methods, data, analyses | 2025, pp. 1-55 DOI: 10.12758/mda.2025.07

Effects of the Self-View Window in Live Video Survey Interviews

Shelley Feuer[1] & Michael F. Schober[2]

[1] *National Center for Science and Engineering Statistics, U.S. National Science Foundation*
[2] *New School for Social Research*

Abstract

The studies reported here explore how the "self-view" window (a live video feed of oneself) affects live video survey respondents' likelihood of disclosing sensitive information and their feelings about the interview. In Study 1 (2012), 124 laboratory respondents answered sensitive and nonsensitive questions taken from US government and social scientific surveys over Skype, either with or without a self-view window. Respondents randomly assigned to having a self-view disclosed no less sensitive information than those without a self-view, and on a few questions, they disclosed more (more frequent alcohol use and more sex partners). Self-view respondents also perceived the interview as less sensitive, and they reported less copresence with the interviewer, reduced self-consciousness, and greater comfort answering many of the sensitive questions. Study 2 (2017) replicates these findings in a second sample of 133 respondents by (a) tracking where video survey respondents look on the screen—at the interviewer, at the self-view, or elsewhere—while answering the same survey questions and (b) examining how gaze location and duration differ for sensitive vs. nonsensitive questions and for more and less socially desirable answers. Findings include that self-view respondents looked less at the self-view while answering sensitive (vs. nonsensitive) questions, and that respondents who looked more at the self-view window reported feeling less self-conscious and less worried about how they presented to the interviewer. Results demonstrate that the self-view can change respondents' experience and where they look during a video interview. They also document, for the first time in video surveys, surprising individual variability in looking at the self-view, with some respondents never once looking and others looking at their self-view as much as 50% of the time. Attending to how self-view and respondents' choices (e.g., turning it on or off) affect respondent experience and data quality will be important as live video surveys are increasingly deployed.

Keywords: live video interviews, self-view, survey methodology, gaze, interviewing, disclosure

As live video is tested in the field as a plausible mode for conducting surveys on a range of topics in different populations (Centeno et al., 2023; Hanson et al., 2023; Neiger et al., 2023; Sanchez et al., 2023; Thórólfsson et al., 2023; Zavala-Rojas et al., 2023), more needs to be understood about how the particular features of video will affect survey data quality and respondent experience relative to other survey modes. Thus far, the emerging evidence from studies that randomly assign participants to video surveys or to other modes (Conrad et al., 2023; Endres & Hillygus, 2023) suggests that across several measures of data quality video surveys can elicit responses comparable in quality (for good and ill) to those elicited in in-person interviews, and different from those elicited in self-administered interviews. For example, respondents randomly assigned to live video interviewing differentiate their responses in a series of questions that use the same response scale—presumably reflecting more thoughtful responding and better data quality—more than respondents in web surveys (Conrad et al., 2023; Endres et al., 2023), and at similar levels to respondents in in-person interviews (Endres et al., 2023). But live video respondents disclose less sensitive information—presumably reflecting social desirability bias and poorer data quality—than respondents in a web survey (Conrad et al., 2023; Endres et al., 2023), and at similar levels to respondents in in-person interviews (Endres et al., 2023).[1]

The evidence thus far is based on particular implementations of live video surveys, in studies using particular video platforms that bring their own features and options and that may connect more or less well with different potential respondent populations depending on the devices they are optimized for (Schober et al., 2020). But even within particular platforms (e.g., Zoom, Teams, FaceTime, WhatsApp, Skype) there are options for how a video interview is

[1] Self-administered "prerecorded video" interviews, in which respondents play video of a recorded interviewer asking the questions before entering responses, seem to provide a different mix of the benefits and drawbacks of live video–more disclosure and less rounding of numerical information, but also more nondifferentiation (Conrad et al., 2023).

Acknowledgements

This work was supported by a National Science Foundation Doctoral Dissertation Research Improvement grant (Methodology, Measurement, and Statistics program) [SES-1632015]; the National Science Foundation (Methodology, Measurement, and Statistics program) [SES-1025645]; the Charles Cannell Fund in Survey Methodology; and New School for Social Research faculty research support. We thank Heidi Reichert for her consultation on statistical procedures, and Courtney Snavely for support preparing video files and linking gaze data for Study 2 analyses.

Notes

The views represented in this paper are not necessarily those of the US Federal government, the National Center for Science and Engineering Statistics, or the National Science Foundation.

Direct correspondence to

Shelley Feuer, National Science Foundation, Alexandria, VA, USA
E-mail: sfeuer@nsf.gov

deployed that have the potential to affect data quality and respondent experience, for example whether and when the interviewer's or the respondent's camera is on or off, where the interviewer's face appears on the respondent's device's screen, whether screen sharing or an attention-competing chat feature is used, and whether the respondent can see their self-view image during the interview or not. The current study focuses on effects of one of these features: the presence or absence of the respondent's self-view during a video survey interview, and in particular an interview that includes sensitive questions.

How might seeing oneself affect respondents' experience and data quality in a standardized video survey interview? To our knowledge, there is no direct evidence to date. The evidence on how video self-view can affect people's behavior and their feelings in other domains of interaction suggest that the effects may differ in different task contexts and for different populations, just as positive and negative effects of video interaction more generally may differ across contexts and tasks (see Seitz et al., 2024). For example, in one study (Shockley et al., 2021) employees of a US corporation reported more fatigue and less engagement during group video meetings when their camera was required to be on (likely entailing a self-view). In contrast, in another study (Abramova et al., 2021) Western European workers who self-reported looking at themselves more while speaking during video work meetings reported greater satisfaction with the meeting process and enjoying video meetings more than those who looked at themselves less, although those who reported looking at themselves more while *listening* reported less satisfaction with the meeting process. In an educational context, university undergraduates in one study who had a self-view, playing the roles of boss and employee in a disciplinary workplace conversation, evaluated their own performance in the conversation and the outcome more negatively than those who did not have a self-view (Shin et al., 2022); yet US undergraduates learning from a Zoom psychology lecture in another study who saw themselves during the lecture performed as well on a quiz as those who did not (Austin et al., 2022).

Potential mechanisms underlying self-view effects on behavior and feelings in other contexts include that a self-view increases self-focus or self-awareness, much as a mirror in in-person situations does (Carver & Scheier, 1978). Increased private self-awareness has been demonstrated in video conversations where strangers asked each other scripted questions about non-sensitive matters (e.g., "What do you like to eat on your pizza?"): participants with a self-view scored higher on a self-awareness scale than those with no self-view (Miller et al., 2017). The self-view can also provide an ongoing reminder that others can see you right now—what has been called public self-awareness—which also can increase self-focus (Carver & Scheier, 1978). On the negative end, this may lead to a greater sensitivity to potential or actual negative evaluation (Fenigstein, 1979), as well as to self-consciousness about one's appearance or "appearance anxiety" (Tien et al., 2023). The self-view, as additional visual input not ordinarily experienced in in-person interaction, may also contribute to the "nonverbal overload" that

has been argued to lead to video fatigue more generally (Bailenson, 2021). On the positive end, people with the increased private self-awareness that a self-view brings may have better access to their own physical and emotional states (Joinson, 2001), potentially leading to their feeling less defensive. They may also be more comfortable knowing that the video connection is working, and that they look okay, than non-self-view respondents.

To complicate matters, the desirability or aversiveness of self-view may also vary across individuals, plausibly depending on their ongoing or trait levels of public self-consciousness (Kuhn, 2022) and the extent to which they generally "self-objectify" (Pfund et al., 2020). In one study, open-ended descriptions by college-age business students of their reactions to self-view in the video classroom (Kuhn, 2022) ranged from people disliking seeing their face during a class and finding it distracting to liking seeing themselves. In another study (Balogova & Brumby, 2022) many online participants reported not minding a self-view at all, but some reported that it made them feel somewhat or very uncomfortable and that they find the self-view somewhat or very distracting.

How might these self-view effects and proposed mechanisms apply in standardized video survey interviews? While it is plausible that video interlocutors' goals and behaviors in video survey interviews may overlap in some ways with what they feel and do in other video contexts, the video survey interviewing situation is distinct in several ways: respondents do not typically initiate the interaction, which is intended to elicit information from the respondent (different than situations in which a participant is seeking information, see Schober et al., 2003); an interviewer follows a standardized script that can include sensitive or threatening questions; the interaction is typically dyadic as opposed to in a group, etc. This suggests that the mechanisms that have been proposed to account for negative and positive effects of self-view in other contexts could well be relevant to the specific situation of participating in a standardized survey interview that includes sensitive questions—but not necessarily.

In the studies presented here, we experimentally measure the effects of a self-view on survey respondents' disclosure of sensitive information (their responses to questions about survey questions that are likely to be sensitive or threatening), their reported post-interview comfort answering the questions, and their feelings of connection with the interviewer. We compare survey responses and comfort for respondents randomly assigned to participate in an interview with a self-view to those assigned to participate in an interview with no self-view. Based on evidence and theorizing in other contexts of video use that self-view and its concomitant increased self-awareness may be harmful or helpful, we test competing hypotheses:

Hypothesis 1.1: Self-view respondents will disclose less sensitive information and report feeling less comfortable answering sensitive questions than respondents with no self-view. This effect should be observed if a greater proportion of self-view

respondents feel a need to present themselves in a positive light than non-self-view respondents, whether because of greater private self-awareness or greater self-consciousness about their appearance or both.

Hypothesis 1.2: Self-view respondents will disclose more sensitive information and report feeling more comfortable answering sensitive questions than non-self-view respondents. This effect should be observed if respondents with greater self-awareness from having a self-view have better access to their internal states than non-self-view respondents, as well as if the self-view leads more respondents to feel comfortable knowing that the connection is working and that they look okay.

Study 1

Respondents

Respondents were recruited from a Craigslist New York ad and offered a $20 cash incentive to participate in a laboratory study. Of the 124 participants, 60 were randomly assigned to the *self-view* condition (respondents could see themselves and the interviewer) and 64 to the *no-self-view* (respondents could only see the interviewer) condition. (See Figure 1 for interface examples.) As one would expect with random assignment to conditions, respondents in the two groups did not differ in age (averaging 37.4 years (SD = 13.7) in the self-view group and 33.5 (SD = 10.4) in the no self-view group, $F(1, 123) = 3.13$, n.s.), sex (χ^2 (1, N = 124) = .99, n.s.), level of education (χ^2 (3, N = 124) = 5.35, n.s.) or racial / ethnic identities (χ^2 (5, N = 124) = 6.44, n.s.). See Table 1 for details.

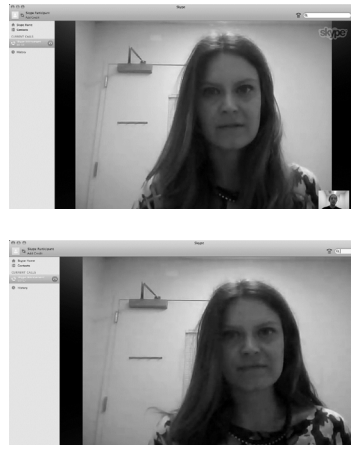

Figure 1 Respondent's view of interviewer with self-view window (top) and without self-view window (bottom)

Respondents were also asked to provide details about their computer use: to estimate how often (if ever) they used text-based and video-based chat programs (e.g., gChat, Skype), on a scale from never to multiple times a day, and to rate how comfortable they were using video chat programs, from 'not at all' to 'extremely.' Analysis of variance showed no reliable differences between the conditions for any of these measures, *F*s = n.s.

