

An abstract network diagram consisting of numerous nodes (some solid blue circles, some white circles with blue outlines) connected by thin, light blue lines. The nodes are distributed across the entire image, with a higher density in the upper right and lower right areas. The background is split horizontally: the top half is white, and the bottom half is dark grey.

Britainthinks

— Insight & Strategy —

NCSC – Public perceptions of cyber security terminology research

Final research report | March 2023

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1 Introduction and methodology



Background

In 2022, the NCSC commissioned BritainThinks to conduct research into public perceptions of 'cyber security', including what the term means to the public and the mental models behind the concept.

Building on this understanding, the NCSC commissioned BritainThinks to conduct further research in 2023 to understand public perceptions of additional terminology relating to cyber security.

The ultimate purpose of this research activity is to make sure that the NCSC is engaging and empowering the public to be cyber secure in the most effective way.



This research explored perceptions of alternative terminology to ‘cyber’, as well as other key terms relevant to cyber security

The **alternatives to ‘cyber’** and their use as prefixes to ‘security’, ‘harm’ and ‘crime’ were the key focus of this research and therefore were explored in more detail than the other terminology shown.

Alternatives to cyber	Connected technology	Types of harm and defence	Descriptions of activity or content	Cyber related behaviours
Online	Connected	Scam	Fake	‘Strong’ and ‘weak’ passwords
Digital	Smart	Hack	Dodgy	Password manager
Personal	The cloud	Crime	Suspicious	Two factor / multi factor authentication
Tech/technology	Internet of Things (IoT)	Theft		Two step / multi step verification
<i>Plus each of the above used as prefixes to: security, crime, and harm</i>		Compromise		
		Phishing / Smishing / Quishing		

Specifically, the research objectives for this project were to understand:

What is the public's mental model behind these terms?

- How do they understand and make sense of these terms?
- How do they relate to each other, if at all?

What do the public understand these terms to mean?

- Do they feel relevant to them?

To what extent, if at all, does language used affect their perceptions?

- What language feels empowering or disempowering?
- What language resonates with the public? And does any feel less meaningful?

What role does context play for these terms?

- Do the terms mean different things in different contexts?
- Do the terms evoke a particular context or usage?
- Are they more or less meaningful in certain contexts compared to others?

We conducted research with three different audience groups, with the research method tailored to each of them

Online engagement with younger people

1 week of online engagement with **13x teenagers** aged between 13-17:

- 3x 13-year-olds
- 3x 14-year-olds
- 2x 15-year-olds
- 3x 16-year-olds
- 2x 17-year-olds

Participants were asked 5-6 questions per day, over 5 days, via **WhatsApp**. Participants were asked by moderators to clarify or add to their responses where necessary.

Focus groups with the general public

6 x 90-minute general public focus groups, via **Zoom**. The groups were split by age and socio-economic grade:

- 18-29, ABC1
- 18-29, C2DE
- 30-49, ABC1
- 30-49, C2DE
- 50+, ABC1
- 50+, C2DE

Within each group there was a mix of gender, ethnicity, UK region and device operating system (across smartphones and laptops).

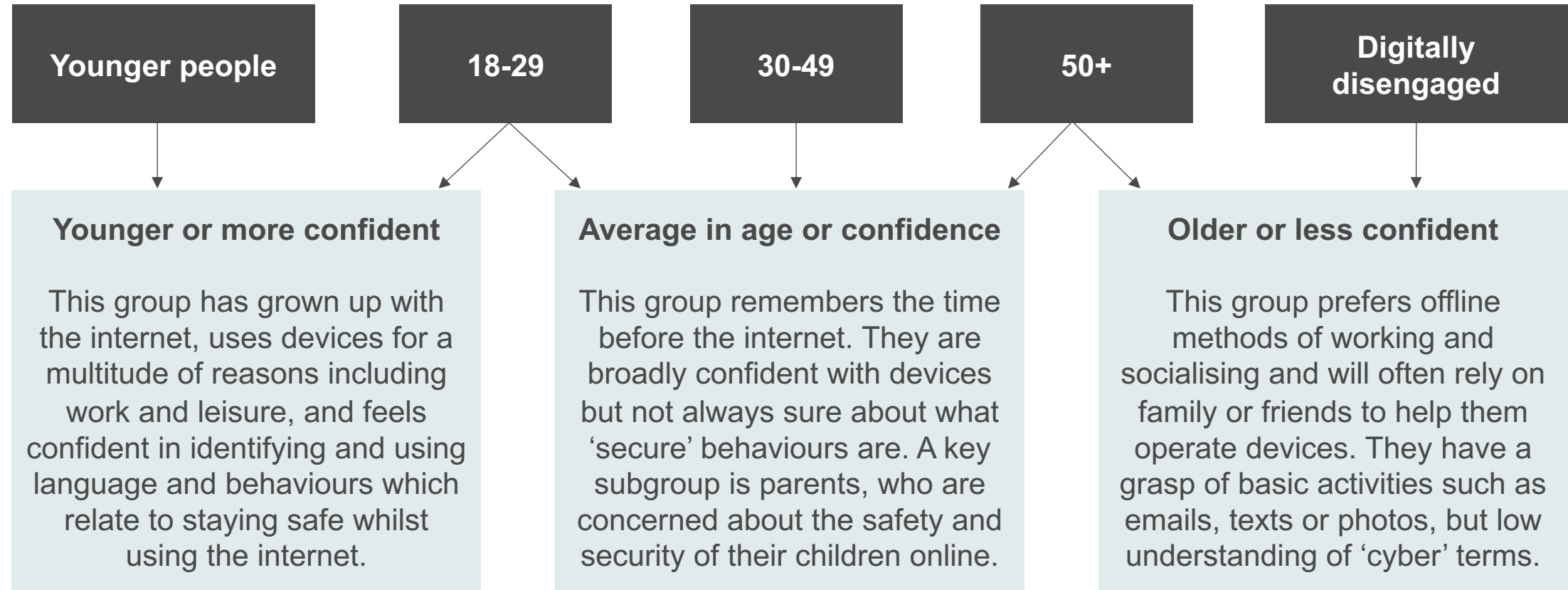
In-depth interviews with digitally disengaged people

5 x 45-minute interviews with individuals who are less confident online or using internet-connected devices.

These took place via **telephone**.

These participants were a range of ages (between 35-65), socio-economic grades, genders, ethnicities, and from different regions of the UK (North of England, South of England, Wales, Scotland and Northern Ireland).

During the analysis stage, we identified three key segments according to age and confidence levels with technology



Socio-economic grade is also an indicator of what group an individual fits into. In particular, **people who use internet-connected devices for work** are likely to be more confident in recognising 'cyber'-related language or behaviours than those who do not.

2 Core understanding of the terminology



Core Understanding: Alternatives to ‘Cyber’*

Online:

- A status, reflecting being online or ‘actively’ doing something using the internet, e.g., messaging, browsing

Digital:

- Referring to an electronic device, most typically with a screen
- Superseding ‘analogue’ devices, but equally, now being made obsolete by ‘smart’ devices

Personal:

- Information or activity which is private, or that the individual user does not wish to be shared widely
- Associated with confidentiality, personal data and restricting access to devices or accounts
- Can be used to differentiate between devices – e.g., personal vs. shared vs. work

Technology:

- Used to refer to devices (e.g., phones), software (e.g., self-driving technology) or technical fields (e.g., AI, robotics)
- Associated with innovation, progress, advancement, and changing the way we live (often, but not always, for the better)

*Please note these understandings represent the associations of members of the public, whose awareness and understanding of these terms’ use in a cyber-security related context varied. Therefore, the understandings may differ from a term’s ‘correct’ meaning or use.

Core Understanding: Connected Technology

Connected:

- Anything which is connected *to the internet*, or devices and people who are connected *to each other* via the internet

Smart:

- Devices which are connected to the internet *and* which enable 'normal' objects (e.g., TVs, watches, lights, fridges) with computer-like capabilities (e.g., streaming, being able to connect to a phone or app, etc.)
- One step more advanced than 'digital' devices (*see previous slide*)

The Cloud:

- Non-physical storage space*
- Often conflated with iCloud, and therefore assumed to refer only to Apple products or devices

*NB. More digitally confident audiences point out the information is physically stored somewhere but just not on the device itself

Core Understanding: Types of Harm and Defence

Scam:

- Being tricked into providing money or information, either online or offline
- Particularly associated with personal finances, banking or fraud

Hack:

- To break into an online account or device with malicious intent, e.g., to steal data, money or files

Phishing:

- A well-known form of online scam / method to get hold of personal information or money
- No one has heard of 'smishing' or 'quishing', even if familiar with phishing via SMS / QR code formats

Crime (/ theft):

- Illegal activity (/ stealing)
- Most commonly associated with physical, rather than online, behaviours and possessions unless prefixed

Compromise:

- To have personal information leaked or hacked
- Associated more with data being *compromising* (e.g., embarrassing photos) than devices being *compromised*

Core Understanding: Descriptions of Activity or Content

Fake:

- Used with a degree of certainty that an account, website or email (etc.) is not what it purports to be
- Assumed to be hiding either deceitful or, at worst, harmful content

Suspicious:

- Used when there is less certainty in something being deceitful or harmful, but there are cues which raise caution

Dodgy:

- Something which is suspicious but that is less of a threat to the user or can be ignored, either because it is outdated or simply less sophisticated (e.g., a website or text message which does not look realistic)

Core Understanding: Cyber-related Behaviours

Strong vs. weak passwords:

- Associated with pop-ups instructing users on how to create a secure password when creating an account
- Most assume a 'strong' password means:*
 - Including a mix of uppercase and lowercase letters, symbols / 'special' characters and numbers
 - Making longer passwords
 - Using different passwords for different accounts
 - Not having personal information, e.g., birthdays, as passwords

Password manager:

- Most are unfamiliar with what it is, having not come across the term before
- Most can make an accurate guess at what it means (i.e., a place to store multiple passwords) but very few are confident

2FA / 2SV / MFA / MSV:

- Not well recognised by the public, even when they are familiar with the additional identification step they refer to
- When presented together, the public is not at all clear on where the differences lie between:
 - 'Two' vs. 'multi'
 - 'Step' vs. 'factor'
 - 'Authentication' vs. 'verification'
 - Different combinations of the above

**NCSC's guidance, e.g., using three random words or password managers, was not spontaneously raised by any participants*

3 Executive summary



Public conceptions of cyber security terminology are strongly shaped by the context, their behaviours, and levels of confidence

1.

