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Remote Working and (In)Security

The Impact of Pandemic-Driven Remote Working on Employee Wellbeing, the Psychological Contract and Cyber Security

Georgia Crossland and Amy Ertan
Royal Holloway, University of London

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CYBERPSYCHOLOGY SOLUTIONS

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Authors

Georgia Crossland and Amy Ertan
Royal Holloway, University of London

Project Scoping

Berta Pappenheim
RISCS Fellow in Leadership and Culture

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Nico B, NCSC
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THE CYBERFISH
CYBERPSYCHOLOGY SOLUTIONS

About the authors

Georgia Crossland: is a doctoral student at Centre for Doctoral Training in Cyber Security, Royal Holloway University of London. Her thesis focuses on human factors and the psychology of the user in cyber security. Alongside her studies, Georgia has worked on a number of human factor projects for private organisations and government, generally concerning cyber security behaviours and awareness campaigns. Georgia has published government reports on cyber security behaviours, research in clinical psychologist journals, and selected articles on cyber security can be found on InfoSecurity magazine and her personal blog.

Amy Ertan (CISSP): is a predoctoral cybersecurity fellow at the Harvard Kennedy School's Belfer Center, a visiting researcher at the NATO Cooperative Cyber Defence Centre of Excellence, and information security doctoral candidate at Royal Holloway, University of London. Amy has published UK government reports on organisational cyber security behaviours and engaging C-Suite colleagues with cyber risk management, and selected articles on cyber security strategy may be found on Foreign Policy, InfoSecurity Magazine, and on her personal website.

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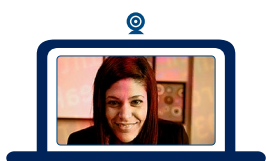
Executive summary

Remote working during the COVID-19 pandemic has had, and continues to have, a great impact on the workforce. Through interviews with senior cyber security professionals, this research explored how the traditional dynamics between employees and leadership have adapted in such times, responding to a rapidly evolving cyber threat landscape, as well as an unpredictable period for organisations and employees in terms of wellbeing and remote working culture. Focusing on the transition to remote working, cyber security, the psychological contract (relationship between employees and employers) and employee wellbeing, the research highlighted several key themes:

- Organisations have taken different approaches to security risk management. While some employers relaxed corporate device policy and displayed increased trust in employees to 'get the job done', other employers increased restrictions, occasionally to the perceived detriment of productivity and collaboration.

- Remote working has increased worry associated with insider threats. Through shadow IT practices, inadequate remote working security controls or mitigations, and decreased visibility of remote working environments, participants suggested that there are more opportunities for employees to, deliberately or unwittingly, to expose organisations to risk.

- Flexible working and virtual team socials were the most common organisational support mechanisms. Additional support mechanisms included informal carer days, financial allowances for equipment, and mental health support resources.

- There is no 'one-size-fits-all' to employee wellbeing through remote working.

- Organisational leadership shapes employee experiences. Positive security culture and organisational handling of employee wellbeing were reported where re-spondents felt leadership clearly articulated and justified a consistent approach to remote working.

- As a result of this research, several recommendations can be drawn which may be of use to government policy-makers and organisations:

- Executive leadership colleagues should strive for clear and consistent top-level communication across all areas including security best practices and wellbeing and employee support.

- Executive leadership colleagues should understand employee needs when deter-mining policy, considering employee wellbeing alongside organisational objec-tives.

- Executive leadership should take the impact of remote working into consideration when looking at employee retention, and record any potential implications for the psychological contract, especially when remotely on-boarding new colleagues.

- Security leadership colleagues should understand employee needs when setting specific policy/ processes for cyber security awareness.

- Security leadership colleagues should ensure employees at all levels understand the purpose of cyber security controls and the justification for using them, leveraging executive leadership support where this is required.

- Executive and leadership colleagues should note that employees have experienced the pandemic and remote working pressures in different ways. These needs should be taken into consideration when planning future hybrid or 'return to office environment' patterns.

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Context

Due to the COVID-19 pandemic, the UK has spent much of 2020 and early 2021 under some form of repeated regional and national lockdown, in which working individuals were expected to work from home and limit contact with others wherever feasible. This represented a total shift from what was considered to be 'normal living'. The pandemic impacted much more than work practices, with individuals expected to care for and often homeschool children over periods where educational institutions became remote, care for others who were unable to leave their homes or needed additional assistance, deal with the risk of self-quarantine where exposed, and overall adapt to a highly uncertain and stressful situations. Many will have had to deal with the illness affecting their loved ones, deal with grief, or have faced serious challenges due to contracting COVID-19 themselves.

From early spring of 2020, organisations faced the difficult task of adapting to the crisis, and balancing capability with cyber security. Unable to meet in person and with international travel halted across the globe, online meeting services quickly became the platforms of collaboration for many organisations where working remotely was possible. While pre-COVID-19 research highlights benefits of remote working, through performance increases and work satisfaction, with greater flexibility resulting in greater perceptions of productivity, there is a limit to how far previous studies can be applied as these studies typically assume remote working to be an optional benefit rather than a mandated activity.

Alongside the significant psychological effects of the pandemic, and remote working, on employees, there have been several changes to the cyber security landscape, both prompted by the shift to remote working, and a change in the cyber threat landscape as malicious actors exploited uncertainty. Much of the impact of remote working is difficult to capture: unreported risks, and undetected breaches, not to mention personal behavioural changes that cannot be tracked. It is likely the full impact of the shift to remote working will not be seen for some time, as instances and risks emerge after the fact.

From March 2020, secure remote working was a configuration challenge facing practically every industry. The urgent requirement to shift staff to remote working often meant connectivity came before security, as IT departments were forced to innovate drastically (PwC, 2020). The security of access connections, applications and endpoints, and operational practices are impacted by remote working through the implementation of VPNs, device firewalls and adaptable security policy (for example, around access control and data leakage). Beyond the technical challenges, productivity and employee wellbeing also have impacts on security practices and introduce 'shadow' solutions that are implemented outside official policies or guidelines. For example, ongoing longitudinal research suggests that software engineers face distractions and boredom working from home, while the lack of social contact appears correlated with increasing stress levels (Russo et al., 2020).

The external threat landscape has shifted, as evidence emerged early on, that malicious actors were seeking to take advantage of the pandemic (United Kingdom's National Cyber Security Centre (NCSC) and the United States Department of Homeland Security (DHS) Cyber security and Infrastructure Security Agency (CISA), 2020). Adversaries were found to be using COVID-19 themed phishing attempts or malicious attachments to further cybercriminal activity, espionage, or information operations (Council of Europe, 2020).

In particular, industry researchers reported a 40% surge in ransomware attacks through 2020 (Help Net Security, 2020), which included increased targeting against the healthcare sector, which saw a 45% spike in November 2020 as attacks increased towards the end of the year (CyberPeace Institute, 2020).

All of these challenges were, and continue to be, grappled with globally (Furnell & Shah, 2020). Even when COVID-19 ceases to be the urgent catastrophic emergency it currently presents in late 2020, it is likely that the transformation towards reduced business travel and greater remote working practices is here to stay. Research examining the broader impacts of remote working is likely to prove useful both in preparing for future disruptions to traditional working patterns, and for the potential future in which hybrid working conditions (with both remote and office-based colleagues) become more common.

Existing research

Phase 1 of this research project involved an extensive review of the previous literature. The full literature review can be accessed here. This section will give a brief overview of this literature review and the future directions for research that were suggested as a result.

Remote working and wellbeing

Existing research on past pandemics has largely focussed on the mental health of healthcare workers and infected patients (Reynolds et al., 2008). However, the current COVID-19 pandemic has not only been demonstrated to impact healthcare workers' mental health (Labrague & De los Santos, 2020), but has also had a large impact on the mental health of the wider workforce and general population (Brooks et al., 2020). This is not only due to the widespread infections and health anxieties felt by many, but also due to the repeated national lockdowns that cause isolation and a total shift from what is considered to be 'normal living'. Wherever feasible, workers had to adapt to working from home, and many people had to quarantine completely for up to two weeks, or shield their households for extended periods of time.

The Institute of Employment working at home wellbeing survey (Bevan, Mason and Bajorek, 2020) looked at how remote working during COVID-19 was affecting the UK workforce and their mental health. Participants reported problems with health, aches and pains, diet and exercise, poor sleep and increased exhaustion. Half the participants reported not being happy with work life balance, while 30% felt isolated. King's College London and Ipsos Mori (2020), in a survey of over 2000 UK residents, found that half of the respondents said they felt more anxious or depressed than normal, and that 38% have slept less or less well than normal. Additionally, remote working has introduced a number of additional challenges to employees' effectiveness and productivity, such as communication problems, workplace isolation, not taking breaks, interruptions and over-prioritising work (Prasad et al., 2020).

Cyber Security

Many meetings are now largely conducted via online video conferencing. Waizenegger et al. (2020) interviewed 29 workers about their experiences of working from home, finding that people reported feeling less isolated when they had video conference meetings at the beginning of the day. However, some participants also reported a 'virtual meeting fatigue'.

Furthermore, in addition to the sudden reliance on technology causing issues for wellbeing, the move to a perhaps 'less' cyber secure home environment, remote working has had a significant impact on the cyber security of organisations, cyber security employees and the cyber security industry.