Table 1 Demographic characteristics of respondents in Study 1 and Study 2, as self-reported at the end of the questionnaire

	Study 1 Self-view (*N* = 64)		Study 1 No self-view (*N* = 60)		Study 2 Self-view (*N* = 66)		Study 2 No self-view (*N* = 67)	
Characteristic	*n*	%	*n*	%	*n*	%	*n*	%
Sex								
Male	23	35.9	22	36.7	38	55.6	30	44.8
Female	41	64.1	28	63.3	27	40.9	35	52.2
Level of education								
Some high school (no degree)	0	0	0	0	2	3.0	0	0
High school diploma/GED	2	3.1	7	11.7	9	13.6	12	17.9
Some college or Associate's degree	21	32.8	23	38.3	22	33.4	25	37.3
Bachelor's degree	32	50.0	23	28.3	27	40.9	19	28.4
Graduate	9	14.1	7	11.7	6	9.1	11	16.4
Race/Ethnicity								
White	22	34.4	19	31.7	20	30.8	20	30.3
Black/African-American	26	40.6	19	31.7	25	38.5	32	48.5
Asian	5	7.8	11	18.3	8	12.3	8	12.2
Hispanic/Latino	5	7.8	7	11.7	8	12.3	4	6.1
Multiracial	4	6.3	2	3.3	3	4.6	2	3.0
Other	1	1.6	1	1.7	1	1.5	0	0

Notes: For Study 1, *M* = 35.5 (*SD* = 12.3) for age. For Study 2, *M* = 40.6 (*SD* = 13.6) for age. For Study 2, 3 respondents did not report their sex.

Interviewers

The five interviewers, all of whom identified as female, were doctoral candidates in clinical psychology with notable interviewing experience in clinical settings. The interviewers were trained in standardized survey interviewing protocols, based on Fowler and Mangione's (1990) guidelines. Interviewers, who were blind

to the study hypotheses and to the fact that some respondents assigned to them had a self-view and others did not, each conducted between 18 and 28 interviews (interviewing approximately 12 respondents in each condition). Each interview took approximately 15 minutes, ranging from 12–19 minutes. Interviewers conducted the interview in a separate room from the respondents, who did not know that the interviewer was in the same building; the interviewers used a laptop with a computer-assisted interviewing (CAI) interface (in Qualtrics) and a Skype window to enter the respondents' spoken responses on their laptop.

Survey Questions

The 43 survey interview questions, also used in Lind et al. (2013), ask about health and fitness, sexual health and behaviors, alcohol use, personal finances and political activism. The questions were selected from US government and social scientific surveys: the General Social Survey (GSS), Survey of Consumer Finances (SCF) and Behavioral Risk Factor Surveillance System (BRFSS). These questions had been selected for use in Lind et al. (2013) either because 1) they had been shown specifically to demonstrate mode effects on disclosure of sensitive information in previous research—less disclosure of socially undesirable information in more personal (interviewer-administered) than self-administered modes—or 2) there was a chance that respondents would engage in socially desirable responding. Response options among the questions are categorical (yes/no or multiple response options), numerical or ordinal (rating scales like "every day", "a few times per week", "once a week", etc.). The temporal frame (reference period) for the questions varied from the present, to the past 30 days, to the past 12 months, to time since the respondent's 18th birthday or their entire life. A CAI interface was implemented in Qualtrics and controlled by interviewers to initiate the next question and record responses. See Appendix A for a full list of questionnaire items.

Table 2 identifies domains for which there was specific evidence from previous studies using large samples of respondents of mode effects (first column), as well as domains where it was plausible that mode effects might be observed. Given that the lab context, New York City sample and Craigslist recruitment method for the current study are the same as for the Lind et al. study, this previous evidence seemed likely to be particularly relevant.[2]

[2] The domains identified with "yes" for Lind et al. were categorized as sensitive for the primary gaze analyses in Study 2.

Table 2 Mode effects previously demonstrated for specific survey question topics

Question topic	Mode effects previously demonstrated	Mode effects demonstrated in Lind et al. (2013)
Weight	Yes	No
Exercise	Yes	No
Smoking	Yes	Yes
Number of sex partners – in past 12 months	Yes	No
Number of sex partners – since age 18	Yes	Yes
Frequency of sex	No	No
HIV – tested ever	No	No
Alcohol use – days in past 30	Yes	No
Alcohol use – binge drinking in past 30 days	Yes	No
Alcohol use – regularity of use in past 12 months	Yes	Yes
Alcohol use – drinks typically consumed on average day	Yes	No
Newspaper reading	Yes	Yes
Television hours	Yes	Yes
TV – Primetime drama and sitcom viewing	Yes	Yes
TV – News program viewing	No	No
Religious services	Yes	No
Having credit cards	Yes	Yes
New charges on credit card	No	No
Saving habits	Yes	Yes
Spending	No	No
Voting – in 2012 presidential election	No	No
Voting – in local elections	No	No
Donate blood	No	No
Giving food or money to homeless	Yes	Yes
Doing volunteer work	Yes	No
Giving money to charity	No	No
Offering seat to stranger	Yes	Yes

Procedure

Data were collected between April and August of 2012. The study was conducted in a laboratory to fully control administration, with respondents and interviewers Skyping from separate rooms. Respondents were told that they would be answering a series of questions about their lives over the computer, in real time, by a trained interviewer. They were then brought to a different room and seated in front of a computer monitor where they were informed that the interviewer would be calling over Skype in a few minutes. They were told that to start the connection they were to press the green key that had a picture of a video camera on it. Once the connection was established, the experimenter left the room, and the interviewer proceeded to ask the survey interview questions.

Respondents were never informed that the interviewer was in the same building (and none ever guessed it, as evident in their responses to the post-interview questionnaires). After the interview, respondents filled out the post-interview questionnaires on a separate computer.

Post-Interview Questionnaires

Respondents completed a series of post-experiment questionnaires rating their experience with the interviewer and the interview itself. They also answered questions about their demographic characteristics and their experience with and comfort using computers and video technology in general. Self-view respondents also responded to questions asking for self-reported estimations of frequency of glances at the self-view window and general awareness of the image, as well as whether they ever attempted to or wanted to close the image. All respondents were then presented with textual versions of the survey interview questions they had just answered and asked to rate how comfortable they had felt answering each one, as well as how upset they would be if someone else learned their answers to each question. They also filled out a self-consciousness scale (Scheier & Carver, 1985) asking them to rate the degree to which each statement is characteristic of the way they see themselves.[3] See Supplementary material A for all post-interview questionnaires.

[3] Note that for the self-view respondents the comfort and upset ratings and self-consciousness scale were presented after they had reported about their experience of the self-view window (which made sense for that point in the questionnaire), and so there is the possibility that these ratings by self-view respondents could have been affected by their reflection on the self-view experience.

Statistical Methods

We fitted a series of multilevel regression models to evaluate the fixed effect of condition on response, with interviewer included as a random effect.

For the twelve questions requiring open numerical (continuous) responses, models were estimated using restricted maximum likelihood methods in IBM SPSS Statistics version 27 (Linear Mixed-Effects Models using the 'mixed' command). For the seven questions that required binary yes/no responses, we fitted multilevel mixed-effects logistic regressions in Stata/SE version 16.1 (using the 'melogit' command). For the five questions requiring a choice from an unordered response scale, we fitted multilevel multinomial logistic regressions in Stata/SE version 16.1 (using the 'mlogit' and 'gsem' commands). For the nineteen questions requiring selection for an ordered response scale (e.g., *Every day, Several times a week, Several times a month, Rarely,* or *Never*), multilevel ordinal regression models were fitted (using Stata's 'meologit' command). Significance of the model coefficients was evaluated using the z statistic, and R^2 and McFadden's pseudo R^2 (McFadden, 1974) were used as measures of model fit for the continuous and non-continuous question types, respectively. All tests were two-sided using alpha = 0.05.

For the post-interview questions asking for comfort ratings, self-consciousness ratings, and experience with the interview and interviewer, ANOVAs were conducted to test group differences (as the majority of those questions required continuous responses). For the post-interview ratings of each survey question asking *How comfortable were you answering this question?* and *How upset would you be if someone else found out your answer?* a binomial sign test was used to determine if either group reported different mean levels of *comfort* or different mean levels of *upset*.

Results

Survey Questions

For the twelve questions requiring numeric responses, the interviewer random effect was not significant in any model, meaning that the multilevel model was no better a fit than the OLS model for those questions. So, while interviewer was included in the models, Table 3 only reports the coefficients of condition for each question.

As Table 3 shows, for 9 of the questions there was no effect of self-view on response (disclosure). In two cases, self-view respondents disclosed more sensitive information–specifically, they reported having had more sex partners (combining responses about both male and female partners in two separate questions) and drinking more often (R^2 = 3.3% and 3.2%, respectively). Specifically,

self-view respondents reported having had more sex partners (M = 16.8, SD = 23.3) than those in the no-self view condition (M = 9.2, SD = 12.4), and more frequent alcohol use (M = 1.8 days per week, SD = 1.8) than those in the no-self view condition (M = 1.2, SD = 1.3).

Table 3 Multilevel mixed-effects regression modeling effects of self-view (condition) on response (numeric)

Question	Coefficient	(*SE*)
Servings fruit/vegetables yesterday	-0.02	(0.31)
Sex partners in last year	-0.54	(0.54)
Total sex partners since 18th birthday	-7.54*	(3.38)
Alcohol use (days/week)	-0.64*	(0.29)
Alcohol use (days/month)	-1.01	(1.24)
Binge drink (times/month)	0.12	(0.35)
Avg number of drinks per day	-0.05	(0.26)
TV (hours/day)	-0.40	(0.51)
Number of credit cards	-0.22	(0.16)
New charges on credit cards	-3.78	(2.59)
Credit card balance	-0.15	(0.37)

Notes: Total sex partners since 18th birthday combines male and female partners, which were asked separately.
*$p < .05$.

For questions requiring binary yes/no responses, Table 4 only reports the coefficients of condition for each question. The random effect for interviewer was not statistically significant for all but 1 of the questions, meaning that the multilevel model was no better a fit than the OLS model for those questions. Looking at the significance and direction of condition for the model where interviewer was significant, there was still no effect of condition. Altogether, looking at questions with binary response options, the multilevel mixed-effects logistic regression models show no effect of self-view on response distributions (McFadden's pseudo R^2 all less than 1%).

Table 4 Multilevel mixed-effects logistic regression modeling effects of self-view (condition) on response (binary)

Question	Coefficient	(*SE*)
Smoked > 100 cigarettes	-0.07	(0.40)
Tested for HIV	-0.43	(0.40)
Read novels	-0.03	(0.44)
Have credit cards	-0.12	(0.37)
Have credit cards paid off over time	-0.13	(0.41)
Attended political meetings/rallies	0.27	(0.41)
Contributed money to politics	-0.14	(0.42)

For the nineteen questions requiring selection for an ordered response scale, Table 5 again only reports the coefficients of condition for each question. The random effect for interviewer was not statistically significant for all the questions, meaning that the multilevel model was no better a fit than the OLS model for those questions. Altogether, looking at questions with ordinal response options, the multilevel mixed-effects ordered logistic regression models show no effect of self-view on response distributions (McFadden's pseudo R^2 all less than 2%).

Table 5 Multilevel mixed-effects ordered logistic regression modeling effects of self-view (condition) on response

Question	Coefficient	(*SE*)
Health (poor – excellent)	-0.23	(0.33)
Physical exam (past 6 months – 5+ years ago)	-0.23	(0.34)
Weight (very underweight – very overweight)	-0.04	(0.33)
Exercise (0–7 days)	-0.40	(0.33)
Sex past year (not at all – 4+ times/week)	0.22	(0.32)
Alcohol past year (not at all – 5+ times/week)	0.45	(0.32)
Read newspaper (never – every day)	-0.14	(0.33)
Watch TV shows (never – every day)	-0.10	(0.32)
Watch news (never – every day)	-0.27	(0.32)
Attend religious services (never – 1+ times/week)	0.51	(0.33)
Pay off credit card balance (never – always)	0.07	(0.41)
Spending (less than income – exceeded income)	0.39	(0.34)
Follow politics (hardly – most of time)	-0.28	(0.33)
Voting local elections (never – always)	-0.40	(0.33)
Donated blood (not at all – 1+ times/week)	-0.09	(0.51)
Donate to homeless (not at all – 1+ times/week)	-0.83	(0.33)

Table 5 (continued)

Question	Coefficient	(*SE*)
Volunteer work (not at all – 1+ times/week)	0.16	(0.33)
Money to charity (not at all – 1+ times/week)	-0.21	(0.34)
Offered seat to stranger (not at all – 1+ times/week)	-0.23	(0.33)

For categorical responses, Table 6 only reports the coefficients of condition for each question. The random effect for interviewer was not statistically significant for most questions, meaning that the multilevel model was no better a fit than the OLS model for those questions. While the interviewer random effect was significant in two of the questions, there was no significant effect of self-view. Altogether, looking at questions with categorical response options, the multinomial models show no effect of self-view on response distributions (McFadden's pseudo R^2 all less than 3%).