The public think about cyber security terminology through the lens of their own relationship with and behaviours in relation to internet-connected devices. The meanings they draw from terms are often strongly tied to specific internet-connected devices and online activities, rather than broader definitions.

2.

As a consequence, terminology which does not align to how the public uses internet-connected devices immediately feels less relevant. Most notably, many feel 'digital' is now obsolete, as many devices they use have moved from simply being digital to being 'smart'. In other cases, terms are felt to be more relevant to the offline world, e.g., theft.

3.

Public confidence in using internet-connected devices also has an impact on how they understand terminology. There are two extremes: younger people, who are more confident and understand terms more widely and readily; and, on the other hand, less confident, typically older, people often have more narrow associations with terms, and struggle to define them.

4.

Public confidence also shapes *sentiment* towards terminology and the extent to which it feels empowering. For example, members of the public who are more confident feel terms such as online and tech are aspirational, whereas those who are less tech confident feel more disempowered as they associate them with devices and activities they find complex.

5.

Finally, the context in which the public perceive terms plays an important role. This includes terms feeling more salient when thinking about them in relation to different places, devices and activities. For example, creating an account online is a context where 'personal' becomes more salient, as they are sharing their personal information. See more on slide 14.

The terms 'online', 'personal' and 'technology' all feel resonant and relevant, while 'digital' has more outdated associations

Overview of how the public instinctively understands each term:

Online	- A status which means a person is available online, e.g., via WhatsApp, emails, or online gaming. - Activities which can take place offline being performed on the internet, e.g., online shopping. - An umbrella term to describe a way of life. As the boundaries between online and offline become increasingly blurred, the public feel 'online' to describe most aspects of their life.
Digital	- Devices which have a screen. These may or may not be connected to the internet (e.g., the public also associates electronics such as air-fryers or radios as being digital). - See as the alternative to analogue, for example, the transition from analogue to digital clocks. - Younger audiences feel that 'smart' now better suits their devices, e.g., referring to their 'smart TV' and 'smart watch' rather than 'digital TV' or 'digital watch'.
Personal	- Used to describe information or data which is personal to them. This includes <i>personal data</i>, i.e., name, address, and also information which they feel is personal, e.g., private messages. - Used as a term to describe devices which belong to them personally and are not shared or used for work. - The term draws strong associations with privacy and security.
Technology	- A broad range of devices including those that are computerised (e.g., tablets) and those that aren't (e.g., headphones). Although the public can list examples of 'tech', they lack a coherent definition. Software, such as apps, that can be applied to lots of different hardware, e.g., high-tech cars. - A general term to describe new introductions designed to make things easier or more efficient.

The resonance and salience of each term does however depend strongly on the context

Online	Digital	Personal	Technology
Online is applied to a wide range of contexts, when it comes to locations, devices and activities. All audiences use the term at home, at work (if they use internet connected devices) and ‘out and about’. Almost all recognise that it applies to devices that can connect to the internet (e.g., smartphone, tablet). More readily associate it with active usage of the internet, e.g., messaging or banking, rather than passive uses, such as streaming on TV.	Digital is used the context of devices, although younger audiences are less likely to use it at all. Most salient when thinking about devices which were previously analogue, e.g., cameras, clocks. Also more salient when thinking about devices with a screen, e.g., an air fryer. Associated with activities that were once done physically or offline, e.g., digital marketing, mp3 players, rather than activities which the public do themselves online.	Personal is associated with individual use of the internet and separate from work or shared devices. Strong like to security: many focus on the use of personal details and data online, especially when it comes to banking. Older participants are more likely to associate with the offline world, e.g., keeping safe from physical harm.	Technology is applied to a wider range of activities, devices and contexts. ‘Tech’ is associated with devices which are seen as new and innovative, i.e., ‘the latest tech’. Less commonly associated with specific activities, but rather associated with new developments, such as AI and robotics. Older participants use it as a broader term linked to innovation and progress.

The term 'online' is most intuitive as a prefix for security, crime and harm, with the other terms fitting less clearly with each suffix

	Online	Digital	Personal	Technology
Security	Actions and behaviours individuals take to stay when actively online	Security features that protect devices, especially from others gaining access	Most understand as an individual measure taken to stay safe online, but older audiences also apply it to the offline world	Similar to digital security and refers to protection of devices and hardware
Crime	Any criminal activity facilitated by the internet, especially scams and fraud	Younger audiences see it as synonymous with 'online crime' but use it less often. Older audiences apply it to financial crime	n/a	Uncertain definition as not seen as not relevant to personal use, like counterfeit devices or ransomware
Harm	Personally or socially harmful behaviours such as bullying or abuse, from one user to another	Harm of devices not people, for example viruses or bugs on computers	Most associate this with the offline world, not online activities, especially among older participants	Uncertain definition. Possibly used to describe damage to devices or from devices, e.g., screen time

Most additional terms tested are understood by the public, but unsurprisingly, more technical terms (e.g. IoT, 2SV) less so

Connected technology	• ‘Connected’ and ‘smart’ are widely used terms, while a very small number have heard of IoT. • ‘Connected’ is used similarly to ‘online’, to refer to any devices connected to the internet. • ‘Smart’ is understood similarly, but is also often used as a prefix, e.g., ‘smart TV’ or ‘smart watch’. • Most know that ‘the cloud’ refers to storing data somewhere that is not the device itself. However, many conflate the cloud with iCloud, and so assume it is only relevant for Apple users.
Types of harm and defence	• Although the public are very familiar with the terms ‘crime’, ‘theft’, and ‘compromise’, they are not used spontaneously in an online context. • ‘Scam’ is strongly associated with finances and can be used in both an online or offline context, while ‘hacking’ is most strongly associated with bad actors ‘breaking in’ to devices or online accounts. • Most are aware that phishing is a type of scam, and try not to click on ‘dodgy links’, but they are less sure of an exact definition of ‘phishing’ and do not know that it relates to emails specifically.
Descriptions of activity or content	• The terms ‘fake’, ‘dodgy’ and ‘suspicious’ are all commonly used to describe online activity. • ‘Fake’ is assumed to conceal harmful content, for example with social media accounts and trolls. • ‘Suspicious’ is used when there is less certainty but there are signals which raise caution. • ‘Dodgy’ is most commonly used for websites or links which may be trying to get information from the user, but isn’t deemed to be serious, as ‘dodgy’ things can easily be ignored or avoided.
Cyber related behaviours	• The terms ‘strong’ and ‘weak’ are understood clearly in relation to passwords. The public tend to think about these when prompted whilst making passwords for online accounts. • Most are unfamiliar with what a ‘password manager’ is, and those who are unaware of the term can struggle to work out what it means as they do not hear the phrase often. • 2FA/MFA and 2SV/MSV are recognised by those who are more tech savvy and associated with logging in to online accounts, however, people are unsure as to the differences between the variations in the terms.

These findings suggest that NCSC should consider:

Using 'online security' to refer to situations where the public feel they are 'actively' using the internet

'Online security' is well understood by the public and moves them into a space where they're thinking about measures which protect them while they are actively *doing* something online, for example, making strong passwords when creating online accounts or going on secure websites when surfing the web.

Referring to devices that need protecting as 'connected'

The public understand 'connected' to be any device which is connected to the internet. This encourages them to think broadly to all devices, including those which they do not actively use, e.g., connected home devices such as smart doorbells and smart speakers.

Aim to use specific, but non-technical, language when describing the types of harm

The most resonant terms to describe harm are more specific (e.g., scam, hack) rather than umbrella terms (e.g., online harm, personal harm). As the broader terms are not well defined, the public often understand them to refer to other tech-enabled harms, for example cyberbullying or harm from too much screen time.

'Personal' and 'online' are most relevant to individuals

Although not misunderstood, technology and digital often apply to specific devices, or broader terms, feeling less relevant to participants' personal use. Online and personal are more relatable to individual behaviour and are applicable to a wide range of contexts.

4 Key terms: alternatives to 'cyber'



We tested perceptions of four key potential alternative terms for cyber:

Online

Personal

Digital

Tech / technology

Online

What comes to mind when I say: 'online'?*



*Word cloud generated from terms used in WhatsApp engagement with younger people and notes taken from general public focus groups

'Online' is most strongly associated with a state of being or *actively* doing things on the internet

Online is a broad, all-encompassing term among all audience groups.