Psychological contract

The psychological contract is an implicit agreement between employer and employee, and can be defined as 'the individual beliefs, shaped by the organisation, regarding terms of an exchange agreement between the individual and their organisation' (Rousseau, 1996). Where there are breaches in the psychological contract, in which trust is violated by either the employee or the employer, employee levels of organisational commitment and job satisfaction decrease (McLean Parks & Kidder, 1994), while in a positive psychological contract, employees report positive physical

and mental health (Parzefall & Hakanen, 2010). The psychological contract has also been linked to cyber security behaviours, as supervisors and employees were found to be more willing to accept the perceived costs of being compliant with information security policy if they perceived the psychological contract to have been fulfilled (Han, Kim & Kim, 2017).

The psychological contract can be examined as workers move through the employee lifecycle, through onboarding, the course of their employment, and offboarding. Through remote working, there are a number of aspects of the employee-employer relationship which may have impacted the psychological contract. These include employee furloughs or redundancies as organisations adapted to the pandemic, or surveillance technologies used by employers, the use of which has been shown to contribute to a culture of employee distrust (Blumenfeld, Anderson & Hooper, 2020). There is no research on breaking psychological contracts and insider threats while working remotely during the pandemic.

Conclusions and Future directions

Overall, the literature demonstrated a variety of possible avenues for future research and the impact of remote working on wellbeing, cyber security and organisational relationships. The research also demonstrated links between the three areas, such as reliance on technology in the home causing wellbeing and cyber security issues.

Aims

Based on the previous literature and the research gaps demonstrated by the literature review, this research project aimed to investigate the impact of remote working during COVID-19, and its impact on wellbeing, the psychological contract, and cyber security.

Methodology

Research design

This research employed a qualitative interview method to investigate the research questions. In order to gain an in-depth understanding of the issues. Qualitative research aims to understand and uncover participants' perceptions and perspectives, rather than testing hypotheses or causal explanations as in quantitative research. With this in mind, we believed a qualitative methodology would be able to provide the most meaningful and useful data. All data was collected during UK lockdown (January-February 2021), therefore, all interviews were conducted over video communication methods. Video conferencing provides a feasible alternative to face-to-face interviewing has been found to be a valid method for data collection (Gray et al. 2020).

Recruitment

We interviewed cyber security leaders in industry, in the hope that they could give both in-depth insight into cyber security issues experienced, and, owing to their leadership role, give insight relating to the wellbeing and psychological contract issues experienced by their team.

Participants were recruited through online social media (namely LinkedIn and Twitter) and through the researcher's social networks. Participants were recruited on a rolling basis, with an aim to achieve data saturation. A standardised invite with both an information sheet and informed consent form attached was then sent to participants. Written or spoken informed consent was gained from all participants before the commencement of the interview.

Participants

All participants were anonymised and given pseudonyms in the transcripts and write-up. The organisations were also anonymised. The only information that was kept was the type of industry each participant worked in.

In total 18 participants completed an interview. 7 females and 11 males. The majority of participants (15 out of 18) were based in the UK, with two from Europe, and one from the US. Participants were from varying areas of industry and representing 18 different organisations, see table 1 below.

Participants by Industry Sector

Industry	Participant/s
Charitable Services	P18
Defence	P6, P11
Financial Services	P1, P3, P5, P14
Gaming	P7, P16
Information Technology (IT)	P8
IT Security	P15
Manufacturing	P2, P8
Professional Services (Consulting)	P13, P17
Professional Services (Legal)	P4
Public Sector (Government)	P10, P12

Procedure

All interviews were around 1 hour in length. Two interviewers evenly split participants and conducted the interviews. All participants completed the interview via Zoom. Because participants were from multiple industries, with varying areas of expertise, we decided to use an unstructured interview approach with a topic guide to direct the conversation. The topic guide encompassed topics addressing remote working and its impact on wellbeing, relationships between the organisation and employee and cyber security. The full topic guide can be found in appendix 1.

Data analysis

Interviews were transcribed via auto-transcription and manual-transcription methods. An automated transcript was first created using a Google Pixel. One researcher then went back over and edited the auto transcripts while listening to the original interview to ensure accuracy.

Interviews were analysed using NVivo. NVivo is a qualitative data analysis computer software package. Researcher's went through transcripts, coding the data into themes. All transcripts were coded by one researcher, and the codes were then checked for validity by a second researcher. Query searches were then also completed within NVivo, in order to see if themes differed depending on industry.

Findings

In this section, the research findings are presented as themes identified through the data analysis. Each theme will be discussed separately, however, the topics and data underpinning these themes are connected and overlap in different ways. The quotes chosen to demonstrate the themes were selected to represent each theme as clearly as possible. It is, however, important to stress that they are not the only primary data underpinning each theme.

1. The cyber security landscape

Over half of the participants expressed the view that their employer's cyber security posture was not severely challenged nor significantly negatively impacted by the shift to remote working. Where organisations flexible working policies had previously allowed for remote work before the pandemic, the security function had existing policies and procedures that meant no significant shift in risk posture.

> P2: 'The fact that we end up no longer in the office doesn't really change much in terms of our IT infrastructure or our security risk posture because we already assume from a managed endpoint that we've got some degree of trust, and we already used the tools that we needed to facilitate remote working in any case.'

Looking at the external threat landscape, participants had a range of views on whether their organisations' threat landscapes had changed significantly. To some, the increased rate of social engineering marked a new trajectory for opportunistic cyber criminals, while other participants viewed an uptick in phishing emails as a continued trend.

> P12: 'There's opportunity to target weaknesses in the way that technology was put together in terms of getting people remote working quicker, but people built things badly before the pandemic and continue to build things badly now... there's always been scams.'

For example, one participant highlighted the uptick in malicious cyber activity could be due to the rise in furloughed employees or those who had lost their jobs and were opportunistically seeking illicit income:

> P14: 'I think people are using it as, "Here's a way I can perhaps make money during lockdown or however long I haven't got a job for". So that's really changed the threat landscape, we've had to go, and we're seeing it a lot from my clients I look after, sort of being hit by just really basic general attacks.'

Through the interviews, two thirds of the participants mentioned an increase in phishing attempts when asked about the changing threat landscape and external cyber threats, particularly in the early stages of remote working in late Spring 2020. It was also noted that phishing emails were more likely to use language or social engineering prompts relating to COVID-19.

> P18: 'I think that was the only month that I can recall where our organisation got more sort of malicious email that was getting blocked than legitimate email coming through, for example.'

The increase in phishing emails was not highlighted as a major concern for many attendees. The use of spam filtering systems was credited as reducing the number of emails that reached employee inboxes, while some organisations circulated phishing and smishing awareness communications to increase employee awareness of any increased threat. The 'click rate' - the percentage of colleagues clicking on a malicious

email, was reported to be consistent, or in one case improved as education campaigns was credited with reducing the number of colleagues clicking on suspicious emails in a simulated phishing test.

> *P3: 'So if I send an email to your bank email address from an external email address, it's irrelevant if your in a building or not, you know, you're not, you're still going through the VPN you're still going through our files, you're still going through our sensitive mail, our mail defences systems. So from that point of view we've got a lot of technical mitigations in place, and those are no different whether you're inside the bank or out.'*

The themed phishing emails was also not discussed as a surprising or unexpected trends by participants, who simply saw the malicious actors as opportunists:

> *P16: 'It's of-the-moment, it's what everyone's doing, but if it isn't COVID it's the World Cup and if it isn't the World Cup then it's something else.'*

> *P7: 'It's almost a refreshing change from every year around tax season, we get the tax related phishing. So it's quite interesting to see that change and go in and there are some getting better, I don't know if you've seen some of the NHS related phishing, they're really good actually, they're really convincing, which is always a step up from some of the stuff we were seeing when it was like that looks really quite rubbish.'*

However, participants did not dismiss the use of phishing as an effective threat vector for attackers, and not all participants reported the straightforward mitigation referenced above. Where phishing attempts were more specific and targeted participants reported that reputation-based email spam filters (solutions which rely on the reporting of suspicious emails, amongst other heuristics) were unable to keep up with evolving techniques and use of language.

> *P8: 'A lot more [is] getting through the filters as well, so a lot more brand-new stuff that's been created in the past hour or two hours and therefore has not had the reputation and filters straight through it…. we're noticing an increasing amount of stuff that's getting through, which has meant that we need to significantly upskill our staff on spotting phishing and reporting phishing and being a consequence free environment.'*

One participant also noted that the use of mobile devices did introduce a challenge in making it harder for employees to determine suspicious links, and highlighted this as a challenge that had yet to be mitigated:

> *P4: 'Yeah, and what we found out is the people that use laptops and outlook actually listen to what you tell them, they hover all the links they use all of the techniques to see whether something is genuine or not. It's the people on an iPad or an iPhone or an Android phone that can't do that. That thought of well, it kind of looks safe, I'll click the link.'*

Another participant highlighted the use of spear phishing attempts that also referenced COVID, which may not be picked up by spam-filtering software due to their targeted and often sophisticated nature. Other threats mentioned by participants included perceived adversarial attention on VPN and remote access technologies, as well as a threat actor focus on supply chains. These threats were not described as being specifically challenging for cyber security colleagues to mitigate and were mentioned as examples where particular threats had increased in frequency, rather than representing a new threat in themselves:

> *P5: 'We absolutely have seen both nation state and criminal adversaries exploiting VPN vulnerabilities and with increasing frequency, but again that, that is something I think isn't terribly surprising.'*

> *P12: 'Supply chains are a big focus again…..I don't think huge change maybe just volumetrics, the technologically kind of you know, adversaries or criminals out there are able to do more with less than there were before, that's no different to kind of defenders being able to do more as well, technological technology advances.'*

When discussing the changing cyber security posture of their organisations, participants often highlighted typical employee behavioural practices in relation to cyber security policy or procedures.