Table 6 Multilevel multinomial logistic regression modeling effects of self-view (condition) on response (categorical)

Question	Reference	Category	Coefficient	(*SE*)
Sex of sex partners	Male	Female	0.11	(0.46)
		Both	-1.00	(0.88)
		No partners	0.04	(0.45)
Sexual orientation	Straight	Gay	1.16	(0.84)
		Bisexual	0.24	(0.64)
Employment	Employed	Self	0.49	(0.56)
		No work 1 year	-0.81	(0.75)
		No work > 1 year	1.24	(0.72)
		Homemaker	15.59	(1687.07)
		Student	-0.27	(0.49)
		Retired	15.59	(2385.90)
		Unable	-0.66	(0.91)
Savings	Spend > income	Spend = income	-0.30	(0.55)
		No plan	-14.40	(869.67)
		Save occasionally	0.22	(1.00)
		Save regularly	-0.05	(0.49)
Vote 2012	Yes	No	-0.78	(0.47)
		Not eligible	-0.44	(0.60)

Post-Interview Questionnaires

Self-view respondents reported less sense of copresence with the interviewer (M = 3.1, SD = 1.4) than no-self-view respondents (M = 3.6, SD = 1.3), $F(1, 121) = 4.91$, $p = .033$, $\eta_p^2 = .04$. Self-view respondents also reported feeling that the survey, as a whole, was less sensitive (M = 3.1, SD = 1.2) than no-self-view respondents (M = 3.6, SD = 1.1), $F(1, 121) = 3.88$, $p = .051$, $\eta_p^2 = .03$.

When presented with textual versions of the survey questions and asked *How comfortable were you answering this question,* there were generally high levels of reported comfort—but self-view respondents reported higher mean levels of comfort than no-self-view respondents for 32 of 42 questions, binomial/sign test $p < .001$. When asked *How upset would you be if someone else found out your answer,* self-view respondents reported lower mean levels of how upset they would be than no-self-view respondents for 39 of 42 questions, binomial/sign test $p < .001$.

With regards to self-awareness, self-view respondents reported "*thinking about themselves*" reliably more than no-self-view respondents (M = 3.0, SD = 1.0) and (M = 2.6, SD = 1.0), respectively, $F(1, 122) = 5.67$, $p = .019$, $\eta_p^2 = .04$. Self-view respondents also reported being marginally less "self-conscious about the way they look" than no-self-view respondents, (M = 2.4, SD = 1.0) and (M = 2.7, SD = 0.9), $F(1, 122) = 3.16$ $p = .077$, $\eta_p^2 = .03$.

With regards to the presence of the self-view window, 70% of self-view respondents reported being very aware of it and looking at it quite often.

Discussion

Contrary to Hypothesis 1.1, the evidence reported here is that self-view does not reduce disclosure of sensitive information and does not affect disclosure overall; multilevel models showed no overall effect of self-view on responses. If anything, the disclosure findings show modest support for Hypothesis 1.2—increased disclosure among respondents with a self-view in responses to two sensitive questions: self-view respondents reported more frequent alcohol use and more sex partners.[4] Also consistent with Hypothesis 1.2, self-view respondents reported having felt more comfortable answering the questions and being marginally less "self-conscious about the way they look" than no-self-view respondents. The fact that self-view respondents reported feeling less connection with the interviewer than no-self-view-respondents is also inconsistent with Hypothesis 1.1, and more consistent with prior evidence that people disclose more embarrassing information in situations that involve less social presence with an interviewer (e.g., Kreuter et al., 2008; Lind et al., 2013; Schober et al.,

[4] Note that finding mode differences in social desirability for only one or a subset of sensitive questions is the norm across studies (e.g., Corkrey & Parkinson, 2002; Mott, 1985; Tourangeau & Smith, 1996).

2015; Tourangeau & Smith, 1996). Consistent with prior evidence that self-view increases self-awareness, self-view respondents reported "thinking about themselves" reliably more than no self-view respondents. Most self-view respondents reported being very aware of the self-view window and looking at it quite often.

Study 2 tests the replicability of the Study 1 findings and adds additional measures to further explore the potential mechanisms underlying self-view effects. Rather than relying on self-view respondents' reports of how often they looked at the self-view window, we measure respondents' gaze during the interview with eye-tracking equipment. Of course, adding eye-tracking measures changes the interviewing context in potentially important ways, as the equipment must be calibrated for each participant and the session is video-recorded; whether the effects that emerged in Study 1 replicate with these changes is an open question. To the extent that they do, these measures allow us to test more specific hypotheses about how self-view affects eye movements and disclosure, exploring when and how often self-view respondents look at the image of themselves, as well as how their gaze location and duration differ for sensitive vs. neutral questions and for less socially desirable answers.

Study 2

Study 2 replicates Study 1's procedure and adds eye-tracking measures. Analyses vary three main factors: condition (self-view vs. no self-view), question type (sensitive vs. nonsensitive), and response type (whether the actual response given is non-socially desirable vs. socially desirable). The main dependent measure is gaze duration at the relevant points of interest (POI): the self-view window, the interviewer/screen (these are the same because the interviewer's image filled the entire screen except for the self-view window region), or elsewhere (away from the screen). Additional dependent measures include respondents' post-interview reports about the interview experience, their perceptions of the interviewer, and their feelings of comfort and self-consciousness. The analyses are based on particular moments in the interviews, specifically each question-answer (Q-A) sequence (from presentation of one question to presentation of the next). Study 2 tests the following five hypotheses:

Hypothesis 2.1: Respondents will look at the self-view region for a greater proportion of time in self-view than no-self-view interviews. This allows for verification of self-view respondents' reports that they look at the self-view a lot, while also providing a check that the eye-tracking coordinates measurement was sensible.

Hypothesis 2.2: Respondents will avert their gaze (look away from the interviewer) more during question-answer (Q-A) sequences for sensitive than nonsensitive questions. People have been shown to avert their gaze more when answering cognitively difficult questions (e.g., Doherty-Sneddon et al., 1997; Glenberg et al., 1998)

and during survey responses that prove to be less reliable (Schober et al., 2012). Gaze aversion is also connected to social anxiety and poorer relational engagement (Clark & Wells, 1995; Horley et al., 2003). If sensitive questions are more cognitively or interpersonally demanding than nonsensitive questions, and if sensitive questions prompt the fear of being evaluated by others and discomfort, then more gaze aversion should be observed for sensitive questions whether or not respondents have a self-view.

This hypothesis also implies that self-view respondents should look at the self-view window less during sensitive than nonsensitive Q-A sequences, because gaze aversion consists of eye movements to empty or uninformative parts of space (Morency et al., 2006) and the self-view is another source of potentially relevant information. If the pattern is different when respondents have a self-view, this would suggest that the self-view window creates a context that differs from no self-view in terms of cognitive demand and/or dynamic with the interviewer.

Hypothesis 2.3: Respondents will avert their gaze more when giving more embarrassing answers (independent of whether the question is sensitive). This hypothesis tests a different locus of disclosure effects: sensitive *responses.* The same question may not be sensitive for all respondents: some respondents may not find a topic embarrassing or have nothing embarrassing to report, and others may be unembarrassed by reporting what most others would find embarrassing to report. Gaze behavior should then be predictable based on respondents' own feelings of discomfort when answering each question, which we can determine from respondents' ratings immediately after the interview. To further test this hypothesis, similar question-level analyses are carried out based on outside raters' judgments of the sensitivity of answers.

Hypothesis 2.4: Self-view respondents who report greater comfort will have looked at the self-view region more. This hypothesis tests whether the Study 1 respondents' reports of greater reported comfort in the self-view condition occur because these respondents actually look at the self-view window or because they feel comfortable simply because of the mere presence of the self-view window, independent of looking.

Hypothesis 2.5: Self-view respondents who looked at the self-view region more during the interview will report having thought about themselves more during the interview. This hypothesis tests whether the Study 1 finding of greater self-awareness in the self-view condition is related to actually looking at the self-view window or to the mere presence of the self-view window independent of looking. Analysis of gaze at the self-view window also allows for a clearer understanding of the distinction between self-awareness and self-consciousness (heightened awareness of being viewed by another); more frequent looking may be associated with *increased* self-awareness while *decreasing* feelings of self-consciousness (as measured by post-interview reports of the interview experience).

Respondents

One hundred and thirty-three new respondents were recruited using an advertisement on Craigslist New York and offered a $20 cash incentive. As in Study 1, they were randomly assigned to either the self-view (n = 66) or no self-view condition (n = 67) and interviewed over Skype by interviewers unaware of this manipulation. We kept a record of respondents' self-reported demographic characteristics, including those that could be associated with eye movement and gazing, such as age (Romano Bergstrom et al., 2013).

As in Study 1, respondents in the two groups did not differ reliably in age, averaging 40.3 years (SD = 14.2) in the self-view group and 40.8 (SD = 13.1) in the no-self-view group, F (1, 130) = 0.05, n.s. As shown in Table 1, they also did not differ in sex, χ^2 (1, N = 133) = 4.97, n.s.; level of education, χ^2 (4, N = 133) = 5.48, n.s.; racial/ethnic identities, χ^2 (5, N = 133) = 3.39, n.s.; or self-reported computer-use frequency and comfort, Fs = n.s. Focusing only on respondents who had reliable gaze data (N = 119), the two groups also did not differ reliably in age, averaging 40.4 years (SD = 14.6) in the self-view group and 40.1 (SD = 13.2) in the no-self-view group, F (1, 116) = 0.01, n.s. They also did not differ in sex, χ^2 (1, N = 116) = 4.29, n.s.; level of education, χ^2 (4, N = 119) = 4.09, n.s.; racial/ethnic identities, χ^2 (5, N = 118) = 3.32, n.s.; or self-reported computer-use frequency and comfort, Fs = n.s.

Interviewers

As in Study 1, the five new interviewers (4 female, 1 male) were doctoral candidates in clinical psychology with notable interviewing experience in clinical settings. They followed the same procedures as Study 1.

Survey Questions

The survey questions were the same as those used in Study 1. This time the interviewer's online instrument also generated timestamps for the start of each question page and duration on each page, for subsequent linkage with the gaze data.

Eye-Tracking Equipment

Study 2 used The Eye Tribe, a small eye-tracking device that sits in front of the computer monitor and allows for unobtrusive measurement of gaze with free head movement. We used Eye Tribe data acquisition and control software, which displays graphical representations of respondents' binocular gaze data (x/y screen coordinate), 3D eye position and pupil diameter in millimeters; analog and serial real-time outputs of eye position and pupil size were acquired

through text files and imported to SPSS for subsequent analyses. The accuracy of recordings was sufficient for study purposes: the margin of error for timing of eye movements (latency) is ±1.6 milliseconds and for position of eye fixations ± 0.5–1 degrees, where a degree of visual angle amounts to approximately 1 cm on the screen at a 50-cm distance (Ooms et al., 2015). The tracking area is 40 cm x 30 cm at a 65 cm distance, with an operating range of 45 cm – 75 cm. The sampling/frame rate was approximately 30 Hz, which means that 30 data points were produced each second (or a data point is produced every 33 milliseconds). The 30 Hz frame rate was selected, rather than the 60 frames/second option that the Eye Tribe (Figure 2) also allows, in order to allow maximally free head movement for respondents (the higher rate would require respondents to be more stationary).

Figure 2 The Eye Tribe

Video-Recording Software

Each interview was video recorded using Camtasia Studio video editing software. The video captured the interviewer's screen, and thus where the participant was looking, as well as the CAI interface. Each video was also saved as an MP4 as an alternate format for subsequent coding.

Procedure

Data were collected between February and May 2017. The procedure was nearly identical to that in Study 1. Respondents were brought to the laboratory and asked to sit comfortably in front of a computer monitor with the Eye Tribe tracker directly in front of it (see Figure 3). The Eye Tribe was moved to ensure respondent-specific centering and an appropriate distance for gaze capture. After respondents completed a short Eye Tribe calibration exercise (in which they follow dots displayed at different parts of the screen with their eyes), the

interviewer called them over Skype. The entire interview was video recorded using Camtasia. After the interview, the experimenter walked the respondent to a different room where they completed the same questionnaires as in Study 1.

