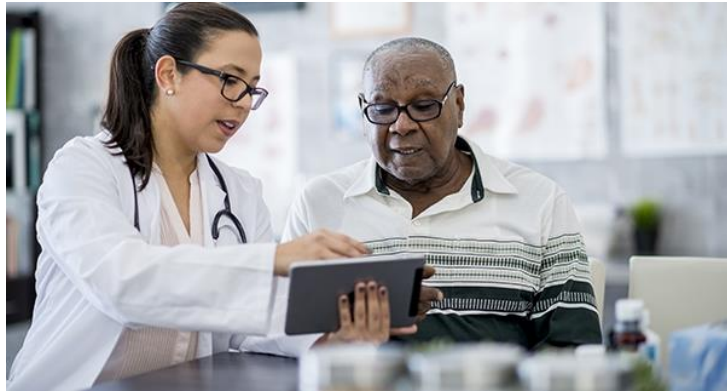
Impact of face coverings by listening situation on:



What effect does hearing have on this?



Likely explanations



Unfamiliar

Potentially very important

Unfamiliar

Possibly stressful



Familiar

Typically unimportant

Familiar

Relaxed (hopefully)

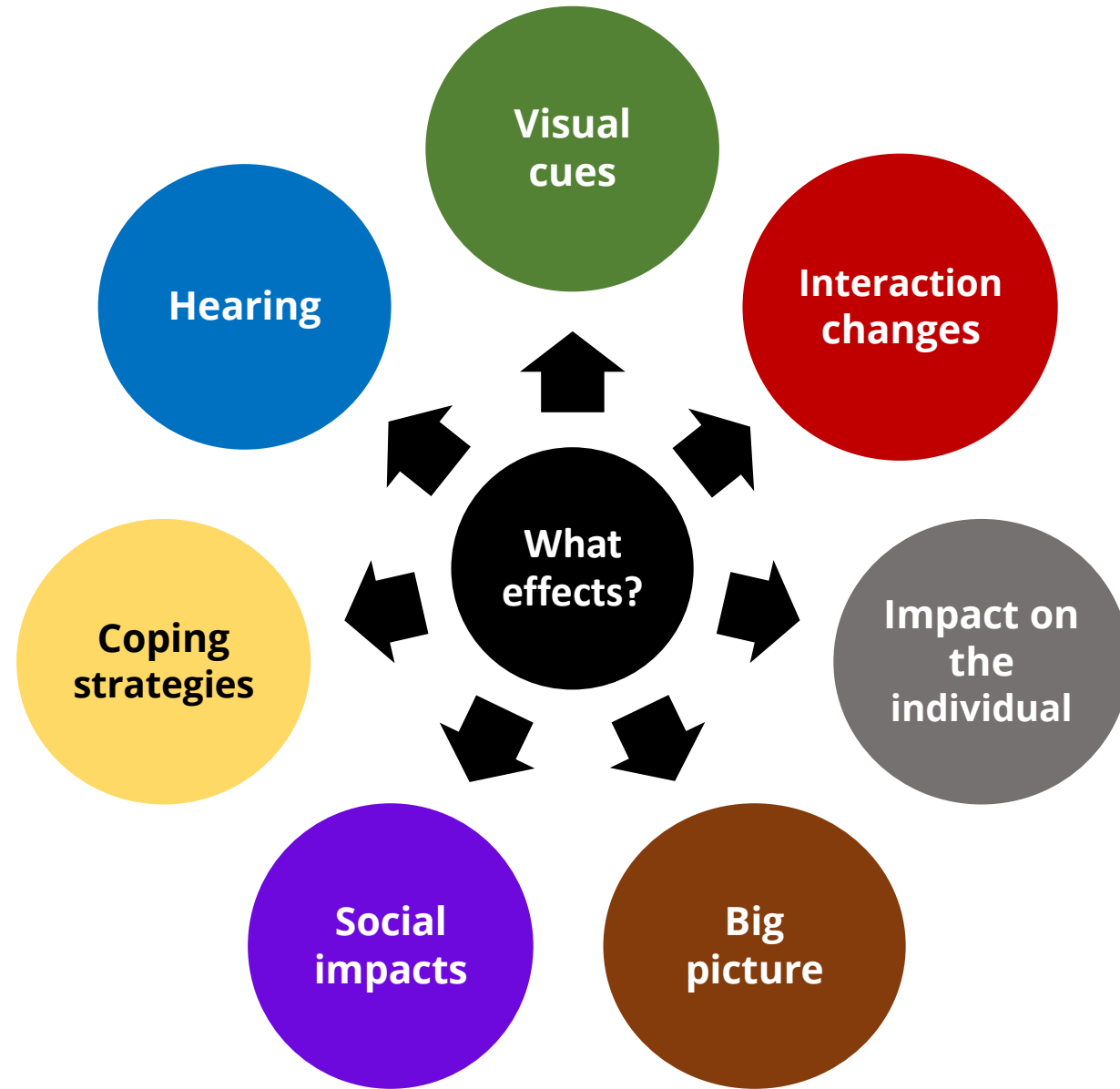
Content

Speaker

Situation

In general, what are your thoughts about talking with someone who is wearing a face covering? Do you think it changes the way you communicate? If so, how? How do you feel about this?’