It was noted that employees did not report suspicious emails consistently. One perspective on why reporting decreased was due to employee uncertainty around when to report. At one organisation, reporting decreased with the onset of remote working and gradually approached pre-remote working levels - a change credited to employee training campaigns.

> *P12: 'When you're in the office and you get something through to your inbox, something like that, you've got an opportunity just to turn to the person next to you and kind of almost get a second pair of eyes, and that side of it disappeared obviously…'*

> *P12: 'So definitely know it's kind of a slight downturn in people reporting things, and maybe because kind of by reporting they almost had to do a bit more formally whereas the there was less of the, less of the the general conversational route of kind of oh while you're passing through can I just get you to look at this.'*

> *P6: 'Most, like 90%, don't care, they assume someone else will deal with it, and very much the same from other point of view they assume, I've had some spam, I'm sure somewhere else had it, I'll let wait for someone else to report it.'*

Another participant highlighted how employees appeared to lack confidence with self-service security mechanisms, such as password reset processes. They commented that this applies particularly to colleagues above the age of 50.

> *P13: 'So with passwords they will phone up, I think it's the IT service desk, if something goes wrong with their passwords rather than trying to resolve it themselves…probably used to a certain way of working which was probably around 20 years ago…. they're not used to self-service and that's had quite a big impact on them.'*

The blurring between employees' personal and office environment, and routines, due to remote working was also mentioned as a source of multiple security risks. Multiple participants mentioned the case in which corporate devices were requested to be made compatible with home-schooling employees' children. In one case, the organisation configured virtual machines to allow for use of the device. In the other organisation, the request was deemed to be inappropriate and amusing.

Data leakage was also perceived as a risk where employees had less control over their home environment and who may be listening in:

> *P13: 'I do know people who are sharing and dining rooms and dining tables with their excuse me, their other halves, who they trust explicitly, and that's fair enough, but it's, it has a real impact in terms of the information security because a lot of what's been discussed that other person should not be hearing……. we have a real issue at our place with people not locking their screens when they're in the office, their argument being behind a firewall, that's difficult enough as it is but then you think if they're completely, you know, if they're in a family environment, are they locking their screen?'*

Data retention and data protection policy was also highlighted as a risk where employees may have devised their own informal systems:

> P13: 'It's the disposal, you know, our people using their shredders at home. We've asked them not to, we've told them not to, they're given in the system they're supposed to use. But yeah how much paper is sat there in someone's house without the appropriate kind of mechanisms? That's a bit of a worry as well.'

> P1: 'But you know, it's as bad as like, you know sharing information or calls on WhatsApp or Google docs or Google drive, you know, like I mean things that are not accredited for use.'

Overall a number of interview participants raised concerns over potential behaviours that can no longer be observed in a remote working environment: potential misuse of corporate devices, inappropriate information sharing or data leakage, the security (including network security) at employee homes. Enforceability of security practices therefore has changed and positive behaviours need to be driven by the individual. This is underpinned by a personal sense of what is right and ethical, including a personal judgment on what may cause cyber risk exposure.

An additional area of concern lay related to the ways in which insider threats may present themselves. As one participant explained, in the home environment, it's harder to detect employees printing, writing down, or taking photos of sensitive information. Particularly for colleagues who are unhappy working remotely, or who have low levels of organisational ownership and loyalty towards their organisation, remote working offers a number of ways to act against corporate policy.

> P17: 'I could be stealing IP, there's all sorts of things I could be doing which I wouldn't be able to get away with in the office.'

Remote working arrangements have physically enabled some to breach work contracts to certain degrees, such as having multiple jobs, or outsourcing their roles. This was raised as a threat that breaches organisational policy, and may breach regulatory, cyber security and jurisdiction policies depending on their role and sector. Noticing these breaches was very difficult, therefore the solution is often having the right values instilled and demonstrated by the management, so that good compliance rules are self-reinforcing.

> P6: 'There is an increased threat of people having two jobs. Yeah, especially contractors because they're working from home, nobody can see them, nobody knows if it's even them doing the job…it's not a new threat but it's easier I think to execute than in the real world because you don't need the physical core locations.'

> P17: 'When dealing with insider threat or insider vulnerability, one of your, the biggest thing you can do to detect these things is actually observe other people so you've lost that line of defence, that element of the detection chain… you lose all of that kind of rich qualitative information that you could see if your co-worker looks a little stressed or tired or scruffy or what have you.'

Participants listed a number of mitigation strategies to reduce the various cyber risks associated with COVID. Often, training and guidance on secure remote working was circulated, covering topics such as phishing and criminal techniques as well as data protection policy.

Participants also noted how technical tools and solutions helped mitigate the cyber security risks affiliated with remote working. Virtual Private Network (VPN) tools were deployed where appropriate and on occasion configured with extra restrictions when

run on employees' personal devices as opposed to corporate laptops. Several participants referenced security and IT projects that ran February to March 2020 which helped streamline the shift to remote working.

> *P18: 'From a technology point of view as well, everything's been already set up to allow for that. Some of the additional pieces of work that we had planned were being delivered just as remote working became the new norm and so everything was quite luckily well-timed in terms of delivery....good amount of work happening around sort of March-February last year, making sure that all the loose ends are tied up to make sure that we're able to work remotely, safely, securely, nothing was going to break and stuff like that. But yeah, since then it's become relatively business as usual.'*

Enhanced cyber security mechanisms include corporate laptop encryption (with BitLocker listed as an example encryption solution) and remote device wipe capabilities. Remote provisioning of equipment was considered a streamlined process by a number of participants, with couriers used to deliver devices during onboarding and, where possible, offboarding. Using remote tokens for sign-on and incorporating multi-factor authentication helped raise assurance of secure remote access. In addition to VPNs, multiple participants expressed positive attitudes to cloud-based technologies which avoided VPNS, which in participants' views offered a smoother and faster connection experience. With an increase in personal 'bring your own devices' (BYOD) multiple participants mentioned an increased focus on monitoring connections to ensure connections requests are from legitimate employees.

The extent to which organisations balanced security mechanisms against flexibility varied depending on their threshold to risk and wider security culture, which will be discussed further below. Multiple participants highlighted their views that their organisation recognised a limit to appropriate employee security monitoring.

> *P8: 'We wouldn't put key loggers in as an example, because that's an unacceptable thing to do we're not going to monitor how many minutes you've been away from your desktop for because that is unacceptable, just fundamentally unacceptable.'*

The general response from participants was that their respective organisations had adapted to meet any new or more frequently occurring threat, through technological means, amended or new employee training and awareness campaign, or new policies (including remote working and acceptable use policies).

2. Differing views on security culture

Many participants, either because they were asked or because they bought it up naturally, spoke about the impact of remote working on security culture. This included the difficulties maintaining a culture during remote working and creating culture with those on-boarded during this period.

> *P3: 'All of those security behaviours that we sort of expect people to pick up by osmosis, we have to make very formal now, or well we have to make very overt.'*

Some participants also spoke about the benefits that remote working may have had for security culture. For example, the fact that remote working during covid-19 proved that employees could work remotely in a secure and effective manner.

> *P7: 'Employees as a whole are trusted more to get the job done because we've seen that the organisation can work remotely and still deliver'.*

Organisations had different ways of dealing with problems, some organisations developed or continued with '0-trust policies' during remote working, while others developed or continued '0-blame' policies.

> *P2: 'Our basic posture is one of zero trust and all that that entails which means that actually as cyber security posture didn't change very much at all.'*

> *P12: 'We're not gonna blame you for it especially because of the nature of the threats that we deal with, that you, you wouldn't expect people to stop in every time you know, they're pretty targeted threats.'*

Participants also noted that cyber security awareness and training had been impacted by remote working. Largely in terms of messaging that was communicated to employees by security teams. For example, some organisations gave advice on best cyber security practices in the home.

> *P11: 'My organisation's been very good with their communications around and sort of everything relating to Covid and the ways we're working. So there were, yeah, some things around working from home, and security, wellbeing and all that kind of stuff.'*

In some cases, participants also mentioned that the mode of delivery for these communications and training had also changed.

> *P18: 'Then a lot of the usual training and awareness mechanisms are still completely in place, obviously none of that gets delivered face to face now, but we have e-learning.'*

Organisations who previously had remote working practices in place found there to be the least change in the area of cyber security culture and cyber security awareness and training.