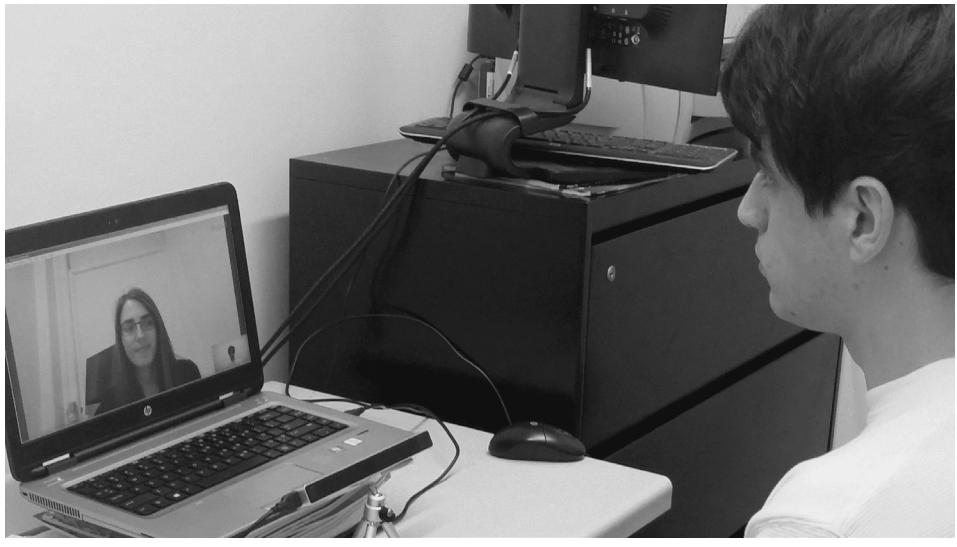

Figure 3 Participant and interviewer engaging in a survey interview

Post-Interview Questionnaires

The post-interview questionnaires were the same as those used in Study 1.

Data Preparation

To test the study's hypotheses, the survey and gaze data needed to undergo several preparatory procedures.

Annotation and Coding

Timestamps were generated for the start of each question (and therefore, the question-answer sequence) using Adobe Premiere software. These were then linked with the stream of gaze behavior from the eye tracker, which generated x and y coordinates of gaze at a rate of 30 frames per second.

The three points of interest (looking at self-view region, looking at interviewer/screen, looking elsewhere) were identified using the pixel-based coordinates from the eye tracker output. The computer screen itself was 1365 x 767

pixels, and so gaze measurements that fit within the following regions were counted accordingly (see Figure 4):

- Looking at self-view window (x > 1130 AND x < 1365) AND (y > 633 AND y < 767)
- Looking away from screen: (x < 0 OR x > 1365) OR (y < 0 OR y > 767)
- Looking elsewhere on screen (x < 1130 OR x > 1365) AND (y < 633 OR y > 767) and NOT looking at self

For a more detailed description of the annotation and coding, see Appendix B.

Figure 4 Pixel-based coordinates

Online Rating Data

To test the hypothesis that gaze aversion will be greater for responses that are more embarrassing, question-level analyses were carried out based on the sensitivity judgments of 100 online respondents, recruited to match US national demographic characteristics on sex, race/ethnicity, and education (see Conrad et al., 2023; Fail et al., 2021 for alternate versions of this procedure that differed in minor ways). For each question, raters were asked to judge how embarrassed most people would be simply being asked each question and then how embarrassed they thought most people would be to give each possible response option. There were 3 rating options: *Not at all embarrassed, somewhat embarrassed, very embarrassed*. For more details about the online rating survey see Supplementary material B.

Gaze Data

One-hundred and nineteen respondents (of the 133 total participants) had complete usable gaze data, with no recording errors from the eye tracker or video recorder. For 7 of the 14 respondents whose data could not be used, the eye tracker could not calibrate. The other cases were excluded because either no video data were recorded due to video software malfunction or there were recording problems with the audio tracks that made coding impossible.

Results

Comparability to Study 1

First, to determine whether the self-view and no-self-view findings replicated with the eye tracker[5], we used the same statistical approach as in Study 1. The pattern of responding and post-interview ratings largely replicates. The various multilevel regressions modeling the effects of self-view on response (for each type: numeric, ordinal, binary, unordered categorical), with interviewer as a random effect (see Tables 7–10), generally showed no effect of self-view (all R^2 and pseudo R^2 < 2.0%) with a few exceptions: self-view respondents again reported a higher number of total sex partners (M = 180.1, SD = 55) than no-self-view respondents (M = 21.2, SD = 55.5) with R^2 of 10.2%, and self-view respondents again reported drinking more (M = 5.9 days per month, SD = 8.4) than no-self-view respondents (M = 3.7 days per month, SD = 4.6) with R^2 of 2.0%. (For Study 2, the greater report of alcohol use emerged in responses to the question about days of drinking per month rather than days per week.)

[5] Again, the addition of the eye tracker, though unobtrusive, could change respondents' experience just enough that the original self-view manipulation might differ in important ways. Additionally, Study 2 respondents were video-recorded, which they were not in the previous study. This could also increase self-awareness at different levels (i.e., private and public) and thereby socially desirable responding.

Table 7 Multilevel mixed-effects regression modeling effects of self-view (condition) on response (numeric)

Question	Coefficient	(*SE*)
Servings fruit/vegetables yesterday	-0.13	(0.28)
Sex partners in last year	0.21	(0.57)
Total sex partners since 18th birthday	-158.90*	(78.20)
Alcohol use (days/week)	-0.40	(0.34)
Alcohol use (days/month)	-2.26*	(1.17)
Binge drink (times/month)	-1.16	(0.72)
Avg # drinks/day	-0.23	(0.31)
TV (hours/day)	-0.89	(0.59)
# of credit cards	-0.22	(0.16)
New charges on credit cards	-53.19	(174.20)
Credit card balance	0.42	(0.25)

Notes: *$p < .05$.

Table 8 Multilevel mixed-effects ordered logistic regression modeling effects of self-view (condition) on response

Question	Coefficient	(*SE*)
Health (poor – excellent)	0.52	(0.33)
Physical exam (past 6 months – 5+ years ago)	0.46	(0.33)
Weight (very underweight – very overweight)	-0.61	(0.34)
Exercise (0 – 7 days)	0.46	(0.31)
Sex past year (not at all – 4+ times/week)	0.11	(0.31)
Alcohol past year (not at all – 5+ times/week)	-0.09	(0.31)
Read newspaper (never – every day)	0.43	(0.33)
Watch TV shows (never – every day)	-0.14	(0.31)
Watch news (never – every day)	-0.27	(0.32)
Attend religious services (never – 1+ times/week)	0.26	(0.33)
Pay off credit card balance (never – always)	-0.13	(0.43)
Spending (less than income – exceeded income)	-0.19	(0.33)
Follow politics (hardly – most of time)	0.25	(0.33)
Voting local elections (never – always)	-0.09	(0.32)
Donated blood (not at all – 1+ times/week)	0.67	(0.45)
Donate to homeless (not at all – 1+ times/week)	-0.01	(0.30)
Volunteer work (not at all – 1+ times/week)	0.05	(0.33)
Money to charity (not at all – 1+ times/week)	0.37	(0.34)
Offered seat to stranger (not at all – 1+ times/week)	0.24	(0.31)

Table 9 Multilevel mixed-effects logistic regression modeling effects of self-view on response (binary)

Question	Coefficient	(*SE*)
Smoked > 100 cigarettes	-2.80	(0.38)
Tested for HIV	-0.38	(0.43)
Read novels	-0.22	(0.38)
Have credit cards	-0.04	(0.36)
Have credit cards paid off over time	-2.25	(1.02)
Attended political meetings/rallies	-0.09	(0.38)
Contributed money to politics	-0.41	(0.46)

Table 10 Multilevel multinomial logistic regression modeling effects of self-view (condition) on response (categorical)

Question	Reference	Category	Coefficient	(*SE*)
Sex of sex partners	Male	Female	0.50	(0.42)
		Both	0.67	(0.78)
		No partners	-0.31	(0.46)
Sexual orientation	Straight	Gay	-0.31	(0.52)
		Bisexual	1.13	(0.62)
Employment	Employed	Self	-0.37	(0.47)
		No work 1 year	-1.40	(0.86)
		No work > 1 year	1.80*	(0.83)
		Homemaker	-0.30	(1.03)
		Student	-0.30	(0.64)
		Retired	0.62	(0.88)
		Unable	-0.30	(0.69)
Savings	Spend > income	Spend = income	-0.27	(0.53)
		No plan	-0.07	(1.47)
		Save occasionally	-0.92	(0.79)
		Save regularly	0.08	(0.46)
Vote 2012	Yes	No	0.52	(0.40)
		Not eligible	0.02	(0.57)

Notes: *$p < .05$.

With regards to the Self-Consciousness Scale-Revised (Scheier & Carver, 1985), as in Study 1, self-view respondents again reported being marginally less self-conscious about the way they look than the no-self-view respondents (M = 1.4, SD = 1.0) and (M = 1.7, SD = 1.1), respectively, $F(1, 131) = 3.04$, $p = .081$, $\eta_p^2 = .02$. Self-view respondents also reported thinking about what they said during the interview reliably more than no-self-view respondents (M = 4.5, SD = 0.7) and (M = 4.1, SD = 0.9), respectively, $F(1, 128) = 4.39$, $p = .038$, $\eta_p^2 = .03$. Self-view respondents (M = 3.3, SD = 1.1) also reported that they felt that the interviewer was more empathetic than no-self-view respondents (M = 2.8, SD = 1.2), $F(1, 131) = 4.76$, $p = .031$, $\eta_p^2 = .04$.[6]

Gaze Data

The gaze data consisted of proportions of time spent looking at each of the three POIs (self-view region, the screen/interviewer, elsewhere) during every question-answer sequence for each respondent. Overall, across conditions, respondents spent about 83.8% of the time looking at the screen and 15.7% looking away. As Figure 5 shows, respondents on average did not look at the self-view window very much, and looked elsewhere much more.

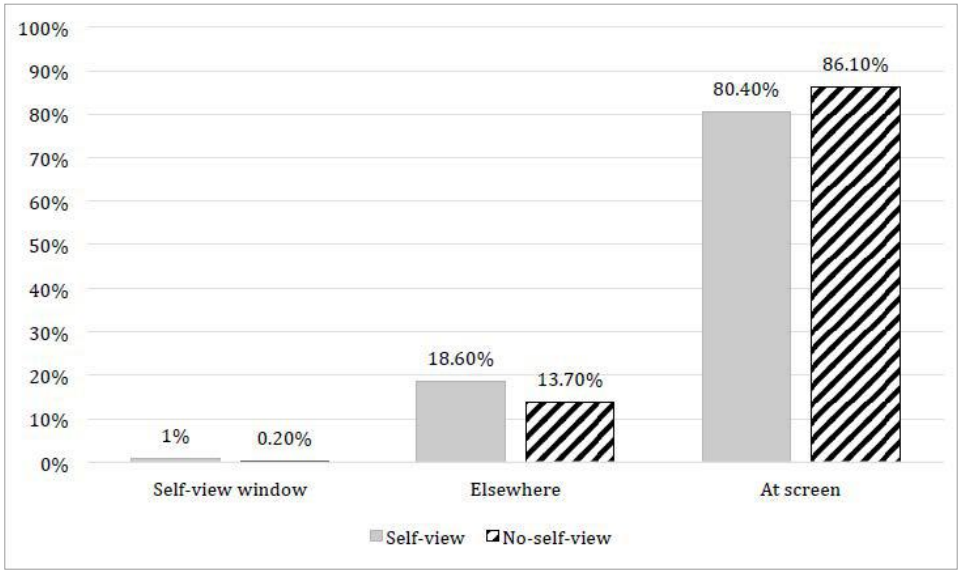

Figure 5 Average gaze at POI, by condition

[6] The one finding from Study 1 that did not replicate was that self-view respondents no longer reported feeling significantly less copresent with the interviewer.

