

# Beyond Political Claims: Women's Interest In and Emotional Response to Viewing Their Ultrasound Image in Abortion Care

**CONTEXT:** *In the United States, abortion opponents have supported legislation requiring that abortion patients be offered the opportunity to view their preprocedure ultrasound. Little research has examined women's interest in and emotional response to such viewing.*

**METHODS:** *Data from 702 women who received abortions at 30 facilities throughout the United States between 2008 and 2010 were analyzed. Mixed-effects multinomial logistic regression analysis was used to determine which characteristics were associated with being offered and choosing to view ultrasounds, and with reporting positive or negative emotional responses to viewing. Grounded theory analytic techniques were used to qualitatively describe women's reports of their emotional responses.*

**RESULTS:** *Forty-eight percent of participants were offered the opportunity to view their ultrasound, and nulliparous women were more likely than others to receive an offer (odds ratio, 2.3). Sixty-five percent of these women (31% overall) chose to view the image; nulliparous women and those living in a state that regulates viewing were more likely than their counterparts to do so (1.7 and 2.5, respectively). Some 213 women reported emotional responses to viewing; neutral emotions (fine, nothing) were the most commonly reported ones, followed by negative emotions (sad, guilty, upset) and then positive emotions (happy, excited). Women who visited clinics with a policy of offering viewing had increased odds of reporting a negative emotion (2.6).*

**CONCLUSIONS:** *Ultrasound viewing appears not to have a singular emotional effect. The presence of state regulation and facility policies matters for women's interest in and responses to viewing.*

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In the United States, approximately 1.1 million abortions are performed annually.<sup>1</sup> Although preprocedure ultrasound scanning is not medically necessary, its use to confirm and gestationally date pregnancy is increasingly routine in U.S. abortion care,<sup>2–4</sup> giving rise to opportunities for women to view their ultrasound image. Research has examined the effects of ultrasound viewing on women's emotions about a wanted pregnancy<sup>5</sup> and posited that viewing can facilitate maternal-fetal bonding,<sup>6,7</sup> and scholars have speculated that preabortion ultrasound viewing would dissuade women from having an abortion.<sup>8,9</sup>

Among opponents of abortion, the belief in the power of viewing an ultrasound has inspired a spate of state-level antiabortion legislation regulating ultrasound provision for women seeking the procedure,<sup>10</sup> with the explicit aim of dissuading them from having abortions.<sup>11</sup> Most of the current laws require facilities to offer women the opportunity to view their ultrasound image, under the presumption that otherwise they would not be granted this opportunity; some laws require that the provider show women the image and describe the developing fetus. Although there is no empirical support for the contention that ultrasound viewing will change women's minds about abortion,<sup>12–14</sup> this kind of legislation is gaining popularity, in large part because unpublished reports on crisis pregnancy

center clients have purportedly shown that the majority of women decide against abortion after viewing their ultrasound image. One study argues that ultrasound laws significantly reduce rates of abortion among young women.<sup>15</sup> Abortion rights advocates, while disputing that viewing changes women's minds, often make public claims that the experience can be emotionally difficult for some women seeking abortion and that they should be protected from viewing,<sup>16,17</sup> particularly at later gestational ages, when the fetus looks more "baby-like."<sup>18</sup> Outside both of these political positions, some research suggests there is an unmet demand for ultrasound viewing among women seeking abortion.<sup>17</sup>

There is a dearth of empirical work examining how ultrasound viewing is offered, whether women are interested in viewing, what emotional responses women have to viewing their preabortion ultrasound image and what variables are associated with particular responses. The handful of published studies on the subject suggests that some women are interested in viewing their ultrasound image<sup>17,19,20</sup> and that negative emotional outcomes are overstated.<sup>12,13</sup> The one U.S.-based study of women's reactions to viewing, which draws on qualitative interviews, suggests that the emotional response is more varied than generally assumed.<sup>21</sup> Given the differing meanings that supporters and opponents of

abortion rights have assigned to ultrasound viewing, it is important to evaluate what affects women's decision to view their preprocedure ultrasound; whether those who choose to view actually do have a negative emotional response; and what characteristics of women or their pregnancies, if any, are associated with particular emotional responses.