Content analysis revealed 7 themes

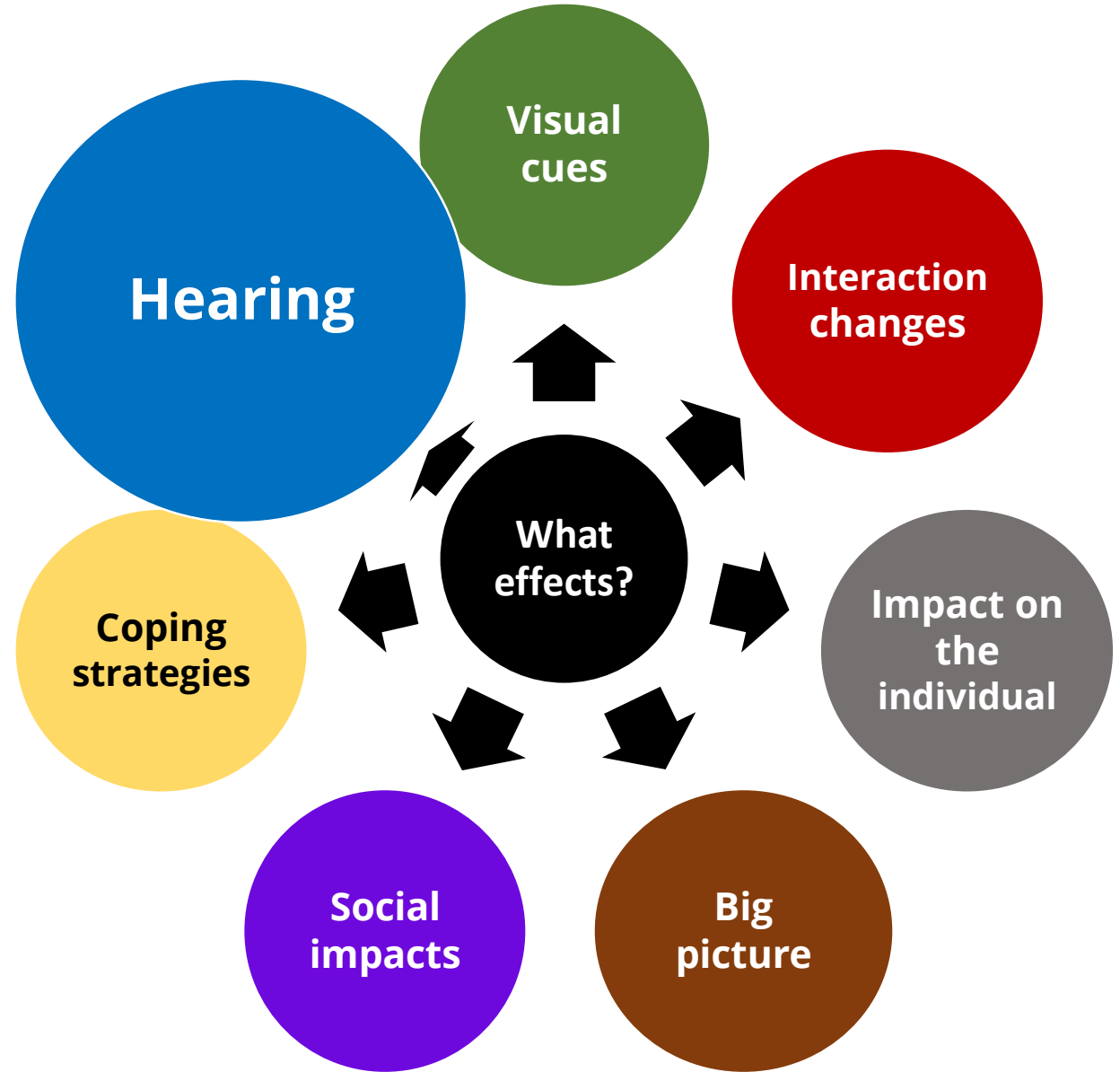


Sound is muffled and quieter

"I have been having some difficulty hearing people. I feel that they are muted slightly"

Impact is speaker-dependent (vocal clarity, accent, etc.)

"Some people are not very good communicators without a mask. Adding a mask on, soft spoken people and people who don't speak clearly, makes it harder for everyone to understand, regardless of their hearing status."