Hypothesis Tests

For Hypotheses 2.1 and 2.2, we fitted a series of multilevel mixed-effects regression models to evaluate the fixed effect of condition on gaze (at the self-view, at the screen, or elsewhere). Because sensitivity is a feature of the question, it was included in the models as a fixed effect to reduce some residual variance, along with potential interactions between condition and question sensitivity. Questions were categorized as sensitive or not based on the Lind et al. (2013) findings. Question duration (length of time from start of one question to the start of the next) was included in the models to explain some of the residual variance. Random effects for interviewer and respondent were included. For Hypothesis 2.3, we fitted a series of multilevel mixed-effects regression models to evaluate the fixed effects of condition and response sensitivity on gaze (at the self-view, at the screen, or elsewhere), along with potential interactions. Response sensitivity was assessed by classifying responses as sensitive if at least 40% of the online judges rated the response as somewhat or very embarrassing (see Appendix D). Random effects for interviewer and respondent were included. For Hypothesis 2.4 question level analyses—using gaze for each question and that question's comfort rating—were conducted. For Hypothesis 2.5, we conducted correlations between responses to questions related to self-awareness and also self-consciousness and self-view gaze.

As Hypothesis 2.1 proposed, Table 11 shows that respondents who had a self-view window looked at this region for a significantly greater proportion of the time than non-self-view respondents. The variables added into the models as plausible contributors to gaze at self-view did not have significant effects on gaze. (Self-view respondents varied enormously in how much time they spent looking at the self-view window; a few looked at it a great deal, and some never looked at it all.) The random effects of interviewer and respondent were not significant.

Table 11 Multilevel regression modeling effects of self-view (condition) on gaze at self

Predictor	Reference category	Coefficient	(*SE*)
Condition	Self-view	0.01***	(0.00)
Q duration		0.00	(0.00)
Q sensitivity	Sensitive	-0.00	(0.00)
Condition & Q sensitivity	Self-view	-0.00	(0.00)

Notes: Q = question. ***$p < .001$.

For Hypothesis 2.2, that respondents would avert gaze more when answering sensitive than nonsensitive questions, Table 12 shows an effect of condition and question duration, but no main effect of question sensitivity. The corresponding effect of looking at the screen is reported in Table 13. The random effects for interviewer and respondent were not significant. This pattern is not consistent with the first part of Hypothesis 2.2.[7] However, with regards to the hypothesis that respondents with a self-view will look less at the self-view window during sensitive questions compared to nonsensitive, a repeated ANOVA revealed that indeed self-view respondents looked at the self-view window less during sensitive questions (M = 0.0096, SD = 0.016) than nonsensitive questions (M = 0.0074, SD = 0.016), $F(1, 60) = 6.42$, $p = .014$, $\eta_p^2 = .10$.

Table 12 Multilevel regression modeling effects of self-view (condition) on gaze elsewhere

Predictor	Reference category	Coefficient	(*SE*)
Condition	Self-view	0.07*	(0.03)
Q duration		0.00**	(0.00)
Q sensitivity	Sensitive	0.96	(0.34)
Condition & Q sensitivity	Self-view	-0.01	(0.01)

Notes: Q = question. *$p < .05$, **$p < .01$.

Table 13 Multilevel regression modeling effects of self-view (condition) on gaze at screen

Predictor	Reference category	Coefficient	(*SE*)
Condition	Self-view	-0.07**	(0.03)
Q duration		-0.00**	(0.00)
Q sensitivity	Sensitive	-0.00	(0.01)
Condition & Q sensitivity	Self-view	0.01	(0.01)

Notes: Q = question. **$p < .01$.

Other question categorization strategies, including using various cutoffs of the panel data, were also employed. For the classification procedures and a list of this classification of sensitive questions, see Appendix C.

[7] While duration was significant in the models for gaze at screen and gaze elsewhere, its inclusion didn't change the effects of condition, question sensitivity or the interaction between them.

So, Hypothesis 2.2 is only partially supported: self-view respondents looked less at the self-view window during sensitive question-answer sequences, but they did not avert their gaze more while answering sensitive questions than non-self-view respondents.

Hypothesis 2.3, that duration of gaze aversion would be greater for responses that are rated as more embarrassing to provide, was assessed by classifying responses as sensitive if at least 40% of the online judges rated the response as somewhat or very embarrassing (see Appendix D). These values were linked to each respondent's answer and comfort rating for each survey question. Table 14 shows that there was no effect of response sensitivity on gaze aversion.

Table 14 Multilevel regression modeling effects of response sensitivity on gaze elsewhere

Predictor	Reference category	Coefficient	(*SE*)
Condition	Self-view	0.06*	(0.03)
R sensitivity	Sensitive	0.01	(0.01)
Condition & R sensitivity	Self-view	-0.01	(0.01)

Notes: R = response. *$p < .05$.

An alternative analysis was also carried out using each respondent's post-interview ratings about how their comfort with the interviewer had changed over the course of the interview, as well as their own self-reported comfort ratings in answering each question. (Note that the self-reported comfort ratings—while in one sense providing the most specific respondent-level evidence that should be relevant to these analyses—have the limitation that they didn't decouple question and response sensitivity in the way that online raters' judgments did, and they also ask about comfort rather than embarrassment.) With regards to comfort change, an ANOVA revealed that respondents who reported that their comfort increased also averted their gaze less ($M = 0.12$, $SE = 0.03$) than those who reported that their comfort just stayed the same ($M = 0.19$, $SE = 0.02$), $F(2, 112) = 3.11$, $p = .048$, $\eta_p^2 = .05$.

Question level analyses—using gaze for each particular question and that question's comfort rating (based on classifying questions rated 5 or higher on the 7-point scale as comfortable)—were conducted. We used a repeated ANOVA with comfort as the within subjects factor and gaze elsewhere as the dependent variable. Condition was also added as a between-subjects factor. Respondents did not avert their gaze differently for questions they reported having been comfortable answering and questions they reported having been uncomfortable answering. So, Hypothesis 2.3 is not supported using response sensitivity ratings from the online raters nor respondents' own post-interview comfort ratings.

To test Hypothesis 2.4, that people in the self-view condition who report greater comfort will have looked at the self-view region more, question level analyses—using gaze for each question and that question's comfort rating—were conducted. We used a repeated ANOVA with comfort as the within subjects factor and gaze at the self-view window as the dependent variable. As predicted, self-view respondents looked at the self-view window for a substantially greater proportion of the time during Q-A sequences for questions they reported having been comfortable answering (M = 0.10, SD = 0.2) than during Q-A sequences for questions they reported being uncomfortable answering (M = 0.07, SD = 0.01), $F(1,44) = 4.98$, $p = .031$, $\eta_p^2 = .10$.

To test Hypothesis 2.5, that more frequent looking would be associated with increased self-awareness (while decreasing feelings of self-consciousness), several correlations were conducted. First, respondents who reported looking at themselves more did, in fact, look more at the self-view window, $r(59) = .28$, $p = .032$. Respondents who looked more at the self-view window reported feeling less self-conscious, $r(59) = -.28$, $p = .027$. They were also marginally less concerned about how they presented themselves, and they reported examining their motives less, ps < .07. However, for self-view respondents there was no relationship between *Thinking about what they said during the interview* and gaze at the self-view window ($p > .05$).

Additional potential relationships between gaze aversion and experience with the interview, interviewer, and dispositional self-consciousness were also explored. With or without the self-view window, respondents who felt greater copresence during the interview, and perceived the interviewer to be more personal and empathetic, averted their gaze less.

One additional observation: the range of time spent gazing at the self-view window was very large, with some respondents never once looking at that area of the screen, and others looking at the self-view as much as 50% of the interview time. The fact that there is a wide range is consistent with self-reports of attraction to or aversion to the self-view in other arenas of video interaction (e.g., Kuhn, 2022; Pfund et al., 2020), but it also suggests that there is more to be understood about how group effects of self-view are constituted from potentially varying effects on individuals.

Discussion

Study 2 replicates Study 1's demonstration that having a self-view window in a live video survey interview changes respondents' experience and has the potential to change their answers. As in Study 1 (which did not measure respondents' gaze), self-view respondents did not disclose any less than non-self-view respondents; if anything, they disclosed more—again reporting more alcohol drinking and sex partners. They also reported being less self-conscious during the interview

and being more self-reflective. Additionally, in Study 2, self-view respondents rated the interviewer as more empathetic. The fact that this pattern of findings replicated even when respondents' gaze was tracked and their interviews video-recorded provides further support for the generality of the self-view effects as measured here.

Study 2's findings also demonstrate that gaze patterns in live video interviews can be informative about respondents' experience and response processes. First, as one would expect, respondents in the self-view condition did look more at the region of the screen containing the self-view window than respondents in the no-self-view condition. Regarding the major hypotheses about gaze direction and duration, the hypothesis that duration of gaze aversion would be greater for sensitive than nonsensitive questions and duration of gaze at self would be lesser for sensitive than nonsensitive questions was partially supported. Categorizing questions as sensitive or not based on the Lind et al. (2013) findings, self-view respondents looked less at the self-view window during sensitive than nonsensitive questions, as predicted. Relatedly, these respondents also looked less at the self-view window for questions that they were uncomfortable answering, which also supports the hypothesis that people with a self-view window who report greater comfort will have looked at the self-view more. With regards to gaze aversion, self-view respondents looked away less during sensitive question-answer sequences (and, correspondingly, looked at the screen more). There was no difference in gaze based on question type for respondents without a self-view window. Taken together, the findings provide good evidence that the presence of a self-view window changes where survey respondents look particularly for sensitive questions.

General Discussion

Taken together, the findings presented here suggest that the self-view window can create a distinct interviewer-respondent dynamic—potentially increasing respondents' engagement with the interviewer and reducing their worry about self-presentation. The fact that the self-view window does not reduce disclosure of sensitive information across a sample—and perhaps may even facilitate it in some cases—suggests that there is much more to explore about how live video might best be deployed for survey interviewing.

On the one hand, the fact that an aspect of the interface setup not under the researcher's control can have significant impacts may be worrying, in that survey respondents might choose settings on their computer or mobile device that harm the quality of survey data they provide. (Our respondents were randomly assigned to having a self-view window or not, but in most platforms that video respondents would be likely to use in field settings, respondents can choose whether to see the self-view by enabling or disabling it, or turning their camera

feed on or off.) Given the substantial variability in how often our respondents looked at the self-view window, our findings suggest that effects might be different for different subgroups of respondents—for example, that the effects might proceed through different mechanisms for those who avoid looking at themselves vs. those who fixate.

On the other hand, these findings open the door to potential strategic and sophisticated deployment of features of video platforms for interviewing, once more is known about which respondents who have access to the technology might benefit from or even prefer video interviews to in-person or telephone interviews (Schober et al., 2023) and what people's reasons are for feeling more or less uncomfortable in a live video survey than in other survey modes (Okon et al., 2025). Beyond the display of the self-view or not, current video platforms could allow selectively turning on and off the camera feeds to change the experience of being seen, even as an interview proceeds, so that more sensitive sections could change the respondent's experience of privacy.

Our studies tested effects of self-view in one particular implementation, with a relatively small self-view window in the lower right corner of a desktop screen superimposed on a full-screen view of the interviewer, and no representation of the self in the no-self-view conditions. Self-view can, of course, be instantiated in many different ways on different platforms and devices, from smartphones to multi-screen setups; the view of the self can be as large as the view of the interlocutor, and juxtaposed with the view of the other in many different ways. It is also now common for a placeholder for the self-view image to be visible during a video session that includes the participant's name if the camera is turned off. Beyond how video is implemented on a device, people's attentiveness to what is on the screen can vary in different task settings, for example if they are multitasking (which of course was not an option in our lab study), and what is visible can vary under different camera placements and lighting conditions. Interviewers may also vary in how and when they look at the respondent, and how much "mutual" gaze is an option.

How these variations might change effects of self-view on survey data quality and respondents' experience is of course unknown. As video platforms and norms of usage have evolved, especially post-pandemic, how exactly the findings reported here (data were collected in 2012 and 2017) will apply now also remains to be seen. It is also unknown how respondents' chosen self-view preferences in an interview (e.g., disabling the self-view, having a larger one, turning the camera off partway through) will affect data quality and their experience: whether or not the respondent-selected settings that make them most comfortable will lead to improved data quality, following the evidence and logic that allowing respondents to select a preferred interview mode can improve data quality (e.g., Conrad et al., 2017). In any case, it is clear that effects of respondent-selected video settings in the field will need to be much better understood.

