Journal of Survey Statistics and Methodology (2023) ***00****, 1–26*

SURVEY CONSENT TO ADMINISTRATIVE DATA LINKAGE: FIVE EXPERIMENTS ON WORDING AND FORMAT

ANNETTE JÄCKLE*
JONATHAN BURTON
MICK P. COUPER
THOMAS F. CROSSLEY
SANDRA WALZENBACH

To maximize the value of the data while minimizing respondent burden, survey data are increasingly linked to administrative records. Record linkage often requires the informed consent of survey respondents and failure to obtain consent reduces sample size and may lead to selection bias. Relatively little is known about how best to word and format consent requests in surveys. We conducted a series of experiments in a probability household panel and an online access panel to understand how various features of the design of the consent request can affect informed consent. We experimentally varied: (i) the readability of the consent request, (ii) placement of the consent request in the survey, (iii) consent as default versus the standard opt-in consent question, (iv) offering additional information, and (v) a priming treatment focusing on trust in the

ANNETTE JÄCKLE is Professor and JONATHAN BURTON is an Associate Director Surveys with the Institute for Social and Economic Research, University of Essex, Wivenhoe Park, Colchester, Essex CO4 3SQ, UK. MICK P. COUPER is Professor with the Institute for Social Research, University of Michigan, 426 Thompson Street, Ann Arbor, MI 48104, USA. THOMAS F. CROSSLEY is Professor with the Department of Economics, European University Institute, Villa La Fonte, Via delle Fontanelle 18, 50014 San Domenico di Fiesole, Italy. SANDRA WALZENBACH is a Postdoctoral Researcher with the Department of Sociology, University of Konstanz, Universitätsstraße 10, 78464 Konstanz, Germany.

This research was funded by the Nuffield Foundation (www.nuffieldfoundation.org) with co-funding from the UK Economic and Social Research Council (ESRC, https://esrc.ukri.org/) (OSP/43279). Data collection on the Innovation Panel was funded by the ESRC grant for *Understanding Society*: The UK Household Longitudinal Study, waves 9–11 (ES/N00812X/1). The views expressed here are those of the authors and not necessarily of the Nuffield Foundation or the ESRC. We are grateful for the feedback and suggestions received from the project advisory board and the reviewers.This study design and analysis were not preregistered.

*Address correspondence to Annette Jäckle, Institute for Social and Economic Research, University of Essex, Wivenhoe Park, Colchester, Essex CO4 3SQ, UK; E-mail: aejack@essex.ac.uk.

https://doi.org/10.1093/jssam/smad019

Statement of Significance

Surveys are increasingly linking administrative records to survey responses. Most surveys require that informed consent be obtained from respondents for such linkage. We conducted a series of experiments on the wording and format of consent requests to improve consent rates without compromising the understanding of the request. We find that improving the readability of the consent question increases understanding but does not increase the consent rate. The consent rate is increased by asking for consent early in the survey and by priming respondents to consider their trust in the administrative data holder. Both manipulations increased consent rates without any negative effect on comprehension or confidence: they increased informed consent.

data holder. For each experiment, we examine the effects of the treatments on consent rates, objective understanding of the consent request (measured with knowledge test questions), subjective understanding (how well the respondent felt they understood the request), confidence in their decision, response times, and whether they read any of the additional information materials. We find that the default wording and offering additional information do not increase consent rates. Improving the readability of the consent question increases objective understanding but does not increase the consent rate. However, asking for consent early in the survey and priming respondents to consider their trust in the administrative data holder both increase consent rates without negatively affecting understanding of the request.

KEYWORDS: Administrative records; Informed consent; Question design; Trust; Understanding.

1. INTRODUCTION

Survey data are increasingly being linked to administrative records to maximize the value of the data while minimizing respondent burden (Davis-Kean et al. 2017; National Academies of Sciences, Engineering, and Medicine 2022). With some exceptions, surveys are required for legal and/or ethical reasons to obtain informed consent from survey respondents to link administrative data to their survey responses. Failure to obtain consent from all respondents leads to reduced samples and the potential for selection bias, and there is some evidence that consent rates, like survey response rates, have been falling (Kreuter et al. 2016; National Academies of Sciences, Engineering, and

Medicine 2017). However, relatively little is known about how best to word and format such consent requests in surveys to maximize informed consent.

We report on a collection of experiments focused on the effect of wording and placement of the data linkage consent request on rates of consent. We experimentally varied: (i) the wording of the consent request, (ii) placement of the consent request in the survey, (iii) consent as default versus the standard opt-in consent question, (iv) offering additional information, and (v) a priming treatment focusing on trust in the data holder.

The overarching goal is to increase the rates of consent to administrative data linkages in surveys without compromising the understanding of the consent process and confidence in the decision made, that is, to increase the rates of *informed* consent. All experiments were designed with this goal in mind. We measure understanding both objectively (using knowledge test questions) and subjectively (using self-reports of how well the respondent feels they understand the request).

We hypothesize that each of the experimental treatments will increase rates of consent while not having any negative effects on (objective and subjective) understanding of the linkage process or on respondent confidence in their decision (as another measure of feeling informed without feeling pressured to comply). That is, we have a directional hypothesis for the primary outcome and a non-inferiority hypothesis for each of the secondary outcomes.

As a secondary research question, we also investigate the effects of these experimental variations on behaviors related to informed consent: the time taken to respond to the consent question and the propensity of respondents to click on hyperlinks to consult additional materials (a leaflet and diagram describing the linkage process). While these are potential indicators of informed decisions, we have no firm expectations regarding the direction of the experimental effects. For example, presenting the consent request in an easier (albeit longer) format may make it easier (faster) to read but may also encourage more respondents to read the entire description of the process (as opposed to just skimming it).

2. PRIOR EVIDENCE ON THE DESIGN OF CONSENT REQUESTS

2.1 Framing

In the survey methods literature, most of the wording experiments on record linkage consent have focused on the framing of the request. Pascale (2011) reported on a study that varied whether the request mentioned the accuracy of the data, reduction of data collection costs, or time-saving reasons. None of these had any effect on consent rates. More recent experiments have varied the framing of the request, with gain-framing mentioning the benefits from consent

and loss-framing emphasizing that not linking will reduce the value of the respondent's survey data. These studies have yielded mixed results. Kreuter et al. (2016) found that loss-framing increased consent compared to gain-framing. However, Sakshaug et al. (2015) found that gain-framing was more effective than loss-framing. Similarly, gain-framing yielded higher consent rates than a neutral framing in one study (Sakshaug and Kreuter 2014) but not in another (Sakshaug et al. 2013). Sakshaug et al. (2019) found that the effect of framing was evident only in one mode (a web survey, but not in a telephone survey), where loss-framing yielded a higher consent rate than gain-framing, but only when the consent request came at the end of the survey. Finally, Welch et al. (2017) found no significant differences between loss-framing and control conditions in a telephone survey. They also found no effect of normalized wording (e.g., "Most people we interview give us permission. . .") on consent. We do not test framing in our study but note the inconsistent findings in the literature here.

2.2 Length

The length of the consent form for record linkage has been the focus of limited experimental research in surveys. Singer (1978) and Singer and Frankel (1982) found no effects of consent question length on consent in interviewer-administered surveys, but Bradford et al. (2021) found a significant positive effect of shorter wording on consent to an online survey. Das and Couper (2014) varied both the length of consent text (short versus extended) and mode of communication (letter versus email) in a study of opt-out consent. Their extended text resulted in lower opt-out rates, greater objective understanding of the consent request (measured with true/false knowledge test questions), and lower perceptions of risk associated with record linkage, than the shorter text. Edwards and Biddle (2021) conducted an experiment in an online panel, comparing long or short forms of data linkage consent questions for two different types of administrative records (income support receipt, pensions and benefits; and health records). The consent rates for the short form (28.4 percent) were slightly but not significantly higher than for the long form (26.6 percent). They found no interaction between the length and type of data linkage request. Objective understanding and perceptions of risk did not differ significantly by the length of the consent request.

Aside from the framing experiments reviewed earlier, we know of no other survey studies that have varied length or content. We therefore look to the informed consent literature from psychology and biomedical research.