Cannot supplement hearing with cues from lips and face

"I use lip reading and not being able to see people's faces affects this"

Without seeing the face meaning is hard to interpret

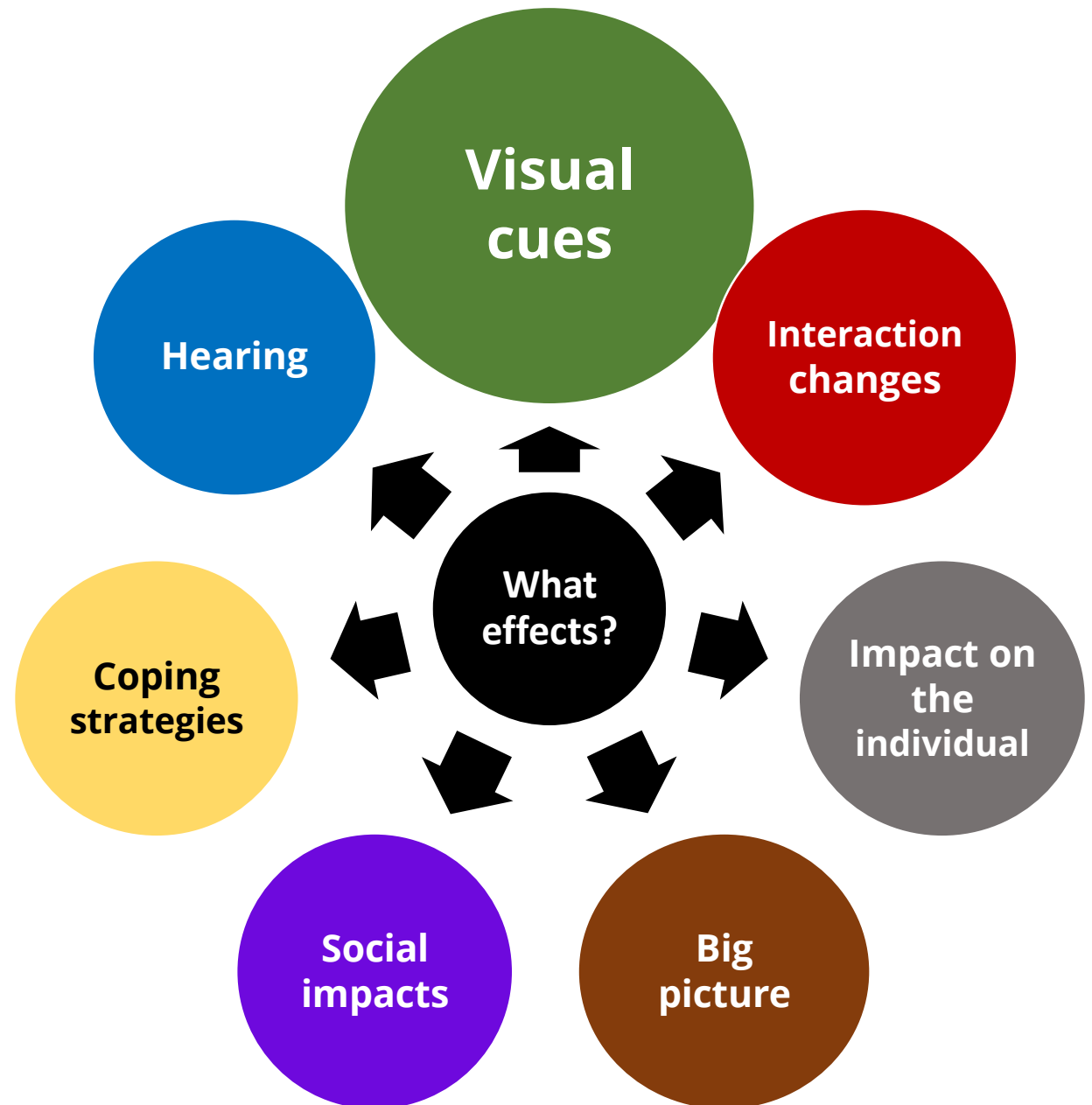
"A persons facial expression is as important if not more important than the spoken word."

New awareness of reliance on visual cues

"I have become more aware of how much I value seeing somebody's face when communicating"

Social distancing exacerbates problems

"and also difficulty if social distancing is maintained as the effect of combining being further away from the speaker plus muffling from the face mask impairs hearing the conversation."



More focus on information sharing

"it becomes information giving rather than a conversation"

Less informal chat, less humour

"Where I might make small talk or banter with colleagues or customers normally, I tend not to if they are in masks or face coverings"