To address these questions, we conducted a mixed-methods analysis of data collected from a sample of women who had an abortion in 2008–2010. We examined whether respondent characteristics, as well as the presence of facility-level policies or state laws on ultrasound viewing, were associated with being offered an ultrasound scan and, in turn, with choosing to view the image. Next, we qualitatively described women's emotional responses to viewing and investigated correlates of specific emotions.

## METHODS

This analysis draws on data collected from a subset of participants in the Turnaway Study, a project designed to assess the effect of having or being denied a wanted abortion. The study recruited women at 30 abortion care facilities across the United States in 2008–2010; these facilities had varying gestational limits, because of variation in state laws or facility policy. All participating facilities had the highest gestational limit among facilities within 150 miles, under the expectation that a woman turned away because she exceeded the gestational limit—a focal experience of the larger study—would be unlikely to find an alternative facility.

Women were eligible to participate in the Turnaway Study if they had a first-trimester abortion; had an abortion at a gestational age within two weeks of the facility's limit; or were denied an abortion because they were three or fewer weeks past the facility's limit. Women seeking abortion for reasons of fetal anomaly were excluded because their social and medical experience would likely differ substantially from that of women seeking abortion for other reasons. We restricted our sample to women who had an abortion.

One week after their abortion, participants completed a phone interview that included closed- and open-ended questions; interviews lasted approximately 45 minutes and were conducted by trained interviewers. This analysis examined women's demographic characteristics and their responses to questions related to ultrasound viewing. Specifically, each woman was asked whether she was offered the opportunity to view her ultrasound and whether she chose to view it. Almost halfway through participant recruitment, we began to ask women who reported that they had not been offered the opportunity to view their ultrasound whether they had proactively asked to view it. For participants who had viewed their image, we asked the open-ended question "How did you feel about the ultrasound, either during the ultrasound or afterwards?" The open-ended format allowed participants to spontaneously describe their emotional response to the experience without being guided by categories we might have created. Because women carrying fetuses with known fetal anomalies were

excluded, the ultrasound images that women viewed were of fetuses that appeared outwardly healthy.

We collected the following demographic and pregnancy-related data: age (younger than 20, 20–24, 25–29, 30–34, or 35 or older), race and ethnicity (white, black, Latina, multiracial or other), parity (zero versus one or more births) and gestational age (eight weeks or less, eight weeks and a day to 13 weeks, 13 weeks and a day to 21 weeks or more than 21 weeks). Given that research has found that a woman's feelings about her abortion decision may affect the emotional experience of her abortion care,<sup>14,22</sup> we also asked each woman, "How difficult was it for you to decide whether to have an abortion?" Women reported their answers using a five-point scale: "very easy," "somewhat easy," "neither easy nor difficult," "somewhat difficult" or "very difficult."

Ultrasound policy was assigned to one of three categories on the basis of the policy reported by each facility<sup>23</sup> and the existence of state law: only a facility policy to offer viewing; state law to offer viewing if an ultrasound is performed; or none. Because some state laws require facilities to offer viewing only after specific gestations, we coded the ultrasound policy as it applied to each participant, rather than by participant's state or by facility. Because no state

**TABLE 1. Percentage distribution of women who had an abortion in the first trimester or within two weeks of the facility's gestational limit, by selected characteristics, Turnaway Study, 2008–2010**

Characteristic	% (N=702)
<b>Age</b>	
15–19	16
20–24	36
25–29	26
30–43	23
<b>Race/ethnicity</b>	
White	38
Black	29
Latina	20
Multiracial/other	13
<b>Parity</b>	
0	34
≥1	66
<b>Gestational age (weeks)</b>	
≤8	26
>8–13	20
>13–21	22
>21	31
<b>Abortion decision-making experience</b>	
Very easy	12
Somewhat easy	18
Neither easy nor difficult	15
Somewhat difficult	27
Very difficult	27
<b>Ultrasound policy</b>	
None	72
Only facility policy	7
State law	21
Total	100

Note: Percentages may not total 100 because of rounding.

had enacted a mandatory viewing law as of the close of study recruitment, no participants were required to view their ultrasound prior to having an abortion. Participants gave written consent to be contacted for the study and verbal consent to be interviewed. All study protocols were approved by the institutional review board of the authors' institution.