A number of studies have varied the length of informed consent forms or patient information leaflets for clinical trials or consent forms for online surveys. Brierley et al. (2012) found no differences in recruitment rates by information leaflet length. Three other clinical trials focused on objective

comprehension (Stunkel et al. 2010; Enama et al. 2012; Matsui et al. 2012). They found no differences in understanding by form length, with Stunkel et al. (2010) concluding that "volunteers had the same level of comprehension after reading a 14-page or a four-page consent form." However, an online survey quasiexperiment (Perrault and Nazione 2016) and a designed experiment (Varnhagen et al. 2005) both reported higher rates of recall of key information for those exposed to the shorter forms.

2.3 Readability

A wide variety of enhancements to consent forms have been tested, including both content (e.g., simplified sentences and words, use of active voice) and design enhancements (layout, font, use of tables, images, and/or bullet points) to improve readability while still conveying the key information. Several studies found no significant effect of these enhancements on objective measures of comprehension (Coyne et al. 2003; Walters and Hamrell 2008; Paris et al. 2010, 2015; Antonacopoulos and Serin 2016; Grady et al. 2017; Perrault and Keating 2018). However, Kim and Kim (2015) found that levels of both objective and subjective understanding were higher for an enhanced consent form. Tait et al. (2013) also reported higher rates of gist (main point) and verbatim (actual) understanding of the risks and benefits of enhanced versions of consent forms. Coyne et al. (2003) found lower levels of consent anxiety and higher levels of satisfaction among those exposed to the enhanced form. Two of the studies also looked at the reading time: Paris et al. (2010) and Perrault and Keating (2018) found no differences by form version. Again, few of these studies examined actual consent rates. Cockayne et al. (2017) and Hall et al. (2013) report no significant differences in recruitment rates between standard and enhanced invitation letters. Similarly, Coyne et al. (2003) found no differences in participation rates by consent form type. However, Paris et al. (2015) reported lower rates of enrollment among those receiving an enhanced consent form.

2.4 Placement or Location of the Request

Other studies have varied when the request for record linkage consent is made. Both Eisnecker and Kroh (2016) and Sala et al. (2014) found no effect of asking for linkage in an earlier versus later wave of a longitudinal study. Within a survey wave, asking for consent after a module of questions related to the content of the data to be linked increased consent compared to asking at the end of the questionnaire (Sala et al. 2014), and asking it at the beginning of the survey rather than the end had a positive effect (Sakshaug et al. 2013; Sakshaug and Vicari 2018; Sakshaug et al. 2019).

In sum, psychology and biomedical research has mainly focused on the effects of wording and formatting of consent materials on objective and subjective understanding of the request. Few survey experiments examine outcomes beyond the consent decision itself, with the exception of Das and Couper (2014) and Edwards and Biddle (2021). Both of those studies point to relatively poor comprehension of the data linkage process. No studies (to our knowledge) of administrative record linkage consent in surveys have examined subjective confidence in the consent decision.

2.5 Offer of Additional Information

Experimentally varying the provision of additional information on request has not been the subject of much research. This is predicated on the assumption that participants do not seem to invest significant effort in reading and understanding consent forms (see, e.g., Ghandour et al. 2013; McNutt et al. 2008; Ripley et al. 2018). We expect the offer of additional information, coupled with design and wording enhancements to shorten and/or simplify the consent information provided, to serve two purposes. One, it may reduce the length of the initial text, potentially increasing the likelihood of it being read. Two, it may give the respondent greater agency or choice in what information they are exposed to, potentially thereby also increasing engagement in the material. This is consistent with Annas' (2017) notion of "informed choice," giving participants the choice to become more informed if they wanted to.

Perrault and McCullock (2019) report on a non-experimental study where they developed a short initial consent for an online study that allowed participants a choice to either continue directly to the study or learn more about the study. All participants (100 percent, $n = 429$) decided to continue directly to the study, choosing to forgo additional information.

2.6 Default Wording

Our experiment is informed by the literature on default options in behavioral economics (see, e.g., Thaler and Sunstein 2008). While opt-in or explicit consent is the norm for most research, there are some exceptions based on regulations mostly applying to government statistical agencies. For example, the US Census Bureau uses opt-out consent for much of its data linkage work, as does Statistics Canada and the UK Office for National Statistics (see Bates 2017; Hewison and Haines 2006). Yang et al. (2019) provide one recent example of opt-out consent. Little research has explored opt-in (active or explicit) versus opt-out (passive) consent to record linkage in surveys.

There is a growing body of literature across a number of different behavioral domains suggesting that small "nudges," including default options, can

increase participation in various activities (see, e.g., Dinner et al. 2011; Loewenstein et al. 2015; Reisch and Sunstein 2016; Hummel and Maedche 2019; Dranseika and Piasecki 2020). We know of no research on using a default option for record linkage consent in the survey literature but expect the findings in other fields to apply here too.

2.7 Priming Trust

There is a dearth of relevant survey literature on priming. Analyses of correlates of consent have suggested that trust in the organizations involved was a key predictor. Trust was also frequently mentioned in qualitative interviews as a reason for consenting (see Thornby et al. 2018; Jäckle et al. 2021). Similarly, in a question asking for how respondents reached the consent decision, the option "I thought about how much I trust the organisations involved" was the most frequently chosen response option (Burton et al. 2021).

Priming experiments are common in the psychology literature (see, e.g., Bargh 2006; Bargh and Chartrand 2000; Molden 2014). Priming is also called "digital nudging" in the information systems literature (see Dennis et al. 2020) and is a close ally of default options and other nudging techniques. In the context of medical decisions, Sepucha et al. (2010) found that trust in the doctor was associated with feeling informed, suggesting a "rational delegation of consent." That is, if respondents trust the organizations involved, they might feel that they do not need to know the details of the request to consent (see also Kongsholm and Kappel 2017; Kasperbauer et al. 2022).

Couper et al. (2010) tested a privacy prime in a vignette-based web experiment on the effect of disclosure risk on hypothetical survey participation. They found that those for whom privacy was made salient have significantly lower levels of willingness to participate in the survey than those given the neutral prime. The privacy prime also had significant effects on perceived risk and harm and on general privacy attitudes, suggesting that it was effective in raising general privacy concerns. Our expectation is that a trust prime will have a similar salutary effect on consent to record linkage, again without compromising comprehension or confidence in the decision.

In a recent information experiment in a university-based web survey, Fullard and Sen (2022) measured respondent trust in the research team both before and after an intervention. The intervention involved providing different amounts and kinds of information about the research team. Respondents were asked consent to link to educational records, health records, and records of student activities. Consent was correlated with baseline trust in the research team, and providing more information raised respondent trust. However, the treatments had no effect on consent.

3. METHODS

3.1 Sample Design and Data Collection

The experiments were embedded in four surveys using two different studies: the *Understanding Society* Innovation Panel (IP) and the PopulusLive online access panel (AP).

The IP is a probability sample of households in Great Britain that is used for methodological testing and experimentation. It is part of *Understanding Society:* The UK Household Longitudinal Study and its design mirror that of the main panel. We implemented our study in wave 11, which was fielded from May to October 2018 by Kantar Public and NatCen Social Research (University of Essex, Institute for Social and Economic Research 2021). We refer to this survey as IP11. IP11 was conducted with random assignment to sequential mixed-mode designs, with some panel members assigned to web first (followed by face-to-face, FTF) and others assigned to face-to-face first (followed by web). The response rates were similar between the two mode treatment groups: 80.5 percent of households allocated to FTF first (and 80.8 percent of individuals in those households) responded, compared to 77.6 percent of households allocated to web first (and 83.2 percent of individuals in those households). The IP User Guide is available at https://www.understandingsociety.ac.uk/documentation/innovation-panel/user-guide. The IP11 questionnaire is available at https://www.understandingsociety.ac.uk/documentation/innovation-panel/questionnaires.