Shorter, flow less well

Conversations are shorter as people get fed up of trying to repeat themselves

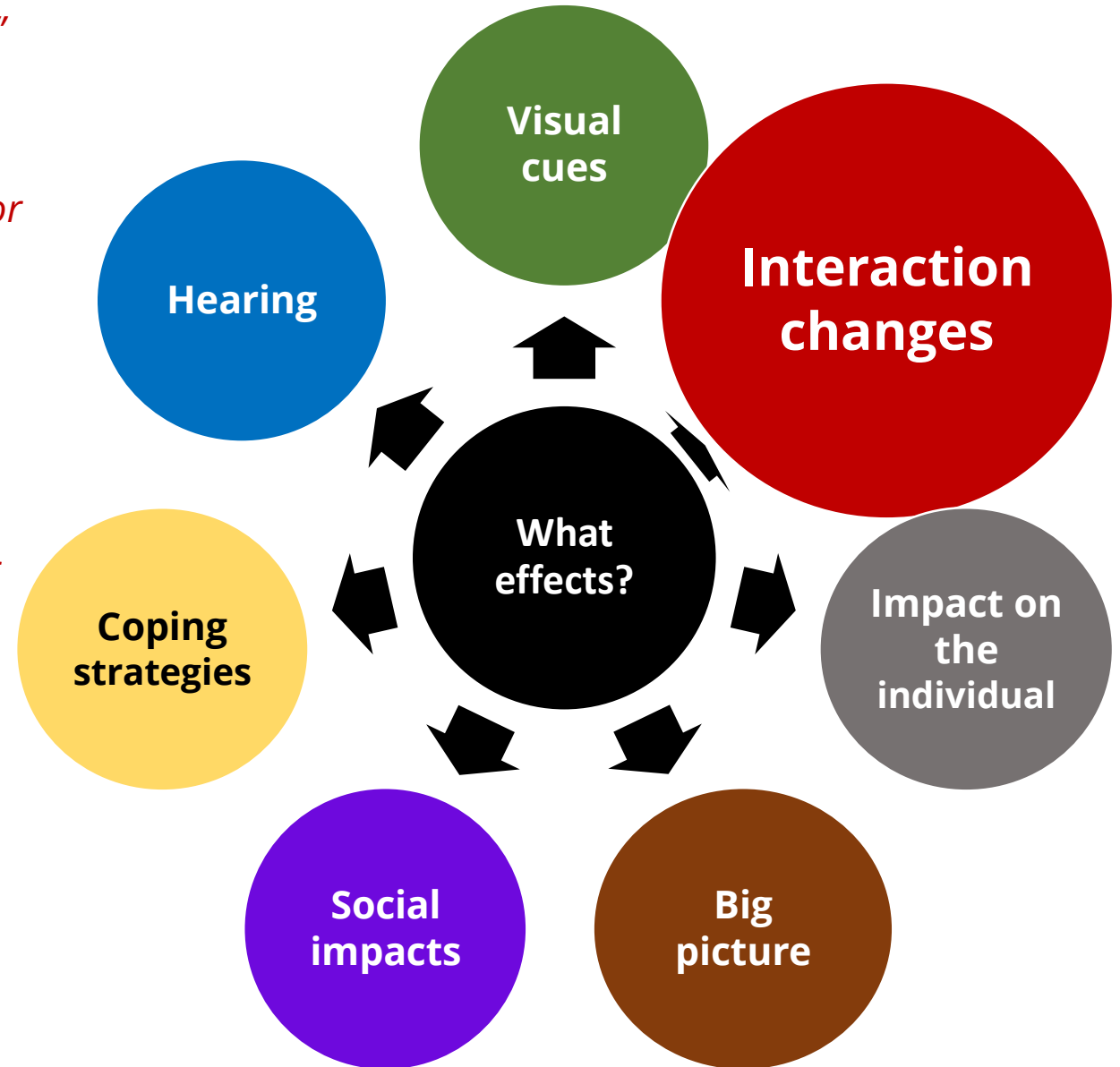
If I can't hear properly end up always saying 'excuse me' or 'can you repeat that'. Hugely affects the flow of conversation

Less personal and engaging

"I feel my connection with some speakers is not as strong"

Emotions are hard to read

"Reassurance from the person is lost and also the person does not seem approachable"



Negative emotions: anxiety, stress, isolation, stupidity, vulnerability, distress, frustration, embarrassment, loss of confidence

"It is more stressful to talk with a person with a face covering, in case I don't hear them"

"And it adds to a sense of isolation"

"I feel thick as I have to get people to repeat what they say"

"I feel very embarrassed at having to ask what is being said"

"feels a bit intimidating as can't read people as well"

"I feel it is frustrating"