> *P10: 'In terms of security culture, I guess a lot of security advice that we had in place was already in place because we had options to work from home, but I think when working from home came like kind of more permanent fixture for most people, some of those, some of our security kind of advice was replayed a little bit more across the organisation. So I'm not sure much or anything changed particularly...'*

Despite theme 1 demonstrating that many participants saw the threat landscape for their organisation and their employees to have changed, some participants noted that their organisations had not changed messaging, or not rolled out any new training or awareness campaigns to specifically deal with remote working. Again, some participants stated this was due to the organisation already having remote working practices in place. These participants did not express too much concern over the matter.

> *P7: 'there hasn't been any increased training or anything like that.'*

Overall, theme 2 demonstrated that different organisations had different views on whether their organisation's security culture had been impacted or not by remote working. Moreover, while some organisations changed their messaging and training practices, others kept theirs the same as before.

3. Norm changes to working

Teething problems and remoteness

Many participants spoke about how the norms of everyday working had changed as they moved to a remote working environment. These were both positive and negative changes. Tech issues attributed to part of the negative changes to norms. For example, some participants spoke about WiFi difficulties and how they were exacerbated by remote working due to the number of people using bandwidth at the same time.

> P1: 'I'm in my, I have an office, my kids have theirs, they're you know, and my wife's home and we're kind of like getting on top of each other trying to share bandwidth like I remember a couple times I had a big conference and my kids are also like on online schools. I, like oh man, I hope not gonna lag too much because I'm running this conference.'

Others noted that these tech issues were especially the case during the beginning of lockdown, as organisations had to move fast to set up employees to work remotely. One employee called this 'teething problems'.

> P12: 'Teething problems in terms of connectivity, and in terms of throughputs. So tending to find that people getting lots of lag, obviously you can't factor in what people's home internets like, what they're broad bands like, some of which you can't really fix, or it's difficult, you know, if they live in an area that doesn't have much, you know, broadband, then that's the way it is'

Organisations had to make sure their VPNs were able to cope with the dramatic increase in the number of people using them.

> P15: 'there has been an issue regarding since we're working from home, we're supposed to use a VPN and that's something that you have to turn on manually and of course that's been an issue, and that was especially an issue in the beginning because that VPN is also managed by state IT, and that VPN didn't have capacity for that many people working from home.'

Others also noted that there were more physical technological problems, such as printouts. This was especially the case for the law-firms who noted that lawyers are often used to more paper-based systems. Furthermore, office space at home was notably different from working in the office, with one participant noted that this difference was exacerbated by income.

> P8: 'You know, there's a very very big difference, in terms of both wealth and economic background, of someone who's come from a working class background, who is struggling to make ends meet, that they're in their first job and they're doing really really well and they're working remotely, they're not gonna have a proper chair and a table, they're not gonna have to space to do it because they they're in London, they're gonna be a flatshare if they're up north they might be working still at home with mum and dad, you know there's all sorts of different challenges that come from that.'

Other issues with the changes to norms included the impact of remote working on employees' work-life balance. Participants admitted to having feelings of guilt about not doing work when they were at home. Furthermore, participants questioned what else there was to do during a national lockdown apart from work. This led many participants to feel that their work-life balance had shifted to be more 'work' than 'life'.

> *P13: 'I think so yeah, I think so and there's also almost like a guilt thing going on. But you know, rather than I don't know doing something else, sort of there's nothing else to do is there? You know. So then it's that when I might as well work, so I think some people are caught definitely in that loop, and I know that occasionally I'll get people who are kind of starting to contact me outside of my working hours, but I tend to, I don't tend to respond because I'm trying not to fall into that trap, you know where you can get sucked into it.'*

> *P17: 'People work much longer hours than they would normally at work, they stay up late, they never log off, they're constantly available, whereas before it was like when we're off we're off when we're out of the office, that's it.'*

Participants also noted that they were using similar technologies for both work and social events, such as Zoom, blurring the line between work and life even more. Participants said that this balance was made harder to find by caring responsibilities. Something that will be expanded on in a later section. It is no surprise therefore that some participants expressed the knowledge that employees were looking forward to returning to the office.

> *P7: 'I've got people who want to stay like this, they never want to go back into office they love it, they enjoy the flexibility and things like that. Then I've got people who are desperate to get back into the office, they're craving social interaction, and the structure to their life, and are almost floundering a little bit around.'*

This opens us up to one of the other big changes that participants noted to be negative, the impact of little human interaction. Participants missed the social interactions you could get from working in an office, the ability to turn around and chat with a colleague or have a meeting over a coffee.

> *P18: 'I think there's the social aspect that I think people miss, that's pretty normal across the board where there's only so much interaction fun and games you can have on a Zoom or a team's call.'*

> *P16: 'That's impacted not just me but you know, members of my team who enjoyed meeting for lunch, they enjoyed going to the canteen together and sitting down and discussing challenges they're having. I don't know, people seem to find it more difficult to do that over these kinds of calls, right?'*

Employees spoke about feelings of 'remoteness', not just in relation to their work, but feeling isolated from the people who were around them.

> *P12: '…just the remoteness of it can be a drain.'*

The above analysis demonstrates that many participants found that there had been teething problems and negative aspects in regard to the changing of norms in their working lives.

However, participants did also speak about some positive changes. For example some practical changes were evident. This included financial impacts, such as reductions in commuting costs and an overall reduction in travel, this was seen as participants as time gained back that they were able to spend elsewhere.

> *P2: 'I just marvel at the I usually do two to three trips a week into London and as basically a working day I have back in my life.'*

This fed into another positive that participants mentioned, the increased ability to spend time with family and work more flexibly to accommodate this.

> *P17: 'I get more time with my family because I get to you know, give my kids breakfast etc before starting work whereas before it was kind of get up at the crack of dawn, I wouldn't see them wake up...'*

Participants also mentioned that this change proved remote working 'works'. Participants argued that the circumstances proved employees were able to remote work effectively. Some participants mentioned that they had noticed an increase in productivity and collaboration, in themselves and in other employees. Participants noted that they get more out of employees when working from home, a finding that seems to be juxtaposed to the negative point of not having a good work life balance.

> *P12: 'we've tended to get oddly probably more out of people, in a sense, because people are kind of using that well, you know, I'll just go on and just finish off a couple of emails or I'll just get this finished off...'*

Participants further noted there was an increase in the ease of going to meetings. More people can turn up without the need to find large rooms to accommodate them and people can also attend meetings at the same time as completing other tasks.

Taking into account all the general positive and negative changes to the everyday working environment mentioned by participants, participants also noted that the move to remote working impacted employees differently. There were individual differences in preferences, and to what extent employees found certain changes to be positive or negative.

> *P15: 'For example, I, you know, I'm one of the people where you can just call me spontaneously if you have a quick thing to ask or check or, or calibrate and I have colleagues who really don't like that, it makes them feel insecure and uncomfortable, and so my preference is one type of technology and their preference is a different type of technology. One colleague explicitly says he prefers an email, another colleague prefers getting a chat message over Skype. You know so different preferences...'*

This highlights something we aim to highlight throughout this research, that different employees and different organisations had different experiences of remote working. Something that was seen as positive for one employee could be seen as negative by another and vice-versa. It's important to know that these themes are aimed at reflecting diversity in the responses.

4. Balancing work and caring commitments

In addition to the shift to remote working, the pandemic introduced challenges with a shift to home-schooling, and the introduction of new barriers for vulnerable people, such as the elderly or those with existing health concerns. The challenges of home-schooling and caring for vulnerable loved ones was raised frequently through interviews, despite not being an explicit topic raised by the researchers. Participants spoke about the impact of caring commitments on their wellbeing and work commitments, the support offered by organisations, and the experience of flexible working policies.

Multiple participants highlighted that the pressure of external caring commitments and non-work related stress had a significant impact on colleagues. In some cases, colleagues either reduced their hours or had to take time away from their role.

> *P11: 'I've got one person in my team who's off with, been signed off work with stress at the moment because they were shielding, they've got a child that they're trying to home-school, and it just got, it got too much for them.'*

> *P14: 'I know some people have taken a step back from their role and then they're sort of other partners carried on working, so they can take care of the children.'*

Interview participants with children highlighted a range of challenges and experiences, from an increase in distractions, and an increased demand on home WIFI networks, to the need to ensure home-schooling and children's wellbeing, though generally expressed the view that this had now been built into a stable remote working routine. It was raised that these accommodations often had impact for employees who were not parents but supported their colleagues with their workload.

> *P11: I've got sort of young kids and so and we've been able to accommodate their needs because the rest of the team have been able to sort of cover if they can't do something. But I'm sure it would be a different story if all of them had kids and we were having to be an on-site team and trying to sort of operate.*

While colleagues with caring responsibilities faced the pressures of balancing work and personal commitments, colleagues who did not have children mentioned the different challenge of having no mandatory end to the day.

Over three quarters of participants mentioned flexible working during the interviews. Participants highlighted, that organisations had become vastly more accustomed to flexible working schedules, marking a significant shift. The majority of interviews perceived their organisations to be supportive of flexible work patterns and prioritising caring or family commitments over a standard working day schedule.

> *P5: 'There has been a huge emphasis on flexible working, and a huge emphasis on evaluation based on outcomes rather than hours worked.'*

> *P3: 'So our organisation has been incredibly good about this, and that is both in the tone from the top but also like directly from my line manager and it's being consistent all the way through, and they've largely said caring responsibilities to come first so you know, whether you're a parent or if you've got somebody who's ill or whatever it is whatever the situation.'*

The support for flexibility in this instance was highlighted as a policy that not only assisted employee wellbeing but would help employees ultimately fulfil their work tasks.