More strongly associated

Less strongly associated

A state of being

Initially, the public **associate online with a 'personal status'** that they're available and can be contacted, thinking particularly about their status as showing as 'online' on apps such as WhatsApp.

"Seeing it written down like that reminds me of when someone else is using the same website as you, like Facebook or Instagram, that they're also connected."
18-29, ABC1

Active use of the internet

The public also use it to describe **active** use of the internet and use online as a prefix for these activities, e.g., online shopping, online banking.

"Whenever I think of 'online', I think of being on an online platform, being active on social media or searching for things on Google."
18-29, C2DE

An umbrella term for a way of life

After reflection, the public feel online is **an umbrella term** that denotes being connected to the internet. This means they assume they are **'always' online**, for example via smart devices that are always on within people's homes, even if they're not actively in use.

"Some devices could be asleep but still 'online'. I have a burglar alarm that is connected to Wi-Fi."
50+, ABC1

Younger audiences are more likely to understand ‘online’ as an umbrella term, whereas older audiences understand it in the context of specific activities

Younger or more confident	Average in age or confidence	Older or less confident
This segment identify a wide range of meanings for the term online and are more likely to identify that it means being ‘connected to the internet’ as an umbrella term, rather than denoting specific activities.	This audience tend to use online to reference specifics, rather than a way of life. They associate the word with activities on the internet (e.g., shopping, banking) and the status of being online on social media, but there is also some recognition that the terms applies to connection to the internet more broadly.	This group find it most difficult to provide coherent definitions of this term, but when they do, tend to associate it relatively narrowly with their online status, use of emails, messenger apps and occasionally social media. Only a minority of the older participants talk about being always online as a result of their varied devices.
<i>“When hearing the word online, the first thing that comes to my head is using the internet to access many different things.”</i> Younger person	<i>“I see it as basically everything now that we deal with; a very all-encompassing word.”</i> 30-49, ABC1	<i>“You’re ‘live’ online, researching and making use of the world wide web.”</i> 50+, ABC1

'Online' is a salient term and is felt to be applicable to a wide range of contexts and devices



Places

Online is used in a **wide range of settings** including at **home, work, and 'out and about'**. Its primary meaning (as a status) applies to all these contexts and is felt to imply the person is available to be contacted. This may include **emails or Microsoft Teams at work**, and **WhatsApp** at home. Its secondary meaning, in relation to online activities, is also relevant in all contexts as the public note that you can go online anywhere, anytime.



Devices

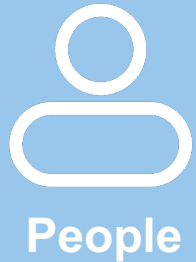
There is agreement that **all devices connected to the internet** are 'online', including everything from smartphones to smart doorbells. Many say that they are surrounded by 'online' devices, both at home, at work and in public, and that such objects are now a firmly entrenched part of everyday life. This helps to reinforce the perception of 'online' as an umbrella term that describes a way of life, as the distinction between online and offline is increasingly blurred.



Activities

'Online' is used as an umbrella term and encompasses **almost any activity carried out on the internet**. It is more salient when thinking about *active* activities, e.g., **sending messages, online shopping, online banking**. It is less commonly associated with more passive activities, such as watching TV on streaming services, where the public are less likely to use it as a prefix.

The wide range of applicable contexts can mean older audiences treat the term with resignation



Younger or more confident

See 'online' as an **expected and integrated part of everyday life**.

They feel it is natural to be consistently or even constantly connected to the internet and therefore the term feels relevant across a wide range of places, devices, and activities. This audience finds it challenging to distinguish between online and offline.

"Online is more relevant to me because I use it every day to contact my friends and family and to play games and shop."

Younger person

Average in age or confidence

See 'online' as part of life, both in the home, outside and at work. In comparison to the younger audience, though, there is **debate about how desirable this is**. Some reflect more positively on life before this proliferation of connectivity, but overall, **most accept 'online' as the norm** for devices and activities.

"Work or home, it's pretty much everywhere because it's all around us, it can mean a multitude of things; it's pretty much running the show now."

30-49, ABC1

Older or less confident

This group accept that 'online' is applicable to a wide range of contexts, noting that **life is increasingly 'moving online'**. However, there is a **degree of discomfort** about this, with concerns about devices tracking or listening to them, a sense that they often have no choice but to complete activities online, and that they may need help to do so.

"[It's] like me paying on my phone rather than going to the [hotel] reception. I think it's linked to a cashless society. I prefer years back when it was cash in hand."

Digitally disengaged

‘Online’ is widely recognised as a prefix for each term, meaning ‘relating to or via the internet’

Online security

‘Online security’ is a familiar term across all audiences. It is defined as **staying safe on the internet**, and applied to a range of uses and contexts **at home and at work or school**, including carrying out financial transactions safely, avoiding hackers/scammers, and protecting their data. The term is seen to be directly applicable to personal use of the internet.

Online crime

‘Online crime’ is associated with organised, criminal activities that use the internet to steal, trick or defraud. There are close associations with **hackers, scams** and, among the more confident, **ransomware**. The public feel they are exposed to ‘online crime’ when they see **scam emails or websites trying to steal money or personal details**.

Online harm

‘Online harm’ is associated with specific actions where people use the internet to target or harm another, for example, **cyber bullying, grooming and social media abuse**. The term online implies the platform on which abusers target their victims. Cyber crime and fraud are typically less front of mind as online harms.

However, there are nuances in understanding and sentiment toward the term by audience:

Attitudes towards online security are relatively consistent. Some **older and disengaged participants** do not feel in control of their online security, relying on software or family members to protect them. **Younger participants** associate it with school and IT lessons.

Younger participants are confident they can protect themselves from crime online, while **other audiences** feel more concerned and less confident. This is due to the scale and perceived sophistication of online crime that currently exists.

Parents and grandparents are concerned that children are particularly vulnerable to online harm. This concern is not held by younger audiences who feel relatively confident that they can avoid harm.

Relevancy of crime and harm as suffixes is low as the public do not see themselves as typical online crime or harm victims

	Online security	Online crime	Online harm
Do the public feel confident they know what the term means?	Yes	Yes	Mixed
Is it a term they use in conversation?	Yes: The public feel they do use the term 'online security', although older and less confident audiences tend to defer to younger relatives for assistance. It is felt to be relevant to a wide range of settings and scenarios, including at work and home.	Mixed: Most feel this term is less relevant to their own personal use of the internet. In particular, older and less confident participants say that is a term they expect to hear in a TV show or on the news, not in relation to their own activity.	Mixed: Nearly all, except older and less confident audiences, would use this term. It is often used in conversations between adults and children about staying safe online. However, some less tech confident audiences do not know what this term refers to, so therefore would not use it in conversation.
<i>"For me, online security relates to what we've been talking about in terms of why we would be nervous to use a device, or if there's something we've seen online that's made us worried, like a pop up or one of those phishing emails or texts and stuff."</i> 18-29, ABC1		<i>"I just think of hackers, that's all online crime. I watched Mr Robot and there's hackers on that."</i> Digitally disengaged	<i>"[Harm means] taking something from you, like personal information or money being hacked. Online harm could lead to personal harm."</i> 18-29, ABC1

The term 'online' is relevant to all as it increasingly describes the way of life in 2023

Most feel 'online' is the **most personally relevant** out of all four the terms tested. Its wide-ranging meaning as a status, activities, devices, and an umbrella term for using the internet means it's very relevant to all. Most feel life is increasingly 'online'.

"I think that the word 'online' is more relevant to my life as it makes me think of social media and the news so I can keep up to date on what is happening in the world."

Younger person

Relevance as a standalone term:

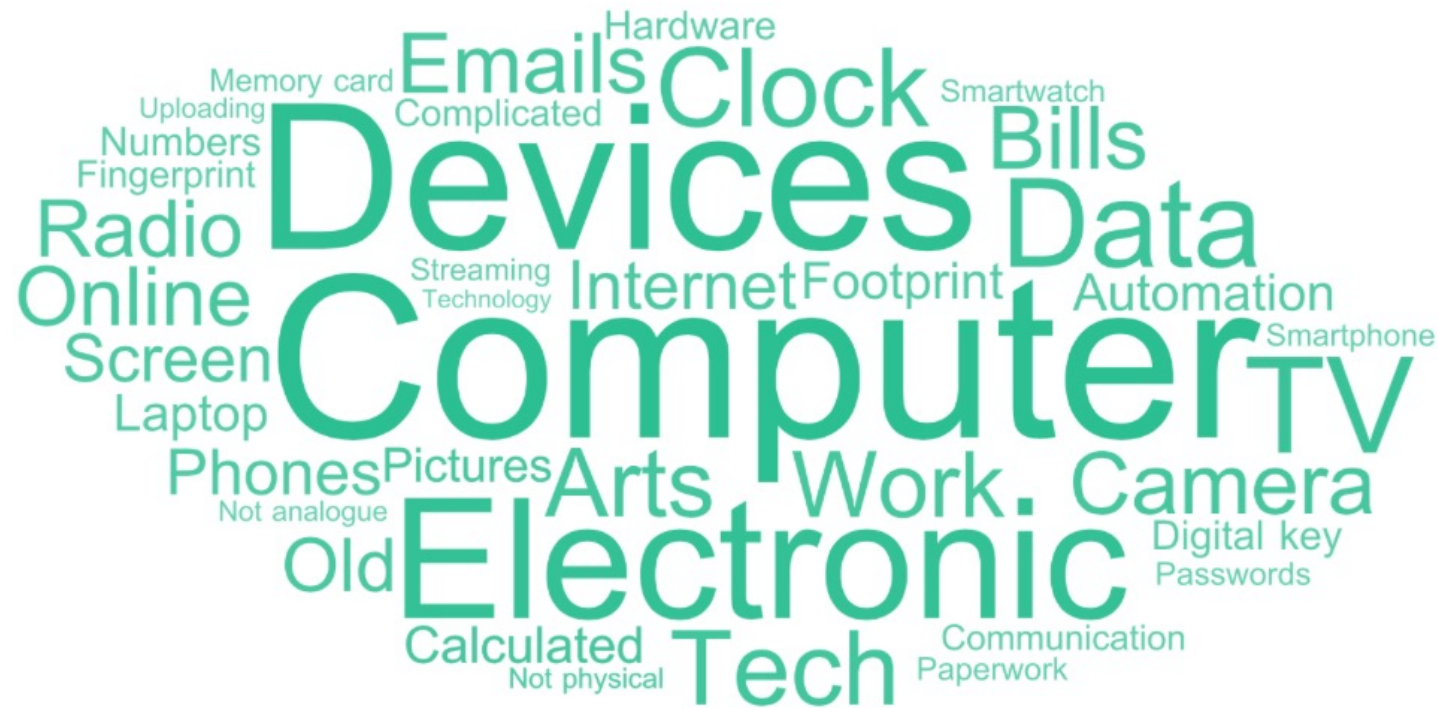
High

Relevance as a prefix:

High

Digital

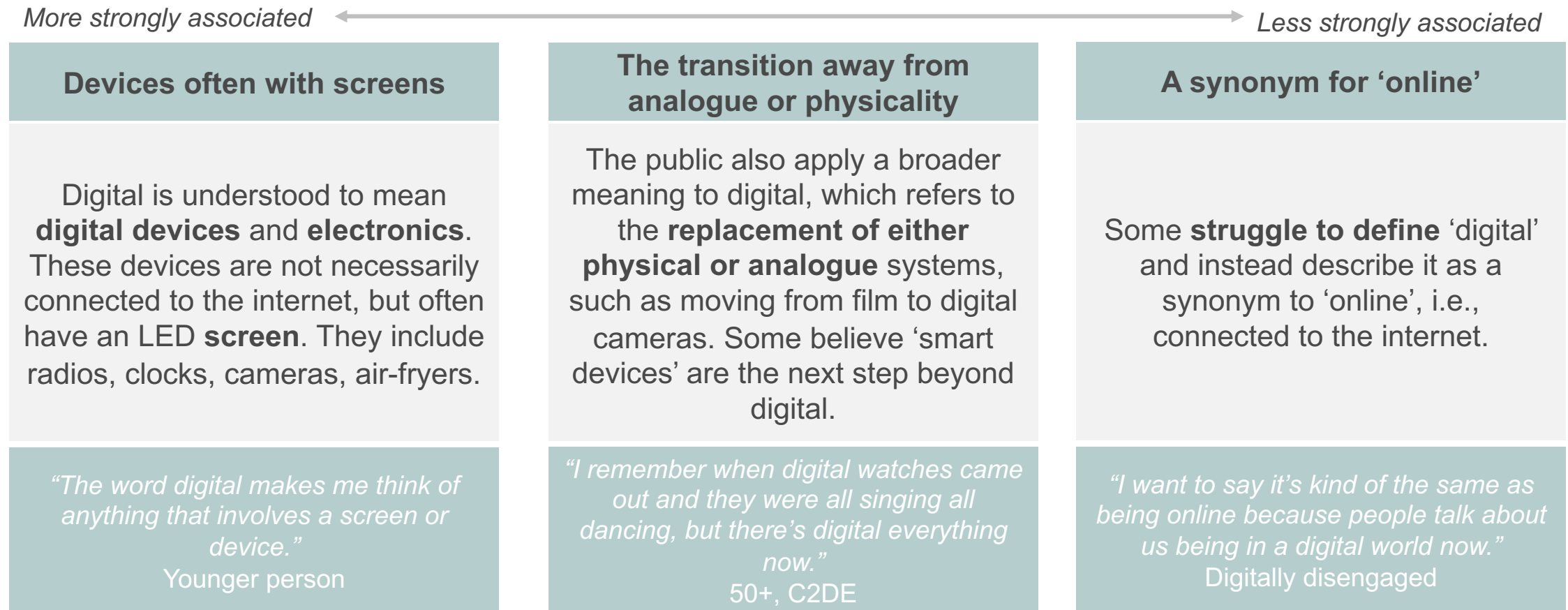
What comes to mind when I say: 'digital'?*



*Word cloud generated from terms used in WhatsApp engagement with younger people and notes taken from general public focus groups

Digital is associated with the transition away from analogue devices to electronic devices typically with screens

The public perceive digital as a term to describe certain kinds of devices:



Younger audiences can struggle to define the term, as they have less experience of the transition from analogue

Younger or more confident	Average in age or confidence	Older or less confident
Younger audiences struggle to give a definition for this term, and say it could apply to any kind of device. In some cases, this audience use 'digital' as a broader term that means connected, for example, they mention the phrase 'the digital revolution.'	This group feels digital means the moving on from analogue or physical objects. They associate it with changes to devices like TVs and clocks in their lifetime. They also think digital means any electronic device, rather than just those connected to the internet.	This audience's understanding also focuses on devices like digital watches and clocks and the difference from analogue. Some of the less tech-assured and more disengaged however, associate the term with a sense of mystery, e.g., defining it as 'magic'.
<i>"I think back to the digital revolution thing, it was a big thing back then. You wouldn't see digital TV, you'd see 4K TV, so it's kind of expected now."</i> 18-29, C2DE	<i>"[An example is] using a digital format for bills rather than paper, and the same for receipts."</i> 50+, ABC1	<i>"Any machine that's basically magic – an analogue watch makes sense, but an Apple watch is basically magic."</i> 30-49, C2DE

Digital is more salient when thinking about how devices and activities have changed over time



Places

The meaning of the term 'digital' is largely **unaffected by place**. It is a low salience term but is more resonant when the public are at home using digital devices, such as their **radio, clock** etc., or for at work for those who work in industries more obviously affected by digitisation, e.g., **marketing**.



Devices

Initially, the term feels more relevant when talking about **newly digital devices** such as watches, clocks and televisions, which were **analogue in the past**. However, after a discussion, the term also feels relevant to a wider range of electronic devices, including those that are not connected to the internet (although the public are less confident about that).



Activities

Due to an understanding of digital as the replacement of the physical with something online or on a screen, it is more resonant when thinking about those activities. For example, the replacement of physical advertising posters with banners online as '**digital marketing**', paper tickets with **e-tickets**, updating music to digital or **mp3 format**. Unlike online, it is less commonly associated with how the public use the internet themselves, for example, saying online banking rather than digital banking.

It is therefore more likely to be used by older adults who experienced the digital transformation first hand



Younger or more confident

While the younger audience recognise that the word 'digital' applies to many of the devices they use, they **do not feel it necessary to use** it as a term as they expect all devices to be digital now.

"The word 'digital' isn't as relevant to me in my daily life as the word online is."

Younger person

Average in age or confidence

This audience is more likely to use 'digital' in the context of **describing change over time**, in particular to devices which were previously analogue.

Some in this group also use the term in contexts where they would also use online (e.g., the 'digital world').

"It's tricky because it's not really a word that I'd frequently use – maybe when tax returns went digital rather than being paper based?"

30-49, ABC1

Older or less confident

This audience is similar to the average in age or confidence audience and is more likely to use the term when describing change in devices over time.

They are also more likely to use it in the context of **electronic devices generally**, which they describe as digital.

"I'm into music... Analogue machines make noise, but digital music came out and you have to take the CD to the computer, and the technology overtook me."

Digitally disengaged

There is low recognition and understanding of terms which use digital as a prefix

Digital security

Most are **not confident** in their understanding of the term digital security. The main associations are with the physical protection of devices, through actions like **facial or finger-print recognition**. Others say that it is interchangeable with online security.

Digital crime

There is little recognition of the term 'digital crime'. When prompted, the public assume it's like 'online crime' and related to **fraud** or **scams**.

Digital harm

There is little recognition of the term 'digital harm'. It is assumed to mean **viruses** and **bugs** which can affect devices. Some also think it can mean harms from being on digital devices too long, for example **eyes hurting from looking at screens**.

However, there are nuances in understanding toward the terms by audience:

Across the pre-fixed terms, the **younger audience** are more likely to use the terms interchangeably with online (e.g., online crimes, harm experienced online). Whereas **average age and older audiences** are more likely to draw subtle distinctions (e.g., digital crime is related to finance; digital harm is related to viruses, rather than cyberbullying).

Due to lack of confidence in their understanding, the pre-fixed terms are unlikely to be used in conversation

	Digital security	Digital crime	Digital harm
Do the public feel confident they know what the term means?	No	No	No
Is it a term they use in conversation?	No: While some young participants say this term is similar to online security, most are not confident in their understanding of it and do not use it.	No: Similar to digital security, few report using this term in conversation, as most do not know what it means.	No: As with the other prefixed terms, reported use of this term is low. Younger people see it as close in definition to online harm, but state they would use that over digital harm.