Cognitive impacts: more concentration and effort required, more fatiguing

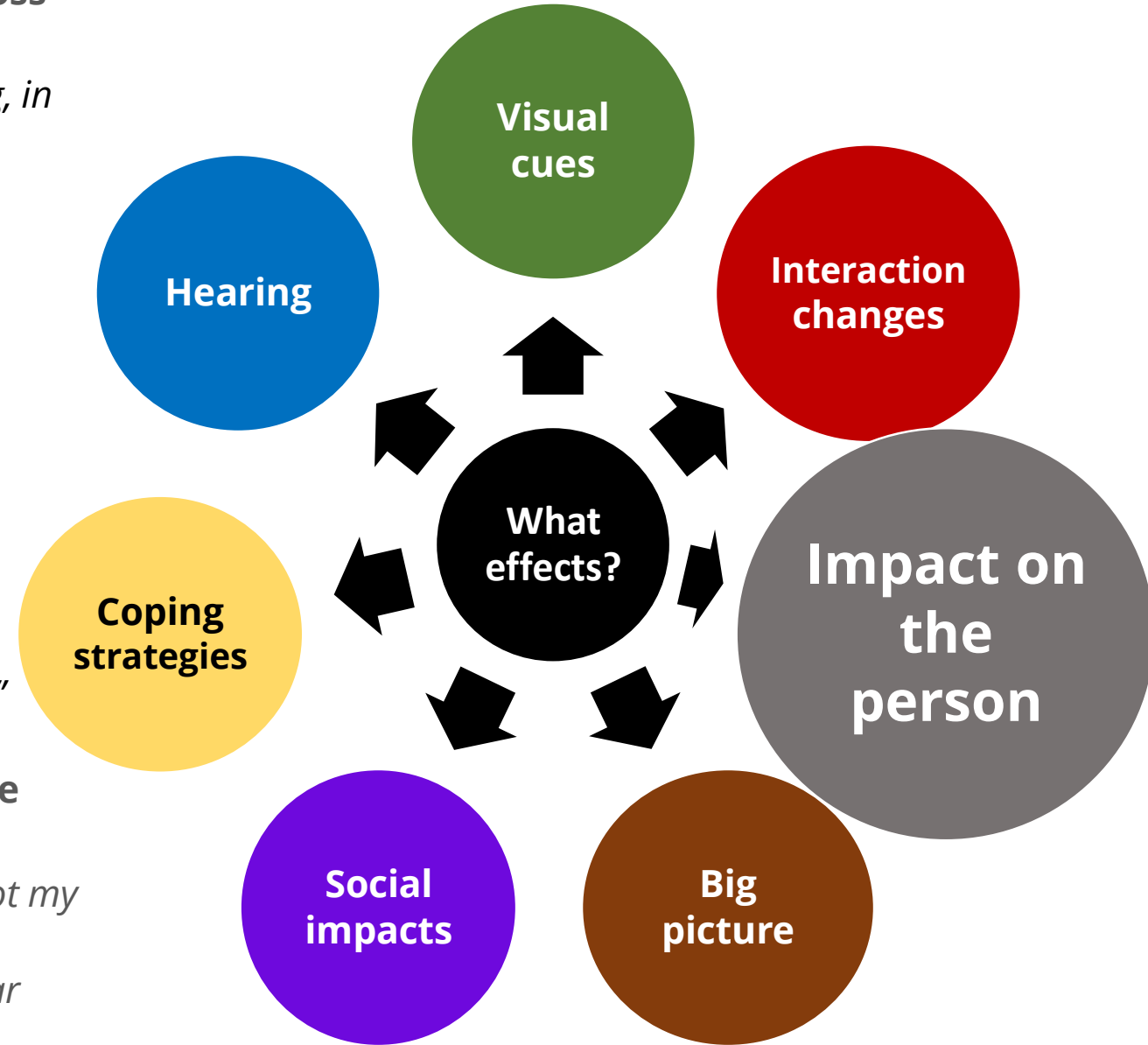
"It requires great concentration and in the end I lose the will to continue"

"At work it is exhausting and I have to keep asking for clarity"

Negative associations: with the pandemic, with a time before hearing aids/cochlear implants

"I really struggle, it's very isolating - just like it was before I got my hearing aid."

"I feel grateful that they are being considerate enough to wear one, but I simultaneously feel on edge because it is a visible reminder that we do not feel entirely safe"



Solution-focused: Use technology and communication strategies, tell others they have hearing loss

"I am currently experimenting use of phone app Live Transcribe in readiness for when I might need to use it in wider public"

"Explained my hearing loss asked the pharmacist to speak slowly which she did."