Since the IP11 sample size constrained the number of experimental treatment groups we could implement, we fielded parallel surveys with additional experiments in an AP. The PopulusLive AP is a non-probability online panel in the United Kingdom with around 130,000 active sample members at that time. Members are recruited through web advertising, word of mouth, and database partners. To enable some comparison with the IP sample, the sample was restricted to Great Britain and quotas based on age, gender, and education were set to match the characteristics of the IP11 sample. Two samples were selected in this way. The first was surveyed in May 2018 and a subset was surveyed again in May 2019. We refer to the surveys from this two-wave panel as AP1.1 and AP1.2. A total of 46,206 panelists were invited to the first survey, of whom 6,532 started the survey and 5,633 completed it (401 broke off and 498 were screened out), for a participation rate of 12.2 percent (see AAPOR 2016). A subset of 2,053 respondents who completed AP1.1 were invited to the second wave (AP1.2); of these, 1,630 respondents completed the second survey for a conditional response rate of 79.4 percent. A second AP (AP2) sample was independently selected in December 2019 and surveyed only once. A total of 30,682 panelists were invited to the survey, of whom 6,459 started the survey and 3,850 completed it (301 broke off and 2,308 were screened out), for a participation rate of 12.5 percent. The implementation of

Table 1. Summary of Experiments by Survey

No.	Experiment	IP11-FTF	IP11-Web	AP1.1	AP1.2	AP2
1	Easy versus standard wording of consent question	×	×	×	×	
2	Early versus late placement of consent in questionnaire	×				
3	Additional information question wording			×		
4	Consent as default versus standard yes/no question			×		
5	Trust priming					×
	Sample sizes	1,363	1,298	2,563	817	1,921

these surveys was led by NatCen Social Research, in collaboration with the PopulusLive panel. For AP documentation and data, see Jäckle et al. (2022a). The AP surveys also included experiments on multiple consent requests (see Walzenbach et al., 2022). Sample members allocated to the multiple consent treatment groups are excluded from the analyses in this article and from the sample sizes reported in table 1.

3.2 Experiments

Table 1 summarizes the randomized experiments and surveys we analyze. The exact wording of each treatment is given in appendix A in the supplementary data online.

3.2.1 Readability: easy versus standard wording.
This experiment was designed to manipulate the difficulty of reading the request. Half of the sample was randomly allocated to the "standard" question wording, used previously in the main *Understanding Society* survey (see figure 1). The rest were allocated to an "easy" version (see figure 2), where the text was rewritten to reduce the reading difficulty and to provide all essential information about the linkage in the question text rather than an additional information leaflet (see appendix A in the supplementary data online for the accompanying diagrams and leaflet). The response options were also simplified to "yes/no."

The revisions were based on findings from prior qualitative in-depth interviews about wording that hampered respondents' understanding of the consent request (Beninger et al. 2017) and on criteria used for reading-level statistics. We assessed reading difficulty using the Flesch-Kincaid Grade Level (FKGL; see Kincaid et al. 1975) scores implemented in Microsoft Word. The revisions

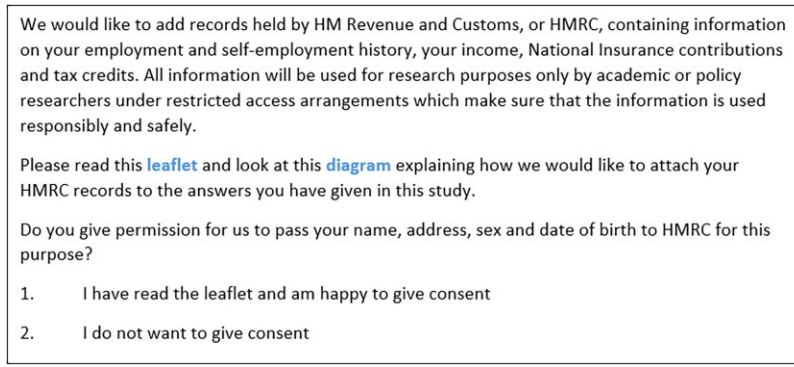


Figure 1. Standard Consent Wording.

reduced the FKGL (which rates reading difficulty on a US school grade level) from 14.3 to 8.8, meaning that a ninth grader (aged 14–15) would be able to understand the easy question wording.

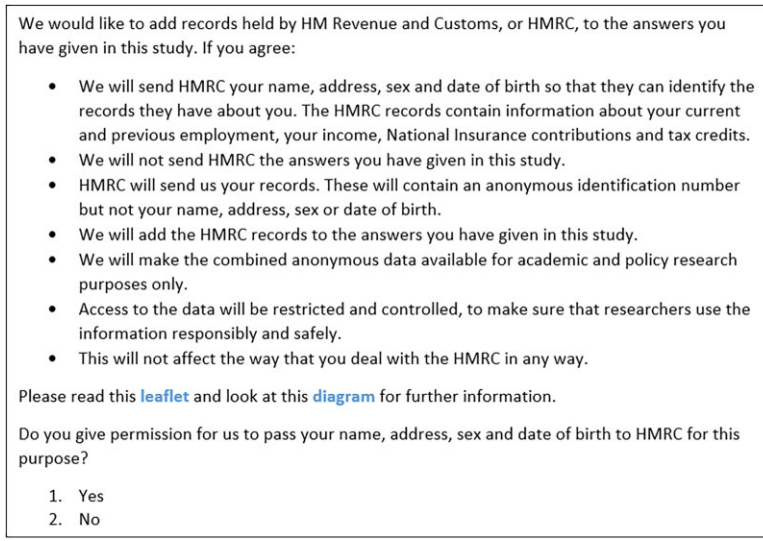
While the standard question wording was presented as a paragraph of text, the easy wording was presented as bullet points. The rationale was that even if respondents skimmed the text, they would be more likely to read the first words of each bullet point and take in more information than in the standard version. Note that the easy version was actually longer than the standard version (206 versus 128 words including response options). At a reading speed of 250 words per minute (wpm), it should take 49.4 and 30.7 seconds, respectively, to read; at a reading speed of 300 wpm, it should take 41.2 seconds for the easy version and 25.6 seconds for the standard version (see Brysbaert 2019). Both versions offered a leaflet and diagram, but the diagram was enhanced for the easy version (see appendix A in the supplementary data online).

3.2.2 Early versus late placement.

Half of the sample was asked for consent early in the interview (after a series of socio-demographic questions); the other half was asked at the end of the survey (before the self-completion CASI module), which is the usual placement of consent questions in *Understanding Society*.

3.2.3 Offer of additional information.

All three versions of this experiment used the "easy" wording from experiment 1. In the control condition, the consent question simply had a "yes/no" response. We tested two alternative versions, both of which had the following response options: "(1) Yes, (2) I need more information before making a decision, (3) No." In one group, those who said "I need more information" were presented with a follow-up screen with additional information and were again asked for consent, as follows: "For more information on the data linkage,


We would like to add records held by HM Revenue and Customs, or HMRC, to the answers you have given in this study. If you agree:

- We will send HMRC your name, address, sex and date of birth so that they can identify the records they have about you. The HMRC records contain information about your current and previous employment, your income, National Insurance contributions and tax credits.
- We will not send HMRC the answers you have given in this study.
- HMRC will send us your records. These will contain an anonymous identification number but not your name, address, sex or date of birth.
- We will add the HMRC records to the answers you have given in this study.
- We will make the combined anonymous data available for academic and policy research purposes only.
- Access to the data will be restricted and controlled, to make sure that researchers use the information responsibly and safely.
- This will not affect the way that you deal with the HMRC in any way.

Please read this leaflet and look at this diagram for further information.

Do you give permission for us to pass your name, address, sex and date of birth to HMRC for this purpose?

1. Yes
2. No

Figure 2. Easy Consent Wording.

please read this leaflet and look at this diagram. Do you give permission for us to pass your name, address, sex and date of birth to HMRC to link your data? (Yes/No).” We refer to this as the “Need more information with follow-up” condition. The other group did not get the follow-up question, and we refer to this as “Need more information without follow-up.”

3.2.4 Default question wording.

This experiment again used the “easy” version described above. In the control condition, respondents were explicitly asked “Do you give permission for us to pass your name, address, sex and date of birth to HMRC for this purpose? (Yes/No)” In the default version, we dropped the yes/no question at the end of the question text and instead presented linkage as the default unless the respondent explicitly opted out. The respondent was instructed to “Press ‘next’ to continue” and given the option to click “I do not want HMRC records to be added to my answers to this survey.”

3.2.5 Trust priming.

This experiment was included in AP2 and crossed with a linkage request to income tax data (Her Majesty’s Revenue and Customs, HMRC) or health data (National Health Service, NHS). Note that we are priming trust in the data holder (HMRC or NHS), in contrast to Fullard and Sen (2022) who tested an intervention to increase trust in the research team. We added an introductory screen saying, “The next question is about linking the information you provide in this survey, to data that [HMRC/the NHS] hold about you.” Those in the

trust prime group saw an additional statement: "[HMRC/The NHS] is a trusted data holder." This was followed by an icon symbolizing data security: a shield and lock symbol with the heading "Trust" (see appendix A in the supplementary data online).