"I very rarely would use this term [digital] in these contexts, I can't remember the last time I did."
30-49, C2DE

"[Digital] is just not something that springs to mind when I think of the other terms."
30-49, C2DE

The public tend not to use the term digital, feeling its purpose as a descriptor of devices and activities is obsolete

Many feel that digital is **one of the least relevant** terms of the four terms tested. This is because most participants feel that digitalisation of electronic devices and activities has already happened, and in some cases been exceeded (e.g., via smart TVs) meaning it is a term that doesn't come up often. The exception is some older participants, who will distinguish between analogue and digital.

"It feels like a word that's disappearing, everything [digital] is in this context already so you don't necessarily need the word to describe [the device's] use in everyday life."

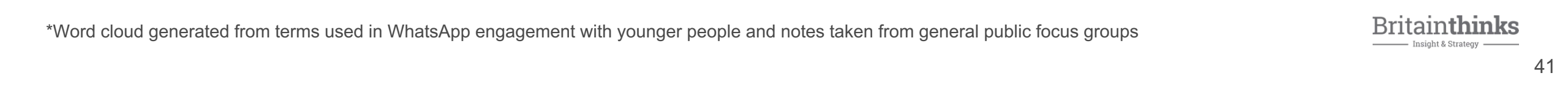
50+, ABC1

Relevance as a standalone term:

Low

Relevance as a prefix:

Low

[illegible]

*Word cloud generated from terms used in WhatsApp engagement with younger people and notes taken from general public focus groups

Personal is most commonly understood to mean personal details and data

Personal is understood to mean anything tech related that belongs to or affects a particular person. It should be noted that associations are likely primed by the online focus prior to discussion of this term.

More strongly associated ←

→ Less strongly associated

Personal data and details

Personal is seen to relate to anything specific to a particular person's use of technology or the internet which they **do not want to be shared or made public**. Most commonly, the public mentions their **data** and **passwords**.

"The first thing that comes to mind with personal is all your personal information that you use online. Every time you sign up for something and they want your age, date of birth and all that."

30-49, C2DE

Devices belonging to someone

The public understands the term to mean **personal devices**, i.e., devices which are not shared with others. This typically means **phones**, as well as tablets, laptops and computers.

"Something that belongs to me and is mine; a personal iPad, that it's mine and I'm using it. A PC means personal computer."

50+, C2DE

Specific link to security

Security measures and **protection** are closely tied to the meaning of this term. The public recognise the need to make sure personal details, data and devices are kept safe.

"[Personal means] things to do with myself, keeping my details safe."

Younger person

Understanding of the term ‘personal’ varies little between audience groups, although average age participants more readily associate the term with devices rather than details

Younger or more confident	Average in age or confidence	Older or less confident
This group understand the term to mean personal details and data. The details and data they think about is broad, and includes their photos, messages, and online behaviour, e.g., cookies and social media profiles. This means they strongly associate privacy with the term too.	This group more readily associate ‘personal’ with personal devices. They also feel the term relates to personal data and details, although this is secondary to devices.	This audience understand the term to refer to their personal details, and particularly their financial details. They also understand it to refer to their personal devices and belongings, which includes their internet-connected devices as well as ‘offline belongings’, e.g., clothes etc.
<i>“I think of consent when I think of personal, giving your consent to have your data in certain places, allowing cookies when you go online.”</i> 18-29, ABC1	<i>“My watch is personal. I’ve got a smart watch, a FitBit, and they’re tailored to you. You put your own credentials into that, don’t you?”</i> 30-49, C2DE	<i>“I wouldn’t expect this anywhere other than the bank really; the only place I’ve really seen [personal] recently is logging in for a personal account or a business option.”</i> Digitally disengaged

‘Personal’ has strong ties to privacy, so is more salient with devices and information that is for private use



Places

The public most commonly associate ‘personal’ with settings related to their personal life, for example, **at home** or when they’re out and about. They tend to **think of ‘personal’ and ‘work’ as opposites**.



Devices

The public associates ‘personal’ with devices they own and are **not shared with others**. This includes **smart watches, phones and tablets**. On the other hand, the term is less relevant for devices such as TVs, PCs or work devices which can and may be used by others – despite some recognising the ‘P’ in PC standing for personal.



Activities

The term becomes more salient when the public thinks about actions which involve **entering their personal details**, especially **banking** and financial transactions. This includes when they’re setting up an account or **logging in** to apps or websites.

Due to the ties with privacy, older audiences can feel more concerned by the term personal



Younger or more confident

The younger audience tend to use the term more in the context of **social media** and **messenger apps**, rather than the technical meaning of personal data such as their name, address etc. They make strong links to **privacy** and the importance of keeping their personal data safe.

"I think of 'personal' in terms of my profile on social media, where you can put the stuff that you want and design it how you want it. On settings you can change things between 'only me' or 'just friends' etc."

18-29, ABC1

Average in age or confidence

Personal is more salient in contexts where they are **actively sharing personal information** or using personal devices (e.g., at home). Most feel responsibility to protect their data and devices, so, as with other audiences, this term is often tied to **security** and privacy more generally.

"I would use it in the context of giving out my email address, I would ask if they want my personal email address or work email address."

30-49, ABC1

Older or less confident

This audience feels the term is more salient when they are doing things online that are private, e.g., **entering bank details** or **creating a new account**. This can feel concerning as they want to protect their personal information and at times enlist the help of family members to do this.

"A lot of the time, 'personal' means me with somebody else, for example if I'm getting my son to help me. Then when I'm up and running I want them to go away because what I'm doing is 'personal.'"

Digitally disengaged

Although the majority apply personal security to the safe use of the internet, many feel that personal harm is about being offline

Personal security

Personal security is seen as a broad term that covers any activity or measure that an individual would take to keep themselves safe online. This includes using **anti-virus software** to using varied and **complicated passwords**. Some also associate it with **physical harm and bodyguards**.

Personal harm

There is low recognition of this term. Most do not necessarily link the term to online activity. Instead, they assume it is **better suited to the physical world**, e.g., physically hurting someone else or even hurting yourself.

However, there are nuances in understanding toward the terms by audience:

The **younger audience** are more likely to apply 'personal security' solely to online use, while the older audience say it makes them think of physical security, i.e., in the offline world.

The **older audience**, especially those who are digitally disengaged, are more likely to say they have not come across this term in relation to the internet. The **younger audience** are likely to reference offline harm (e.g., self-harm), as well as as internet-related harms.

While the public recognise ‘personal’ in terms of keeping their devices and data secure, ‘personal harm’ is less resonant

	Personal security	Personal harm
Do the public feel confident they know what the term means?	Mixed	Mixed
Is it a term they use in conversation?	Yes: The majority across all three audiences understand the term and feel it is relevant to staying safe online with regards to keeping information private and confidential. There is a minority across audiences who associate ‘personal security’ with physical safety, for example thinking of or having a bodyguard or keeping your possessions safe when alone on the street.	Mixed: Few understand the term personal harm compared to personal security, meaning they are less likely to use it. Some in the younger audience are more familiar with it and feel they can define it. However, it is not a term they feel they would use often, and some confuse ‘personal harm’ with ‘self-harm’.
	<i>“Personal security would encompass everything we do online, so all personal data is secure. I’d say personal security and online security are interlinked – they’re when your personal details are online.”</i> 30-49, ABC1	<i>“Personal harm is the worst as it involves inflicting pain on yourself.”</i> Younger person

The public feel personal is a relevant term, with many using it in conversation to describe their own devices and actions

Most feel personal is a **relevant term** as it relates to their online activities and everyday use of the internet, as well as to the devices they own.

Most in each audience group say that they either use the term or come across it in their day-to-day life online, as a prefix that can be added to any word that means that it relates to their specific use or actions.

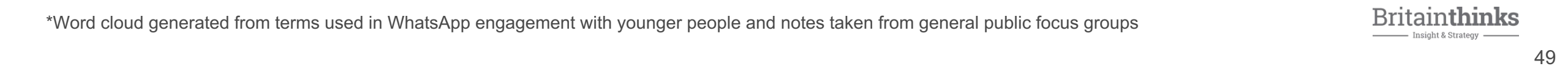
“Personal is second [to ‘online’] because I go online for a lot of personal things – social media is personal to me. ‘Personal’ also differentiates my work from my own uses.”
18-29, ABC1

Relevance as a standalone term:

High

Relevance as a prefix:

Mixed

[illegible]

Technology is broadly defined as devices, but some also apply a more abstract meaning

More strongly associated

Less strongly associated

Devices

The public associate the term with **electronic devices**, both computer-based and others, such as **headphones** or **cars**. The public do not feel it's clearly defined which devices are and are not 'technology', for example does it need a screen, or does it need to connect to the internet to qualify as technology?

"There's different levels – simple technology like smartphones etc., but you can go ten steps forward and talk about AI, robotics, they're still technology but they're in another level."
50+, ABC1

Software

Others feel the term technology can be more specific than the device itself and refer to a piece of software, such as an **app** or '**computer technology**'.

"Cars come with all the new tech in them nowadays."
18-29, C2DE

Modernity/progress

Some define the term in a more abstract way, claiming that it refers to **human advances designed to make life easier**. It is closely associated with the term **progress**.