> *P4: 'The infection rates, getting aged parents, elderly parents to the jabs on time, you know, and we've said that you're entitled to take that time again, this is about doing what's best for you because that helps you be productive for us.'*

The perceived increase in acceptance for flexible working was mentioned positively by colleagues with and without caring commitments, with participants mentioning that they now felt comfortable taking longer lunch walks or start working slightly later or earlier in the day as they preferred. Some participants with children noted that flexible working made it easier for them to engage with home-schooling, and commented that without the daily commute to work, it was more straightforward to do the school run.

> *P2: 'I could walk my son to school and be back, you know, be dropping him off at half 8 and back in front of my desk by quarter to nine without any stressing at all, probably getting a coffee on the way… And the same with picking up, so me and my wife are now saying well, you know what, we might all do three [days working from home] and two [days working in the office] where there's always one of us working from home.'*

In some organisations, the use of personalised email signatures to highlight non-standard working patterns became increasingly common. These would highlight, for

example, that certain colleagues were home-schooling, and therefore could not attend meetings at certain times. Likewise, email signatures may mention emails being sent very early or late from the account, as colleagues spend part of the standard working day engaging with caring commitments and shift their work tasks accordingly.

> P16: 'You know, my manager always said to me since having children even before the pandemic: 'Look if you need to get your hours done in the middle of the night, do it. I don't, you know, I don't really care what time it is done, you don't have to work traditional hours.'

In multiple interviews, flexible working was perceived to be an informal adaptation that was not reflected in written company policy. It was understood and communicated to employees at a number of different organisations that they should 'do what they needed to do' to be able to meet their family and caring commitments and schedule the work tasks at non-standard times if needed. This said, at least one organisation introduced specific 'carers days', and a number of organisations set up mental health working groups, or pandemic response committees, that were mentioned in relation to flexible working support structures.

5. 'Better than nothing' video communications

Video communications via video conferencing software such as Zoom and Microsoft Teams were spoken about extensively during the interviews. Many participants mentioned both the positives and negatives of these communication tools. Demonstrating that most participants recognised that were pros and cons, and some simply described the communications as 'better than nothing'.

Positive views of video communications included participants who thought they would otherwise feel isolated from the outside world.

> P1: 'If this pandemic happened before the internet right, I'd feel much more isolated, much more isolated like I'm enjoying this conversation right now, right and I would not have this opportunity if we didn't have these tools.'

Among these positives of the use of video communications were the use of these communications for social and team building events. Participants also noted that they were able to connect with colleagues from wider geographies that they might not have seen as often if it were not for video communication methods.

> P13: 'I mean, we've done, we've done loads of them now, we've done things like not just a casual like social Zoom room, but we've done loads of quizzes, of course everyone has. Loads of escape rooms, murder mysteries has been one of them, watching stuff there is lots of things we can do with it so it's just about trying to get that creative mindset going for, for making it happen as it were.'

> P17: 'I've actually found with these daily wider team meetings, I've got to know a lot of the wider team a lot better through this lockdown process than I ever knew them before. So I feel closer to a lot of them than I did previously because we were in different offices, it was only maybe once or twice this year when we had big team meetings or the Christmas dinner or whatever that we would all get together under the same roof.'

However a lot of participants also noted negatives of the daily use of video conferencing. This included the over-use of such communications methods leading to screen fatigue and feelings of exhaustion. It was suggested that video conferencing had seemed great to begin with, but as it was used more and more, people got tired of it. Others also mentioned more practical difficulties such as having constant back-

to-back meetings with no down time and issues of having group discussions via these methods.

> P14: 'everyone's getting that bit of zoom fatigue in the lead up to them, I know I definitely do, I look at the calendar if I see those things then I'm like oh God...'

> P13: 'I'm saying anything over a virtual room of 6 gets very difficult very quickly to get a word in edgeways. You get the ones that are more comfortable taking over and then you'll find those are quiet and might have something interesting to say, they just don't get a chance to do so.'

Participants also noted that video conferencing was the best technology for the job, however it was not the same as being in person, in other words it was 'better than nothing.'

> P3: 'I think that's the thing isn't it, it's not the same as being in the same room as someone, it's not the same as you know, just giving your friend a hug or you know, whatever it is but it's better than nothing.'

> P17: 'So yeah I think, yeah Teams is brilliant, too much of it is, I mean, horrible.

> P16: 'I think there was a honeymoon period, wasn't there? . . . I don't know, I think people are just sick of it now aren't they.'

Organisations and individuals also had mitigation techniques in place in order to deal with specific issues employees were having with the continued use of video communications. For example, not mandating employees to have their cameras on at all times in meetings.

> P7: 'I think to start off with, there was always the mandated, you always had to have your camera on, for all meetings. It was soon realised that that was causing zoom fatigue and people were getting more worn out and so meetings were getting shorter and shorter. So having a balance between having your camera on and can having your camera off I think has just helped everyone and little bit with the zoom fatigue.'

> P13: 'Yeah, we certainly are not seeing as many social meetings now, and it is being kept limited. We also at the firm, they've introduced this whole thing around trying to keep meetings to half an hour rather than an hour.'

Therefore, this theme demonstrates that participants showed a mix of views within each participant of the positive and negative sides of video communications, we see the general consensus as being that these communications were better than nothing, but perhaps the use is not perfect.

6. Leadership

The importance of effective leadership, and the impact of ineffective or inconsistent leadership, was raised as a constant point across discussions of the transition and experience of remote working, employee mental health and wellbeing, and cyber security changes over the period. How an organisation's leadership team reacted and coordinated the response to the pandemic and remote working was frequently raised as a justification for positive or negative employee experiences. Two sub-themes emerged around leadership: top-down leadership (decisions and communications from C-Suite and board level colleagues) and the behaviour of line managers (colleagues who managed teams).

A number of participants offered the perspective that clear and supportive communications from senior leadership colleagues had a direct positive impact in reducing employee uncertainty and stress.

> P15: 'I have my leader and then you know, I think it goes five levels above him to senior management and when they communicate how important it is that we take care of each other, and that it's okay to be not doing well, that seems to create a safe space.'

Participants mentioned that clear senior leadership communication on the importance of wellbeing was well-received, including where leadership spoke in informal terms.

> P8: 'The CEO himself said the third lockdown is causing him, personally, more difficulties than all the others put together because it's a time of the year, mixed with the fact you can't see anyone, mixed with January blues anyway.'

> P4: 'We've got a great chief executive that said: 'Look if you're worried about money, stop, because we are continuing to operate. Nobody has been threatened here by any of this. We will continue to work in our modified way, if you're worried about money, if you're worried about childcare, if you're worried about working from home, all you need to do is ask and you can ask anybody in the management team, okay. If you don't get the answer that you want or you feel something's not been understood fully enough, go to someone else, you know.... I think that is a very good face to early message, really helps settle the nerves a little bit.'

While a number of wellbeing initiatives were organised pro-actively by employees (for example, virtual team drinks), the presence of senior leadership on COVID-19 committees, or their support as executive sponsors for employee wellbeing support networks, was also noted positively by participants.

Having managers adept at managing different kinds of colleagues was credited as a contributor to positive employee wellbeing:

> P15: 'You can just call me spontaneously if you have a quick thing to ask or check or, or calibrate and I have colleagues who really don't like that, it makes them feel insecure and uncomfortable, and so my preference is one type of technology and their preference is a different type of technology. You know so different preferences, and then having a leader who is putting it on the agenda that we can discuss it and talk about what works for us individually, so we can actually have the information to make us able to take care of each other in that sense.'

Multiple participants stated that at a middle management level, policies were not always adhered to uniformly. This may be because of the management style adopted by the manager, the emotional skills and comfort perceived by them when talking about wellbeing, or the pressure to ensure continuity even if employees were experiencing mental health challenges.

> P6: 'As it filters down into the more middle management, it becomes a bit different, so they're very supportive but they're not skilled at execution. So, there's like this really weird dichotomy between what they know they should, and want to do and then yeah, but just, just get it done, could you? I'm gonna ask you how you are but it's really down to you to sort that out and then I still need you to perform.'

> P15: 'I have a boss who pays attention to this [employee wellbeing], and he's, it's not always that he has the sharpest eye for it, but at least then he lets me do it.'

Overall, participants reported that they treated their more junior employees with empathy, using their managerial discretion to encourage flexible working, or the use mental health days, and multiple participants mentioned that across their organisation, it often came to individual managerial discretion on how many allowances were made.

7. Employment life cycle

Where interview participants had hired new joiners into the cyber security function, the most common comments (mentioned by all but three participants) around the onboarding process related to the difficulties of not hiring an employee in person. In general these difficulties referred to the social dimensions of joining the team and organisation, rather than technical limitations. Creating trust, expressing the organisation's culture and security culture, and making new joiners feel part of the team were all mentioned as pain points by multiple employees.