### Analysis

We conducted bivariate tests of who was offered the opportunity to view her ultrasound and who actually viewed it, by demographic and pregnancy-related characteristics, difficulty in deciding to have an abortion and viewing policy, as well as by whether women were surveyed after September 10, 2009, when we added the probe about their asking to view the ultrasound. To account for clustering of individuals by study site for model building, we used mixed-effects logistic regression analysis for bivariate comparisons. We employed multivariate mixed-effects logistic regression analysis to identify associations between the viewing outcomes and women's characteristics and ultrasound policy.

For the quantitative models assessing women's emotional responses to viewing their ultrasound image, we grouped the explicitly positive emotions and the explicitly negative emotions elicited from the qualitative analysis (described below) to examine correlations with demographic and pregnancy-related characteristics and ultrasound viewing policy. All quantitative analyses were conducted using Stata 12.0.

For the qualitative analysis, we used grounded theory analytic techniques<sup>24</sup> in coding participants' open-ended answers about their emotional responses to viewing their ultrasound. Participants could describe more than one emotional response, and coding focused on the presence of the emotion, not the intensity. The first and second authors independently coded the responses and then compared coding. Emotion categories with fewer than 10 observations were reevaluated for combination with another category to achieve the most parsimonious coding scheme. Differences were resolved through mutual agreement, yielding a total of nine categories.

## RESULTS

### Participant Characteristics

Of the 721 participants who had an abortion, 19 did not answer the ultrasound questions, leaving a final sample of 702 women. Sixty-two percent were in their 20s, 16% were younger than 20 and 23% were 30 or older (Table 1). Thirty-eight percent identified themselves as white, 29% as black, 20% as Latina and 13% as multiracial or of other racial background. One-third of the women had never given birth. Twenty-six percent of participants had presented at eight weeks or less, 20% between eight and 13 weeks, 22% between 13 and 21 weeks, and 31% at more than 21 weeks. Fifty-four percent said that the decision to have an abortion had been somewhat or very difficult. Seventy-two percent of participants underwent an abortion

at a facility with no ultrasound viewing policy, 7% were subject only to a facility policy and 21% were subject to a state-mandated policy.

### Offers to View the Ultrasound

Overall, 48% of participants said they had been offered a view of their ultrasound image. In bivariate analyses, nulliparous women were more likely to have been offered ultrasound viewing than were women with a previous birth (54% vs. 45%—Table 2). Being offered this opportunity also varied by gestational age, although not in a consistent pattern: Women who between 13 and 21 weeks pregnant had the highest offer rate (67%), while those just over 21 weeks had the lowest (36%). Forty-five percent of women in the early first trimester and 52% of those in the later first trimester were offered the opportunity to view their ultrasound. Seventy-five percent of participants who were subject only to facility-level policies of offering ultrasound views reported being offered one, and 91% of those who were subject to state laws reported this offer; only 33% of women who were subject to no policy were asked about viewing. No significant differences were found by age, race or ethnicity, or difficulty in deciding to have an abortion.

**TABLE 2. Percentage of women who were offered a view of their preabortion ultrasound image, and percentage who viewed the image, by selected characteristics; and odds ratios (and 95% confidence intervals) from multivariate mixed-effects logistic regression analysis assessing characteristics associated with these outcomes**