3.3 Outcomes and Analyses

The key outcome of interest is the consent rate (i.e., the percentage consenting). We measured objective understanding using a series of eight true/false questions about the data linkage process. Subjective understanding was measured with a single item asking "How well do you think you understand what would happen with your data . . .," with a 4-point response scale ranging from "I do not understand at all" to "I understand completely." Confidence was similarly measured with a 4-point response scale ranging from "Very confident in my decision" to "Not confident in my decision." See appendix B in the supplementary data online for wording of these items. We reversed the scoring of the confidence scale so a high score means greater confidence. For respondents interviewed face-to-face, these questions were all included in the self-completion module of the questionnaire. We also captured paradata, including time stamps and, for online respondents, whether they clicked on links to additional information about the data linkage. For technical reasons, time was measured in milliseconds in the AP surveys, but in seconds in IP11.

Note that in the AP samples, we did not actually link respondent data to administrative records. At the end of the surveys, respondents were informed that ". . . we will not actually link the answers from this survey to any other data sources: the purpose of this survey is to collect information about the attitudes and concerns of the general public about data sharing." In the case of the IP, consenting respondents will have their data linked with the relevant administrative records.

We did not account for the complex sample design in the IP as our focus is on inference to the experimental conditions, not the larger population, and to parallel the AP analyses which are from a non-probability sample. Most of the analyses are experimental treatment effects, using chi-square tests of equivalence of proportions and *F*-tests of equivalence of means from ANOVA. Response time is positively skewed, so we recoded outliers above the 99th percentile to the 99th percentile (separately for each experimental condition) and presented both means and medians. We test for the equivalence of medians between two groups using a two-sample Wilcoxon rank-sum test (yielding a *z*-score), and between three groups using a Kruskal–Wallis test of the Wilcoxon rank-sum scores (yielding a chi-square test). Where indicated, we also ran models controlling for selected socio-demographic covariates (gender, age, education, employment, household size, and home tenure). These results are reported in appendix C in the supplementary data online. We also conducted

randomization checks (results not shown) to ensure that the experimental conditions were balanced within samples in terms of these socio-demographic variables.

4. RESULTS

4.1 Readability: Easy versus Standard Wording

This experiment was implemented in IP11 and AP1.1. In IP11, the allocation to question wording was crossed with the mode in which respondents completed the survey. Table 2 presents the results for the three samples in which this experiment was conducted.

It can be seen from table 2 that while the easy wording has slightly higher consent rates, the differences do not reach significance at the 5 percent level in either mode. Objective understanding is significantly higher with the easy version in all samples, while subjective understanding is significantly higher only among IP11 face-to-face cases. Response times are significantly longer for the easy version for both IP11 samples. This may reflect the increased length of that version and possibly also that respondents are reading more of the question text (which would be consistent with greater objective understanding). However, response times do not differ significantly in AP1.1. The fact that fewer web respondents consulted the additional material in the easy version also reflects that some of this material was made more readily accessible in the question text, reducing the need to click on the links. Both response times and the percentage clicking links are higher for web respondents in the AP than the IP. This may reflect the fact that requests for data linkage are fairly common in the IP, and panelists have developed trust in the survey organizations over time. In contrast, such requests for data linkage are rare in APs, potentially requiring greater scrutiny by participants.

We tested whether the effects of the question-wording experiment on consent, subjective and objective understanding, and confidence in the consent decision were different in web and face-to-face interviews in the IP. We found no significant interactions between easy or standard question wording and the mode of interview (see Jäckle et al. 2022b).

One possible reason we do not find a significant effect of the alternative wording on consent rates is that the two versions were not sufficiently different. As a manipulation check, we asked a debriefing question of respondents in AP1.1: "How easy or difficult was it for you to understand the question asking for permission to add data held by HMRC to the answers you gave in this survey?" We find no differences in mean scores ($p = .29$). In general, respondents reported both versions to be very or somewhat easy to understand (83.3 percent in the easy version and 82.5 percent in the standard version, $p = .73$).

Table 2. Standard (Control) versus Easy Wording

Outcome	IP11 face-to-face interviews			IP11 web respondents			AP1.1 web respondents		
	Standard wording	Easy wording	Test of difference	Standard wording	Easy wording	Test of difference	Standard wording	Easy wording	Test of difference
Consent rate (%)	71.1%	73.6%	$\chi^2(1) = 1.05$, $p = .304$	39.3%	44.6%	$\chi^2(1) = 3.81$, $p = .051$	46.4%	49.0%	$\chi^2(1) = 0.71$, $p = .398$
Objective understanding (0–8) (mean, SD)	4.57 (1.54)	5.08 (1.55)	$F(1, 1344) = 36.32$, $p < .001$	4.4 (1.62)	4.8 (1.58)	$F(1, 1155) = 19.25$, $p < .001$	4.29 (1.49)	4.68 (1.38)	$F(1, 1023) = 18.4$, $p < .001$
Subjective understanding (1–4) (mean, SD)	2.78 (0.96)	2.94 (0.93)	$F(1, 1362) = 9.86$, $p = .002$	2.37 (0.98)	2.42 (1.00)	$F(1, 1297) = 0.72$, $p = .397$	2.30 (0.90)	2.30 (0.94)	$F(1, 1026) < 0.01$, $p = .954$
Confidence (1–4) (mean, SD)	2.94 (0.82)	3.02 (0.80)	$F(1, 1362) = 3.15$, $p = .076$	2.91 (0.83)	2.99 (0.82)	$F(1, 1297) = 3.47$, $p = .063$	2.94 (0.88)	2.94 (0.90)	$F(1, 1026) = 0.01$, $p = .942$
Response time (median, mean, SD)	69 81.36 (56.47)	91 99.46 (61.15)	$z = 6.205$, $p < .001$ $F(1, 1361) = 32.27$, $p < .001$	26 47.35 (59.31)	34 45.68 (38.48)	$z = 4.69$, $p < .001$ $F(1, 1297) = 0.36$, $p = .547$	41.27 65.39 (68.80)	38.03 61.81 (65.65)	$z = 0.705$, $p = .481$ $F(1, 1025) = 0.72$, $p = .395$
Consulted additional materials (%)	46.0%	47.0%	$\chi^2(1) = 0.138$, $p = .711$	17.5%	2.6%	$\chi^2(1) = 78.34$, $p < .001$	48.3%	27.6%	$\chi^2(1) = 46.78$, $p < .001$
(n)	(705)	(658)		(657)	(641)		(513)	(514)	

Nonetheless, the easier version did lead to better objective understanding of the linkage consent request.

We repeated the easy versus standard wording experiment in AP1.2, with respondents completing the survey a second time one year later, keeping the same allocation to treatment groups as in AP1.1. We obtained slightly, but not significantly ($p = .43$) lower consent rates (45.9 percent for easy, 48.6 percent for standard); significantly higher levels of objective understanding (4.67 for easy, 4.32 for standard; $p < 0.001$); and no differences in subjective understanding or confidence. We find a similarly large difference in the percentage consulting additional materials (51.9 percent for the easy wording, 25.6 percent for the standard wording; $p < .001$).

In summary, while the easy-wording version is associated with significantly higher levels of objective understanding in both surveys and modes, this does not translate into significantly higher rates of consent.

4.2 Early versus Late Placement of Consent in Questionnaire

This experiment was included on the IP only and implemented only for face-to-face respondents. See table 3. Here, we find—consistent with prior literature—that asking consent for record linkage early in the interview is associated with a significantly 6.5 percentage point higher rate of consent. None of the other outcomes are affected, suggesting that the processing of the request does not change by position in the interview.

Given the wording and placement experiments were fully crossed for IP face-to-face respondents, we tested the interaction of these two manipulations. This interaction is marginally significant (χ^2 (1) = 4.6 $p = .032$) when controlling for covariates (see table C.2 in the supplementary data online for details). Figure 3 illustrates the interaction, showing the average predicted probabilities and 95 percent confidence intervals from the multivariable model. This suggests that when the standard wording is used, early placement of the request has a significantly higher consent rate than late placement (76.5 versus 64.8 percent), but this effect is not seen when the easy wording is used (74.3 percent for early versus 72.9 percent for late). One interpretation is that the effect of more difficult wording is exacerbated when respondents are more fatigued.