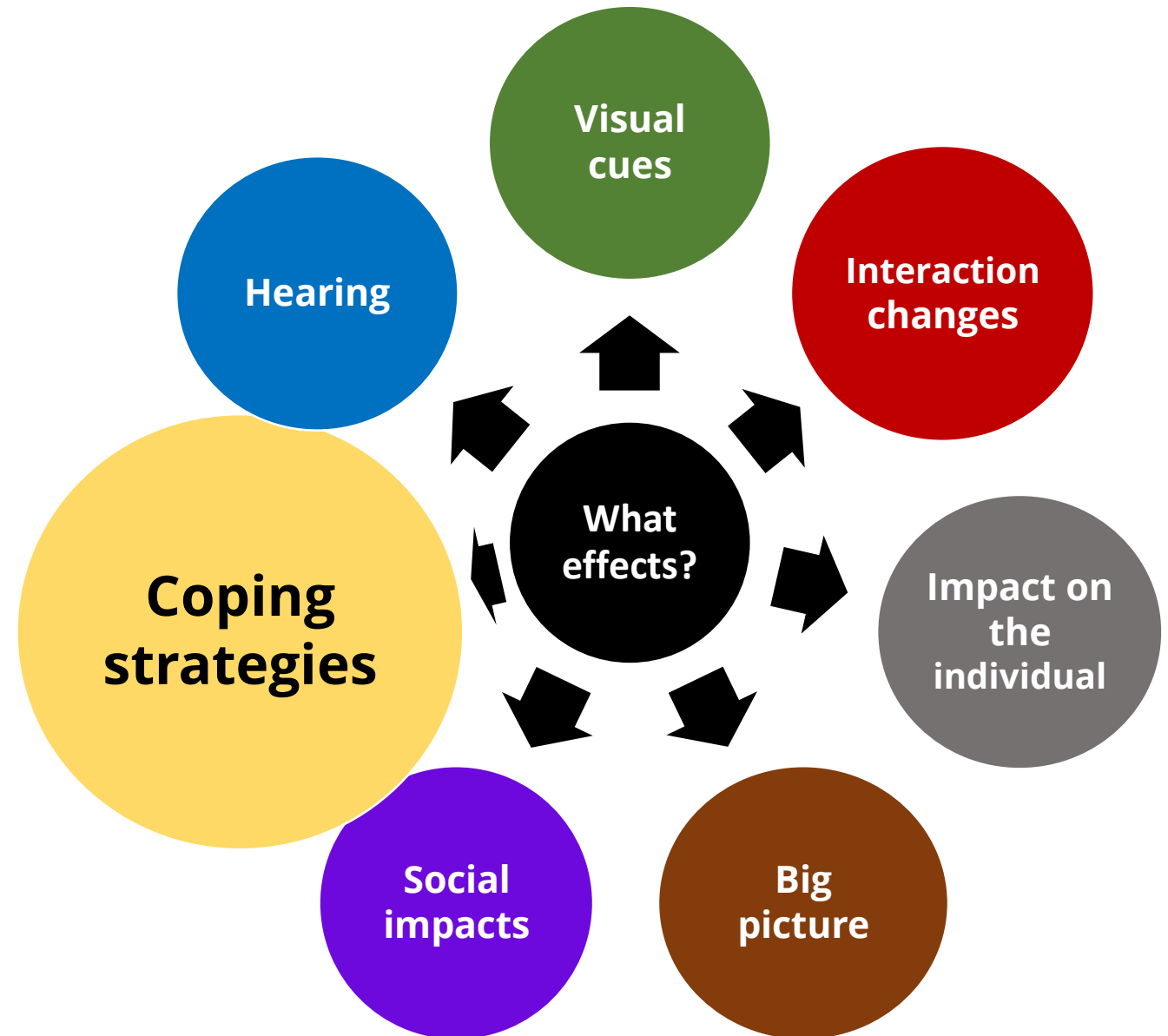
"It sometimes is necessary for people to change the sentence to make the meaning clearer"

Avoidance: Of communication entirely, rely on others

"I now go out of my way to avoid communicating with someone wearing a mask"

"I try not to go out unless I have to and try, where I can to avoid or reduce communication"

"I disengage and let my husband respond"



Interpersonal changes: difficulties recognising someone wearing a face covering, the effect of not seeing smiles, empathy for people with hearing loss

"They also cause difficulty in recognising a person in the first place"

