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**An online randomised controlled trial and survey of behavioural factors influencing patient
willingness to attend a video consultation**

Short title: Behavioural factors and video consulting

Authors anonymous for peer review

Abstract

Objectives: To examine whether the phrasing of a hospital appointment invitation influences patient preference to attend in person or by video. The study also explores patient capabilities, opportunities, and motivations to attend video consultations.

Design: A randomised controlled trial followed by a cross-sectional survey.

Methods: Participants (1,481 total, 780 female) were residents of the United Kingdom who self-identified as being diagnosed with a chronic disease. Participants considered one of three hypothetical invitations. In one group, participants were invited to attend in person. Those in another group were invited to attend by video. These participants could either accept the invitation or request the other option. In the final “active choice” group, participants were asked to choose to attend either in-person or by video appointment. Then, all participants responded to open- and closed-ended items about attending video consultations.

Results: When the default option was in person, 25% of participants chose video consultation, compared to 41% in the active choice group (RR=1.65, 95% CI: 1.37 to 1.99, $p<0.001$) and 65% in the default video group (RR=2.60, 95% CI: 2.20 to 2.96, $p<0.001$). Closed-ended responses suggested that younger patients and those with previous experience were more likely to prefer video consultations. Most open-ended responses contained themes about opportunities, followed by motivations and then capabilities.

Conclusions: Patients are more likely to express a preference to attend by video when video is the default option. The real-world effectiveness of this intervention is more likely to be realised where hospitals also support patient capabilities, opportunities, and motivations.

Keywords: communication, patient satisfaction, default effect, behaviour change

1 **An online randomised controlled trial and survey of behavioural factors influencing patient**
2 **willingness to take up a video consultation during the COVID-19 pandemic**

3 The National Health Service's (NHS) Long-Term Plan (2019) aims to future-proof its service
4 for the decade ahead. A major component of this plan encourages greater use of digital technologies.
5 The onset of the COVID-19 pandemic accelerated efforts to increase video consulting (Christakis,
6 2020), and, in March 2020, hospital trusts were offered funded access to a video consultation
7 platform (Rapson, 2020). While video consultations are not appropriate for every appointment, e.g.,
8 those that require in-person tests, there are many appointments for which they are, e.g., those that
9 discuss treatment options, treatment progress, or test results (Car et al., 2020). There is already
10 evidence that video consultations can support patients with long-term conditions (Hansen et al.,
11 2017; Ignatowicz et al., 2019; Katz et al., 2017; Robinson et al., 2015), and those patients who have
12 experienced video consultations express more favourable attitudes towards them (Leng et al., 2016).
13 However, offering video consulting at scale will require complex modifications to existing systems
14 that support diverse patient needs (Greenhalgh et al., 2018; Greenhalgh et al., 2020). The current
15 study examines a simple change that hospitals can make to increase patient willingness to attend
16 video consultations.

17 To increase patient willingness to attend video consultations, hospitals could change the way
18 an invitation to attend an outpatient appointment is presented: instead of inviting patients to attend in
19 person, they could invite them to attend by video. The way patients are invited to attend can be called
20 the "default". Defaults are pre-set options that take effect if the individual does not request an
21 alternative (Thaler & Susnstein, 2008). Maintaining the status quo often does not involve mental or
22 physical activity and hence it becomes easiest to "go with the flow of pre-set options" (Dolan et al.,
23 2012). For example, people tend to stick with previously selected health insurance plans even as new
24 options become available with more favourable premiums and deductibles (Samuelson and
25 Zeckhauser, 1988). When people are asked to select between two insurance options in an online task,

1 they tend to select the one labelled as the pre-existing health insurance policy (Krieger and Felder,
2 2013).

3 Changing the default can have large effects across a wide variety of patient choices (Hummel
4 et al., 2019), e.g., whether people agree to be organ donors (Johnson et al., 2003) or choose to
5 purchase healthy foods (Peters et al., 2016). The difference in people's choices across conditions
6 with different pre-set options is called the "default effect" (Jachimowicz et al., 2019). Broadly,
7 explanations for the default effect are based on the assumption that human preferences are
8 constructed rather than pre-existing. At least three psychological mechanisms are thought to underlie
9 the power of defaults, including endorsement (believing the proposed default is recommended),
10 endowment (believing that moving away from the default option would entail a loss), and ease
11 (taking up the proposed default is simpler than refusing it) (Dinner et al., 2011; Jachimowicz et al.,
12 2019). Changing invitations from inviting patients to attend "in person" to "by video" may create a
13 new endorsed mode of attendance that is easier to accept. As many hospitals already send
14 appointment invitations, adjusting the text in them is a simple light-touch and low-cost adjustment,
15 which could be referred to as a nudge (Dolan et al., 2012). However, any changes resulting from this
16 nudge may be fleeting where hospitals do not support patients' further needs.

17 The behavioural support that patients need will often involve bridging the digital divide
18 (Watts, 2020), e.g., to help those who do not know how to use their computer well (a capability
19 factor), those who do not have the necessary internet access (an opportunity factor), and those who
20 do not believe that a video appointment can improve their health (a motivation factor) (British
21 Psychological Society, 2020). Previous studies suggest that older adults may experience more of
22 these barriers (Eberly et al., 2020; Lam et al., 2020; Leng et al., 2016), and that patients with multiple
23 diagnoses may experience significant motivational barriers (Donaghy et al., 2019). Some of the
24 behaviour change techniques most likely to overcome barriers related to patients' capabilities,
25 opportunities, and motivations are already known (Michie et al., 2011; Michie et al., 2013). For

1 example, patients' capabilities are more likely to be influenced by the "behavioural
2 rehearsal/practice" technique than "environmental restructuring" or "action planning", which are
3 better suited to increase patients' opportunities and motivations to attend, respectively (Michie et al.,
4 2011). To meet diverse patient needs the most effective interventions will likely be complex, in the
5 sense that they include multiple techniques (Craig et al., 2008).

6 The current study explores behavioural factors that influence people's willingness to attend a
7 hospital outpatient appointment by video. Our primary objective is to investigate the impact of
8 changing the default attendance option in a hypothetical appointment invitation using a randomised
9 controlled trial. We hypothesize that more people will prefer an appointment by video than in person
10 when video is the default option. Our secondary objective is to explore other behavioural factors that
11 influence their willingness to attend a video consultation.

12 **Methods**

13 **Study Design/Setting**

14 The online survey was designed using Qualtrics (2020) software and conducted in September
15 and October 2020. Participants were recruited via Prolific Academic's panel. Prolific Academic is an
16 online platform where researchers can make their surveys available to participants from specific
17 demographic backgrounds (Palan et al., 2018). The survey contained two parts. The first part was a
18 randomised controlled trial to examine whether reframing an invitation to attend an outpatient
19 appointment (changing the default) influences patients' appointment preference. The second part was
20 a cross-sectional survey, exploring patients' capabilities, opportunities, and motivations to attend a
21 video consultation. The study was approved by the *****ANON FOR PEER REVIEW*****
22 (ID: 110/19-20) and pre-registered on ClinicalTrials.gov (ID: *****ANON FOR PEER
23 REVIEW*****). The anonymous data is available at the Figshare repository at [*****reference
24 number TBD pending acceptance for publication*****].

25 **Patient and Public Involvement Statement**

1 In line with the United Kingdom's standard for public involvement, the chief investigator
2 discussed the study design with four public contributors from diverse backgrounds before obtaining
3 ethical approval (National Institute for Health Research, 2018). The contributors included people
4 both younger and older than 55 years of age (as in our sample), carers of family members with
5 chronic conditions, and people who themselves experience chronic conditions. All contributors
6 believed that the methods were suitable and that this research was valuable and timely. Their insights
7 helped the research team reword items to make them more accessible for a lay audience. After the
8 initial data analyses, the chief investigator met with and asked the same contributors to highlight the
9 most valuable finding, suggest avenues for dissemination through patient networks, and generate
10 directions for future research.