> *P16: 'We've got hundreds, I mean quite literally hundreds of people who've never been into an organisation building, or have never met their boss in person or you know, and that, that's, I don't care what anyone says that is a challenge I think.'*

> *P18: 'There's a sort of strange feeling where you've never met someone face to face even though you've recruited them and worked day to day with them for the best part of a year.'*

> *P5: 'For colleagues who are new to our place it has been, I think really challenging for them in terms of integrating with the team… I would say the wider function, collaborative relationships, stakeholder management with our customers is trickier right because you're coming in without the ability to have that face-to-face contact to know how you're sitting next to, who might be from another team or function entirely.'*

In terms of mitigating these challenges, organisational responses tended to rely on buddy systems (an existing employee who would help the new joiner settle in and make required introductions) and the use of video-conferencing tools.

> *P17: 'So I know groups of new starters have been set up so that people still get that kind of cohort of new joiners even though they can't see each other face-to-face, and I know that they have virtual lunches together and they have various different sessions together. So, albeit nobody's seeing each other face to face, I think those sort of induction activities have been quite helpful.'*

> *P5: 'Just absolutely encouraging to the fullest extent possible people to reach out remotely right, you know, so virtual coffee after virtual coffee after virtual coffee which again is in some ways, a poor substitute, but for the moment it's the best we've got.'*

The technical challenges appeared to be minor relative to the social challenges of not being on-site. Training for the most part was delivered online but it was acknowledged that there were some tasks deemed too complicated to delegate to new joiners where it has not been possible to train them in person (for example, using specified equipment in the office to transfer sensitive information). Remote provisioning, for the most part, was considered a process equally, if not more, streamlined compared to the pre-pandemic period.

> *P5: 'If anything the IT provisioning, well maybe not a year ago but nine months ago was so broken that this [remote working], might have actually limited cyber risk.'*

Organisations all had policies in place to reduce the potential risks associated with colleagues leaving the organisation, and in general the participants reported that there were no perceived challenges associated with the offboarding process.

> P13: *'The leavers process is fairly robust. I mean, the only difference really is that a courier comes out rather than handing your equipment into an office. So no I haven't, I'm not aware of any problems around that at all.'*

> P2: *'We essentially break their hardware remotely now, that stage as soon as they've handed in their resignation and done everything that we need them to do. So again that doesn't really change, so that stage we toss the Bitlocker keys from their device and require them to return it.'*

There was an element of risk acceptance for cases in which exiting employees did not return equipment, which could be remotely locked and/or wiped.

> P10: *'Getting stuff back is hard, getting stuff back is really hard. So part of the logic we've got at the moment is that some companies won't pay you your final salary until you return your equipment, which has meant we've had a very high success rate in those companies. In companies which can't or won't do that it's been quite heavily reliant on lots and lots of chasing, and were we are able to remote wiping of machines, so that even if we don't get that actual hardware back, we'll just consider it a lost 500 pounds, it's just a laptop and the actual data is no longer viable. (Note: this participant's employer was an organisation with a group security functions that owned a number of subsidiary companies).'*

Generally hiring patterns had been stable or low compared with the pre-pandemic period. In the majority of cases where new employees joined the team, they were internal hires (colleagues who joined from another part of the organisation) which was noted as an advantage by a number of participants.

The number of leavers was likewise considered to be low. One participant expressed the view that there tended to be low movement due to the broader economic uncertainty following the onset of the pandemic and remote working, where employees were less likely to take risks.

> P9: *'Nobody leaves. Almost nobody, during my time at the company one person left for another job, that's it.'*

> P5: *'There's been very little movement. Yeah, right because there's kind of nowhere for people to go right, but again not necessarily as a result of remote working but just that kind of dire macroeconomic climate at the moment.'*

Multiple participants also mentioned restrictions on hiring new staff as the organisation adapted to uncertainty.

> P7: *'There haven't really been any new starters within my area. Initially we were, because we weren't sure what the impact is going to be, all hire income just kind of stopped.'*

Trust was highlighted by participants as a theme across the employee lifecycle, from the difficulties building trust with new remote colleagues, to mutual trust-based relationships fuelling a sense of belonging to build intimacy with historic and current team structure, and how the business function operates both formally and informally.

> P7: *So I think that's a very unsolved problem particularly for our team, and it's always when you've got a junior member of staff, you kind of give them small bits, small tasks and things help build them up and you get an idea of what they can do. It's almost having to go right*

> *back to that attitude with this new person, so you get to know each other properly as I think they've got to trust you as well, and it's a two-way street.*

Organisations often had to adapt to a situation in which they had to choose to trust remote employees or tighten restrictions, and different participants reported different approaches. At a non-technical level, trust building was cited as a managerial skill, and best demonstrated when leaders are aware of how to build environments where trust, personal ethics and integrity are key values.

> *P7: 'Employees as a whole are trusted more to get the job done because we've seen that the organisation can work remotely and still deliver... and I think everyone's a little bit more, trust has been developed, will allow big flexibility and allow the trust and reliance on the managers to deal with it.'*

> *P9: 'In my opinion, the biggest trust builder, in this particular case, all the managers receive a new kind of incentive to build trust by not micromanaging people...another thing trust comes from the top. I want to trust my top leader.'*

> *P4: 'You know and from a top management perspective it was a simple answer, are they still producing what you expect them to produce in a timely fashion? Yes, then they're working. You know, it's not rocket surgery.'*

The trust in employees to not only work productively but to follow cyber security principles was varied between participants and a number of organisations had corporate acceptable device policies. While some organisations put technical restrictions on what could be accessed from (for example, banning file-sharing platforms such as Google Drive or Dropbox), other organisations displayed explicit trust in their colleagues to manage their cyber security behaviours in an appropriate way:

> *P4: 'There is a patch that is updated, that we control that we can allow you to browse to wherever you want to browse to. So we put a split tunnel VPN in, so if you wanted to stream a movie on Netflix or I think discovery plus came to life around about the same time, that was the big one: 'Can we watch Disney Plus'. Yeah, of course you can and we'll keep that off-network, but it's down to you to manage your device availability at home.'*

Participants did not predict negative impact to employee trust levels in the organisation through remote working, which were typically linked to positive assessments of management decision-making and communication:

> *P15: 'I don't think it has changed too much in terms of people's attitude to the work they've got, and the sort of levels of trust involved with senior management. I think there's been tricky decisions to make, they all seem well thought out.'*

Trust was often mentioned alongside phrases like loyalty, and employee approaches to their work, as well as wider organisational cultures. Participants' comments highlighted that trust could be linked to stability to an extent: where a strong culture of trust already existed, new joiners were better enabled to develop trust.

> *P1: 'I only had the perspective of holding on to that trust, and like... only small percentages have had turnover in our team, but they come in and they see that there's really a good core of our team working together... but if we weren't for that trust building, oh my god. I can't, I don't know.'*

8. The importance of wellbeing

The importance of wellbeing was mentioned by all participants in this research. Participants noted that remote working had greatly impacted the mental health of employees. Participants noted that employees suffered in terms of isolation, stress and worry from both work and from aspects caused by the pandemic such as shielding, participants also mentioned that employees had developed mental health problems, such as ADHD and anxiety.

> P17: 'There is a lot of anxiety with people who are struggling or people who are worried about their loved ones etc.... it's been going on for too long now, I've had enough now.'

Most participants believed that mental health was viewed as important by their employer. Employers, in many cases, placed a big emphasis on flexible working, emphasis on outcomes and not hours worked and a top-down focus on wellbeing. These participants seemed to feel supported.

> P5: 'yeah there has been a huge emphasis on flexible working, and a huge emphasis on evaluation based on outcomes rather than hours worked, so long may that continue. I've seen you know, and again up to MD level, I've seen just just I've seen people handle this with a great deal of sensitivity, you know and a great deal of respect for people's personal circumstances.'

However, some participants also mentioned that they did not feel wellbeing was taken as seriously by the organisation as it perhaps should have been.

> P1: 'Not much. I think my organisation is... organization.... I haven't seen much. I think most of us are just expecting to kind of get that on our own and to find that you know. Maybe there's a blanket. There's like the blanket statement of like, you know, if you need help talk to, talk to a counsellor or talk to, like I mean, but these are gen - these are things that you're generally hearing anyway, these are, that's nothing new.'

In general, people gave many examples of ways in which their organisations had supported them throughout the pandemic, and how this was continuing. This included the organisation facilitating access to counsellors, providing additional equipment to make the workday easier, increasing employee health benefits, providing private healthcare, the creation of mental health champions, making psychological first-aid available, in order to provide a general sense of cultural support. Low-cost initiatives such as walks with others from the office and the use of mental health apps and helplines were also mentioned. Much of the private healthcare and in-house counselling was in place before the lockdown began for the organisations interviewed.

> P3: 'Yes so we have in house counsellors, and they've been more over phone and video conferencing. We also have what's called an employee assistance program, so that's a phone number that you can just ring and say I need help and they will help you find what sort of help you need if that makes sense?'

> P10: 'and then there's been plenty of, so we have like an internal mental health network of like champions, so each team within my organisation has like a mental health champion who you can, you can go and talk to if you have any, any anything you want to talk about. But also this kind of network of champions they organised, well organised, they still have very regular sessions like seminars with speakers, on, yeah anything ranging from like how to spot the signs of stress.'

Organisations also used team building events to encourage interactions between employees, to strengthen the sense of belonging to the team, and to attempt to ease the loneliness of those feeling isolated. For on the more informal side, these events often included book clubs, cocktail making events, quizzes, Christmas parties. However more formal occasions took place online as well, such as workshops. Many participants saw these events as helpful. However, some participants also stated that they found them unusual and awkward.