"I hear people say 'we don't have the technology to do that yet', so it can also maybe mean the potential to do stuff that's beneficial to us."
18-29, ABC1

The younger audience are more likely to apply technology to devices and software, whereas the older and less confident audience apply a wider, more abstract meaning

Younger or more confident	Average in age or confidence	Older or less confident
This audience understand technology to mean devices and software. This includes computerised devices such as phones, but also other ‘gadgets’ such as machines in hospitals. Some also relate it to technological advances, such as AI, robotics and cryptocurrency. However, beyond naming specific devices, apps and advancements, they struggle to give a coherent definition of the term.	This audience understand technology to mean devices and the idea of human ‘progress’. They feel technology especially refers to things that are designed to make life easier or quicker (even if they don’t feel that’s always the case in practice!).	This audience tend to focus on the modernity and human progress meaning of technology, before associating the term with specific devices. Their associations with technology are not always positive, and they can make associations with technology as being overly complex and difficult to operate.
<i>“Technology is anything device-based: phones, laptops, new devices or gadgets.”</i> 18-29, ABC1	<i>“Anything that makes your life easier.”</i> 30-49, C2DE	<i>“What it means to me is that it just fries my brain and I’d rather have a pen and paper.”</i> 50+, ABC1

Technology is most readily associated with the latest devices and innovative changes



Places

Technology is seen as an expansive term and relevant to a wide-range of contexts, including the public's **personal lives**, but also **at work** and **in society more generally**. In their personal lives the public are more likely to see 'tech' referring to devices. In society more broadly 'tech' is taken to mean advancement, of which devices are an important part.



Devices

Technology is more readily associated with different electronic devices that are seen as **new** and **innovative**, i.e., 'the latest tech'. There is a belief that devices **update and change quickly**, and technology can become 'old' very easily. The lack of coherent definition regarding which devices do and do not constitute technology means the public feel the term can apply to a wide range of devices, not just those that are online.



Activities

Technology is a broad term for many, and on the whole is not associated with specific activities. Instead, many talk about the **development of new devices or solutions** that can change the way humans live.

Technology feels aspirational for younger audiences, whereas the older and less confident approach it with more trepidation



People

Younger or more confident

This audience feel confident using the term technology, and its abbreviation, 'tech'. They see it as **aspirational** and a wholly positive impact on their lives.

"I would expect to see 'technology' everywhere, all the time."

Younger person

Average in age or confidence

Whilst this audience are generally positive towards technology, they can be more **wary of the speed of technological development**. This is because they feel they may be left behind in the future. They are also more likely to feel reticent about certain elements of tech (e.g., QR codes) compared to the more confident audience.

"I've got an iPhone X, but my partner has an iPhone 14 and it's got all these features mine hasn't. You can see the technology advancing just looking across these two phones."

18-29, C2DE

Older or less confident

This audience are **most reticent** towards the term. They believe technology is **complicated** and difficult to work out, with many saying they have enlisted the help of their younger family members or some preferring to opt out altogether. The term can feel scary, and like it's more applicable to the younger age groups.

"I try not to use technology but it's becoming more relevant because it's everywhere now."

Digitally disengaged

The public do not tend to understand terms which use tech as a prefix

Tech security

The public do not use or recognise the term 'tech security'. They assume it means the security of their electronic devices, for example using a **pin** or **fingerprint** to protect a phone or insuring their device against theft.

"Is that logging in? Like FaceID? My sons are two years apart and my younger one can get onto his brother's phone."
30-49, C2DE

Tech crime

The term 'tech crime' is similarly **unfamiliar**. Most take it to mean a **physical crime involving technology**, such as selling counterfeit devices. One or two of the more confident audience mention **ransomware**, but most are unsure what this means exactly.

"Tech crime could be like the NHS ransomware, because it's specifically targeted NHS technology."
18-29, ABC1

Tech harm

'Tech harm' is also unfamiliar. When prompted, the public assume it means **physical damage of devices** (e.g., by force) or a virus. As with 'digital harms', a minority assume it could mean **human harm caused by tech**, such as staring at a screen for too long or becoming too dependent on using technology.

"Tech harm would be if I got something harmful on my computer or if someone is actively doing something to phish on my computer."
50+, ABC1

The prefixed terms have little relevance as the public struggle to define them

	Tech security	Tech crime	Tech harm
Do the public feel confident they know what the term means?	No	No	No
Is it a term they use in conversation?	No: Participants do not use this term as it is not one they have come across before.	No: Participants do not use this term as it is not one they have come across before.	No: Participants do not use this term as it is not one they have come across before. However, some are more comfortable guessing its meaning compared to the other prefixed tech terms tested.

‘Technology’ on its own is seen as highly relevant term for all audiences, but it is not used as a prefix

The public feel that, used by itself, the term **‘technology’ is relevant to them**, and use it spontaneously when speaking about electronic devices and objects, as well as software. Many are happy to use technology and ‘tech’ interchangeably, especially among the younger or more confident audience.

The term is also used in reference to the proliferation of technology in every day life: older participants acknowledge the fact that it is an unavoidable part of their lives. Many also mention hearing it in adverts and in the news frequently.

However, there is hardly any use of ‘tech’ as a prefix for other terms.

“It’s something I use everyday, I don’t think I’d be able to get through the day without technology to be honest.”
30-49, ABC1

Relevance as a standalone term:

High

Relevance as a prefix:

Low

5 Key terms: extended list of 'cyber'-related terms



We tested four further categories of terms with participants:

Connected technology	Types of harm and defence	Descriptions of activity or content	Cyber related behaviours
Connected	Scam	Fake	'Strong' and 'weak' passwords
Smart	Hack	Dodgy	Password manager
The cloud	Crime	Suspicious	Two factor / multi factor authentication
Internet of Things (IoT)	Theft		Two step / multi step verification
	Compromise		
	Phishing / Smishing / Quishing		

Key findings:

Connected technology	• ‘Connected’ and ‘smart’ are widely used terms, while a very small number have heard of IoT. • ‘Connected’ is used similarly to ‘online’, to refer to any devices connected to the internet. • ‘Smart’ is understood similarly, but is also often used as a prefix, e.g., ‘smart TV’ or ‘smart watch’. • Most know that ‘the cloud’ refers to storing data somewhere that is not the device itself. However, many conflate the cloud with iCloud, and so assume it is only relevant for Apple users.
Types of harm and defence	• Although the public are very familiar with the terms crime, theft, and compromise, they are felt to be less relevant, and not used spontaneously, in an online context. • ‘Scam’ is strongly associated with finances and can be used in both an online or offline context, while ‘hacking’ is most strongly associated with bad actors ‘breaking in’ to online accounts. • Most are aware that phishing is a type of scam, and try not to click on ‘dodgy links’, but they are less sure of an exact definition of ‘phishing’ and do not know that it relates to emails specifically.
Descriptions of activity or content	• The terms ‘fake’, ‘dodgy’ and ‘suspicious’ are all commonly used to describe online activity. • ‘Fake’ is assumed to conceal harmful content, for example with social media accounts and trolls. • ‘Suspicious’ is used when there is less certainty but there are signals which raise caution. • ‘Dodgy’ is most commonly used for websites or links which may be trying to get information from the user, but isn’t deemed to be serious, as ‘dodgy’ things can easily be ignored or avoided.
Cyber related behaviours	• The terms ‘strong’ and ‘weak’ are understood clearly in relation to passwords. The public tend to think about these when prompted whilst making passwords for online accounts. • Most are unfamiliar with what a ‘password manager’ is, and those who are unaware of the term can struggle to work out what it means as they do not hear the phrase often. • 2FA/MFA and 2SV/MSV are recognised by those who are more tech savvy and associated with logging in to online accounts, however, people are unsure as to the differences between the terms.

‘Connected’ and ‘smart’ are commonly used terms across all three audiences. On the other hand, very few have heard of IoT

Relevant to most

All three audiences are familiar with these terms, and many feel they would use these words in conversation.

Connected

Smart

“I would expect to hear this term [‘smart’] in general day to day conversation.”
Younger person

Relevant to some, but not all

All audiences had heard of this term, although many struggle to define what it means.

The cloud

“The cloud makes me think of storage like uploading photos or work that you don’t need to keep.”
18-29, ABC1

Not relevant

Very few have heard of this term before, and even those that have, struggle to define what it means.

Internet of Thing (IoT)

“I don’t recognise IoT. I’ve never come across that.”
30-49, C2DE

Most understand ‘connected’ and ‘smart’ to be devices or people that are connected to the internet

Connected

Can refer to a range of devices or the people using them, and is felt to imply being ‘**connected to the internet**’. Most use it in the same way as they use ‘online’, i.e., to describe their status or availability. Others feel they only **notice connectivity by its absence**, usually when their devices buffer or stop working.

“Connecting my phone to speakers or the internet, or connecting with other people [online].”
Younger person

Smart

Refers to devices they use which are connected to the internet. It is **often used as a prefix** to those devices, e.g., smart TV, smart phone, smart watch. A smaller minority across the audiences also understand smart to refer to devices that are **less obviously connected to the internet**, e.g., their heating, lights.

“For instance a smart watch, it does more things than a normal watch would do, it’s got more technology in it than the everyday version.”
Digitally disengaged

The cloud

Most understand ‘the cloud’ to mean a **non-physical storage space**. However, while some use cloud servers at work, most come across the cloud through backing up content such as photos on Apple devices. As such, some believe the cloud is only relevant to Apple devices, and **conflate the cloud with iCloud**.