11 **Sample Size Calculation**

12 The sample size was calculated for a comparison of two proportions using the power two
13 proportion command in Stata SE v16.1 as outlined in the pre-registered protocol. We sought to detect
14 differences between participant choices from the in-person invitation default, because this condition
15 is closest to many pre-existing appointment defaults in hospital settings. To detect a conservative
16 10% increase (from 45% to 55%) for participants accepting an invitation to a video outpatient
17 appointment across the three invitation groups, with 90% power and an alpha of 0.025 (Bonferroni's
18 alpha correction for three groups), a sample size of 619 participants in each invitation group was
19 necessary, at least 1,857 total participants. Note that 10% is a conservative effect-size estimate, as a
20 previous meta-analysis of default interventions found a 27% average increase favouring the default
21 option across a range of health and non-health domains (Jachimowicz et al., 2019).

22 **Participants**

23 Eligible participants self-identified as being residents of the United Kingdom, being male or
24 female (sex assigned at birth), and being diagnosed with a chronic disease such as diabetes, heart
25 disease, stroke, etc. Recruitment was stratified by sex and age, such that up to 500 participants from

1 each of the following categories could take part: males 18 to 54 years old, females 18 to 54 years old,
2 males 55 years and older, and females 55 years and older. We opted to dichotomise age to ensure that
3 a similar number of older participants were placed in each group. Stratified categories were based on
4 pre-screening questions participants completed when registering on Prolific Academic. On the first
5 day of recruitment, there were less than 500 active participants registered on Prolific Academic in
6 some categories. While there were 675 males 18 to 54 years old and 1,608 females 18 to 54 years
7 old, there were only 241 males 55 years and older, and 337 females 55 years and older. Therefore,
8 from the first day of recruitment, under-recruitment in the male and older demographics were
9 expected. Participants provided their informed consent before advancing to the survey. Those who
10 completed the survey received 1 GBP (Great British Pound) for their time.

11 **Measurements**

12 *Randomised Controlled Trial Items*

13 The randomised controlled trial items appear in Figure 1. Participants first read informative
14 text about video consultations, stating that: “Video consultations allow patients to have follow-up
15 appointments from home over a secure video and audio link with their doctor, instead of coming to
16 the hospital”. Then, participants were randomly assigned to one of three groups and asked to:
17 “Imagine that a hospital clinician you have been seeing for over a year tells you that that upon
18 reviewing your patient notes they would like you to attend your next consultation [text varied across
19 groups]”. Participants in the default video group were invited to attend by video. Participants in the
20 default in-person group were invited to attend in person. Lastly, participants in the active choice
21 group were invited to select how they would like to attend without a default, either by video or in
22 person. Participants could express their preference to attend by video or in person by selecting either
23 option presented in a random order.

24 *Cross-Sectional Survey Items*

1 The cross-sectional survey items are available in Supplemental Materials 1. The open-ended
2 items asked participants to write two advantages and two disadvantages of video consultations over
3 in-person consultations in free-text boxes. Then, participants stated how strongly they agreed with
4 the statement “The advantages of video consulting outweigh the disadvantages” using a Likert scale,
5 where one represented “strongly agree” and five represented “strongly disagree”. Next, participants
6 responded to 10 closed-ended items related to their capabilities, opportunities, and motivations to
7 attend a video consultation using “Yes” and “No” response options. These close-ended items were
8 informed by Huijg et al.’s (2014) validated survey, and some items were negatively worded.

9 *Additional Items*

10 The final portion of the survey included background questions. Participants were asked how
11 many hospital outpatients they had attended in the last 12 months and how many were video
12 consultations. They indicated which chronic disease(s) they were diagnosed with (diabetes, heart
13 disease, stroke, other [optional free text], or prefer not to say), what country they lived in, and their
14 ethnic group. Lastly, participants were asked to: “Imagine that you could attend your next hospital
15 outpatient appointment using any of the options below. Please rank order the options, from 1 (most
16 preferred) to 5 (least preferred).” The options appeared in a random order, including “in-person”,
17 “video”, “telephone”, “text-messaging”, and “email”.

18 **Randomisation and Blinding**

19 To randomise participants into one of the three groups, Qualtric’s computer randomiser was
20 set to evenly present, an option that uses the Mersenne Twister pseudorandom number generator with
21 a block size of three. While participants could not be blinded to their invitation group, they were not
22 made aware of the other groups. Researchers were never aware of participants’ assigned groups at
23 the point of data collection or random assignment because this was handled automatically by Prolific
24 Academic and Qualtrics.

25 **Statistical Methods**

1 Analyses were completed in Stata SE v16.1. Participant baseline characteristics were
2 summarised using numbers and percentages or means and standard deviation.

3 ***Randomised Controlled Trial Analyses***

4 The primary analysis compares the percentage of participants who expressed a preference to
5 attend the appointment by video across the three groups (Default Video, Default In-Person, and
6 Active Choice), adjusting for sex and age group (stratifying variables in the randomisation).
7 Subgroup analysis was completed by sex and age group. Interactions were evaluated using the Wald
8 test. An additional fully adjusted analysis was also completed, adjusting for sex (male or female), age
9 group (under 55 or 55 and older), diagnostic complexity (experiencing one diagnosis or multiple
10 diagnoses), and previous experience with video appointments (never or at least one video
11 appointment). In a sensitivity analysis the effect of age in years was assumed linear. For binary
12 outcomes, a generalised linear model with a binomial distribution and log link was used to estimate
13 risk ratios, and a generalised linear model with a binomial distribution and identity link was used to
14 estimate the risk difference (Fox, 2016). Results from inferential tests are reported with 95%
15 confidence intervals.

16 ***Cross-Sectional Survey Analyses***

17 For the close-ended items, the percentage of participants who indicated each item as being a
18 facilitating factor was examined. Negatively worded items were reverse scored. The mean rank
19 orders (along with the standard deviations) are provided for five appointment options, including in-
20 person, video, telephone, text messaging, and email. Spearman's rho correlation coefficient was used
21 to assess the relationship between participants' rank order for video consulting and their preference
22 stated in the RCT, along with that correlation's 95% confidence interval using Fieller, Hartley, and
23 Pearson's (1957) method.

24 For the open-ended items, participant responses were placed into Excel. Then, the response
25 order was randomised, blinding researchers to participant group and to whether the response type

1 was an advantage or disadvantage. Next, two researchers independently coded each response as
2 relating most strongly to capabilities, opportunities, motivations (as defined in Michie et al., 2011),
3 or none. Disagreements were resolved via consensus discussions. Initial reliability was described
4 using Cohen's Kappa statistic, and the percentages of responses coded as each COM-B component as
5 advantages and disadvantages were provided. Lastly, for the item asking participants whether the
6 advantages of video consulting outweighed the disadvantages, the percentage of participants
7 indicating some degree of agreement, some degree of disagreement, and neither agreeing nor
8 disagreeing were provided.

9 **Results**

10 The survey was completed by 1,481 participants of which 53% identified as female (N=780)
11 and 67% as 55 years old or greater (N=1,000). Participants were allocated across the three invitation
12 groups similarly: 497 (34%) to the default video group, 491 (33%) to the default in-person group,
13 and 493 (33%) to the active choice group.

14 Table 1 contains the baseline characteristics of participants across the groups. Most
15 participants (N=1,253, 85%) had attended at least one hospital outpatient appointment in the previous
16 12 months, but few (N=165, 11%) had attended an appointment by video. 546 (N=37%) participants
17 reported being diagnosed with diabetes, 191 (13%) with heart disease, and 61 (4%) with stroke. 673
18 (45%) participants wrote in another diagnosis, such as "Crohn's disease" (N=87, 6%), "asthma"
19 (N=78, 6%), or "cancer" (N=46, 3%). Ninety-nine participants did not provide information about
20 their diagnoses and were not included in the fully adjusted analysis. The percentage of participants
21 residing in each country and identifying with each ethnicity roughly aligns with the 2011 United
22 Kingdom population census (Office for National Statistics, 2011).