Characteristic	Offered view		Viewed	
	%	Odds ratio	%	Odds ratio
<b>Age</b>				
15–19	46	0.87 (0.46–1.62)	35*	1.24 (0.68–2.25)
20–24	53	1.07 (0.66–1.76)	37	1.50 (0.94–2.40)
25–29	45	0.78 (0.46–1.31)	24	0.80 (0.48–1.33)
30–43 (ref)	48	1.00	26	1.00
<b>Race/ethnicity</b>				
White (ref)	50	1.00	28	1.00
Black	50	1.65 (1.01–2.69)*	36	1.85 (1.21–2.83)*
Latina	42	1.52 (0.88–2.61)	27	1.32 (0.80–2.16)
Multiracial/other	52	1.29 (0.70–2.39)	34	1.56 (0.90–2.71)
<b>Parity</b>				
0	54*	2.25 (1.48–3.41)*	37*	1.71 (1.16–2.52)*
≥1 (ref)	45	1.00	27	1.00
<b>Gestational age (weeks)</b>				
≤8 (ref)	45*	1.00	30*	1.00
>8–13	52	1.09 (0.63–1.88)	38	1.31 (0.81–2.12)
>13–21	67	0.84 (0.46–1.56)	34	0.76 (0.45–1.28)
>21	36	1.03 (0.61–1.72)	25	0.69 (0.43–1.11)
<b>Abortion decision-making experience</b>				
Very easy (ref)	51	1.00	33	1.00
Somewhat easy	43	0.60 (0.31–1.16)	32	0.91 (0.50–1.68)
Neither easy nor difficult	43	0.69 (0.34–1.37)	30	0.89 (0.47–1.69)
Somewhat difficult	55	1.15 (0.63–2.09)	29	0.88 (0.50–1.56)
Very difficult	48	0.88 (0.47–1.61)	32	1.02 (0.58–1.80)
<b>Ultrasound policy</b>				
None (ref)	33*	1.00	27*	1.00
Only facility policy	75	8.25 (3.36–20.26)*	34	1.29 (0.67–2.50)
State law	91	18.32 (7.32–45.85)*	44	2.45 (1.55–3.87)*
<i>Constant</i>		<i>0.35 (0.17–0.74)*</i>		<i>0.24 (0.12–0.48)*</i>

\*p<.05. Note: ref=reference group.

The multivariate findings were generally consistent with the bivariate ones, except that gestational age lost significance and race became significant. Specifically, blacks were more likely than whites to be offered a viewing (odds ratio, 1.7), and nulliparous women were more likely than others to receive an offer (2.3). Compared with women who were not subject to any ultrasound viewing policy, those who were subject only to a facility policy or to a state law were far more likely to have been offered viewing (8.3 and 18.3, respectively).

### Viewing the Ultrasound

The overall proportion of women who reported that they viewed their ultrasound image was 31%, which represents 65% of the women who were offered the opportunity. In bivariate analyses, the viewing rate generally decreased with increasing age (from 35–37% of the youngest women to 26% of the oldest), and women with children were less likely than nulliparous women to view an image (27% vs. 37%). As with the rate of being offered the opportunity to view an ultrasound, the viewing rate varied by gestational age, but not in a linear pattern. The highest viewing rate was among women at 8–13 weeks' gestation (38%), followed by the rate among women between 13 and 21 weeks (34%). Only 27% of women who were subject to neither a state nor a facility policy viewed their ultrasound, whereas 34% of those subject only to a facility policy and 44% subject to a state law looked at their image. There were no differences in viewing rates before and after we began asking women who had not been offered the opportunity whether they had proactively asked to view it.

In multivariate analyses, blacks were more likely than whites to view their ultrasound (odds ratio, 1.9), and nulliparous women were more likely to do so than were women with children (1.7). Being subject to a state law requiring that viewing be offered was associated with elevated odds of women's viewing their ultrasound (2.5), while being subject only to a facility policy was not.

### Emotional Responses to Viewing

From the open-ended responses of the 212 participants who answered how they felt about viewing their ultrasound, we identified nine emotion categories (Table 3). The answers of 174 women fell into a single category; 36 women described two emotions, and two described three emotions. The most common emotional response described was a neutral one: feeling nothing or feeling fine (77). A woman at five weeks' gestation in Maine explained her response this way: "Fine. I just wanted to see what it looked like out of curiosity—no attachment." Said another woman, at 12 weeks' gestation in Florida, "It was just, like, a baby. It wasn't a big deal or anything. I knew what I was getting into." Yet another woman, at 24 weeks' gestation in Washington State, reported that she "didn't have much feeling" after viewing the ultrasound image.