4.3 Additional Information Question Wording

Offering additional information does not have a positive effect on consent rates (see table 4). In both cases, the offer of additional information resulted in lower consent rates than the control condition, not significant ($p = .729$) for the group with follow-up but significant in the case of the group without follow-up ($p = .003$). In the latter two groups, 19.8 and 17.8 percent, respectively, requested additional information. In the group that was subsequently followed

Table 3. Late versus Early Placement (IP11 Face-to-Face Interviews)

Outcome	Late placement (control)	Early placement	Test of difference
Consent rate (%)	68.9%	75.4%	$\chi^2(1) = 7.04$, $p = .008$
Objective understanding (0–8) (mean, SD)	4.87 (1.57)	4.77 (1.56)	$F(1, 1344) = 1.48$, $p = .223$
Subjective understanding (1–4) (mean, SD)	2.85 (0.95)	2.86 (0.94)	$F(1, 1362) = 0.05$, $p = .817$
Confidence (1–4) (mean, SD)	2.98 (0.81)	2.98 (0.81)	$F(1, 1362) = 0.00$, $p = .967$
Response time (seconds) (median, mean, SD)	69 81.12 (61.36)	90 98.34 (56.44)	$z = 6.761$, $p < .001$ $F(1, 1361) = 29.15$, $p < .001$
Consulted additional materials (%) (*n*)	45.33% (653)	47.46% (710)	$\chi^2(1) = 0.624$, $p = .430$

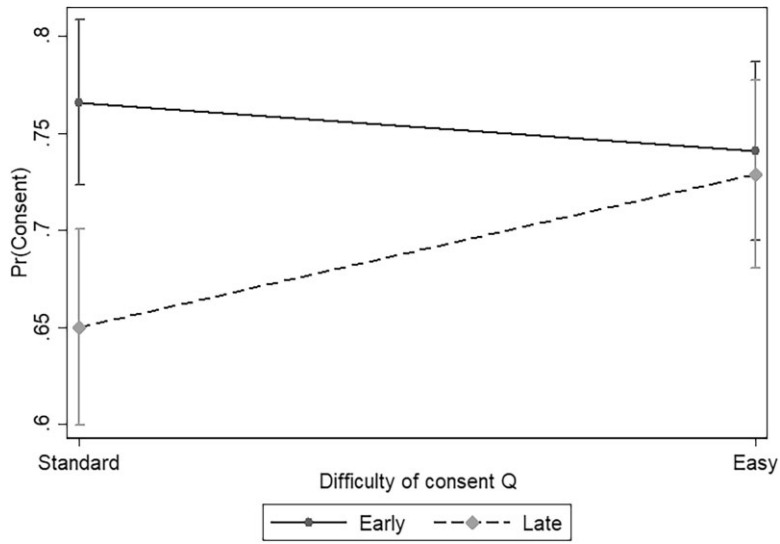


Figure 3. Interaction Effect of Consent Question Wording and Placement on Probability of Consent.

up (group 2), 39.3 percent initially consented, while an additional 8.6 percent consented after providing additional information. In other words, almost a fifth of respondents expressed a desire for additional information, but offering that

Table 4. Easy Wording (Control) versus Offer of Additional Information with or without Follow-Up (AP1.1)

Outcome	(1) Easy wording (control)	(2) More information with follow-up	(3) More information without follow-up	Tests of differences
Consent rate (%)	49.0%	48.0%	39.9%	$\chi^2(2) = 10.3$, $p = .006$
Objective understanding (0–8)	4.68 (1.37)	4.61 (1.46)	4.60 (1.51)	F(2, 1533) = 0.45, $p = .64$
Subjective understanding (1–4)	2.30 (0.94)	2.14 (0.93)	2.18 (0.92)	$F(2, 1538) = 4.38$, $p = .013$
Confidence (1–4)	2.94 (0.90)	2.94 (0.88)	2.89 (0.89)	$F(2, 1538) = 0.65$, $p = .520$
Response time (seconds) (median, mean, SD)	38.03 61.81 (65.65)	36.67 50.21 (45.86)	41.98 61.27 (80.74)	$\chi^2(2) = 12.13$, $p = .016$ $F(2, 1538) = 8.17$, $p < .001$
Consulted additional materials (%)	27.6%	11.0%	22.5%	$\chi^2(2) = 46.0$, $p < .001$
(*n*)	(514)	(511)	(516)	

option does not increase consent rates. In both additional information conditions, subjective understanding appears to be lower than in the control condition ($p = .004$ for group 2 versus 1 and $p = .310$ for group 3 versus 1).

The response time story is a complex one and may be linked to the consultation of additional materials. In group 2 (where the links to the leaflet and diagram are only presented to those who indicated a need for more information), response time is shorter than for the other two groups. But response times are substantially longer for those who click on the links (median = 109 seconds) than those who do not (median = 32 seconds), suggesting that the lower proportion clicking on the link in group 2 accounts for the response time difference. Overall, we can conclude that giving respondents an opportunity to obtain additional information does not increase the use of the links or response time substantially. Coupled with our finding that such offers do not increase consent rates or objective understanding, we conclude that these experimental treatments were not effective.

4.4 Default Question Wording

Wording the consent response as the default surprisingly decreases the consent rate (see table 5). However, the effect is modest and non-significant ($p = .591$). Similarly, this experimental manipulation has no discernible effect on objective or subjective understanding, confidence in the decision, or whether the respondent clicked on the links for further information. The default wording approach took slightly (but not significantly) longer, possibly resulting from the less-straightforward question wording. Again, we conclude that our experimental manipulation was not particularly effective.

4.5 Trust Priming

We present the main effects (combining HMRC and NHS) for the trust manipulation in table 6. We expected lower consent rates for HMRC than for NHS but did not hypothesize an interaction of trust with data holder.

We find that the trust prime is associated with a significantly ($p = .037$) higher level of consent than the no prime group, as hypothesized. As expected, we also find a main effect of data holder on consent (not shown in table 6): 49.0 percent for HMRC, 57.8 percent for NHS ($\chi^2(1) = 14.7$, $p < .001$). Testing the interaction in a logistic regression model controlling for covariates (see table B.2 in the supplementary data online), we find main effects for both data holder ($p < .0001$) and trust ($p = .024$), but no significant interaction ($p = .97$) between the two on consent. In sum, this relatively modest manipulation has a significant positive effect on the proportion consenting, while not affecting any of the other outcomes of interest.

4.6 Multivariable Models with Socio-Demographics and Interactions

Finally, we examine the effect of the experimental treatments on the two key outcomes (consent and objective understanding) when controlling for socio-demographic variables. We also tested the interaction of education with the question-wording treatment, with the expectation that the easy wording may be more helpful for those with less formal education. Full results are presented in appendix C in the supplementary data online. As expected, the treatment effects described above do not change substantially in the presence of controls. We find no significant interactions in any of the models estimated.

As previous studies have found, we find no socio-demographic characteristics that consistently predict consent in all samples. Age is associated with consent in the IP FTF and IP web samples, with older people having lower consent rates (see table C.2 in the supplementary data online). However, the effect of age is not as clear in the AP samples (see table C.3 in the supplementary data online). Similarly, education is associated with consent in a non-

Table 5. Easy Wording (Control) versus Consent as Default Wording (AP1.1)

Outcome	Easy wording (control)	Consent as default wording	Test of difference
Consent rate (%)	49.0%	47.35%	$\chi^2(1) = 0.289$, $p = .591$
Objective understanding (0–8)	4.68 (1.38)	4.69 (1.50)	$F(1, 1018) = 0.04$, $p = .839$
Subjective understanding (1–4)	2.30 (0.94)	2.24 (0.97)	$F(1, 1021) = 0.94$, $p = .332$
Confidence (1–4)	2.94 (0.90)	2.91 (0.91)	$F(1, 1021) = .32$, $p = .572$
Response time (seconds) (median, mean, SD)	38.03 61.81 (65.365)	43.43 59.38 (53.47)	$z = 1.79$, $p = .073$ $F(1, 1021) = 0.42$, $p = .516$
Consulted additional materials (%)	27.6%	25.7%	$\chi^2(1) = 0.47$, $p = .49$
(*n*)	(514)	(509)	