23 ***Randomised Controlled Trial Results***

24 Participant preference to attend the consultation by video was influenced by what invitation
25 they considered. In the default in-person group, 25% (N=122/491) of participants chose video

1 consultation over in-person consultation, compared to 41% (N =202/493) in the active choice group
2 and 65% (N=321/497) in the default video group, see Table 2. The likelihood of choosing to attend
3 by video was estimated to be 65% higher (RR=1.65, 95% CI: 1.37 to 1.99, $p<0.001$), and the
4 absolute difference was 16 percentage points higher (RD=16pp, 95% CI: 10 to 22, $p<0.001$), for
5 participants in the active choice group compared to the default in-person group, adjusting for age
6 group and sex. The likelihood of choosing to attend consultation by video is over two-fold higher
7 (RR=2.60, 95% CI: 2.20 to 3.07, $p<0.001$), and the absolute difference is 40 percentage points higher
8 (RD=40pp, 95% CI: 34 to 45, $p<0.001$) for participants in the default video group compared to the
9 default in-person group, adjusting for age group and sex. The results for subgroup analysis by sex
10 and age group are reported, and the tests for interactions between invitation group with sex and age
11 group were not statistically significant, see Table 2. Results were broadly similar after covariate
12 adjustment, the fully adjusted model, for age group, sex, diagnostic complexity, and previous video
13 consultation, see Supplemental Materials 2. In a further sensitivity analysis, we find that treating age
14 as a continuous variable did not influence the results.

15 ***Cross-Sectional Survey Results***

16 Supplemental Materials 3 provides details on participant responses to the close-ended items
17 about their capabilities, opportunities, and motivations. The largest barriers suggested for each factor
18 are described here. Regarding the capability items, 66% of participants (N= 978/1,481) did not know
19 if their hospital offered video consultations. Regarding the opportunity items, 66% of participants
20 (N=983/1,481) could not recall other people speaking favourably about video appointments. Lastly,
21 regarding motivations, 26% (N =393/1,481) did not believe their clinicians could provide them with
22 good care via an online appointment and 18% (N = 285/1,481) expressed privacy concerns. The
23 percentage of younger participants endorsing items as facilitating factors was on average 7% (Range
24 = 3 to 13 per item) higher than older participants. Additionally, the percentage of participants who
25 previously attended a video consultation endorsing items as facilitating factors was on average 14%

1 (Range = 2 to 58) higher than those with no had not. Participants rank-ordered the in-person
2 appointment option the most preferred (mean rank = 1.83, SD = 1.21), closely followed by video
3 (2.24, SD = 1.12), and then telephone (2.66, SD = .89), email (3.82, SD = .96), and text message
4 (4.47, SD = 0.83). Participants ranked preference for video consulting was significantly correlated
5 with their preference stated in the RCT, $r_s(1481) = .43$, (95% CI = .44 to .53, $p < .001$).

6 There was substantial agreement between the reviewer codes for the open-ended items,
7 $k(5924) = .74$ (95% CI = .72 to .76, $p < .001$), and only 3% of responses were coded as None.
8 Opportunity was the most often applied code, with 71% of advantages and 55% of disadvantages
9 being coded as opportunities. The main advantages for this component revolved around there being
10 no need to travel and no parking costs. For example, one participant said that: *“I would not have to*
11 *make an hour’s bus journey to the hospital”*. Another participant reflected that attending by video
12 would mean that: *“I would not have to drive 45 mins each way, and pay to park, and wait around”*.
13 Other participants mentioned that video consultations saved them time, e.g., one participant stated
14 that they: *“Wouldn’t need to organise childcare or time off work”*. The main disadvantages included
15 that a physical examination was not possible and not having sufficient internet access. For example, a
16 participant noted that: *“They [the consultant] can’t physically examine me or take my blood*
17 *pressure”*. Another stated that their: *“Doctor would be unable to check specific symptoms, e.g.,*
18 *palpitate abdomen, listen to chest, etc.”*. Regarding their limited internet access, a participant
19 expressed that: *“I do not own either a PC, a laptop, a tablet, or even a TV, and video calls using*
20 *mobile data allowance are expensive”*.

21 Motivation was the next most frequently applied code, with 25% of advantages and 36% of
22 disadvantages being coded as motivations. Advantages often included there being a lower risk of
23 communicable infections, e.g., *“no risk to be infected by a virus”* and *“no risk of spreading*
24 *infection”*. Disadvantages involved the less personal nature of a video call compared to an in-person
25 consultation. One participant thought that video consultations would be: *“less personal, the video*

1 *may make it feel that the doctor may not want to see you*". Another participant reflected that: "*it*
2 *seems very impersonal not talking face to face, and I would be loath to ask personal questions*".
3 While some participants mentioned privacy as an advantage, e.g., "*[You would be] free from other*
4 *people seeing you at the surgery - privacy*", privacy was also mentioned as a disadvantage. At times
5 these privacy concerns involved issues with data security, e.g., one participant expressed that: "*I may*
6 *not be comfortable to divulge a lot of information to the consultant via Zoom since I don't know how*
7 *the data will be processed*". Other times these concerns involved issues with other people being
8 present in their home during the call, e.g., one participant expressed that: "*I would feel hesitant about*
9 *discussing potentially private or embarrassing matters— I don't have much privacy at home in a*
10 *small flat*".

11 Capability was applied less frequently, with only 3% of advantages and 5% of disadvantages
12 being coded as capabilities. Some participants thought that it might be an advantage if they could
13 record the consultation to review later, e.g., "*it [the consultation] could be recorded so you could*
14 *look at it again if you forgot anything [the] consultant said*". Disadvantages involved participants
15 lacking technical skills to access a video call, e.g. "*I am not very good with video links*" and "*I'm still*
16 *quite uncomfortable using video in general*". Some participants' chronic conditions made the option
17 to attend a video consultation more attractive. One participant noted that: "*I have chronic pain so not*
18 *having to travel would be an advantage*". Another said that: "*I have chronic health problems and a*
19 *hospital appointment can take days to recover from*". However, some chronic conditions made video
20 consultations more difficult, e.g., "*I am profoundly deaf so struggle with video*".

21 Nearly half (47%) of participants somewhat or strongly agreed that the advantages
22 outweighed the disadvantages, about a quarter disagreed (28%), and the remaining neither agreed nor
23 disagreed (25%).

24

Discussion

1 As hypothesised based on the literature, the current study found a large default effect, which
2 reveals an important mechanism for engaging patients with health services in general and medical
3 appointments in particular. When the invitation was to attend in person, the percentage of
4 participants opting to attend by video was 25%. This percentage rose to 65% when the invitation
5 proposed attending by video. Participants' expressed preferences offer little reason to maintain an in-
6 person default. Nearly half of the participants believed the advantages of attending an appointment
7 by video outweighed the disadvantages.

8 One strength of the current study is the number of participants with chronic conditions who
9 took part, 1,481. This was achieved by recruiting participants from an online panel, which also poses
10 a limitation in that our participants may be more digitally literate than the general public. That said,
11 the use of internet-enabled technologies is high. Ofcom's (2020) survey of media use across the
12 United Kingdom (which is conducted using face-to-face methods) finds that 87% of people used the
13 internet in 2019, which has remained unchanged since 2014. The percentage of non-users increases
14 with age. For people between 16 to 54 years old, the percentage of non-users is lower than 8%. In
15 contrast, the percentage of non-users at least 55 years old is greater than 16%. Thus, our findings for
16 younger participants are more likely to generalise than our findings for older participants.

17 One weakness of the randomised controlled trial part of our study is its hypothetical nature.
18 People's responses to hypothetical choices may change when confronted with the possibility of real-
19 world consequences, and the magnitude of the default effect found in our study may decrease in the
20 real world. However, experiments with hypothetical choices are commonly used to assess people's
21 preferences for service options and such findings may support changes in practice (Mühlbacher &
22 Johnson, 2016). The online survey methodology used here is commonly used to understand whether
23 and when the default effect arises; e.g., Johnson et al.'s (2003) initial study about organ donation and
24 Krieger and Felder's (2013) study about health insurance were conducted using similar

1 methodologies online. The current findings may be used to build the necessary foundation to support
2 before/after studies or randomised controlled trials in the real world.