The next three most frequent emotional responses were generally negative. Forty-nine women reported feeling sad

**TABLE 3. Number of women reporting specific emotional responses to viewing their preabortion ultrasound image**

Emotion	No.
<b>Total</b>	<b>212†</b>
<b>Neutral</b>	77
<b>Negative</b>	
Sad/depressed	49
Guilty	30
Upset/bad	29
<b>Positive</b>	
Happy/excited	22
Comforted	15
Good	11
<b>Mixed</b>	6
<b>Other</b>	13

†Women could report more than one emotion; thus, the total number of responses exceeds 212.

or depressed after viewing their ultrasound, 30 women reported that viewing made them second-guess or feel guilty about their decision to have an abortion, and 29 said that viewing made them feel upset or bad. Like many women who reported that viewing spurred a negative emotion, a woman in Texas, at just over six weeks' gestation, was brief in her response. She explained that viewing made her feel, simply, "sad—I wanted to cry." Women who reported that viewing prompted them to feel bad about their decision to obtain an abortion were more expansive. For example, a woman at nine weeks' gestation in Illinois said that viewing made her feel "kind of wishy-washy, but I tried to not let it affect me, because I know the situation with me and him." This participant signaled that her abortion decision drew on more than just the content of the ultrasound image; she had thought about her relationship with her partner. Similarly, another woman, at 20 weeks' gestation in Arkansas, said of viewing her ultrasound, "It upset me at first, but I knew I couldn't afford another child, and I knew the decision that I had already made." For this respondent, even as the image spurred an emotional reaction, her awareness of the practical challenges of raising a child placed her negative feelings in context: Feeling bad about the abortion did not outweigh her assessment that she could not afford to raise another child.

In contrast, and perhaps surprisingly, the next most common emotions reported were generally positive. Twenty-two women said that viewing their ultrasound made them feel happy or excited, 15 felt comforted and 11 felt good. One woman, at almost 22 weeks' gestation in California, reported, "I was kind of happy, but I knew what decision I would have to make." Some of these women were surprised at experiencing these positive emotions. One woman, at nine weeks' gestation in Oregon, said that viewing her ultrasound made her "kinda happy. I can't explain it—I just was." Indeed, consistent with research findings on wanted pregnancies,<sup>25</sup> sometimes what women said made them happy was the way viewing made the pregnancy seem

more real. For example, a woman at 23 weeks' gestation in Washington State reported a positive emotional response to seeing fetal movement: "It made me happy because it was nice to see it alive and see it moving." Several women who described positive emotions explained that they appreciated the opportunity to view the image. One woman, at 10 weeks' gestation in Minnesota, said she was "glad to see it, wanted to, and glad to have that choice."

Six women stated that they felt "mixed" emotions, but did not elaborate. Because these short responses contained no further comment, we considered "mixed" emotions as a stand-alone category. Thirteen women reported emotions that we categorized as "other" (e.g., "nervous," "shocked").

Although emotions are often conceptualized to range across a spectrum, with positive on one end and negative on the other, 10 women (distinct from the six in the mixed category) reported that viewing inspired both positive and negative emotions. For some, the emotions were experienced independently, in succession. One woman, at nine weeks' gestation in Oregon, reported: "[I felt] amazement when I first saw it, 'cause I could see things, but then was sad." Another woman, at five weeks' gestation in Texas, described the opposite succession, explaining that viewing "was an eye opener, a reality check. [It] confirmed to me that this was really happening and made me feel sad. But it made me secure in my decision that this [abortion] is something I need to do." Other women spoke of feeling the seemingly conflicting emotions concurrently. A woman at nine weeks' gestation in New Jersey said, "It was weird. I felt happy but sad. It was a new experience for me, so I had mixed emotions about it."

We found some patterns in who experienced explicitly positive ("happy/excited" or "good") or explicitly negative ("sad/depressed" or "upset/bad") emotions.\* In multivariate mixed-effects models, only parity was associated with reporting a positive emotion. Nulliparous women were more likely than others to express an explicitly positive emotion in response to viewing their ultrasound image (odds ratio, 2.4—Table 4).

Latinas were more likely than whites to report an explicitly negative emotion to viewing their ultrasound (odds ratio, 2.1). And finally, compared with women who were not subject to any ultrasound viewing policy, those who were subject only to a facility policy had an increased likelihood of reporting a negative emotion (2.6). Meanwhile, the association between being subject to a state law and reporting a negative emotion was marginally significant. Neither the woman's age nor her gestational age was associated with reporting explicitly positive or negative emotions.