Participants also noted that these online social events had been more popular towards the beginning of lockdown, suggesting that this perhaps contributed to feelings of 'Zoom fatigue'. One participant also mentioned that their team had organised outside walks for employees, as an example of a psychologically safe environment to share experiences with each other, even if it involved extra travelling and effort.

> P18: 'there's been all sorts of strange things from you know, even playing games together to cocktail making type things, there's like some people that like to knit that will join, they do like a lunch and knit session for example and stuff like that. So a lot of there's a lot of social activities still taking place that I think is definitely helping everyone. A lot of those would have taken place face to face and they're still able to happen remotely which is good.'

> P15: 'So in our office we have a daily, well not a daily but a weekly walk. You meet up once a week to go for a walk and you know, it's allowed, we're allowed to spend time going there even if it takes an hour with transport each way.'

One participant also mentioned the news of the vaccine and the possible road plans for the end of lockdown as a help for previous feelings of uncertainty.

Overall, participants thought wellbeing to be an important topic in discussions surrounding the use of remote working. Most participants found their organisations to be supportive, listing ways in which they have helped employees at their organisation.

9. Anticipated working practices post-COVID

There were different views on how the work environment would look post-COVID. Some participants were confident their organisations would return to mandated in-person working, due to the sensitive nature of information they worked with, but also due to organisational cultures that prioritised physical presence in the office. Some predicted a willing return to work after COVID-mandated isolation.

> P16: 'I think the moment that everyone's not on lockdown, everyone gonna be in the office all day for I don't know how long. It's just gonna be, remember that time when we were at home for a year and a half? It was awful, we don't want to do that anymore.'

The majority of participants expressed the view that remote working would exist in some capacity but that remote working was likely to remain an optional feature for colleagues.

> P12: 'The CEO said kind of informally at a board meeting about three weeks ago that she doesn't expect people to be back in the office for at least three years, if that ever happens, you know. And it'll always you know, they'll keep the offices and always be an option there.'

> P17: 'The end objective will be to have a scenario where everybody's happy so people who want to work from home can work from home, people who want to work in the office can work in the office, and everything in between.'

This offered a potential benefit in terms of flexibility from recruitment through the employee lifecycle process.

> *P12: 'Now surely we've proved that we can work remotely, so why not be more location agnostic now, these are the places where people can work if there's an office… but equally you know we can bring in people from and geographies that we haven't considered before… what we want from people is the skills and we can we can find a way of making the rest work.'*

> *P4: 'We got used to people working from anywhere with whatever they've got available to them in a time period that makes sense for them. Yeah, they are behaviours I don't want to undo the other side of Covid.'*

A number of participants organically highlighted how the transition back to office working is likely to have its own challenges as employees change routine once again, both in wellbeing and security practices senses.

> *P5: 'We've been used to this certain level of social interaction and now we're not used to that anymore, and that's gonna have to take some getting used to when we get back to full speed as before.'*

> *P7: 'I think it's gonna be really hard to switch back to the nine till five attitude. There's no hard stop and I think mentally that's gonna be really weird to go back to, if we do end up being back into the office and going, you know, whatever normal used to be.'*

> *P11: 'I think there's going to be a big job to do to get people back into the office and thinking security, as well… there has to be a whole kind of reintroducing people back into the organisation.'*

Where post-COVID work habits were mentioned, participants were of the view that organisations should consider employee wellbeing and the different preferences between employees when designing any 'return to physical working' strategies.

Discussion

This section places the interview findings in the context of current research, drawing on relevant academic papers and industry reports. For a full overview of academic literature relating to pandemic-driven remote working and cyber security please see the corresponding RISCS Remote Working Literature Review (Crossland, Ertan & Michaelides, 2021).

Cyber Security

With surveys highlighting that in 2018, a third of small to medium enterprises in the UK suffered a data breach due to remote working (Cybsafe, 2018), organisations heading into the pandemic period had to consider technical solutions, in terms or secure remote connectivity and data transfer, the behaviour of (and trust levels associated towards) employees working in a remote environment, and the balance between appropriate security alongside flexibility to allow for business continuity.

The pandemic was utilised by cyber threat actors in a number or ways that were clearly recognised by interviewees. Participants generally noted an increase in opportunistic COVID-19 themed attacks which has been reflected on a global scale, seen through the number of coronavirus attacks target organisations particularly in March and April 2020 (Khan et al., 2020). The consensus from participants was that the nature of these social engineering cyber-attacks (phishing attempts, or attempted business email compromise) did not represent a significant concern or departure from existing cyber defence procedures (such as spam filters). This correlates with the idea of COVID-19 themed cyber-attacks becoming the 'new normal' as opportunistic threat actors tailored their language to match global developments, which for the UK included increased COVID-19 attacks around the time of Prime Minister's COVID-19 diagnosis, and alongside announcements regarding 'peaks' in COVID transmission (Microsoft, 2020). The existence of established cyber defence tools, including email spam filters and malware detection software, are able to continue to filter suspicious emails (and their attachments) from legitimate business activity for a large percentage of cases.

Remote working has been shown to impact an employee's intended behaviour in relation to cyber security policy, with remote working colleagues having an altered perception or security and privacy policy awareness, as well as lower intentions and ability to comply with information security (Johnston et al., 2020). This research suggests that the lack of organisational support can reduce employee compliance (intentions and ability) with information security policy, an element of cyber risk compounded by the increased instances of insider threat that are enabled through remote working (Chapman, 2020).

Some, though not all, interview participants highlighted additional cyber awareness training for colleagues, covering aspects such as alerts on themed phishing attacks to the circulation of remote working best practices. This aligns with research clarifying the need to delivery appropriate remote working education which meets the needs or remote colleagues (Johnston et al., 2010), and to design training to account for the cyber risks associated with remote working, in order to minimise the instances in which, due to insufficient training, remote working employees unwittingly expose the organisation to increased levels of cyber risk (Chapman, 2020).

Psychological Contract

The huge swatches of hiring freezes and drop in demand for UK appointments has undoubtedly had a huge impact on the relationship employees have to existing employers, as KPMG notes that in April 2020 recruitment for permanent appointments and temporary billings fell for a 22-year low in the UK, with a decrease in starting salaries and decreased hiring across all sectors bar healthcare (KPMG, 2020). In general, interview participants reported overall stability across their teams through 2020 and credited this due to uncertainty due to the pandemic and market conditions. While pre-pandemic literature states that breaches in the psychological contract may be linked with employee exit from the firm (Turnley & Feldman, 1999), the UK employment market in 2020 means this theory is less applicable. Put simply, the unprecedented impact of the pandemic on uncertainty and the recruitment sector is likely to limit the applicability of Turnley & Feldman's (1999) findings, as market uncertainty means employees may feel less comfortable leaving current roles even once the psychological contract has been degraded.

Some participants within the current study spoke about onboarding processes. It's clear these processes were different in a remote environment, some participants noted that they knew of people who had not met team members or had not done so themselves. This definitely acted as a pain point for employees. However, we do not have enough evidence to suggest whether this directly impacted the psychological contract developed, though it does extend the empirical evidence of unique challenges that new employees encounter during onboarding whilst working remotely.

Most of the psychological contract research and literature takes place with employees working from the office, and with close contact with their organisations (Al-Abrrow, 2019; McLean Parks & Kidder, 1994; Restubog et al., 2013; Robinson & Rousseau, 1994). However, Tietze and Nadin (2011) found that when moving to homeworking, the obligations and boundaries of the employee are often redrawn. However, employees exhibited a more transactional orientation to work; threatening to leave if remote working was withdrawn as an option (Tietze & Nadin, 2011). Our research in some ways is in contrast to this study, as many participants expressed an eagerness to return to the office, while others suggested that remote working would now be an option that remains.

Our research further demonstrated that positive leadership and supportive organisations, fostered positive attitudes of employees towards their respective organisations, and as such were able to build a strong sense of belonging, fuelling organizational ownership in employees as a core value. This then demonstrates another way in which employers might maintain and extend a positive psychological contract in a remote environment. This is in keeping with research demonstrating that a positive psychological contract encourages positive physical and mental health in employees (Parzefall & Hakanen, 2010).

The impact and use of video conferencing tools was also spoken about extensively. Many participants found the tools to help with team building, continuation of employee relationships and were significant in onboarding processes. This was therefore another possible way for employers and employees to fulfil aspects of an unspoken contract and creating spaces of psychological safety, where colleagues can share concerns or their experiences . Participant responses relating to both positive organisational and security cultures are supported by research on how effective leadership can strengthen the psychological contract (Meghana & Vijaya, 2019).

Meghana and Vijaya's (2019) survey shows that through good interpersonal communication and positive social messages, leaders are able to influence employees to go beyond the transactional nature of their roles and build trust-based relationships in a remote working context.

The reflections from interview participants on effective leadership focused on clear communication and the perceived effectiveness of strong interpersonal skills, in which C-suite executives related to their employees in terms of open discussion on mental health struggles and other wellbeing matters. Open and emotionally informed communication in this manner has been found previously to increase employee levels or organisational commitment (Lombardo, 2013), highlighting that the strategies taken by many senior executives at the organisations represented in this research are likely to have faced benefits in the form of a strengthened psychological contract.