“I don’t usually think of it as being ‘The’ Cloud – I’d just call it ‘iCloud’.
Does Samsung have a cloud?”
30-49, C2DE

Although the public have heard of the terms crime, theft, and compromise, they are felt to be less relevant in an online context

Relevant to most	Relevant to some, but not all	Not relevant
All three audiences will use these words readily in conversation. Scam is also used to describe offline encounters.	The public is aware of these words, but they are less salient in an online context. Or in the case of phishing, not all have heard of it.	No participants in this research had heard of these terms before.
Scam	Crime	Smishing / quishing
Hack	Theft	
	Compromise	
	Phishing	
<i>"You get scammers on Facebook and they send messages to all your friends. There's the ones where they take money from your bank account. It's a modern way of burgling your house."</i> Digitally disengaged	<i>"I wouldn't just use the word 'theft' in the context of computers."</i> 50+, C2DE	<i>"I'd have said smishing and quishing were made up words, I've never heard of those."</i> 50+, ABC1

Scam is strongly associated with finances, whereas hacking is most strongly associated with accounts and systems

Scam

Scam is understood to be when a person is **tricked into sending money or information** to a criminal. This can be either online or offline, with many reporting they had been approached by a scammer via **email or text**, but also by **telephone** and **in-person**. Scams are strongly associated with finances and bank/card details.

"This is relevant to everyone connected to the internet."
Younger person

Hack

Hacking is understood to mean a person **'breaking in' to an online space**, typically an account or system. Older participants typically associate with larger scale security breaches, e.g., targeted towards governments or large companies. However, younger participants more readily associate it with individuals **'hacking' into personal accounts**, most often social media.

"I've hacked into my ex-boyfriend's emails a few times."
30-49, C2DE

Phishing

Most, with the exception of some older and less digitally confident, have heard of the term phishing. However, they feel less confident describing its meaning compared to other terms. Most are aware it's a **type of scam**, and try not to click on **'dodgy links'**, but are unsure of the mechanics. Only a minority are aware that the term relates to emails specifically.

"Phishing is like you put out loads of thousands of tendrils to see what you catch. It's a technique that's used to extract data from someone."
30-49, C2DE

The public associate 'compromise' with leaking of their personal information, and do not relate 'crime' and 'theft' to being online

Compromise

Although not a commonly used word, the public understand 'compromise' with their personal **data being leaked** or accessed by hackers. There is also an association with **embarrassing** information, for example having 'compromising photos' exposed.

"'Compromise' would be when you've been exposed. There will always be a niggle in the back of my head if I log onto a new site to buy something."
50+, ABC1

Crime

The public see crime as an all-encompassing term including **online and offline illegal activity**. For example, they would describe an online scam as a crime, but also physical thefts. The term's broad meaning means that it is less salient and **not often used spontaneously in an online context**.

"If someone scams you to steal money it's obviously a crime, but scam and crime together doesn't sound right..."
50+, ABC1

Theft

Most **do not associate 'theft' with the online world**. Instead, they understand the term to mean when someone steals physical belongings from someone else.

"I usually hear this term in the news when a robbery is reported."
Younger person

All descriptors are relevant to the public, with many using the terms spontaneously throughout the conversation

Relevant to most	Fake	Suspicious	Dodgy
All three audiences will use these words readily in conversation to describe content, activity, and people.	The public understand 'fake' to imply a degree of certainty that something (e.g., a website, account, document) is not real . It is commonly associated with fake social media accounts which 'troll' others. The public agree that 'fake' content is usually harmful .	The public associate 'suspicious' with a lower degree of certainty than fake, e.g., you may be suspicious, but not sure that something is fake. The public can describe signals that make them feel suspicious, e.g., an account not having a profile picture .	The public feel that 'dodgy' is the least severe descriptor. If something looks 'a bit dodgy' it may make you suspicious, but isn't that serious as it can easily be ignored . Most use dodgy to describe links or websites which may be trying to scam them.
Fake	"Fake would make me think of scam and fraud." 30-49, ABC1	"Fake is definite, suspicious is your gut but you haven't got the facts." 30-49, C2DE	"I'd say 'that's a bit dodgy'. It sounds more slang than the others, you'd say it in a casual conversation." 18-29, ABC1
Suspicious			
Dodgy			

Cyber related behaviour terms are not typically used in everyday conversation, which means awareness is more mixed

Relevant to most

The term is not used in conversation, but all understand what it means.

'Strong' and 'weak' passwords

"I'm aware of strong and weak passwords; using lower and upper case letters and a symbol, and not using your date of birth."
50+, C2DE

Relevant to some, but not all

Not all are aware of these terms and those who are can find them difficult to describe. An exception is those who use the terms for work.

Password manager

Two factor / multi factor authentication

Two step / multi step verification

"At my old work you had to download an app, and put a password in and then it generates a six-digit code and you have to put that in as well. So someone might be able to guess your password, but they won't be able to guess the code on your phone."
30-49, C2DE

Cyber related behaviour terms are most salient when the public are creating or logging into accounts online

'Strong' and 'weak' passwords	Password manager	Two factor / multi factor authentication Two step / multi step verification
These terms are most salient when the public is creating an online account. Most describe seeing a pop-up or similar that instructs them how to make a strong password, e.g., by including upper and lowercase characters, numbers and symbols.	Only a minority, who use password managers, are aware of the term. Those who do not use a password manager, struggle to work out what it could refer to, and is not necessarily clear this could relate to allowing their phone or browser to save passwords.	Younger and those of average age/confidence are more aware of 2FA/2SV, compared to older participants. The terms are most salient when they are logging in to their accounts (e.g., their online or mobile banking) which often require this security step. However, there is less understanding of whether these terms can be used interchangeably, or whether they have important differences or distinctions.
<i>"I try to make my passwords stronger for things which are more important, like my bank. For Facebook I'll choose something that's easier to type in."</i> 18-29, ABC1	<i>"I don't think many people have a password manager."</i> 30-49, C2DE	<i>"I don't recognise the difference between the two step and two factor – I've heard of them both but don't know the difference."</i> 18-29, ABC1

Appendix: pen portraits



To complement the research findings, we have included the following pen portraits to illustrate the different attitudes of each of the three audiences presented in this research.

For each audience, there is an account of the context in which they think about and use their internet-connected devices, followed by descriptions of how they understand the four alternatives to 'cyber' tested in the research.

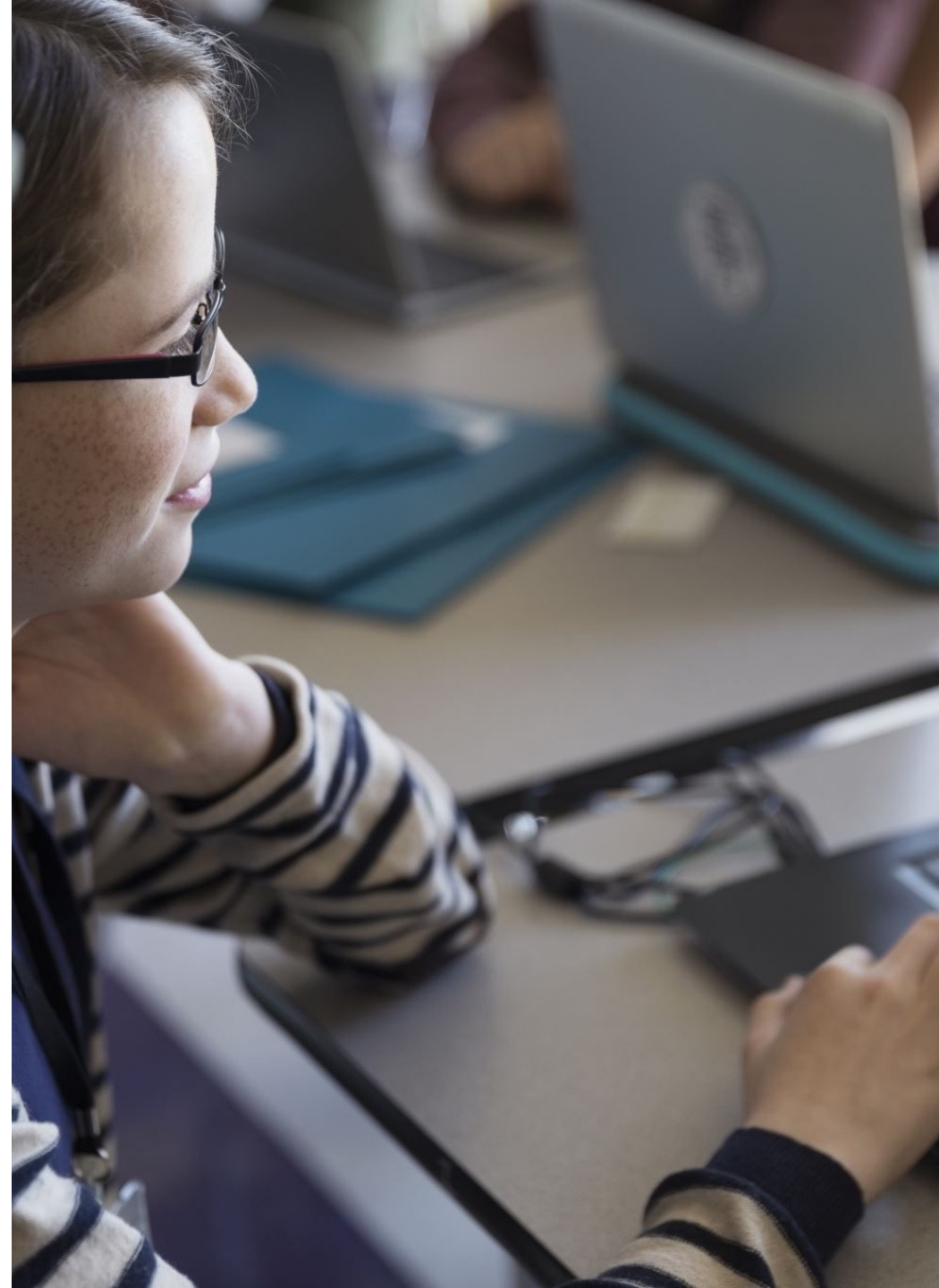


Younger or more confident: how I use and understand my devices

I mostly use my phone, for social media and listening to music. I also have a laptop which I use for working, and I like to stream shows on my Smart TV. I have a games console which I can use to connect with my friends online too.