3 Encouragingly, the generalisability of our finding for the active choice group already has
4 some support. In a 2020 observational study conducted in the Netherlands, patients with colorectal
5 disease engaged in shared decision making about how their follow-up appointment would occur, and
6 42% (22/50) chose video consultation (Barsom et al., 2020). This is similar to our active choice
7 group in which 41% chose video. The consultations in the Netherlands' study were for discussing
8 overall progress, test results, treatments, and complaints. Physical examinations for patients with
9 colorectal disease are rare during follow-up consultations so were not a concern (Beaver et al., 2012).
10 In contrast, not being able to receive a physical examination during a video consultation was a major
11 barrier our participants expressed. This barrier was explored in a 2020 study conducted in the United
12 Kingdom with patients who have diabetes, cancer, or heart disease (Shaw et al., 2020; also see
13 Seuren et al., 2020). This study found that some physical examinations were possible, but that
14 consultants may need training on how to give appropriate instructions, e.g., on using lay language to
15 describe technical procedures. If such tests are likely to be part of the video call, patients should be
16 made aware of the tests and asked to prepare any materials they may need in advance. In some cases,
17 patients may be trained to self-test during an in-person consultation before follow-up video
18 consultations.

19 While changing the default in the appointment letter can increase the percentage of patients
20 willing to attend by video, a policy change advocating a video default should only be rolled out if it
21 is welfare-enhancing at the individual and social levels (Leggett, 2014). Many criteria could be used
22 to assess "welfare-enhancing", including impacts on population health, personal wealth, and even
23 happiness. These criteria are alluded to in Thaler and Sunstein's (2008) *Nudge: Improving Decisions*
24 *about Health, Wealth, and Happiness*. One argument supporting nudging is that where nudges frame
25 choice options they are inevitable; therefore, we should implement those that enhance welfare

1 (Sunstein, 2015). Some people may prefer that inevitable nudges arise without intention, but this is
2 unlikely at best and reckless at worst: companies may choose defaults that benefit them at the
3 expense of customers' health. Regardless, where nudges explicitly preserve freedom of choice,
4 opponents' concerns should be ameliorated (Saghai, 2013; Schmidt, 2020). In the current study,
5 nearly half of our participants (47%) believed that the advantages of video consulting outweigh the
6 disadvantages. The present findings suggest that providing patients with a choice may empower them
7 to select the option that best suits their needs. The video consulting default may help patients
8 overcome initial resistance to selecting this option caused by the status quo bias.

9 A limitation of the cross-sectional survey is that it occurred after the randomised trial, so the
10 hypothetical invitations may have influenced responses in the cross-sectional survey. This limitation
11 is particularly noteworthy for the cross-sectional survey item that asked participants to rank order
12 their preference for the following appointment options: in-person, video, telephone, text messaging,
13 and email. Here participants who previously expressed a preference for in-person over video, or vice
14 versa, were likely to express the same preference order in their ranking, which could be due to stage
15 or contextual influences on preferences (Podsakoff, MacKenzie, & Podsakoff, 2012). Having said
16 that, our cross-sectional survey still picks out some diverse patient needs that affect patients'
17 experiences with video consulting.

18 The cross-sectional survey responses were coded according to the capability, opportunity, and
19 motivation components, because these components are already linked to the theoretically informed
20 and empirically supported techniques best suited to influence them (Michie et al., 2011, 2013). For
21 example, to increase patients' awareness and motivations to attend, hospitals could share other
22 patients' positive experiences around video consultations (e.g., the "information about other's
23 approval" technique). For patients who lack technical skills, practice sessions could be offered before
24 their first video appointment (e.g., the "behavioural rehearsal/practice" technique). While initial
25 demand for practice sessions may be high, offering practice sessions may empower patients to make

1 a more informed choice (Lee et al., 2006). To address privacy concerns, information could be
2 provided to patients around data protection policies (e.g, the “reduce negative emotions” technique).

3 Notably, some participants mentioned disadvantages that may render it impossible to attend,
4 such as not having internet access. In these cases, behaviour change techniques directed at the
5 patient, like the “restructuring the physical environment” technique, are likely infeasible: the NHS is
6 not equipped to supply patients with better internet access. Here we suggest that the technique be
7 applied to the invitation itself, such that patients are invited to express their concerns and are assured
8 that the appointment can be rescheduled as an in-person appointment if preferred. Similar nudges
9 have been used to reduce missed hospital outpatient appointments (Hallsworth et al., 2015). To avoid
10 bothersome cycles of invites and rescheduling, hospital records would ideally be restructured in such
11 a way as to indicate whether video consulting is appropriate for each patient before sending the
12 invitation.

13 In conclusion, the use of video consultations for hospital outpatient appointments has rapidly
14 expanded during the COVID-19 pandemic. Whether preferences to attend video consultations are
15 sustained depends, at least in part, on how the invitation is presented as well as on whether additional
16 behavioural factors are supported. By inviting patients to attend a video consultation and then
17 supporting their capabilities, opportunities, and motivations to follow through with that invitation,
18 hospitals can affect the proportion of patients attending different types of appointments.

References

- 1
2 Barsom, E. Z., van Dalen, A. S. H. M., Blussé van Oud-Alblas, M., Buskens, C. J., van de Ven, A.
3 W. H., Tanis, P. J., Schijven, M. P., & Bemelman, W. A. (2020). Comparing video
4 consultation and telephone consultation at the outpatient clinic of a tertiary referral centre:
5 Patient and provider benefits. *BMJ Innovations*, 7, 95–102. [https://doi.org/10.1136/bmjinnov-](https://doi.org/10.1136/bmjinnov-2020-000512)
6 [2020-000512](https://doi.org/10.1136/bmjinnov-2020-000512)
- 7 Beaver, K., Campbell, M., Williamson, S., Procter, D., Sheridan, J., Health, J., & Susnerwala, S.
8 (2012). An exploratory randomized controlled trial comparing telephone and hospital follow-
9 up after treatment for colorectal cancer. *Colorectal Disease*, 14(10), 1201–1209.
10 <https://doi.org/10.1111/j.1463-1318.2012.02936.x>
- 11 British Psychological Society (BPS) Behavioural Science and Disease Prevention Taskforce. (2020).
12 Behavioural science and disease prevention: Psychological guidance. London, UK: BPS
13 Behavioural Science and Disease Prevention Taskforce.
14 [https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-](https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Behavioural%20science%20and%20disease%20prevention%20-%20Psychological%20guidance%20for%20optimising%20policies%20and%20communication.pdf)
15 [%20Files/Behavioural%20science%20and%20disease%20prevention%20-](https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Behavioural%20science%20and%20disease%20prevention%20-%20Psychological%20guidance%20for%20optimising%20policies%20and%20communication.pdf)
16 [%20Psychological%20guidance%20for%20optimising%20policies%20and%20communicati](https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Behavioural%20science%20and%20disease%20prevention%20-%20Psychological%20guidance%20for%20optimising%20policies%20and%20communication.pdf)
17 [on.pdf](https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Behavioural%20science%20and%20disease%20prevention%20-%20Psychological%20guidance%20for%20optimising%20policies%20and%20communication.pdf)
- 18 Car, J., Koh, G. C, Foong, P. S., & Wang, C. J. (2020). Video consultations in primary and specialist
19 care during the covid-19 pandemic and beyond. *BMJ*, 371, m3945.
20 <https://doi.org/10.1136/bmj.m3945>
- 21 Carroll, G., Choi, J., Laibson, D., Madrian, B., & Metrick, A. (2009). Optimal defaults and active
22 decisions. *Quarterly Journal of Economics*, 124, 1639–1674.
23 <https://www.jstor.org/stable/40506268>
- 24 Christakis, N. A. (2020). *Apollo's Arrow: The Profound and Enduring Impact of Coronavirus on the*
25 *Way We Live*. Little, Brown Spark.