## DISCUSSION

As abortion opponents continue to promote legislation to regulate the viewing of preabortion ultrasound images—largely formulated under the belief that viewing will dissuade women from having an abortion<sup>11</sup>—a key component has been the requirement that women be offered the opportunity to view their ultrasound. In fact, our study

**TABLE 4. Odds ratios (and 95% confidence intervals) from multivariate mixed-effects logistic regression analysis assessing associations between women's reporting explicitly positive or negative emotional responses to viewing their preabortion ultrasound image and selected characteristics**

Characteristic	Positive	Negative
<b>Age</b>		
15–19	0.96 (0.32–2.90)	1.14 (0.44–2.94)
20–24	0.63 (0.24–1.64)	1.79 (0.86–3.71)
25–29	0.38 (0.11–1.29)	1.02 (0.45–2.30)
30–43 (ref)	1.00	1.00
<b>Race/ethnicity</b>		
White (ref)	1.00	1.00
Black	0.80 (0.33–1.96)	1.44 (0.75–2.77)
Latina	0.46 (0.14–1.48)	2.05 (1.02–4.14)*
Multiracial/other	0.94 (0.31–2.82)	1.35 (0.57–3.16)
<b>Parity</b>		
0	2.39 (1.07–5.31)*	1.69 (0.96–2.97)
≥1 (ref)	1.00	1.00
<b>Gestational age (weeks)</b>		
≤8 (ref)	1.00	1.00
>8–13	2.25 (0.78–6.50)	1.13 (0.55–2.33)
>13–21	1.28 (0.35–4.75)	1.11 (0.53–2.32)
>21	1.28 (0.44–3.70)	0.57 (0.26–1.23)
<b>Abortion decision-making experience</b>		
Very easy (ref)	1.00	1.00
Somewhat easy	0.29 (0.07–1.24)	0.99 (0.34–2.91)
Neither easy nor difficult	0.80 (0.24–2.68)	1.30 (0.44–3.82)
Somewhat difficult	0.41 (0.12–1.34)	1.46 (0.55–3.87)
Very difficult	0.88 (0.30–2.51)	2.43 (0.95–6.25)
<b>Ultrasound policy</b>		
None (ref)	1.00	1.00
Only facility policy	0.69 (0.15–3.27)	2.58 (1.09–6.08)*
State law	0.50 (0.15–1.67)	1.92 (0.99–3.70)

\*p<.05. Notes: Explicitly positive emotions were "happy/excited" and "good," and explicitly negative emotions were "sad/depressed" and "upset/bad." ref=reference group.

found that offers to view images in the absence of a legal requirement were not uncommon: A third of participants who were not subject to either a facility policy or state law reported being offered the opportunity to view (consistent with research finding that ultrasound workers often selectively offer patients the opportunity<sup>18</sup>), and three-quarters of participants who sought care in facilities that had a policy of offering viewing to all patients, without a legal requirement to do so, reported an offer to view their ultrasound.

Of the women offered the opportunity to view, 65% did so. This rate is more than 20 percentage points higher than that observed in the only other U.S.-based study of viewing rates,<sup>20</sup> but nonetheless consistent in demonstrating women's interest in viewing preabortion ultrasounds. As seen in earlier research,<sup>20</sup> we found that nulliparous women were more likely than others to view their images, perhaps because of general curiosity and unfamiliarity with pregnancy, and that blacks were more likely than whites to view, although future research is needed to provide insight into this finding. In contrast to findings from existing research,<sup>20</sup> women's age and gestational age were not

\*Because "guilty" could be interpreted as a positive emotion and "comforted" as a neutral one, we excluded them from this analysis.

associated with viewing the ultrasound. We did find that the presence of a state law requiring that women be offered the opportunity to view was associated with choosing to view, which is in line with the professed aims of these state regulations.<sup>11</sup>

However, our description of and investigation of correlates of women's emotional responses to viewing their ultrasound found little support for abortion rights opponents' hope that viewing will inspire bonding emotions with the fetus,<sup>11</sup> as studies of viewing in wanted pregnancies assert.<sup>6,7</sup> This finding was consistent with the only qualitative study of women's emotional reactions to viewing their images.<sup>21</sup> Furthermore, we found no support for the assumptions of many abortion care providers that viewing a more developed fetus (i.e., viewing at later gestational ages) is associated with more negative emotional responses,<sup>16–18</sup> suggesting that practitioner and advocate concerns about viewing the more “baby-like” fetus at later gestations<sup>18</sup> may be misplaced.