Table 6. No Prime (Control) versus Trust Prime (AP2)

Outcome	No prime	Trust prime	Test of difference
Consent rate (%)	51.0%	55.7%	$\chi^2(1) = 4.34$, $p = .037$
Objective understanding (0–8)	4.67 (1.45)	4.76 (1.42)	$F(1, 1914) = 1.64$, $p = .199$
Subjective understanding (1–4)	2.27 (0.98)	2.32 (0.95)	$F(1, 1919) = 1.30$, $p = .255$
Confidence (1–4)	2.92 (0.92)	2.95 (0.88)	$F(1, 1919) = 0.37$, $p = .545$
Response time (seconds) (median, mean, SD)	29.09 47.96 (56.67)	29.57 49.87 (71.32)	$z = 1.12$, $p = .262$ $F(1, 1919) = 0.42$, $p = .517$
Consulted additional materials (%)	25.1%	24.4%	$\chi^2(1) = 0.13$, $p = .721$
(*n*)	(961)	(960)	

linear pattern in IP FTF but not in IP web or any of the AP samples. In terms of objective knowledge, higher education is positively associated with knowledge in both IP samples and in all the AP surveys.

5. DISCUSSION AND CONCLUSIONS

We conducted a series of experiments in which the wording, placement, and format of the request for consent to the linkage of survey data with administrative records were varied. The aim of these experiments was to find ways to increase informed consent. Increased rates of consent, holding subjects' comprehension and confidence constant, are desirable. Equally, though, increased comprehension and confidence, for a given consent rate, is also a positive outcome. Of course, concomitant increases in consent, comprehension, and decision confidence would be the best outcome of all.

We found no significant effects on the consent of the easier (but slightly longer) question wording, and this replicated across three samples (IP FTF, IP web, and AP). This finding is consistent with prior studies finding modest effects of wording manipulations on rates of consent. The easier wording did significantly increase objective knowledge across all three samples, increasing correct answers by about half a point on average. Subjective understanding (self-reported but in the presence of an interviewer) was significantly higher in the easy version in the face-to-face sample but not in the two web samples. Confidence in the decision did not differ by question version.

We also found that significantly fewer respondents in the web samples clicked on the link for additional information in the easy wording condition than in the standard condition. In part, we think that this is because some of this material was incorporated into the question itself, reducing the need for additional explanation. In the face-to-face mode, the interviewer hands the respondent the leaflet in the same way regardless of wording, so we would expect no difference by wording there.

Consistent with prior research, we found that asking consent early in the interview was associated with a higher rate of consent. We note that our finding—and that of prior research—on placement is in the context of a panel study where a relationship already exists. However, a small number of cases (645) in IP11 are from a refreshment sample, being interviewed for the first time. Among these new respondents, 74.3 percent in the early condition consented, compared to 64.4 percent in the late condition (a significant difference, $p = .0067$). That is, in our data, the result also holds in a fresh cross-sectional sample. Further research is, however, needed on differences in the determinants of consent between established and fresh samples. We found a significant interaction between placement and wording. It appears that respondents are less likely to consent to data linkage if the question is asked late in the questionnaire and the wording of the request is difficult. Position has no effect on consent if the wording is easy; wording has no effect on consent if the position is early. But we did not test this in the web samples. Further research is needed to establish how robust this interaction is and why the wording matters more when the question is asked late.

Turning to the experiments in the AP, our attempts to provide the respondent with some agency or control over how much information they receive were not successful. Similarly, "nudging" the respondent to consent by framing it as the default option did not work. It is possible that AP participants are not paying careful attention to the details of the request. However, (i) the median response times suggest that most respondents are reading much of the material presented, (ii) the objective knowledge scores are similar to those for the IP respondents, and (iii) the rates of consulting the additional materials are higher than that for IP web respondents. These observations suggest that lack of effort (or satisficing) may not be the explanation for the lack of effect of these manipulations. It may well be that our experimental manipulations were simply not strong enough to produce differences in consent rates. Alternatively, it may be that respondents are making decisions based on the key elements of the request, rather than on the peripheral factors that we were able to manipulate while keeping within the permissible boundaries for making such requests. This would be consistent with Burton et al. (2021), who found that most respondents base their consent decisions on heuristics. Further work is needed to investigate how these heuristics can be influenced to increase informed consent.

Finally, we found that priming respondents to think about how much they trust the organizations involved in the data linkage increases consent, without negatively affecting comprehension or confidence in the decision. We tested this in only a single AP sample, so this deserves further exploration. Jäckle et al. (2022b) found that answering the linkage consent question online, rather than with a face-to-face interviewer, led respondents to report higher levels of concern about data security and privacy. Whether trust priming would have a similar effect in interviewer administer surveys as it did in the present web survey remains to be tested.

Our research adds to the literature on consent to data linkage by expanding the outcomes studied beyond the rate of consent. Our work has shown that it is important to focus on other outcomes, including objective knowledge of the consent process (i.e., is the consent truly informed?), as well as subjective knowledge and confidence in the decision (do respondents feel informed, and are they comfortable with their decision?). For example, even though improvements in wording do not reliably and consistently increase consent rates, the fact that they significantly increase objective knowledge of the consent process is a positive finding.

In sum, our experimental manipulation of the consent request wording increased comprehension, with no decrease in consent. We replicated a prior finding that early placement of the request increases consent, and, in a novel finding, demonstrated that priming respondents to think about how much they trust the organizations involved. Importantly, both manipulations that increased consent rates did so without any negative effect on comprehension or confidence: they increased informed consent.

While the effects of these experimental manipulations are not large, they do produce incremental gains in consent rate or comprehension at negligible cost. Further work in this area is promising. As surveys increasingly seek consent to administrative data linkages to expand both the depth and breadth of data available for researchers, finding the best ways to inform and reassure participants about how such data linkages may be used remains a key research objective.

Supplementary Materials

Supplementary materials are available online at academic.oup.com/jssam.

ETHICS

Ethical approval for wave 11 of the Innovation Panel was received from Ethics Committee, University of Essex, on September 22, 2017. Ethics approval for the project "Understanding and Improving Data Linkage Consent in Surveys," on which this article is based, was received from Ethics Committee, University of Essex, on February 07, 2018, with an amendment on April 17, 2018.

DATA AVAILABILITY

The data used in this article are available here:

University of Essex, Institute for Social and Economic Research. (2021). Understanding Society: Innovation Panel, Waves 1-13, 2008-2020. [data collection]. 11th Edition. UK Data Service. SN: 6849, http://doi.org/10.5255/UKDA-SN-6849-14.

Jäckle, A., Burton, J., Couper, M.P., & Crossley, T.F. (2022a). Understanding and improving data linkage consent in surveys, 2018-2019. [data collection]. Colchester, Essex: UK Data Service. https://reshare.ukdataservice.ac.uk/855464/

Replication materials are available at: https://osf.io/9dgnr/?view_only=309b36ae002444a2a94d8d1a06470437.

REFERENCES

Annas, G. J. (2017), "Informed Consent: Charade or Choice?" *The Journal of Law, Medicine & Ethics*, 45, 10–11.

Antonacopoulos, N. M. D., and Serin, R. C. (2016), "Comprehension of Online Informed Consents: Can It Be Improved?," *Ethics & Behavior*, 26, 177–193.

Bargh, J. A. (2006), "What Have We Been Priming All These Years? On the Development, Mechanisms, and Ecology of Nonconscious Social Behavior," *European Journal of Social Psychology*, 36, 147–168.

Bargh, J. A., and Chartrand, T. L. (2000), "Studying the Mind in the Middle: A Practical Guide to Priming and Automaticity Research," in *Handbook of Research Methods in Social Psychology*, eds. H. Reis and C. Judd, New York: Cambridge University, pp. 253–285.

Bates, N. (2017), "Consent and Confidentiality for Linked Data," paper presented at the CNSTAT Workshop on Developing a Methodological Research Program for Longitudinal Studies, Washington, DC, June 5–6.

Beninger, K., Digby, A., Dillon, G., and MacGregor, J. (2017), "How People Decide Whether to Give Consent to Link Their Administrative and Survey Data," Understanding Society Working Paper 2017-13. University of Essex, Colchester. Available at https://www.understandingsociety.ac.uk/research/publications/524692.