References

Abramova, O., Gladkaya, M., & Krasnova, H. (2021). An unusual encounter with oneself: Exploring the impact of self-view on online meeting outcomes. *ICIS 2021 Proceedings*, 16. https://aisel.aisnet.org/icis2021/is_future_work/is_future_work/16

Austin, M. R., Fogler, K. A. J., & Daniel, D. B. (2022). Seeing self and others on-screen does not negatively impact learning in virtual classrooms. *Scholarship of Teaching and Learning in Psychology, 8*(4), 368–373. https://doi.org/10.1037/stl0000303

Bailenson, J. N. (2021). Nonverbal overload: A theoretical argument for the causes of Zoom fatigue. *Technology, Mind, and Behavior, 2*(1). https://doi.org/10.1037/tmb0000030

Balogova, K., & Brumby, D. (2022). How do you Zoom?: A survey study of how users configure video-conference tools for online meetings. *Proceedings of the 1st Annual Meeting of the Symposium on Human-Computer Interaction for Work*, Article 5, 1–7. https://doi.org/10.1145/3533406.3533408

Carver, C. S., & Scheier, M. F. (1978). Self-focusing effects of dispositional self-consciousness, mirror presence, and audience presence. *Journal of Personality and Social Psychology, 36*(3), 324–332. https://doi.org/10.1037/0022-3514.36.3.324

Centeno, L., Kelley, J., Arrue, J., Edwards, B., Hubbard, R., & Dulaney, R. (2023, July 17–21). *Video interviewing in full production: A new mode is here to stay* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). The Guilford Press.

Conrad, F. G., Schober, M. F., Antoun, C., Yan, H. Y., Hupp, A. L., Johnston, M., Ehlen, P., Vickers, L., & Zhang, C. (2017). Respondent mode choice in a smartphone survey. *Public Opinion Quarterly, 81*(S1), 307–337. https://doi.org/10.1093/poq/nfw097

Conrad, F. G., Schober, M. F., Hupp, A. L., West, B. T., Larsen, K. M., Ong, A. R., & Wang, T. (2023). Video in survey interviews: Effects on data quality and respondent experience. *methods, data, analyses, 17*(2), 135–170. https://doi.org/10.12758/mda.2022.13

Corkrey, R., & Parkinson, L. (2002). A comparison of four computer-based telephone interviewing methods: Getting answers to sensitive questions. *Behavior Research Methods, Instruments, & Computers, 34*(3), 354–363. https://doi.org/10.3758/BF03195463

Doherty-Sneddon, G., Anderson, A. H., O'Malley, C., Langton, S. R. H., Garrod, S. C., & Bruce, V. (1997). Face-to-face and video mediated communication: A comparison of dialogue structure and task performance. *Journal of Experimental Psychology: Applied, 3*(2), 105–125. https://doi.org/10.1037/1076-898X.3.2.105

Endres, K., Hillygus, D. S., DeBell, M., & Iyengar, S. (2023). A randomized experiment evaluating survey mode effects for video interviewing. *Political Science Research and Methods, 11*(1), 144–159. https://doi.org/10.1017/psrm.2022.30

Fail, S., Schober, M. F., & Conrad, F. G. (2021). The time it takes to reveal embarrassing information in a mobile phone survey. *International Journal of Social Research Methodology, 24*(2), 249–264. https://doi.org/10.1080/13645579.2020.1824629

Fenigstein, A. (1979). Self-consciousness, self-attention, and social interaction. *Journal of Personality and Social Psychology, 37*(1), 75–86. https://doi.org/10.1037/0022-3514.37.1.75

Fowler, F. J., & Mangione, T. W. (1990). *Standardized survey interviewing: Minimizing interviewer-related error.* SAGE Publications. https://doi.org/10.4135/9781412985925

Glenberg, A. M., Schroeder, J. L., & Robertson, D. A. (1998). Averting the gaze disengages the environment and facilitates remembering. *Memory & Cognition, 26*(4), 651–658. https://doi.org/10.3758/BF03211385

Hanson, T., Briceno-Rosas, R., & Mitchell, J. (2023, July 17–21). *Video interviewing on the European Social Survey* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Horley, K., Williams, L. M., Gonsalvez, C., & Gordon, E. (2003). Social phobics do not see eye to eye: A visual scanpath study of emotional expression processing. *Journal of Anxiety Disorders, 17*(1), 33–44. https://doi.org/10.1016/s0887-6185(02)00180-9

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology, 31*(2), 177–192. https://doi.org/10.1002/ejsp.36

Kreuter, F., Presser, S., & Tourangeau, R. (2008). Social desirability bias in CATI, IVR, and web surveys: The effects of mode and question sensitivity. *Public Opinion Quarterly, 72*(5), 847–865. https://doi.org/10.1093/poq/nfn063

Kuhn, K. M. (2022). The constant mirror: Self-view and attitudes to virtual meetings. *Computers in Human Behavior, 128*, 107110. https://doi.org/10.1016/j.chb.2021.107110

Lind, L. H., Schober, M. F., Conrad, F. G., & Reichert, H. (2013). Why do survey respondents disclose more when computers ask the questions? *Public Opinion Quarterly, 77*(4), 888–935. https://doi.org/10.1093/poq/nft038

McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* (pp. 105–142). Academic Press.

Miller, M. K., Mandryk, R. L., Birk, M. V., Depping, A. E., & Patel, T. (2017). Through the looking glass: The effects of feedback on self-awareness and conversational behaviour during video chat. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 5271–5283. https://doi.org/10.1145/3025453.3025548

Morency, L.-P., Christoudias, C. M., & Darrell, T. (2006). Recognizing gaze aversion gestures in embodied conversational discourse. *Proceedings of the 8th International Conference on Multimodal Interfaces*, 287–294. https://doi.org/10.1145/1180995.1181051

Mott, F. L. (1985). *Evaluation of fertility data and preliminary analytical results from the 1983 (5th Round) Survey of the National Longitudinal Surveys of Work Experience of Youth*. Center for Human Resource Research, Ohio States University.

Neiger, D., Phillips, B., Lester, G., Slamowicz, S., Farrell, E., Gerlach, K., & Carmo, P. (2023, July 17–21). *Video-assisted live interviewing in comparison to other survey methods in Australia* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Okon, S., Dolgin, R. S., & Schober, M. F. (2025). Participants' reported discomfort with live video as a mode for answering a sensitive survey question. *Public Opinion Quarterly.* https://doi.org/10.1093/poq/nfaf031

Ooms, K., Dupont, L., Lapon, L., & Popelka, S. (2015). Accuracy and precision of fixation locations recorded with the low-cost Eye Tribe tracker in different experimental set-ups. *Journal of Eye Movement Research, 8*(1), Article 1. https://doi.org/10.16910/jemr.8.1.5

Pfund, G. N., Hill, P. L., & Harriger, J. (2020). Video chatting and appearance satisfaction during COVID-19: Appearance comparisons and self-objectification as moderators. *International Journal of Eating Disorders, 53*(12), 2038–2043. https://doi.org/10.1002/eat.23393

Romano Bergstrom, J. C., Olmsted-Hawala, E. L., & Jans, M. E. (2013). Age-related differences in eye tracking and usability performance: Website usability for older adults. *International Journal of Human–Computer Interaction, 29*(8), 541–548. https://doi.org/10.1080/10447318.2012.728493

Sanchez, C., Brown, M., Cole, K., & Taylor, K. (2023, July 17–21). *Experiences of video interviewing in two UK national cohort studies* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Scheier, M. F., & Carver, C. S. (1985). The Self-Consciousness Scale: A revised version for use with general populations. *Journal of Applied Social Psychology, 15*(8), 687–699. https://doi.org/10.1111/j.1559-1816.1985.tb02268.x

Schober, M. F., Conrad, F. G., Antoun, C., Ehlen, P., Fail, S., Hupp, A. L., Johnston, M., Vickers, L., Yan, H. Y., & Zhang, C. (2015). Precision and disclosure in text and voice interviews on smartphones. *PLOS ONE, 10*(6), e0128337. https://doi.org/10.1371/journal.pone.0128337

Schober, M. F., Conrad, F. G., Dijkstra, W., & Ongena, Y. P. (2012). Disfluencies and gaze aversion in unreliable responses to survey questions. *Journal of Official Statistics, 28*(4), 555–582. https://www.proquest.com/scholarly-journals/disfluencies-gaze-aversion-unreliable-responses/docview/1266766372/se-2

Schober, M. F., Conrad, F. G., Ehlen, P., & Fricker, S. S. (2003). How web surveys differ from other kinds of user interfaces. In *Proceedings of the Survey Research Methods Section* (pp. 190–195). American Statistical Association. http://www.asasrms.org/Proceedings/y2003/Files/JSM2003-000336.pdf

Schober, M. F., Conrad, F. G., Hupp, A. L., Larsen, K. M., Ong, A. R., & West, B. T. (2020). Design considerations for live video survey interviews. *Survey Practice, 13*(1). https://doi.org/10.29115/SP-2020-0014

Schober, M. F., Okon, S., Conrad, F. G., Hupp, A. L., Ong, A. R., & Larsen, K. M. (2023). Predictors of willingness to participate in survey interviews conducted by live video. *Technology, Mind, and Behavior, 4*(2). https://doi.org/10.1037/tmb0000100

Seitz, J., Benke, I., Heinzl, A., & Maedche, A. (2024). The impact of video meeting systems on psychological user states: A state-of-the-art review. *International Journal of Human-Computer Studies, 182,* 103178. https://doi.org/10.1016/j.ijhcs.2023.103178

Shin, S. Y., Ulusoy, E., Earle, K., Bente, G., & Van Der Heide, B. (2022). The effects of self-viewing in video chat during interpersonal work conversations. *Journal of Computer-Mediated Communication, 28*(1), zmac028. https://doi.org/10.1093/jcmc/zmac028

Shockley, K. M., Gabriel, A. S., Robertson, D., Rosen, C. C., Chawla, N., Ganster, M. L., & Ezerins, M. E. (2021). The fatiguing effects of camera use in virtual meetings: A within-person field experiment. *Journal of Applied Psychology, 106*(8), 1137–1155. https://doi.org/10.1037/apl0000948

Thórólfsson, Æ., Jónsdóttir, G. A., Hjaltason, Á. B., & Guðmundsson, H. (2023, July 17–21). *Mode effects of video interviewing as a proxy of face-to-face interviewing in R10 of ESS in Iceland* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Tien, I. S., Imundo, M. N., & Bjork, E. L. (2023). Viewing oneself during synchronous online learning increases appearance anxiety and decreases memory for lecture content. *Applied Cognitive Psychology, 37*(2), 443–451. https://doi.org/10.1002/acp.4048

Tourangeau, R., & Smith, T. W. (1996). Asking sensitive questions: The impact of data collection mode, question format, and question context. *Public Opinion Quarterly, 60*(2), 275–304. https://doi.org/10.1086/297751

Zavala-Rojas, D., Korkut Keles, O., Schwarz, H., & Romanin, E. (2023, July 17–21). *Measurement invariance of social trust and attitudes towards immigration across face-to-face and video-interviews in ESS Round 10* [Conference presentation]. European Survey Research Association Conference, Milan, Italy.

Appendix A

Survey Interview Questions

1. Would you say that in general your health is excellent, very good, good, fair, poor, don't know, or you're not sure?

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ Don't know
- ☐ Not sure

2. A routine checkup is a general physical exam, not an exam for a specific illness, injury, or condition. When was the last time you saw a doctor for a routine checkup?

- ☐ Within the past 6 months (any time less than 6 months ago)
- ☐ Within the last year (more than 6 months but less than 12 months ago)
- ☐ Within the past 2 years (more than 1 year but less than 2 years ago)
- ☐ Within the past 5 years (more than 2 years but less than 5 years ago)
- ☐ 5 or more years ago
- ☐ Don't know
- ☐ Not sure
- ☐ Never

3. How would you describe your weight?

- ☐ Very underweight
- ☐ Slightly underweight
- ☐ About the right weight
- ☐ Slightly overweight
- ☐ Very overweight

4. How many of the past seven days did you do exercise that made you sweat and breathe hard, such as running, swimming, dancing, or other physical activity?