- 1 Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., Petticrew, M., & Medical Research
2 Council Guidance. (2008). Developing and evaluating complex interventions: The new
3 Medical Research Council guidance. *BMJ*, 29(337), a1655. <https://doi.org/10.1136/bmj.a1655>
- 4 Dinner, I., Johnson, E. J., Goldstein, D. G., & Liu, K. (2011). Partitioning default effects: Why
5 people choose not to choose. *Journal of Experimental Psychology: Applied*, 17(4), 332–341.
6 <https://doi.org/10.1037/a0024354>
- 7 Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R., & Vlaev I. (2012). Influencing
8 behaviour: The MINDSPACE way. *Journal of Economic Psychology*, 33(1), 264–277.
9 <https://doi.org/10.1016/j.joep.2011.10.009>
- 10 Donaghy, E., Atherton, H., Hammersley, V., McNeilly, H., Bikker, A., Robbins, L., Campbell, J., &
11 McKinstry, B. (2019). Acceptability, benefits, and challenges of video consulting: A
12 qualitative study in primary care. *British Journal of General Practice*, 69(686), e586–e594.
13 <https://doi.org/10.3399/bjgp19X704141>
- 14 Eberly, L. A., Kallan, M. J., Julien, H. M., Haynes, N., Khatana, S. A. M., Nathan, A. S., Snider, C.,
15 Chokshi, N. P., Eneanya, N. D., Takvorian, S. U., Anastos-Wallen, R., Chaiyachati, K.,
16 Ambrose, M., O'Quinn, R., Seigerman, M., Goldberg, L. R., Leri, D., Choi, K., Gitelman, Y.,
17 Kolansky, D. M., Cappola, T. P., Ferrari, V. A., Hanson, C. W., Deleener, M. E., &
18 Adusumalli, S. (2020). Patient characteristics associated with telemedicine access for primary
19 and specialty ambulatory care during the COVID-19 pandemic. *JAMA Network Open*, 3(12),
20 e2031640. <https://doi.org/10.1001/jamanetworkopen.2020.31640>
- 21 Fieller, E. C., Hartley, H. O., & Pearson E. S. (1957). Tests for rank correlation coefficients: I.
22 *Biometrika*, 44, 470–481. <https://doi.org/10.2307/2332878>
- 23 Fox, J. (2016). Applied regression analysis and generalized linear models (3rd ed.). Los Angeles,
24 CA: Sage

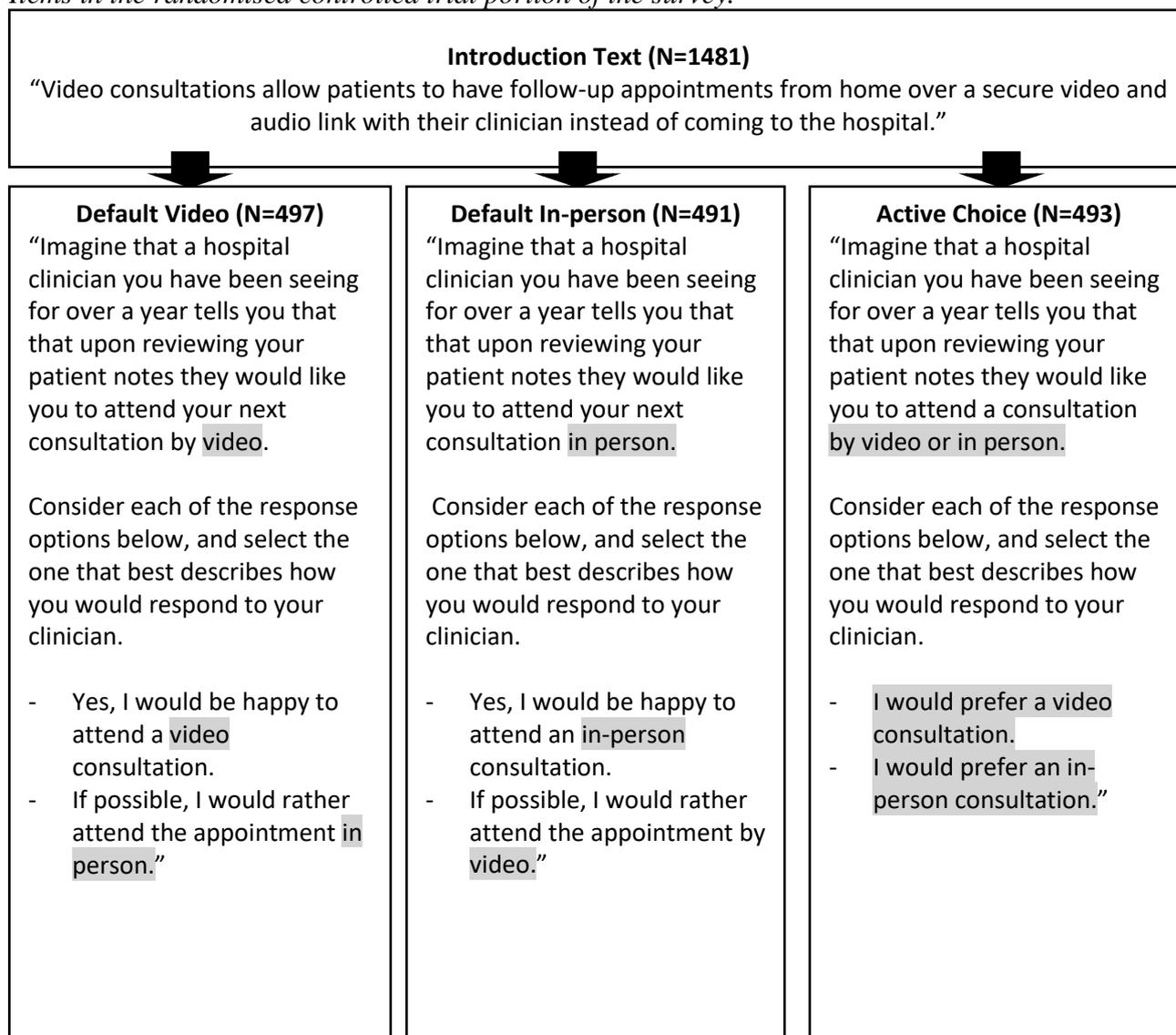
- 1 Greenhalgh, T., Shaw, S., Wherton, J., Vijayaraghavan, S., Morris, J., Bhattacharya, S., Hanson, P.,
2 Campbell-Richards, D., Ramoutar, S., Collard, A., & Hodkinson, I. (2018). Real-world
3 implementation of video outpatient consultations at macro, meso, and micro levels: Mixed-
4 method study. *Journal of Medical Internet Resources*, 20(4), e150.
5 <https://doi.org/10.2196/jmir.9897>
- 6 Greenhalgh, T., Wherton, J., Shaw, S., & Morrison, C. (2020). Video consultations for COVID19:
7 An opportunity in a crisis? *BMJ*, 368(1), m998. <https://doi.org/10.1136/bmj.m998>
- 8 Hallsworth, M., Berry, D., Sanders, M., Sallis, A., King, D., Vlaev, I., & Darzi, A. (2015). Stating
9 appointment costs in SMS reminders reduces missed hospital appointments: Findings from
10 two randomised controlled trials. *PLoS ONE*, 10(9), e0137306.
11 <https://doi.org/10.1371/journal.pone.0137306>
- 12 Hansen, C. R., Perrild, H., Koefoed, B. G., & Zander, M. (2017). Video consultations as add-on to
13 standard care among patients with type 2 diabetes not responding to standard regimens: A
14 randomised controlled trial. *European Journal of Endocrinology*, 176(6), 727–736.
15 <https://doi.org/10.1530/EJE-16-0811>
- 16 Huijg, J. M., Gebhardt, W. A., Dusseldorp, E., Verheijden, M. W., van der Zouwe, N., Middelkoop,
17 B. J. C., & Crone, M. R. (2014). Measuring determinants of implementation behaviour:
18 Psychometric properties of a questionnaire based on the Theoretical Domains Framework.
19 *Implementation Science*, 9(33). <https://doi.org/10.1186/1748-5908-9-33>
- 20 Hummel, D., & Maedche, A. (2019). How effective is nudging? A quantitative review on the effect
21 sizes and limits of empirical nudging studies. *Journal of Behavioural and Experimental*
22 *Economics*, 80(1), 47–58. <https://doi.org/10.1016/j.socec.2019.03.005>
- 23 Ignatowicz, A., Atherton, H., Bernstein, C. J., Bryce, C., Court, R., Sturt, J., & Griffiths, F. (2019).
24 Internet videoconferencing for patient-clinician consultations in long-term conditions: A