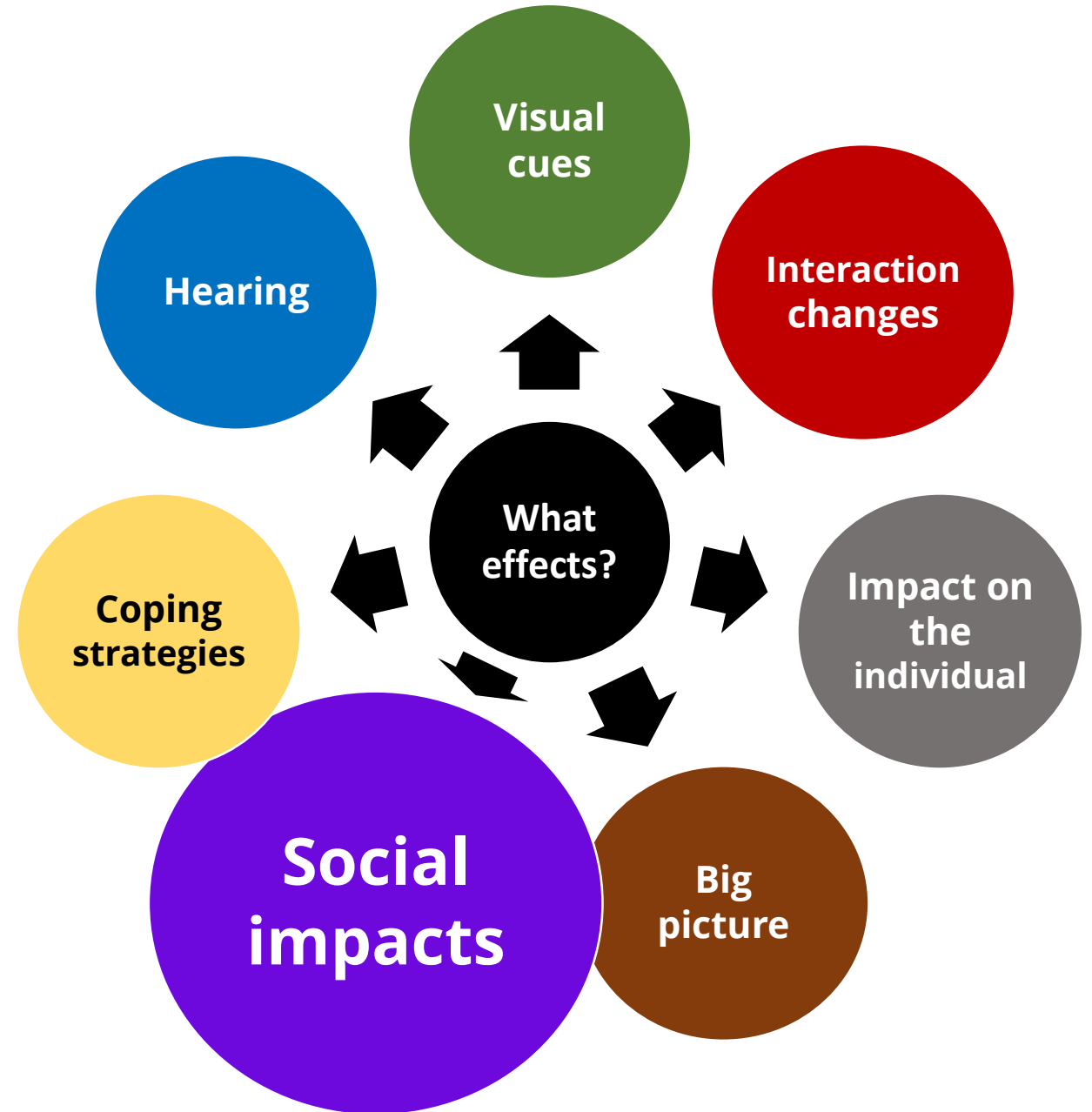
"It makes you feel a bit down as seeing people's smiles makes your day better and we cannot have this at the minute"

"For me it's a minor inconvenience, but for those who are hard of hearing it must be extremely off-putting and isolating"

Communication changes: Perception of barriers, use eyes and words instead of facial expressions

"Talking to someone with a face covering means there is a barrier in communication. "

"I am telling people when I am smiling at them"



Accepted/tolerated for the public good

"While communication is important, so is health and life so we all need to do our part to not inadvertently transmit the virus to someone who will be severely affected or even killed by it"

"It's annoying but I can deal with it if it'll help things go back to normal quicker"