- ☐ 7 out of 7 days
- ☐ 6 out of 7 days
- ☐ 5 out of 7 days
- ☐ 4 out of 7 days
- ☐ 3 out of 7 days
- ☐ 2 out of 7 days
- ☐ 1 out of 7 days
- ☐ 0 out of 7 days

5. Thinking about nutrition, about how many total servings of fruit and/or vegetables did you eat yesterday? A serving would equal one medium apple, a handful of broccoli, or a cup of carrots.

_____ servings

6. Have you smoked at least 100 cigarettes in your entire life?

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

7. Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation?

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

8. How many sex partners have you had in the last 12 months?

_____ partners

9. Have your sexual partners in the past 12 months been exclusively male, exclusively female, or both male and female?

- ☐ Exclusively male
- ☐ Exclusively female
- ☐ Both male and female
- ☐ I've had no sex partners in the last 12 months

10. About how often did you have sex in the past 12 months?

- ☐ Not at all
- ☐ Once or twice
- ☐ Once a month
- ☐ 2 – 3 times a month
- ☐ Weekly
- ☐ 2 – 3 times per week
- ☐ 4 or more times per week

11. Now thinking about the time since your eighteenth birthday, how many female partners have you had sex with?

_____ female partners

12. Now thinking about the time since your eighteenth birthday, how many male partners have you had sex with?

_____ male partners

13. Which term best describes how you think of yourself?

- ☐ Heterosexual or straight
- ☐ Homosexual, gay, or lesbian
- ☐ Bisexual

14. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per week did you have at least one drink of any alcoholic beverage?

_____ day(s)

15. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per month did you have at least one drink of any alcoholic beverage?

_____ day(s)

16. Considering all types of alcoholic beverages, how many times during the past 30 days did you have more than 5 drinks on one occasion?

_____ time(s)

17. Thinking back over the last 12 months, about how regularly did you drink alcoholic beverages?

- ☐ Never in those 12 months
- ☐ 1 to 3 times in 12 months
- ☐ 4 to 7 times in 12 months
- ☐ 8 to 11 times in 12 months
- ☐ 1 to 3 times a month
- ☐ Once or twice a week
- ☐ 3 to 4 times per week
- ☐ 5 times a week or more

18. Again, as you think back over the last 12 months, how many drinks would you have on a typical day when you drank?

_____ drink(s)

19. During the past 12 months, have you read novels, short stories, poems, or plays, other than those required by work or school?

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

20. How often do you read the newspaper? By 'newspaper' we mean the content no matter whether it appears in print, online or on a mobile device. Count only newspapers from recognized journalistic outlets. Every day, a few times a week, once a week, less than once a week, or never?

- ☐ Every day
- ☐ A few times a week
- ☐ Once a week
- ☐ Less than once a week
- ☐ Never

21. On the average day, about how many hours do you personally watch television?

_____ hour(s)

22. I'll now ask about some different kinds of television shows. Would you tell me how often you watch prime-time drama or situation comedy programs? Would you say every day, several times a week, several times a month, rarely, or never?

- ☐ Every day
- ☐ Several times a week
- ☐ Several times a month
- ☐ Rarely
- ☐ Never

23. How often do you watch world or national news programs?

- ☐ Every day
- ☐ Several times a week
- ☐ Several times a month
- ☐ Rarely
- ☐ Never

24. How often do you attend religious services? At least once a week, almost every week, about once a month, seldom or never?

- ☐ At least once a week
- ☐ Almost every week
- ☐ About once a month
- ☐ Seldom
- ☐ Never

25. Which of the following statements best describes your current employment status?

- ☐ Employed for wages
- ☐ Self employed
- ☐ Out of work more than one year
- ☐ Out of work less than one year
- ☐ A homemaker
- ☐ A student
- ☐ Retired
- ☐ Unable to work

26. Now I have some questions about credit cards and charge cards. Do you have any credit cards or charge cards? Please do not include debit cards.

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

27. Are any of the cards you have any type of Visa, Master Card, Discover, or American Express cards you can pay off over time? (Do not include regular American Express charge cards that must be paid in full.)

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

28. How many do you have? Please do not count duplicate cards for the same account or any business or company accounts.

- ☐ card(s)

29. On your last bills, roughly how much were the new charges made to these accounts?

_____ $.00

30. After the last payments were made on these accounts, roughly what was the balance still owed on these accounts?

_____

31. Thinking only about Visa, Master Card, Discover, American Express cards you can pay off over time, and store cards, do you almost always, sometimes, or hardly ever pay off the total balance owed on the account each month?

- ☐ Almost always
- ☐ Sometimes
- ☐ Hardly ever

32. Now I'd like to ask you some questions about your attitudes about savings. People have different reasons for saving, even though they may not be saving all the time. Which of the following statements comes closest to describing your saving habits?

- ☐ Don't save – usually spend more than income
- ☐ Don't save – usually spend about as much as income
- ☐ Save whatever is left over at the end of the month – no regular plan
- ☐ Save income of one family member, spend the other
- ☐ Spend regular income, save occasional other income
- ☐ Save regularly by putting money aside each month

33. Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or that you spent less than your income?

- ☐ Spending exceeded income
- ☐ Spending equaled income
- ☐ Spending was less than income

34. Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs most of the time, some of the time, only now and then, or hardly at all?

- ☐ Most of the time
- ☐ Some of the time
- ☐ Only now and then
- ☐ Hardly at all

35. In 2012, you may remember that Barack Obama ran for President on the Democratic ticket against Mitt Romney for the Republicans. Did you vote in that election?

- ☐ Yes
- ☐ No
- ☐ Not eligible to vote in that election
- ☐ Not sure

36. What about local elections – do you always vote in those, do you sometimes miss one, do you rarely vote, or do you never vote?

- ☐ Always vote
- ☐ Sometimes miss one
- ☐ Rarely vote
- ☐ Never vote

37. In the past three or four years, have you attended any political meetings or rallies?

- ☐ Yes
- ☐ No
- ☐ Not sure

38. In the past three or four years, have you contributed money to a political party or candidate or to any other political cause?

- ☐ Yes
- ☐ No
- ☐ Not sure

39. During the past 12 months, how often have you donated blood?

- ☐ More than once a week
- ☐ Once a week
- ☐ Once a month
- ☐ At least two or three times a year
- ☐ Once in the past year
- ☐ Not at all in the past year
- ☐ Don't know/Not sure

40. During the past 12 months, how often have you given food or money to a homeless person?

- ☐ More than once a week
- ☐ Once a week
- ☐ Once a month
- ☐ At least two or three times a year
- ☐ Once in the past year
- ☐ Not at all in the past year
- ☐ Don't know/Not sure

41. During the past 12 months, how often have you done volunteer work for a charity?

- ☐ More than once a week
- ☐ Once a week
- ☐ Once a month
- ☐ At least two or three times a year
- ☐ Once in the past year
- ☐ Not at all in the past year
- ☐ Don't know/Not sure

42. During the past 12 months, how often have you given money to a charity?

- ☐ More than once a week
- ☐ Once a week
- ☐ Once a month
- ☐ At least two or three times a year
- ☐ Once in the past year
- ☐ Not at all in the past year
- ☐ Don't know/Not sure

43. During the past 12 months, how often have you offered your seat on a bus or subway, or in a public place to a stranger who was standing?

- ☐ More than once a week
- ☐ Once a week
- ☐ Once a month
- ☐ At least two or three times a year
- ☐ Once in the past year
- ☐ Not at all in the past year
- ☐ Don't know/Not sure

Appendix B

Annotation and Coding

In order to prepare survey and gaze data for analysis, paid research assistants and additional student volunteers from The New School were recruited to mark the start times of each Q-A sequence in the video-recorded interviews (as unfortunately, Camtasia video timestamps, Qualtrics timestamps, and gaze timestamps were not sufficiently synchronized to allow direct merging across the data sources). The research assistants first recorded each video's start time and then, using Adobe Premiere, they marked the start of each of the 43 questions. Assistants were told that the start of each question should be identified by the start of the interviewer's utterance (i.e., including fillers, disfluencies, deviations from question verbiage "so, um"). That is, the Q-A sequence goes from the start of the question to the beginning of the next question. The end of the last question was also marked. That was defined as the moment the interviewer enters the participant's response.[8] The markers were then exported to an Excel document that documented the time elapsed (to the millisecond) since start of video, for each marker. From this Excel sheet, we were able to generate a time stamp for the start of each question (and therefore, the Q-A sequence) using SPSS's date/time computation wizard. The timestamps needed to be linked with the stream of gaze behavior from the eye tracker, which generated x and y coordinates of gaze at a rate of 30 frames per second.

A computer programmer from Parsons School of Design used Python to create a file that connected each row of gaze data with the appropriate question for each participant. The resolution of gaze regions needed for this study's analytic purposes was not high (looking at self-view region, looking at interviewer/screen, looking elsewhere), and so establishing the linkage, once the file was complete, was relatively straightforward given the tracker's capabilities.

8 Note that with this annotation procedure, the final Q-A sequence is therefore shortened compared to the rest, but this is exactly the same across both experimental groups.

Appendix C

Classification of Survey Interview Questions As Sensitive

Using a more inclusive categorization that classifies questions as sensitive if other prior studies have identified mode differences in response distributions (e.g., Tourangeau et al., 1997), we examined another categorization of sensitive vs. nonsensitive questions (Column 1, other studies). This yielded a total of 21 sensitive questions and 22 nonsensitive and included the question of religious service attendance based on the findings from Study 1. Results show a similar pattern for gaze elsewhere (and thereby gaze at screen), but no effect on gaze at the self-view window. Specifically, using this classification, respondents with a self-view window averted their gaze less during sensitive than nonsensitive questions (and they gazed more at the screen during sensitive than nonsensitive questions).

Thus far, the categorization of questions as sensitive or not was based on prior findings of interview mode effects on socially desirable responding (e.g., FTF vs. ACASI). However, other questions in this survey not identified through this categorization may well be embarrassing to be asked, and it is plausible that they could lead to socially desirable responding (e.g., frequency of sex). In order to explore this further, we carried out another analysis this time using judgments by the Qualtrics Panel to classify questions as sensitive or nonsensitive.

As a first pass, we classified questions as sensitive if more than 50% of the Qualtrics panel members rated a question as one that they thought people would find "somewhat" or "very" embarrassing to be asked. We also compared alternate classifications using cutoffs of 40%, 35%, and 30% of the Qualtrics panel rating a question as somewhat or very embarrassing to answer. Different cutoffs yield different classifications of the questions. Under all these different cutoffs, there was no evidence that respondent gaze (at self, screen, or elsewhere) differed for sensitive vs. nonsensitive questions.

A classification table of questions as sensitive based on these different strategies can be found below.