Bradford, A., Chiu, S., Kreuter, F., and Presser, S. (2021), "Informed Consent in Social Media Surveys," paper presented at the Virtual Annual Conference of the American Association for Public Opinion Research (online).

Brierley, G., Richardson, R., and Torgerson, D. J. (2012), "Using Short Information Leaflets as Recruitment Tools Did Not Improve Recruitment: A Randomized Controlled Trial," *Journal of Clinical Epidemiology*, 65, 147–154.

Brysbaert, M. (2019), "How Many Words Do We Read Per Minute? A Review and Meta-Analysis of Reading Rate,"*PsyArXiv*, 12 April, https://doi.org/10.31234/osf.io/xynwg.

Burton, J., Couper, M. P., Crossley, T. F., Jäckle, A., and Walzenbach, S. (2021), "How Do Survey Respondents Decide Whether to Consent to Data Linkage?" Institute for Social and Economic Research, University of Essex: Understanding Society Working Paper Series No. 2021-05, https://www.iser.essex.ac.uk/research/publications/working-papers/understanding-society/2021-05.

Cockayne, S., Fairhurst, C., Adamson, J., Hewitt, C., Hull, R., Hicks, K., Keenan, A.-M., Lamb, S. E., Green, L., McIntosh, C., Menz, H. B., Redmond, A. C., Rodgers, S., Torgerson, D. J., Vernon, W., Watson, J., Knapp, P., Rick, J., Bower, P., Eldridge, S., Madurasinghe, V. W., and Graffy, J. (2017), "An Optimised Patient Information Sheet Did Not Significantly Increase Recruitment or Retention in a Falls Prevention Study: An Embedded Randomised Recruitment Trial," *Trials*, 18, 144.

Couper, M. P., Singer, E., Conrad, F. G., and Groves, R. M. (2010), "Experimental Studies of Disclosure Risk, Disclosure Harm, Incentives, and Survey Participation," *Journal of Official Statistics*, 26, 287–300. Avaialable at https://www.scb.se/dokumentation/statistiska-metoder/JOS-archive/.

Coyne, C. A., Xu, R., Raich, P., Plomer, K., Dignan, M., Wenzel, L. B., Fairclough, D., Habermann, T., Schnell, L., Quella, S., and Cella, D.; Eastern Cooperative Oncology Group (2003), "Randomized, Controlled Trial of an Easy-to-Read Informed Consent Statement for Clinical Trial Participation: A Study of the Eastern Cooperative Oncology Group," *Journal of Clinical Oncology*, 21, 836–842.

Das, M., and Couper, M. P. (2014), "Optimizing Opt-Out Consent for Record Linkage," *Journal of Official Statistics*, 30, 479–497.

Davis-Kean, P., Chambers, R. L., Davidson, L. I., Kleinert, C., Ren, Q., and Tang, S. (2017), Longitudinal Studies Strategic Review: 2017 Report to the Economic and Social Research Council, ESRC, Swindon. Available at https://www.ukri.org/publications/longitudinal-studies-strategic-review/

Dennis, A. R., Yuan, L., Feng, X., Webb, E., and Hsieh, C. J. (2020), "Digital Nudging: Numeric and Semantic Priming in E-Commerce," *Journal of Management Information Systems*, 37, 39–65.

Dinner, I., Johnson, E. J., Goldstein, D. G., and Liu, K. (2011), "Partitioning Default Effects: Why People Choose Not to Choose," *Journal of Experimental Psychology: Applied*, 17, 332–341.

Dranseika, V., and Piasecki, J. (2020), "Transparent Defaults and Consent for Participation in a Learning Health Care System: An Empirical Study," *Journal of Empirical Research on Human Research Ethics*, 15, 261–270.

Edwards, B., and Biddle, N. (2021), "Consent to Data Linkage: Experimental Evidence on the Impact of Data Linkage Requests and Understanding and Risk Perceptions," in *Advances in*

Longitudinal Survey Methodology, ed. P. Lynn, New York: Wiley, pp. 181–203. https://doi.org/10.1002/9781119376965.ch8.

Eisnecker, P. S., and Kroh, M. (2016), "The Informed Consent to Record Linkage in Panel Studies: Optimal Starting Wave, Consent Refusals, and Subsequent Panel Attrition," *Public Opinion Quarterly*, 81, 131–143.

Enama, M. E., Hu, Z., Gordon, I., Costner, P., Ledgerwood, J. E., and Grady, C.; VRC 306 and 307 Consent Study Teams (2012), "Randomization to Standard and Concise Informed Consent Forms: Development of Evidence-Based Consent Practices," *Contemporary Clinical Trials*, 33, 895–902.

Fullard, J., and Sen, S. (2022), "Tell Me Who You Are and I Will Give You My Consent: A Light-touch Intervention on Consent to Data Linkage," ISER Working Paper Series 2022-10, Institute for Social and Economic Research, University of Essex. https://www.iser.essex.ac.uk/wp-content/uploads/files/working-papers/iser/2022-10.pdf.

Ghandour, L., Yasmine, R., and El-Kak, F. (2013), "Giving Consent without Getting Informed: A Cross-Cultural Issue in Research Ethics," *Journal of Empirical Research on Human Research Ethics*, 8, 12–21.

Grady, C., Touloumi, G., Walker, A. S., Smolskis, M., Sharma, S., Babiker, A. G., Pantazis, N., Tavel, J., Florence, E., Sanchez, A., Hudson, F., Papadopoulos, A., Emanuel, E., Clewett, M., Munroe, D., and Denning, E.; INSIGHT START Informed Consent Substudy Group (2017), "A Randomized Trial Comparing Concise and Standard Consent Forms in the START Trial," *PLoS One*, 12, e0172607.

Hall, A. E., Sanson-Fisher, R. W., Lynagh, M. C., Threlfall, T., and D'Este, C. A. (2013), "Format and Readability of an Enhanced Invitation Letter Did Not Affect Participation Rates in a Cancer Registry-Based Study: A Randomized Controlled Trial," *Journal of Clinical Epidemiology*, 66, 85–94.

Hewison, J., and Haines, A. (2006), "Overcoming Barriers to Recruitment in Health Research," *British Medical Journal*, 333, 300–302.

Hummel, D., and Maedche, A. (2019), "How Effective is Nudging? A Quantitative Review on the Effect Sizes and Limits of Empirical Nudging Studies," *Journal of Behavioral and Experimental Economics*, 80, 47–58.

Jäckle, A., Beninger, K., Burton, J., and Couper, M. P. (2021), "Understanding Data Linkage Consent in Longitudinal Surveys," in *Advances in Longitudinal Survey Methodology*, ed. P. Lynn, New York: Wiley, pp. 122–150. https://doi.org/10.1002/9781119376965.ch6.

Jäckle, A., Burton, J., Couper, M. P., and Crossley, T. F. (2022a), *Understanding and Improving Data Linkage Consent in Surveys, 2018-2019.* [data collection]. Colchester, Essex: UK Data Service. https://doi.org/10.5255/UKDA-SN-855036.

Jäckle, A., Burton, J., Couper, M. P., Crossley, T. F., and Walzenbach, S. (2022b), "How and Why Does the Mode of Data Collection Affect Consent to Data Linkage?" *Survey Research Methods*, 16, 387–408.

Kasperbauer, T. J., Halverson, C., Garcia, A., and Schwartz, P. H. (2022), "Biobank Participants' Attitudes toward Data Sharing and Privacy: The Role of Trust in Reducing Perceived Risks," *Journal of Empirical Research on Human Research Ethics*, 17, 167–176.

Kim, E. J., and Kim, S. H. (2015), "Simplification Improves Understanding of Informed Consent Information in Clinical Trials Regardless of Health Literacy Level," *Clinical Trials*, 12, 232–236.

Kincaid, J. P., Fishburne, R. P., Rogers, R. L., and Chissom, B. S. (1975), "Derivation of New Readability Formulas (Automated Readability Index, Fog Count, and Flesch Reading Ease Formula) for Navy Enlisted Personnel," Research Branch Report 8-75, Naval Air Station, Memphis, TN.

Kongsholm, N. C. H., and Kappel, K. (2017), "Is Consent Based on Trust Morally Inferior to Consent Based on Information?," *Bioethics*, 31, 432–442.