When I'm online, important features are speed and quality; I don't want videos to buffer when I'm streaming, and I want to be able to upload, download and transfer large files quickly. I'm confident using my devices for a wide range of purposes; I can do my banking and shopping online, and I regularly book tickets and events online through my phone.

My main worry is that someone could hack into my devices and steal my data. However, I trust myself to recognise spam messages, fake accounts and insecure websites, and I might use a personal hotspot or VPN rather than public Wi-Fi if it's for something important, so I think I do about as much as I can to avoid bad things happening.



Case Study | Amir, Younger or more confident

Online

Online, to me, means any situation where either I or my device is connected to the internet. It can almost always be used; from when I'm searching for things in a browser, through to gaming, banking, shopping, streaming or interacting with my friends on social media.

Personal

Within the context of using the internet, 'personal' relates to personal information or personal data. This covers my social media presence and profiles, passwords, contact information and date of birth. These are private to me, and I want to be in control of who sees them.

Digital

I'm not sure I could give an exact definition but would assume 'digital' means any device which is electronic or has a screen. I might think of a digital clock or digital radio, but generally I think the term 'digital' is a bit redundant as pretty much everything you do online is digital.

Tech / technology

Like digital, it's hard to pin this term down as it seems to underly a lot of other 'online' terms, but I associate 'technology' with a mix of a device's hardware and software. It can also refer to areas of pioneering computing, for example thinking about crypto currencies, AI and robotics.

Average in age or confidence: how I understand and use my devices

I mostly use my phone and laptop, for social media, catching up with the news and shopping. I have recently upgraded to a Smart TV and also have a smart watch. I have an Alexa I use from time to time and a Ring doorbell.

When I'm online, important features are a good internet connection and using straightforward, secure sites.

My main worry is what my kids see online and who might be able to see their information. I don't worry so much for the devices I use day to day, because (for example with my Firestick) the only thing someone could steal is my username and password. I know I'm meant to have a different password for everything but it's too much to remember so I'm quite bad at updating them for most things. However, I am more conscious and careful when my personal or financial data is involved, for example with online banking or when I'm setting up a new online account.



Case Study | Karen, Average in age or confidence

Online

Online is an increasingly ubiquitous term, and I'm aware that technically my devices might be 'online' when I'm not using them, but in general I would associate 'online' with being 'live' or *actively* using the internet, for example when it says on WhatsApp or Microsoft Teams that someone is online.

Personal

Personal can mean information but mainly refers to my personal items and devices. Specifically, my phone is personal to me because it has all my information on it and is also a comfort device. I might also think about my personal devices in relation to or in contrast to my work devices.

Digital

It's not a term I use often but it might refer to data (when 'digitally' backing up my devices) or businesses going paperless (e.g., submitting digital copies of paperwork). I remember when cameras and TVs first became digital, but it feels like the word is disappearing now in favour of 'smart'.

Tech / technology

Technology is designed to make our lives easier, and it is constantly advancing; companies are always bringing out the latest phones and devices, and technology is getting increasingly sophisticated on our roads and in the NHS, for example. I do feel 'tech' can be highly complex at its most extreme.

Older or less confident: how I use and understand my devices

I mostly use my phone or tablet, for calling, texting, sending emails and taking photos. Beyond that, I prefer to do things such as banking and shopping in person, but I can do these things online if I really need to from time to time with the help of my friends and family.

When I'm online, important features are simplicity and devices and websites being easy to navigate.

My main worry is the number of pop-ups you get when you go online. I'm worried about clicking on the wrong thing, and it makes me concerned that someone might get hold of my details without me knowing. I always seem to get targeted adverts for things after I talk about them out loud to someone else, which makes me feel worried, and I don't trust 'cookies' because I don't know what I'm agreeing to. The main way I protect myself from online harms is by not opening emails I don't recognise in case it's a scam.



Case Study | Ray, Older or less confident

Online

Online, to me, is when you are live or active on the internet, like when you're on a website or emailing people. It can also be used as an alternative to things which used to happen in person, for example online banking or online dating; rather than going to the shops people will say they can buy it online.

Personal

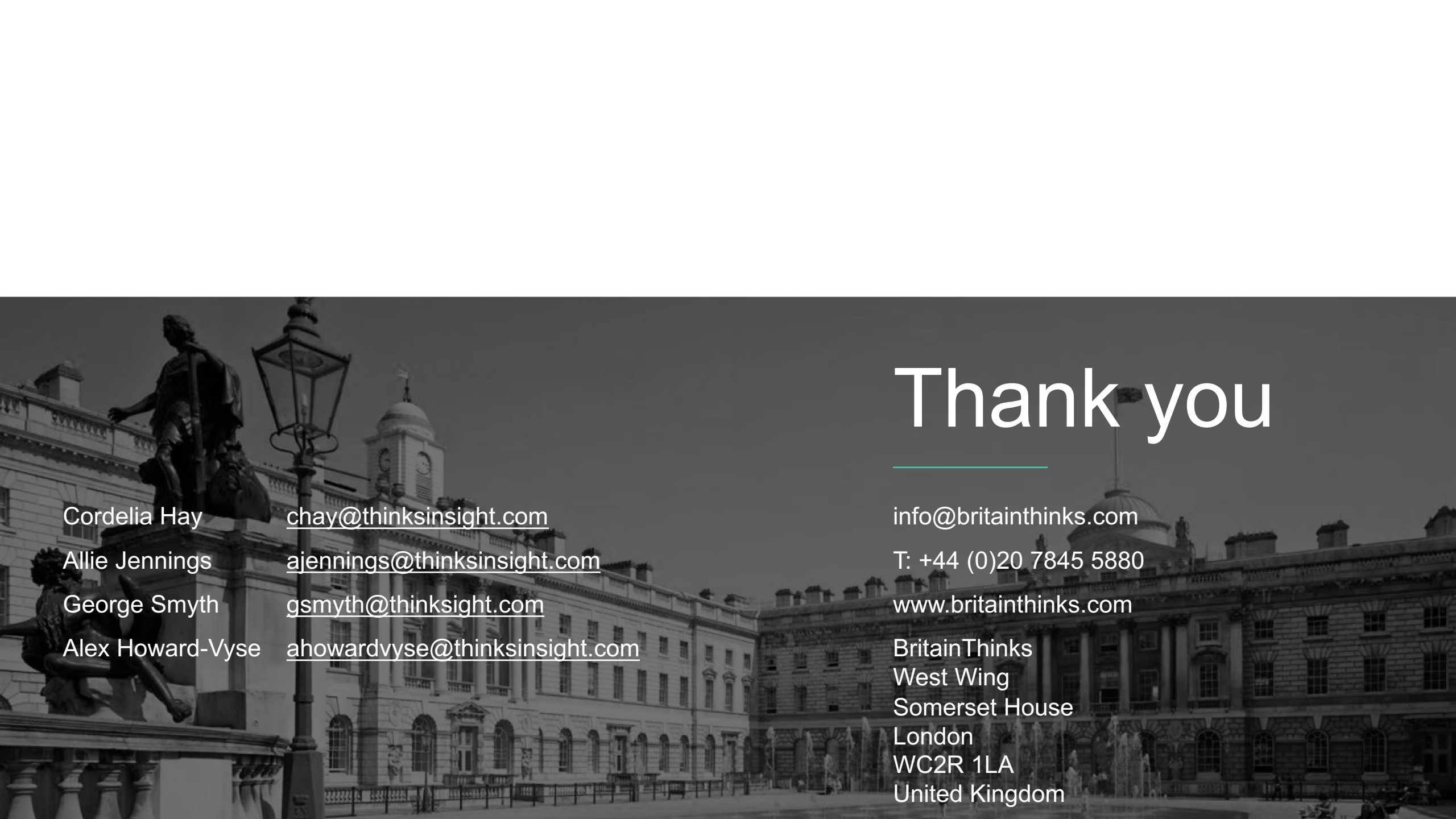
'Personal' refers to my physical self first and foremost, however it can also mean online activity that I want to keep to myself. For example, I might consider some websites, emails and photos to be personal to me. I've heard of PCs, and I might also think of 'personal details' in relation to my finances.

Digital

Digital is what has replaced 'analogue' – everything is digital now, but I would probably use it to refer to photos and videos. I think of 'the digital world' as being invisible or not physical, and sometimes struggle as a result, for example I had to buy a digital boarding pass for a flight.

Tech / technology

Technology means modern, typically electronic, equipment which is meant to make life easier in some way, for example a computer or self-driving car. I find digital tech frustrating when it doesn't work, and I would expect other, 'techier' people to have a better idea of how to use it than me.



Thank you

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