- 1 review of reviews and applications in line with guidelines and recommendations. *Digital*
2 *Health*, 5(1), 2055207619845831. <https://doi.org/10.1177/2055207619845831>
- 3 Jachimowicz, J. M., Duncan, S., Weber, E. U., & Johnson, E. J. (2019). When and why defaults
4 influence decisions: A meta-analysis of default effects. *Behavioural Public Policy*, 3(2), 159–
5 186. <https://doi.org/10.1017/bpp.2018.43>
- 6 Johnson, E. J., & Goldstein, D. (2003) Do defaults save lives? *Science*, 302(5649), 1338–1339.
7 <https://doi.org/10.1126/science.1091721>
- 8 Katz, I. J., Pirabhahar, S., Williamson, P., Raghunath, V., Brennan, F., O'Sullivan, A., Youssef, G.,
9 Lane, C., Jacobson, G., Feldman, P., & Kelly, J. (2017). iConnect CKD - Virtual medical
10 consulting: a web-based chronic kidney disease, hypertension, and diabetes integrated care
11 program. *Nephrology*, 23(7), 646–652. <https://doi.org/10.1111/nep.13070>
- 12 Krieger, M., & Felder, S. (2013). Can decision biases improve insurance outcomes? An experiment
13 on status quo bias in health insurance choice. *International journal of environmental research*
14 *and public health*, 10(6), 2560–2577. <https://doi.org/10.3390/ijerph10062560>
- 15 Lam, K., Lu, A. D., Shi, Y., & Covinsky, K. E. (2020). Assessing telemedicine unreadiness among
16 older adults in the United States during the COVID-19 pandemic. *JAMA Internal Medicine*,
17 180(10), 1389–1391. <https://doi.org/10.1001/jamainternmed.2020.2671>
- 18 Lee, L., Frederick, S., & Ariely, D. (2006). Try it, you'll like it: The influence of expectation,
19 consumption, and revelation on preferences for beer. *Psychological Science*, 17(12), 1054–
20 1058. <https://doi.org/10.1111/j.1467-9280.2006.01829.x>
- 21 Leggett, W. (2014). The politics of behaviour change: Nudge, neoliberalism and the state. *Policy and*
22 *Politics*, 42(1), 3–19. <https://doi.org/10.1332/030557312X655576>
- 23 Leng, S., MacDougall, M. & McKinstry, B. (2016). The acceptability to patients of video-consulting
24 in general practice: Semi-structured interviews in three diverse general practices. *Journal of*
25 *Innovation in Health Informatics*, 23(2), 141. <https://doi.org/10.14236/jhi.v23i2.141>

- 1 Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for
2 characterizing and designing behaviour change interventions. *Implementation Science*, 6(42).
3 <https://doi.org/10.1186/1748-5908-6-42>
- 4 Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M. P.,
5 Cane, J., & Wood, C. E. (2013). The Behaviour Change Technique Taxonomy (v1) of 93
6 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting
7 of Behaviour Change Interventions. *Annals of Behavioural Medicine*, 46(1), 81–95.
8 <https://doi.org/10.1007/s12160-013-9486-6>
- 9 Mühlbacher, A., & Johnson, F. R. (2016). Choice experiments to quantify preferences for health and
10 healthcare: State of the practice. *Applied Health Economics and Health Policy*, 14(3), 253–
11 266. <https://doi.org/10.1007/s40258-016-0232-7>
- 12 National Health Service. (2019, August 21). The NHS Long Term Plan.
13 <https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/>
- 14 National Institute for Health Research. UK Standards for Public Involvement (website); Available
15 from: <https://sites.google.com/nih.ac.uk/pi-standards/home>. Accessed 9 May 2021.
- 16 Ofcom. (2020). Adults' Media Use & Attitudes report 2020.
17 [https://www.ofcom.org.uk/_data/assets/pdf_file/0031/196375/adults-media-use-and-](https://www.ofcom.org.uk/_data/assets/pdf_file/0031/196375/adults-media-use-and-attitudes-2020-report.pdf)
18 [attitudes-2020-report.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0031/196375/adults-media-use-and-attitudes-2020-report.pdf)
- 19 Office for National Statistics. (2011). 2011 Census: Key Statistics and Quick Statistics for Local
20 Authorities in the United Kingdom.
21 [https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/population](https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/keystatisticsandquickstatisticsforlocalauthoritiesintheunitedkingdom/2013-10-11)
22 [estimates/bulletins/keystatisticsandquickstatisticsforlocalauthoritiesintheunitedkingdom/2013-](https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/keystatisticsandquickstatisticsforlocalauthoritiesintheunitedkingdom/2013-10-11)
23 [10-11](https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/keystatisticsandquickstatisticsforlocalauthoritiesintheunitedkingdom/2013-10-11)
- 24 Palan, P., & Schitter, C. (2018). Prolific.ac: A subject pool for online experiments. *Journal of*
25 *Behavioural and Experimental Finance*, 17, 22–27. <https://doi.org/10.1016/j.jbef.2017.12.004>

- 1 Peters, J., Beck, J., Lande, J., Pan, Z., Cardel, M., Ayoob, K., & Hill, J. O. (2016). Using healthy
2 defaults in Walt Disney World restaurants to improve nutritional choices. *Journal of the*
3 *Association for Consumer Research*, 1(1), 92–103. <https://doi.org/10.1086/684364>
- 4 Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social
5 science research and recommendations on how to control it. *Annual Review of Psychology*,
6 63, 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- 7 Rapson, J. (2020, May 11) Covid sparks boom in digital hospital outpatient appointments. *Health*
8 *Services Journal*. [https://www.hsj.co.uk/technology-and-innovation/covid-sparks-boom-in-](https://www.hsj.co.uk/technology-and-innovation/covid-sparks-boom-in-digital-hospital-outpatient-appointments/7027590.article)
9 [digital-hospital-outpatient-appointments/7027590.article](https://www.hsj.co.uk/technology-and-innovation/covid-sparks-boom-in-digital-hospital-outpatient-appointments/7027590.article)
- 10 Robinson, M. D., Branham, A. R., Locklear, A., Robertson, S., & Gridley, T. (2015). Measuring
11 satisfaction and usability of FaceTime for virtual visits in patients with uncontrolled diabetes.
12 *Telemedicine and e-Health*, 22(2), 138–143. <https://doi.org/10.1089/tmj.2014.0238>.
- 13 Saghai, Y. (2013). Salvaging the concept of nudge. *Journal of Medical Ethics*, 39(8), 487–493.
14 <http://dx.doi.org/10.1136/medethics-2012-100727>
- 15 Samuelson, W., & Zeckhauser, R. J. (1988). Status quo bias in decision making. *Journal of Risk and*
16 *Uncertainty*, 1(1), 7–59. <https://www.jstor.org/stable/41760530>
- 17 Schmidt, T., & Engelen, B. (2020). The ethics of nudging: An overview. *Philosophy Compass*, 15(4),
18 e12658. <https://doi.org/10.1111/phc3.12658>
- 19 Seuren, L. M., Wherton, J., Greenhalgh, T., Cameron, D., A'Court C., & Shaw, S. E. (2020). Physical
20 examinations via video for patients with heart failure: Qualitative study using conversation
21 analysis. *Journal of Medical Internet Research*, 22(2), e16694. <https://doi.org/10.2196/16694>
- 22 Shaw, S. E., Seuren, L. M., Wherton, J., Cameron, D., A'Court, C., Vijayaraghavan, S., Morris, J.,
23 Bhattacharya, S., & Greenhalgh, T. (2020). Video consultations between patients and
24 clinicians in diabetes, cancer, and heart failure services: Linguistic ethnographic study of