Nonetheless, viewing an ultrasound did generate negative emotional reactions for some women, and negative emotions were associated with being subject to a clinic policy to offer viewing, and were marginally associated with being subject to a state law on viewing. This suggests the possibility that viewing “offers” are experienced more as “recommendations” by patients, and hence women may not feel as free to decline as practitioners may intend. Providers may want to pay careful attention to how the offer is made to ensure that patients do not feel pressured to view their ultrasound.

It is also important to consider in a broader context the experiences of participants who reported that viewing the ultrasound image inspired a negative emotional response. We do not know whether these women expected they would have this emotional experience, although research suggests that women often anticipate emotional difficulty following an abortion,<sup>26</sup> or whether, in retrospect, they wish they had not chosen to view the image because of the emotional impact. Furthermore, some women feel they should experience negative emotions about their abortion,<sup>22</sup> and it is possible that women sought to trigger those emotional responses through viewing. In considering these findings, it is paramount to emphasize that participating women chose to view their ultrasounds, and so these results may not be generalizable to the mandatory viewing that some states now legislate.

Finally, our findings that some women experienced positive emotions, and that the most frequent reported emotions were neutral ones, stand in pointed contrast to the politicized nature of the debate over preabortion ultrasound viewing, highlighting how the politics of this debate ignore women's actual experience of care. Not only are women's emotional responses absent from current political discourse on the meaning of ultrasound viewing to women receiving abortion care, but the frequency of neutral emotions poses a challenge to the presumption that

viewing always creates an emotional response.<sup>5</sup> Similarly, the experiences of participants who articulated two seemingly conflicting emotions (i.e., a positive and a negative emotion) are not reflected in current discussions of ultrasound viewing's emotional effects as being singular. The diversity of articulated emotions speaks to the value, methodologically, of allowing women to use their own words to describe their emotions, rather than starting from a set of expected emotional responses.

### Limitations

Several limitations of this study bear discussion. First, our data were collected one week after the abortion, opening the possibility that participants' feelings about and even memories of the ultrasound experience had changed. For instance, we suspect that among participants subject to state law, the lower than 100% reporting of an offer to view their ultrasound is explained by the retrospective nature of our study and expected gaps in recall. Similarly, because we collected retrospective data among women who proceeded to have an abortion after viewing, we cannot report on whether viewing changed women's minds about abortion, although research has found no effect of viewing on women's abortion decision.<sup>12–14</sup> Further, although the interview question was explicit in asking about participants' emotional reaction to viewing the image, some may have reported their emotional response to the overall experience of viewing, including the offer, or their emotional response to the abortion; that is, the reported emotions may have been generated by sources other than viewing the image itself. Finally, our analyses did not account for how geographic and cultural differences in abortion stigma may have affected the viewing experience. The presence of a state law regulating offers to view may signal that a state is generally more hostile to abortion, and that cultural context may influence a woman's decision making about viewing and her emotional response if she chooses to view her ultrasound.

### Conclusions

Overall, when considered in conjunction with research on the effects of ultrasound viewing in wanted pregnancies that found no significant long-term relationship between viewing and maternal attachment in pregnancies carried to term,<sup>5,27–30</sup> our findings suggest that the impact of viewing on women's emotions about their pregnancy is overestimated. Despite claims that the ultrasound image itself conveys information, our results support the idea that how the image is interpreted is steeped in a political, social and personal context.<sup>9,31–35</sup> In other words, the experience of viewing the ultrasound depends on a variety of factors beyond the actual image.<sup>36</sup> We believe that the conversation about women's experience—emotional and otherwise—of abortion care must go beyond making political claims about the impacts of their responses to a medical technology and incorporate their subjective understandings.

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