The use of surveillance technologies on employees has been reported to contribute to a culture of mistrust among employees (Blumenfeld, Anderson, & Hooper, 2020), and this aspect was recognised by interview participants who expressed discontent at the idea of monitoring employees through keyloggers and similar technologies.

Wellbeing

Our findings on wellbeing overall demonstrated that employees and organisations pointed to and understood the importance of wellbeing and recognised how wellbeing may influence other aspects of the remote working experience. This extends previous findings on both wellbeing during pandemics, and wellbeing in a remote workforce, and the importance of building psychological resilience in a workplace.

Past research looking at mental health during pandemics has largely focused on researching infected patients and those in hospital for an extended period of time. This research tends to show a varying degree of psychological problems caused by extended hospital stays and in frontline health workers (Thoresen et al., 2009). The current COVID-19 pandemic has not only been demonstrated to impact healthcare workers' mental health (Labrague & De los Santos, 2020), but has also had a large impact on the mental health of the wider workforce and general population (Brooks et al., 2020). Our research supports these findings and demonstrates that employees report to experience varying psychological problems, from worry to anxiety.

Previous research on remote working has pointed to some positive wellbeing related effects, such as productivity increases (Heinonen, 2009). Our participants also mentioned an increase in productivity and that they 'got more' out of employees, however this finding sits alongside the finding that participants found it more difficult to achieve a good work-life balance. This finding is similar to previous research suggesting that remote working promotes an 'always on' working mode, which encourages mental and physical fatigue (Hernandez, 2020; Molino et al., 2020). It seems it is very possible that although productivity may increase, employees may feel their long-term work-life balance is compromised. This apparent distinction in experiences could also highlight that different types of people thrive in different environments. In this case, the findings would suggest that organisations should look to take individual circumstances and working patterns into account when deciding working environment policies post-pandemic.

However, from the current research, it is hard to tease out the differences between psychological issues caused by the pandemic itself, and psychological issues caused

by remote working. Given that previous research has demonstrated both of these factors to have an influence on wellbeing, it is likely to be a combination of the two.

Our findings extend previous findings by showing that most participants generally felt supported in terms of wellbeing during the pandemic and the move to remote working, or at least felt that their organisation were actively taking measures to try and support employees and their individual situations, such as by use of counselling services, mental health first aid, or by creating online team building events via online conferencing tools. However, one or two participants mentioned their organisations to be lacking in this regard.

Research shows that investment in positive mental health is beneficial for individuals and organisations because it increases personal and organisational resilience. Mental health impacts job performance (Wright, Cropanzano & Bonett, 2007), which in turn predicts higher organisational performance and productivity (Dutton, Roberts & Bednar, 2011). Organisations not supporting employee mental health therefore should consider the benefits of supporting employees' wellbeing more generally, especially during extremely stressful periods of time, such as a pandemic.

Limitations

Despite the insights the current study gives us, there are some limitations to be noted. Although for an interview study this project has a relatively standard sample size, more participants are needed for a detailed analysis of the results, for example by sector.

Furthermore, the views captured are those of senior colleagues and may not reflect the views of others, in particular less senior colleagues at the organisation. The views of those in senior positions are likely to be different from those not in these positions, for example, they might experience different levels of organisational support. Lastly, the interviews largely focused on UK-based colleagues and therefore findings cannot necessarily be applied to international, non-UK contexts.

Recommendations

As a result of these research findings, we have identified the following high-level recommendations for senior leadership colleagues in organisations:

- **Executive leadership colleagues** should strive for clear and consistent top-level communication. This applies across all communication themes, including wellbeing and employee support, as well as changes to best practice policies and procedures, including security specific policies for contingencies to increase organisational resilience.

- **Executive leadership colleagues** should understand employee needs when determining policy. Creating psychologically safe environments for employees during stressful periods of time should be balanced with organisational objectives and job requirements to increase personal resilience and wellbeing.

- **Executive leadership** should take the impact of remote working into consideration when looking at employee retention, and record any potential implications for the psychological contract, especially when remotely on-boarding new colleagues. Effective two-way communications should be in place for instances that may include acknowledging where breaches in the psychological contract have occurred. Leadership should take a personal responsibility for strengthening the psychological contract through employee support and leadership behaviours informed by emotional intelligence and empathy.

- **Security leadership colleagues** should understand employee needs when setting specific policy/ processes for cyber security awareness. Personal ethics and employee integrity should be prioritised as core values lived and represented by senior leadership to establish a strong sense of belonging and organisational ownership in all employees. As such, cyber hygiene practices and positive on-line behaviours should form an integral part of the overall organisational culture and strategy.

- **Security leadership colleagues should** ensure employees at all levels understand the purpose of cyber security controls and the justification for using them, no matter whether they are in their homes or in an office environment, leveraging executive leadership support where this is required.

- **Executive and leadership colleagues** should note that employees have experienced the pandemic and remote working pressures in different ways, and have different needs as a result. These needs should be taken into consideration when planning future hybrid or 'return to office environment' patterns. Psychological first aid should be readily available across the organisation for instances when employees need support.

Future research opportunities

The authors have several recommendations and suggestions for future research on the themes of remote working, colleague mental health and wellbeing, the psychological contract, and organisational security and resilience (including cyber security):

- This project gathered perspectives from chief information security officers and equivalent cyber security colleagues in senior leadership positions. We would propose that future research also, or specifically, consider colleague experiences at various seniority levels, including for junior and analyst positions.

- While this project interviewed colleagues across a range of sectors, and from both public and private environments, the small sample size limits the extent to which the authors can analyse industry trends. Future research may wish to focus on particular industries, conduct a comparative study between types of organisations or between sectors, or scale up the number of interviews conducted to allow for meaningful statistical analysis of the data

- The interviews undertaken for this project were high level and solicited subjective responses. Researchers asked for colleague *perspectives*, including affective attitudes and normative assessments on relevant trends. Another valuable project could focus on the tools, techniques and implemented technologies through the pandemic, potentially through a distributed survey. This would offer a view into security and remote working trends at a technological level.

- An understanding of the nuances relating to the impact remote working will benefit from retrospective analysis of the evidence on organisational cyber security risk exposure through the COVID-19 pandemic period, exploring how far cyber security incidents were a result of remote working arrangements. The evidence (numbers of incidents, for example) will be available later in time.

Conclusion

This report investigated the impact of the COVID-19 pandemic and remote working on cyber security, employee wellbeing and the psychological contract. Phase 1 of this research project involved an extensive review of the previous literature. The full literature review can be accessed here. This review aimed to give an overview of the current research available in these areas as well as point out any existing gaps. We determined there was minimal research looking into the impact of remote working on cyber security, especially during a pandemic. Previous literature had also mainly focussed on the impact of pandemics on front line health workers' wellbeing, rather than the workforce as a whole. Similarly, previous research regarding the psychological contract during remote working or during a pandemic was severely lacking. For phase 2 of the research we therefore decided to interview 18 cyber security experts, from a variety of industries, to gain insights into these topics.

Broadly, the results demonstrate that participants noted an increase in threat actors utilising the pandemic for their own means. Furthermore, some, though not all, interview participants highlighted additional cyber awareness training for colleagues, covering aspects such as alerts on themed phishing attacks to the circulation of remote working best practices. These were, in most cases, viewed as necessary and helpful. Furthermore, our research found that many factors influencing the psychological contract were impacted by the move to remote working. This included the onboarding process, which in turn circles back to the ability to create a positive security culture in a remote environment.

According to the participants, the wellbeing and mental health of employees was largely supported, and in a variety of ways, by organisations. This was recognised as a necessary and positive measure that organisations needed to take, not just because of the potential isolation of remote working, but also owing to the stress of the pandemic. The wellbeing of employees will continue to be important as the pandemic progresses, and organisations need to make aid available to those who need it.

As the pandemic continues, new strategies will be adopted for hybrid work arrangements. We therefore need to continue research into these areas, in order to support organisations and their employees. Our checklist is intended to help establish, or further develop, good practice based on what worked for large organisations supported by UK government advice.

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Appendix: Interview topic guide

Topic 1. Remote working

Pandemic impact on organisation in terms of remote working

To what extent has the make-up of the cyber security function changed from March 2020?

New starters

Colleagues leaving the team

Additional mitigation to cyber risk?

- As part of the onboarding process to help cyber awareness
- For leavers

Topic 2. Mental health and wellbeing

Impact of remote working on employee mental health and wellbeing

long term effects

How has organisation supported employees throughout the pandemic *in terms of mental health and wellbeing*

Insurance policies/ benefits/ policies - any changes to these?

Is mental health support covered by corporate health insurance?

Have technologies - such as zoom - helped with isolation?

Techniques to make online meetings less transactional

Topic 3. Cyber security and resilience

Threat landscape - what increased / types of threats

Working from home

responses/ mitigation

Impact of stress on employee cyber security behaviours

Have training and awareness strategies changed?

- How has incident response strategies changed (exercises running online etc)

Topic 4. Psychological contract

Shifting in understanding of work

Flexible working

How did change impact teams / social cohesiveness

Personnel changes

- How do you onboard remotely and make colleagues feel part of the team

How do you build trust remotely?