- 1 video-mediated interaction. *Journal of Medical Internet Research*, 22(4), e18378.
- 2 <https://doi.org/10.2196/18378>
- 3 Sunstein, C. R. (2015). The ethics of nudging. *Yale Journal of Regulation*, 32(1), 413–450.
- 4 <https://digitalcommons.law.yale.edu/yjreg/vol32/iss2/6>
- 5 Thaler, R., & Benartzi, S. (2004). Save more tomorrow: Using behavioural economics to increase
- 6 employee saving. *Journal of Political Economy*, 112, S164–S187.
- 7 Thaler, R. H., & Sunstein, C. (2008). *Nudge: Improving Decisions about Health, Wealth, and*
- 8 *Happiness*. New Haven: Yale University Press.
- 9 Qualtrics (2020). Provo, Utah, USA. <https://www.qualtrics.com>
- 10 Watts, G. (2020). COVID-19 and the digital divide in the UK. *The Lancet Digital Health*, 2(8),
- 11 e395–e396. [https://doi.org/10.1016/S2589-7500\(20\)30169-2](https://doi.org/10.1016/S2589-7500(20)30169-2)
- 12
- 13
- 14
- 15
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1 **Figure 1.**2 *Items in the randomised controlled trial portion of the survey.*

3
4 *Note.* Text is highlighted in the above figure in to draw attention to between group differences. Text
5 was not highlighted when participants completed the survey.

1 **Table 1.**2 *Participant demographics across invitation groups.*

	Default video	Default in-person	Active Choice
Participants in analyses	497	491	493
Stratified characteristics			
Female	260 (52%) [†]	259 (53%)	261 (53%)
<55 years old	332 (67%)	333 (68%)	335 (68%)
One diagnosis	363 (73%)	335 (68%)	355 (76%)
No previous video consultations	443 (89%)	439 (89%)	434 (88%)
Age			
Age in years (SD)	28.1 (14.7)	28.2 (14.7)	28.2 (15.0)
Country of residence			
England	398 (80%)	416 (85%)	434 (88%)
Scotland	61 (12%)	37 (8%)	45 (9%)
Wales	27 (5%)	23 (5%)	11 (2%)
Northern Ireland	11 (2%)	15 (3%)	3 (1%)
Ethnicity			
Asian/Asian British	28 (6%)	18 (4%)	24 (5%)
Black/African/Caribbean/Black British	7 (1%)	11 (2%)	12 (2%)
Mixed/Multiple ethnic groups	9 (2%)	12 (2%)	9 (2%)
White	447 (90%)	443 (90%)	440 (89%)
Other	4 (1%)	6 (1%)	6 (1%)
Prefer not to say	2 (0%)	1 (0%)	2 (0%)
Diagnoses			
Diabetes	194 (39%)	173 (35%)	179 (36%)
Heart Disease	58 (12%)	74 (15%)	59 (12%)
Stroke	19 (4%)	26 (5%)	16 (3%)
No. Hospital outpatient appointments in previous 12 months			
Total, mean (SD)	2.4 (1.8)	2.4 (1.8)	2.3 (1.9)
By video, mean (SD)	0.2 (0.6)	0.2 (0.8)	0.2 (0.7)

3 [†] Percentages may not add to 100 due to rounding.

Table 2.

Risk ratios and risk difference of preference for video consultation over in-person consultation by default choice group, adjusted for age group and sex.

	Invitation group			Estimated intervention effects			
	In-person default	Active choice	Video default	Active choice †		Video default †	
	No. participants	No. participants	No. participants	Percentage point difference (95% CI) p-value	Risk ratio (95% CI) p-value	Percentage point difference (95% CI) p-value	Risk ratio (95% CI) p-value
	prefer video consultation/group total (%)						
All participants	122/491 (25%)	202/493 (41%)	321/497 (65%)	16 (10 to 22) p<0.001	1.65 (1.37 to 1.99) p<0.001	40 (34 to 45) p<0.001	2.60 (2.20 to 3.07) p<0.001
By gender							
Male	53/232 (23%)	94/232 (41%)	160/237 (68%)	18 (9 to 26) p<0.001	1.77 (1.34 to 2.35) p<0.001	45 (37 to 53) p<0.001	2.96 (2.30 to 3.80) p<0.001
Female	69/259 (27%)	108/261 (41%)	161/260 (62%)	15 (7 to 23) p<0.001	1.55 (1.21 to 1.99) p=0.001	35 (27 to 43) p<0.001	2.32 (1.86 to 2.91) p<0.001
By age group							
<55 years	85/333 (26%)	145/335 (43%)	211/332 (64%)	18 (11 to 25) p<0.001	1.70 (1.36 to 2.11) p<0.001	38 (31 to 45) p<0.001	2.49 (2.04 to 3.04) p<0.001
≥55 years	37/158 (23%)	57/158 (36%)	110/165 (67%)	13 (3 to 23) p=0.013	1.54 (1.09 to 2.19) p=0.016	43 (33 to 53) p<0.001	2.85 (2.10 to 3.85) p<0.001

† Compared to in-person default group, the reference group; and adjusted for age group and sex for all participants (and either age or sex for the sub-group estimates). P-value for tests of interaction: 0.260 for gender (risk difference); 0.320 for gender (risk ratio); 0.284 for age group (risk difference) and 0.2407 for age group (risk ratio).

Supplementary Materials 1.*Survey Items*

Descriptive Text	<p>Within this survey you will be asked to tell us about your attitudes, beliefs and opinions toward hospital video consultations.</p> <p>Video consultations allow patients to have follow-up appointments from home over a secure video and audio link with their clinician instead of coming to the hospital.</p>
PARTICIPANTS RANDOMLY ALLOCATED INTO ONE OF THREE GROUPS FOR RCT COMPONENT	
<p>RCT component – Default Video Group</p>	<p>Imagine that a hospital clinician you have been seeing for over a year tells you that that upon reviewing your patient notes they would like you to attend your next consultation by video.</p> <p>Consider each of the response options below, and select the one that best describes how you would respond to your clinician.</p> <p><input type="radio"/> Yes, I would be happy to attend a video consultation.</p> <p><input type="radio"/> If possible, I would rather attend the appointment in person.</p>
<p>RCT component – Default In Person Group</p>	<p>Imagine that a hospital clinician you have been seeing for over a year tells you that that upon reviewing your patient notes they would like you to attend your next consultation in person.</p> <p>Consider each of the response options below, and select the one that best describes how you would respond to your clinician.</p> <p><input type="radio"/> Yes, I would be happy to attend an in-person consultation.</p> <p><input type="radio"/> If possible, I would rather attend the appointment by video.</p>
<p>RCT component – Active Choice Group</p>	<p>Imagine that a hospital clinician you have been seeing for over a year tells you that that upon reviewing your patient notes they would like you to attend a consultation by video or in person.</p> <p>Consider each of the response options below, and select the one that best describes how you would respond to your clinician.</p> <p><input type="radio"/> I would prefer a video consultation.</p> <p><input type="radio"/> I would prefer an in-person consultation.</p>

ALL PARTICIPANTS CONTINUE TO REMAINING ITEMS	
Open-ended Advantages	<p>Advantage 1 Please list two advantages of video consultations over in-person consultations that you feel could help you attend a hospital appointment by video.</p> <p>Advantage of video 1: <input type="text"/></p> <p>Advantage of video 2: <input type="text"/></p>
Open-ended Disadvantages	<p>Disadvantage of video 1: <input type="text"/></p> <p>Disadvantage of video 2: <input type="text"/></p>
Outweigh?	<p>How strongly do you agree with the following statement: "The advantages of video consulting outweigh the disadvantages"?</p> <p><input type="radio"/> Strongly agree</p> <p><input type="radio"/> Somewhat agree</p> <p><input type="radio"/> Neither agree nor disagree</p> <p><input type="radio"/> Somewhat disagree</p> <p><input type="radio"/> Strongly disagree</p>
Closed-ended Capability-Knowledge	<p>I know that my hospital offers video consultations for outpatient services where appropriate.</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>