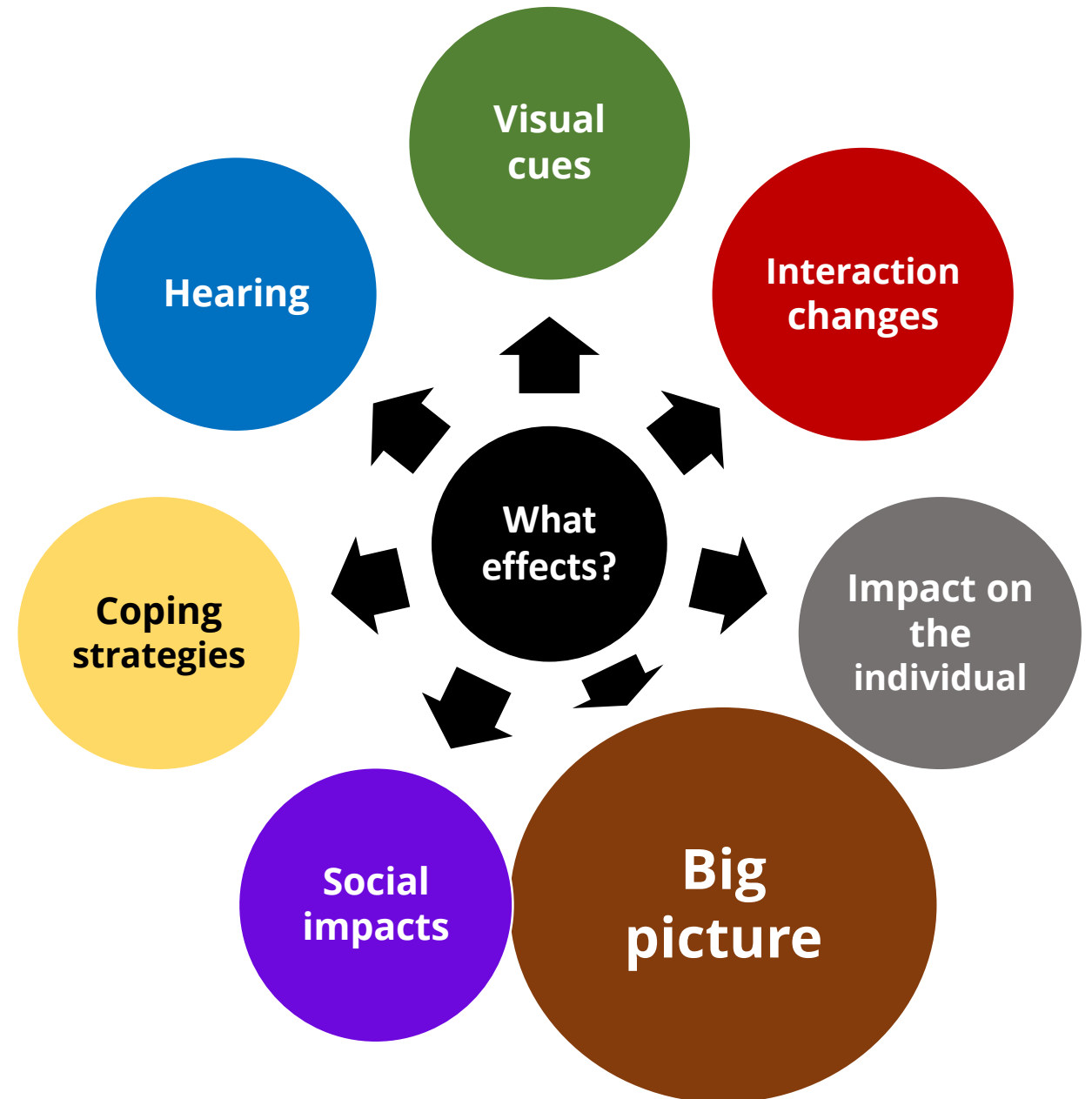
Worries about ongoing use

"I'm concerned because I'm a deaf nurse and feel I won't be able to do my job"

There were some positives:

"I haven't had problems with people wearing masks, you can see a smile in the eyes"

"But you do have to engage more fully to hear what's being said, so I do think that is a positive"



In what way do you communicate differently when you are wearing a face covering?

In what way are the nature of your conversations different when you are wearing a face covering?



Open ended responses revealed that people:

- Speak more loudly, slowly and clearly, say less, use simpler language, stick to essentials, avoid humour, and sometimes overcompensate by shouting
- Use gestures and facial expressions more often and more purposefully, try to use their eyes to communicate
- Adapt communication using cues from others
- Feel less confident and more self-conscious
- Conversations are less personal, less engaging, lacking in spontaneity
- Find it harder to build relationships and discuss personal matters

Summary

- Communication impacts of face coverings are broad
- The impacts go beyond the acoustics of speech transmission – which is not surprising based on the importance of the mouth and lips in communication
- They are significantly greater for people with hearing loss
- Despite this, people are accepting of them for the greater good

ORIGINAL ARTICLE



Impacts of face coverings on communication: an indirect impact of COVID-19

Gabrielle H. Saunders , Iain R. Jackson and Anisa S. Visram

Manchester Centre for Audiology and Deafness, School of Health Sciences, University of Manchester, Manchester, UK

ABSTRACT

Objective: To understand the impact of face coverings on hearing and communication.

Design: An online survey consisting of closed-set and open-ended questions distributed within the UK to gain insights into experiences of interactions involving face coverings, and of the impact of face coverings on communication.

Sample: Four hundred and sixty members of the general public were recruited via snowball sampling. People with hearing loss were intentionally oversampled to more thoroughly assess the effect of face coverings in this group.

Results: With few exceptions, participants reported that face coverings negatively impacted hearing, understanding, engagement, and feelings of connection with the speaker. Impacts were greatest when communicating in medical situations. People with hearing loss were significantly more impacted than those without hearing loss. Face coverings impacted communication content, interpersonal connectedness, and willingness to engage in conversation; they increased anxiety and stress, and made communication fatiguing, frustrating and embarrassing – both as a speaker wearing a face covering, and when listening to someone else who is wearing one.

Conclusions: Face coverings have far-reaching impacts on communication for everyone, but especially for people with hearing loss. These findings illustrate the need for communication-friendly face-coverings, and emphasise the need to be communication-aware when wearing a face covering.

ARTICLE HISTORY

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What's next?

- Stone et al. grant to develop communication-friendly face coverings in collaboration with small businesses
- Redo survey 1 year on
- Student project – impacts of niqab, hijab

Solutions?

- Use of transparent face coverings - despite their being acoustically less transparent than non-transparent ones – work is still needed on this
- Educate healthcare professionals about addressing communication needs of their patients
- Educate general public in use of good communication tactics



The end!

Thanks for listening

email address: gabrielle.saunders@manchester.ac.uk

ManCAD-BAA podcasts:

<http://research.bmh.manchester.ac.uk/ManCAD/Podcast/>