Kreuter, F., Sakshaug, J. W., and Tourangeau, R. (2016), "The Framing of the Record Linkage Consent Question," *International Journal of Public Opinion Research*, 28, 142–152.

Loewenstein, G., Bryce, C., Hagmann, D., and Rajpal, S. (2015), "Warning: You Are about to Be Nudged," *Behavioral Science & Policy*, 1, 35–42.

Matsui, K., Lie, R. K., Turin, T. C., and Kita, Y. (2012), "A Randomized Controlled Trial of Short and Standard-Length Consent Forms for a Genetic Cohort Study: Is Longer Better?," *Journal of Epidemiology*, 22, 308–316.

McNutt, L.-A., Waltermaurer, E., Bednarczyk, R. A., Carlson, B. E., Kotval, J., McCauley, J., Campbell, J. C., and Ford, D. E. (2008), "Are We Misjudging How Well Informed Consent Forms Are Read?," *Journal of Empirical Research on Human Research Ethics*, 3, 89–97.

Molden, D. C. (2014), "Understanding Priming Effects in Social Psychology: What Is "Social Priming" and How Does It Occur?," *Social Cognition*, 32, 1–11.

National Academies of Sciences, Engineering, and Medicine (2017), *Federal Statistics, Multiple Data Sources, and Privacy Protection: Next Steps*, Washington, DC: The National Academies Press. https://doi.org/10.17226/24893.

National Academies of Sciences, Engineering, and Medicine (2022), *Toward a 21st Century National Data Infrastructure: Mobilizing Information for the Common Good*, Washington, DC: The National Academies Press. https://doi.org/10.17226/26688.

Paris, A., Brandt, C., Cornu, C., Maison, P., Thalamas, C., and Cracowski, J. -L. (2010), "Informed Consent Document Improvement Does Not Increase Patients' Comprehension in Biomedical Research," *British Journal of Clinical Pharmacology*, 69, 231–237.

Paris, A., Deygas, B., Cornu, C., Thalamas, C., Maison, P., Duale, C., Kane, M., Hodaj, E., and Cracowski, J.-L. (2015), "Improved Informed Consent Documents for Biomedical Research Do Not Increase Patients' Understanding but Reduce Enrolment: A Study in Real Settings," *British Journal of Clinical Pharmacology*, 80, 1010–1020.

Pascale, J. (2011), "Requesting Consent to Link Survey Data to Administrative Record," paper presented at the Fourth Conference of the European Survey Research Association (ESRA), Lausanne, Switzerland, July 18–22.

Perrault, E. K., and Keating, D. M. (2018), "Seeking Ways to Inform the Uninformed: Improving the Informed Consent Process in Online Social Science Research," *Journal of Empirical Research on Human Research Ethics*, 13, 50–60.

Perrault, E. K., and McCullock, S. P. (2019), "Concise Consent Forms Appreciated—Still Not Comprehended: Applying Revised Common Rule Guidelines in Online Studies," *Journal of Empirical Research on Human Research Ethics*, 14, 299–306.

Perrault, E. K., and Nazione, S. A. (2016), "Informed Consent—Uninformed Participants: Shortcomings of Online Social Science Consent Forms and Recommendations for Improvement," *Journal of Empirical Research on Human Research Ethics*, 11, 274–280.

Reisch, L. A., and Sunstein, C. R. (2016), "Do Europeans like Nudges?," *Judgment and Decision Making*, 11, 310–325.

Ripley, K. R., Hance, M. A., Kerr, S. A., Brewer, L. E., and Conlon, K. E. (2018), "Uninformed Consent? The Effect of Participant Characteristics and Delivery Format on Informed Consent," *Ethics & Behavior*, 28, 517–543.

Sakshaug, J. W., and Kreuter, F. (2014), "The Effect of Benefit Wording on Consent to Link Survey and Administrative Records in a Web Survey," *Public Opinion Quarterly*, 78, 166–176.

Sakshaug, J. W., Schmucker, A., Kreuter, F., Couper, M. P., and Singer, E. (2019), "The Effect of Framing and Placement on Linkage Consent," *Public Opinion Quarterly*, 83, 289–308.

Sakshaug, J. W., Tutz, V., and Kreuter, F. (2013), "Placement, Wording, and Interviewers: Identifying Correlates of Consent to Link Survey and Administrative Data," *Survey Research Methods*, 7, 133–144.

Sakshaug, J. W., and Vicari, B. J. (2018), "Obtaining Record Linkage Consent from Establishments: The Impact of Question Placement on Consent Rates and Bias," *Journal of Survey Statistics and Methodology*, 6, 46–71.

Sakshaug, J. W., Wolter, D., and Kreuter, F. (2015), "Obtaining Record Linkage Consent: Results from a Wording Experiment in Germany," *Survey Insights: Methods from the Field*. https://doi.org/10.13094/SMIF-2015-00012.

Sala, E., Knies, G., and Burton, J. (2014), "Propensity to Consent to Data Linkage: Experimental Evidence on the Role of Three Survey Design Features in a UK Longitudinal Panel," *International Journal of Social Research Methodology*, 17, 455–473.

Sepucha, K. R., Fagerlin, A., Couper, M. P., Levin, C. A., Singer, E., and Zikmund-Fisher, B. J. (2010), "How Does Feeling Informed Relate to Being Informed? The DECISIONS Survey," *Medical Decision Making*, 30, 77s–84s.

Singer, E. (1978), "Informed Consent: Consequences for Response Rate and Response Quality in Social Surveys," *American Sociological Review*, 43, 144–162.

Singer, E., and Frankel, M. R. (1982), "Informed Consent Procedures in Telephone Interviews," *American Sociological Review*, 47, 416–426.

Stunkel, L., Benson, M., McLellan, L., Sinaii, N., Bedarida, G., Emanuel, E., and Grady, C. (2010), "Comprehension and Informed Consent: Assessing the Effect of a Short Consent Form," *IRB: Ethics & Human Research*, 32, 1–9.

Tait, A. R., Voepel-Lewis, T., Nair, V. N., Narisetty, N. N., and Fagerlin, A. (2013), "Informing the Uninformed: Optimizing the Consent Message Using a Fractional Factorial Design," *JAMA Pediatrics*, 167, 640–646.

Thaler, R. H., and Sunstein, C. R. (2008), *Nudge: Improving Decisions about Health, Wealth, and Happiness*, New York: Penguin Press.

Thornby, M., Calderwood, L., Kotecha, M., Beninger, K., and Gaia, A. (2018), "Collecting Multiple Data Linkage Consents in a Mixed-Mode Survey: Evidence from a Large-Scale Longitudinal Study in the UK," *Survey Methods: Insights from the Field*. Available at https://surveyinsights.org/?p=9734.

University of Essex, Institute for Social and Economic Research (2021), *Understanding Society: Innovation Panel, Waves 1-13, 2008-2020* (11th ed.). UK Data Service. SN: 6849. http://doi.org/10.5255/UKDA-SN-6849-14.

Varnhagen, C. K., Gushta, M., Daniels, J., Peters, T. C., Parmar, N., Law, D., Hirsch, R., Takach, B. S., and Johnson, T. (2005), "How Informed Is Online Informed Consent?," *Ethics & Behavior*, 15, 37–48.

Walters, K. A., and Hamrell, M. R. (2008), "Consent Forms, Lower Reading Levels, and Using Flesch-Kincaid Readability Software," *Drug Information Journal*, 42, 385–394.

Walzenbach, S., Burton, J., Couper, M. P., Crossley, T. F., and Jäckle, A. (2022), "Experiments on Multiple Requests for Consent to Data Linkage in Surveys," *Journal of Survey Statistics and Methodology*. Online preprint. https://doi.org/10.1093/jssam/smab053.

Welch, V., Ravanam, M. S., Skalland, B., Ramsey, R., Reagan-Steiner, S., Knighton, C., Hill, H. A., Elam-Evans, L., and Smith, C. (2017), "Questionnaire Experiments to Increase Provider Consent: The National Immunization Survey," paper presented at the Annual Meeting of the American Association for Public Opinion Research, New Orleans, LA, May 17–20.

Yang, D., Fricker, S., and Eltinge, J. (2019), "Methods for Exploratory Assessment of Consent-To-Link in a Household Survey," *Journal of Survey Statistics and Methodology*, 7, 118–155.