Table A1 Survey interview question sensitivity

Interview question	Other studies	Lind et al.	Panel judgments			
			at 50%	at 40%	at 35%	at 30%
1. Would you say that in general your health is excellent, very good, good, fair, poor, don't know, or you're not sure?					X	X
2. A routine checkup is a general physical exam, not an exam for a specific illness, injury, or condition. When was the last time you saw a doctor for a routine checkup?				X	X	X
3. How would you describe your weight?	X		X	X	X	X
4. How many of the past seven days did you do exercise that made you sweat and breathe hard, such as running, swimming, dancing, or other physical activity?	X		X	X	X	X
5. Thinking about nutrition, about how many total servings of fruit and/or vegetables did you eat yesterday? A serving would equal one medium apple, a handful of broccoli, or a cup of carrots.			X	X	X	X
6. Have you smoked at least 100 cigarettes in your entire life?	X	X	X	X	X	X
7. Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation?	X		X	X	X	X
8. How many sex partners have you had in the last 12 months?	X		X	X	X	X
9. Have your sexual partners in the past 12 months been exclusively male, exclusively female, or both male and female?			X	X	X	X
10. About how often did you have sex in the past 12 months?			X	X	X	X
11. Now thinking about the time since your eighteenth birthday, how many female partners have you had sex with?	X	X	X	X	X	X
12. Now thinking about the time since your eighteenth birthday, how many male partners have you had sex with?	X	X	X	X	X	X
13. Which term best describes how you think of yourself?				X	X	X

Interview question	Other studies	Lind et al.	Panel judgments			
			at 50%	at 40%	at 35%	at 30%
14. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per week did you have at least one drink of any alcoholic beverage?	X			X	X	X
15. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per month did you have at least one drink of any alcoholic beverage?	X			X	X	X
16. Considering all types of alcoholic beverages, how many times during the past 30 days did you have more than 5 drinks on one occasion?	X		X	X	X	X
17. Thinking back over the last 12 months, about how regularly did you drink alcoholic beverages?	X	X	X	X	X	X
18. Again, as you think back over the last 12 months, how many drinks would you have on a typical day when you drank?	X			X	X	X
19. During the past 12 months, have you read novels, short stories, poems, or plays, other than those required by work or school?						
20. How often do you read the newspaper? By "newspaper" we mean the content no matter whether it appears in print, online or on a mobile device. Count only newspapers from recognized journalistic outlets. Every day, a few times a week, once a week, less than once a week, or never?	X	X				
21. On the average day, about how many hours do you personally watch television?	X	X				
22. I'll now ask about some different kinds of television shows. Would you tell me how often you watch prime-time drama or situation comedy programs? Would you say every day, several times a week, several times a month, rarely, or never?	X	X				

Interview question	Other studies	Lind et al.	Panel judgments			
			at 50%	at 40%	at 35%	at 30%
23. How often do you watch world or national news programs?						
24. How often do you attend religious services? At least once a week, almost every week, about once a month, seldom or never?	X				X	X
25. Which of the following statements best describes your current employment status?					X	X
26. Now I have some questions about credit cards and charge cards. Do you have any credit cards or charge cards? Please do not include debit cards.	X	X				X
27. Are any of the cards you have any type of Visa, Master Card, Discover, or American Express cards you can pay off over time? (Do not include regular American Express charge cards that must be paid in full.)						X
28. How many do you have? Please do not count duplicate cards for the same account or any business or company accounts.					X	X
29. On your last bills, roughly how much were the new charges made to these accounts?					X	X
30. After the last payments were made on these accounts, roughly what was the balance still owed on these accounts?				X	X	X
31. Thinking only about Visa, Master Card, Discover, American Express cards you can pay off over time, and store cards, do you almost always, sometimes, or hardly ever pay off the total balance owed on the account each month?				X	X	X
32. Now I'd like to ask you some questions about your attitudes about savings. People have different reasons for saving, even though they may not be saving all the time. Which of the following statements comes closest to describing your saving habits?	X	X		X	X	X

Interview question	Other studies	Lind et al.	Panel judgments			
			at 50%	at 40%	at 35%	at 30%
33. Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or that you spent less than your income?				X	X	X
34. Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs most of the time, some of the time, only now and then, or hardly at all?				X	X	X
35. In 2012, you may remember that Barack Obama ran for President on the Democratic ticket against Mitt Romney for the Republicans. Did you vote in that election?					X	X
36. What about local elections – do you always vote in those, do you sometimes miss one, do you rarely vote, or do you never vote?					X	X
37. In the past three or four years, have you attended any political meetings or rallies?						X
38. In the past three or four years, have you contributed money to a political party or candidate or to any other political cause?						X
39. During the past 12 months, how often have you donated blood?						X
40. During the past 12 months, how often have you given food or money to a homeless person?	X	X				X
41. During the past 12 months, how often have you done volunteer work for a charity?	X				X	X
42. During the past 12 months, how often have you given money to a charity?				X	X	X
43. During the past 12 months, how often have you offered your seat on a bus or subway, or in a public place to a stranger who was standing?	X	X				X

Appendix D

Table A2 Qualtrics panel ratings of sensitive survey interview responses (> 40%)

Question and response options	Sensitive? (Y/N)
1. Would you say that in general your health is excellent, very good, good, fair, poor, don't know, or you're not sure?	
Excellent	N
Very good	N
Good	N
Fair	Y
Poor	Y
Don't know	Y
Not sure	Y
2. A routine checkup is a general physical exam, not an exam for a specific illness, injury, or condition. When was the last time you saw a doctor for a routine checkup?	
Within the past 6 months (any time less than 6 months ago)	N
Within the last year (more than 6 months but less than 12 months ago)	N
Within the past 2 years (more than 1 year but less than 2 years ago)	Y
Within the past 5 years (more than 2 years but less than 5 years ago)	Y
5 or more years ago	Y
Don't know	Y
Not sure	Y
Never	Y
3. How would you describe your weight?	
Very underweight	Y
Slightly underweight	Y
About the right weight	N
Slightly overweight	Y
Very overweight	Y
4. How many of the past seven days did you do exercise that made you sweat and breathe hard, such as running, swimming, dancing, or other physical activity?	
7 out of 7 days	N
6 out of 7 days	N
5 out of 7 days	N
4 out of 7 days	N
3 out of 7 days	Y
2 out of 7 days	Y
1 out of 7 days	Y
0 out of 7 days	Y

Question and response options	Sensitive? (Y/N)
5. Thinking about nutrition, about how many total servings of fruit and/or vegetables did you eat yesterday? A serving would equal one medium apple, a handful of broccoli, or a cup of carrots.	
0	Y
1 – 2	Y
3+	N
6. Have you smoked at least 100 cigarettes in your entire life?	
Yes	Y
No	N
7. Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation?	
Yes	Y
No	Y
Don't know/Not sure	Y
8. How many sex partners have you had in the last 12 months?	
0	Y
1	Y
2+	Y
9. Have your sexual partners in the past 12 months been exclusively male, exclusively female, or both male and female?	
Exclusively male	Y
Exclusively female	Y
Both male and female	Y
I've had no sex partners in the last 12 months	Y
10. About how often did you have sex in the past 12 months?	
Not at all	Y
Once or twice	Y
Once a month	Y
2 – 3 times a month	Y
Weekly	Y
2 – 3 times per week	Y
4 or more times per week	Y
11. Now thinking about the time since your eighteenth birthday, how many female partners have you had sex with?	
0	Y
1 – 5	Y
6+	Y

Question and response options	Sensitive? (Y/N)
12. Now thinking about the time since your eighteenth birthday, how many male partners have you had sex with?	
0	Y
1 – 5	Y
6+	Y
13. Which term best describes how you think of yourself?	
Heterosexual or straight	N
Homosexual, gay, or lesbian	Y
Bisexual	Y
14. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per week did you have at least one drink of any alcoholic beverage?	
0	N
1 – 2	N
3+	Y
15. A drink of alcohol is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. During the past 30 days, how many days per month did you have at least one drink of any alcoholic beverage?	
0	N
1 – 5	Y
6+	Y
16. Considering all types of alcoholic beverages, how many times during the past 30 days did you have more than 5 drinks on one occasion?	
0	N
1 – 2	Y
3+	Y
17. Thinking back over the last 12 months, about how regularly did you drink alcoholic beverages?	
Never in those 12 months	N
1 to 3 times in 12 months	N
4 to 7 times in 12 months	Y
8 to 11 times in 12 months	Y
1 to 3 times a month	Y
Once or twice a week	Y
3 to 4 times per week	Y
5 times a week or more	Y
18. Again, as you think back over the last 12 months, how many drinks would you have on a typical day when you drank?	
0	N
1	Y
2+	Y

Question and response options	Sensitive? (Y/N)
19. During the past 12 months, have you read novels, short stories, poems, or plays, other than those required by work or school?	
Yes	N
No	Y
20. How often do you read the newspaper? By "newspaper" we mean the content no matter whether it appears in print, online or on a mobile device. Count only newspapers from recognized journalistic outlets. Every day, a few times a week, once a week, less than once a week, or never?	
Every day	N
A few times a week	N
Once a week	N
Less than once a week	Y
Never	Y
21. On the average day, about how many hours do you personally watch television?	
0	N
1 – 3	N
4+	Y
22. I'll now ask about some different kinds of television shows. Would you tell me how often you watch prime-time drama or situation comedy programs? Would you say every day, several times a week, several times a month, rarely, or never?	
Every day	N
Several times a week	N
Several times a month	N
Rarely	N
Never	N
23. How often do you watch world or national news programs?	
Every day	N
Several times a week	N
Several times a month	N
Rarely	N
Never	Y
24. How often do you attend religious services? At least once a week, almost every week, about once a month, seldom or never?	
At least once a week	N
Almost every week	N
About once a month	Y
Seldom	Y
Never	Y

Question and response options	Sensitive? (Y/N)
25. Which of the following statements best describes your current employment status?	
Employed for wages	N
Self employed	N
Out of work more than one year	Y
Out of work less than one year	Y
A homemaker	Y
A student	N
Retired	N
Unable to work	Y
26. Now I have some questions about credit cards and charge cards. Do you have any credit cards or charge cards? Please do not include debit cards.	
Yes	N
No	Y
27. Are any of the cards you have any type of Visa, Master Card, Discover, or American Express cards you can pay off over time? (Do not include regular American Express charge cards that must be paid in full.)	
Yes	N
No	N
28. How many do you have? Please do not count duplicate cards for the same account or any business or company accounts.	
0	N
1 – 2	N
3+	Y
29. On your last bills, roughly how much were the new charges made to these accounts?	
$0	N
$1 – 249	Y
$250+	Y
30. After the last payments were made on these accounts, roughly what was the balance still owed on these accounts?	
$0	N
$1 – 499	Y
$500+	Y
31. Thinking only about Visa, Master Card, Discover, American Express cards you can pay off over time, and store cards, do you almost always, sometimes, or hardly ever pay off the total balance owed on the account each month?	
Almost always	N
Sometimes	Y
Hardly ever	Y

Question and response options	Sensitive? (Y/N)
32. Now I'd like to ask you some questions about your attitudes about savings. People have different reasons for saving, even though they may not be saving all the time. Which of the following statements comes closest to describing your saving habits?	
Don't save – usually spend more than income	Y
Don't save – usually spend about as much as income	Y
Save whatever is left over at the end of the month – no regular plan	Y
Save income of one family member, spend the other	Y
Spend regular income, save occasional other income	N
33. Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or that you spent less than your income?	
Spending exceeded income	Y
Spending equaled income	Y
Spending was less than income	N
34. Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs most of the time, some of the time, only now and then, or hardly at all?	
Most of the time	N
Some of the time	Y
Only now and then	Y
Hardly at all	Y
35. In 2012, you may remember that Barack Obama ran for President on the Democratic ticket against Mitt Romney for the Republicans. Did you vote in that election?	
Yes	N
No	Y
Not eligible to vote in that election	Y
36. What about local elections – do you always vote in those, do you sometimes miss one, do you rarely vote, or do you never vote?	
Always vote	N
Sometimes miss one	N
Rarely vote	Y
Never vote	Y
37. In the past three or four years, have you attended any political meetings or rallies?	
Yes	N
No	Y
38. In the past three or four years, have you contributed money to a political party or candidate or to any other political cause?	
Yes	N
No	N

Question and response options	Sensitive? (Y/N)
39. During the past 12 months, how often have you donated blood?	
More than once a week	N
Once a week	N
Once a month	N
At least two or three times a year	N
Once in the past year	Y
Not at all in the past year	Y
40. During the past 12 months, how often have you given food or money to a homeless person?	
More than once a week	N
Once a week	N
Once a month	N
At least two or three times a year	N
Once in the past year	Y
Not at all in the past year	Y
41. During the past 12 months, how often have you done volunteer work for a charity?	
More than once a week	N
Once a week	N
Once a month	N
At least two or three times a year	N
Once in the past year	Y
Not at all in the past year	Y
42. During the past 12 months, how often have you given money to a charity?	
More than once a week	N
Once a week	N
Once a month	N
At least two or three times a year	Y
Once in the past year	Y
Not at all in the past year	Y
43. During the past 12 months, how often have you offered your seat on a bus or subway, or in a public place to a stranger who was standing?	
More than once a week	N
Once a week	N
Once a month	N
At least two or three times a year	N
Once in the past year	Y
Not at all in the past year	Y

Online First publication date: 2025-08-08