Closed-ended Capability-Skill	I have used online video conversation systems before, such as Skype, FaceTime, Microsoft Teams, Zoom, etc. <input type="radio"/> Yes <input type="radio"/> No
Closed-ended Capability-Belief in capability	I believe that I have sufficient technical skills to attend an outpatient appointment by video. <input type="radio"/> Yes <input type="radio"/> No
Closed-ended Opportunity-Social	People I know tell me that they have had a good experience attending an outpatient appointment by video. <input type="radio"/> Yes <input type="radio"/> No
Closed-ended Opportunity- Environment	I have access to the internet in my home or at my work to attend an outpatient appointment by video. <input type="radio"/> Yes <input type="radio"/> No
Closed-ended Opportunity- Environment	I have a quiet space where I can take part in an outpatient appointment by video. <input type="radio"/> Yes <input type="radio"/> No
Closed-ended Opportunity- Environment	My internet access at home or work does not work well enough to attend an outpatient appointment by video. <input type="radio"/> Yes <input type="radio"/> No

Closed-ended Motivation-Emotion	<p>Even if my clinician recommends a video consultation, I do not feel my condition is stable enough for me to have a video consultation instead of an in-person appointment.</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>
Closed-ended Motivation-Belief consequences	<p>I believe that my clinician can provide me with good care via an outpatient appointment by video.</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>
Closed-ended Motivation-Emotions	<p>I have privacy concerns that would keep me from attending an outpatient appointment by video.</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>
Demographics/individual differences How many outpatient appointments?	<p>In the past 12 months, how many hospital outpatient appointments have you attended? If you are not certain, please provide your best estimate.</p> <p><input type="radio"/> none</p> <p><input type="radio"/> 1</p> <p><input type="radio"/> 2</p> <p><input type="radio"/> 3</p> <p><input type="radio"/> 4</p> <p><input type="radio"/> 5</p> <p><input type="radio"/> 6 or more</p>

<p>Only presented this item if the participant said 1 or more to the previous question</p> <p>Demographics/individual differences</p> <p>How many outpatient video appointments?</p>	<p>Of your [carry forward answer from above] hospital outpatient appointment(s) how many were video consultations? If you are not certain, please provide your best estimate.</p> <p><input type="radio"/> None</p> <p><input type="radio"/> 1</p> <p><input type="radio"/> 2</p> <p><input type="radio"/> 3</p> <p><input type="radio"/> 4</p> <p><input type="radio"/> 5</p> <p><input type="radio"/> 6 or more</p>
<p>Demographics/individual differences</p> <p>Chronic Disease</p>	<p>With which chronic disease(s) have you been diagnosed? Please check all that apply:</p> <p><input type="checkbox"/> diabetes</p> <p><input type="checkbox"/> heart disease</p> <p><input type="checkbox"/> stroke</p> <p><input type="checkbox"/> other:</p> <hr/> <p><input type="checkbox"/> prefer not to say</p>

Demographics/individual differences Gender	With which gender do you most closely identify? <input type="radio"/> male <input type="radio"/> female <input type="radio"/> other <input type="radio"/> prefer to self-specify: <hr style="width: 100%; border: 0.5px solid black;"/> <input type="radio"/> prefer not to say
Demographics/individual differences Age	How many years old are you today? <hr/> ▼ 18 ... prefer not to say <hr/>
Demographics/individual differences Country	In which UK country do you currently reside? <input type="radio"/> England <input type="radio"/> Scotland <input type="radio"/> Wales <input type="radio"/> Northern Ireland <input type="radio"/> prefer not to say

<p>Demographics/individual differences Ethnicity</p>	<p>With which ethnic group do you most closely identify?</p> <p><input type="radio"/> white</p> <p><input type="radio"/> mixed/multiple ethnic groups</p> <p><input type="radio"/> Asian/Asian British</p> <p><input type="radio"/> black/African/Caribbean/black British</p> <p><input type="radio"/> other</p> <hr/> <p><input type="radio"/> prefer not to say</p>
<p>Rank Order Preferences</p>	<p>Imagine that you could attend your next routine check at hospital using any of the options below.</p> <p>Please rank order the options from 1 (most preferred) to 5 (least preferred). You can move options by clicking and dragging.</p> <p>_____ In-Person</p> <p>_____ Video</p> <p>_____ Telephone</p> <p>_____ Text Messaging</p> <p>_____ Email</p>

Supplemental Materials 2.

Fully adjusted analysis. Risk ratios and risk difference of preference for video consultation over in-person consultation by default choice group, adjusted for age group, sex, diagnostic complexity and previous experience of video consultations.

	Invitation group			Estimated intervention effects			
	In-person default	Active choice	Video default	Active choice †		Video default †	
	No. participants prefer video consultation/group total (%)			Percentage point difference (95% CI) p-value	Risk ratio (95% CI) p-value	Percentage point difference (95% CI) p-value	Risk ratio (95% CI) p-value
All participants	115/447 (26%)	194/469 (41%)	300/466 (64%)	16 (10 to 22) p<0.001	1.61 (1.33 to 1.95) p<0.001	39 (33 to 44) p<0.001	2.49 (2.10 to 2.96) p<0.001

† Compared to in-person default group, the reference group; and adjusted for age group, sex, diagnostic complexity and previous experience of video consultations for all participants.

Supplemental Materials 3.

Responses to closed-ended COM-B items. Reverse scored items are indicated in “(r)” such that all scores indicate how strong of a facilitator. The number of facilitating responses are indicated in parentheses.

		All	Sex		Age		Previous Experience with Video Consulting		Diagnostic complexity †	
			Female	Male	18-54 years	55+ years	No	Yes	One	Multiple
Total		1481	780	701	1000	481	1316	165	1053	329
Capability	I know that my hospital offers video consultations for outpatient services where appropriate.	34% (503)	34% (267)	34% (236)	36% (364)	29% (139)	28% (362)	86% (141)	35% (366)	32% (105)
	I have used online video conversation systems before, such as skype FaceTime, Microsoft Teams, Zoom, etc.	88% (1304)	87% (679)	89% (625)	92% (916)	81% (388)	87% (1144)	97% (160)	89% (936)	84% (278)
	I believe that I have sufficient technical skills to attend an outpatient appointment by video.	91% (1356)	89% (697)	94% (659)	96% (956)	83% (400)	91% (1196)	97% (160)	93% (975)	87% (285)
Opportunity	People I know tell me that they have had a good experience attending an outpatient appointment by video.	34% (498)	36% (283)	31% (215)	38% (378)	25% (120)	29% (386)	68% (112)	33% (350)	32% (105)
	I have access to the internet in my home to attend an outpatient appointment by video.	97% (1435)	97% (754)	97% (681)	98% (980)	95% (455)	97% (1271)	99% (164)	97% (1023)	97% (317)
	I have a quiet space where I can take part in an outpatient appointment by video.	90% (1335)	90% (700)	91% (635)	89% (891)	92% (444)	90% (1181)	93% (154)	90% (945)	94% (308)
	My internet access does not work well enough to attend an outpatient appointment by video. (r)	87% (1284)	86% (674)	87% (610)	89% (885)	83% (399)	86% (1137)	89% (147)	87% (917)	85% (281)
Motivation	Even if my clinician recommended a video consultation, I do not feel my condition is stable enough for me to have a video consultation instead of an in-person appointment. (r)	80% (1183)	79% (613)	81% (570)	81% (813)	77% (370)	80% (1049)	83% (134)	82% (858)	74% (244)
	I believe that my clinician can provide me with good care via an outpatient appointment by video.	74% (1088)	73% (568)	74% (520)	77% (768)	66% (320)	72% (948)	85% (140)	75% (785)	71% (233)
	I have privacy concerns that would keep me from attending an outpatient appointment by video. (r)	82% (1196)	82% (640)	79% (556)	81% (810)	80% (386)	80% (1058)	84% (138)	82% (861)	82% (269)

† 99 of the 1481 participants did not report their diagnostic conditions and so were removed from these analyses.