The *Birth Education Starts Today* Video on Birth Care Options: Evaluation With University Students

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ABSTRACT

Despite evidence indicating that midwife-attended birth is safe and satisfactory, few U.S. families have credentialed midwives as their birth care providers. In the context of person-centered health care and improving maternity care, we evaluated how an author-constructed video featuring evidence and personal narratives on midwifery care affected attitudes and care preferences/intentions for a hypothetical future birth among university students who had not become parents. Students (114 women, 30 men) completed care attitude and preference items before and after viewing the video. Significant ($p < .001$) changes indicated significantly improved attitudes toward midwives and out-of-hospital birth and related preferences. We discuss the educational framework of the video and plans to determine whether short-term effects translate into care-seeking behavior across diverse populations.

The Journal of Perinatal Education, 29(1), 23–34, <http://dx.doi.org/10.1891/1058-1243.29.1.23>

Keywords: childbirth education, young adult, midwives, home childbirth

Central to midwives' expertise and care is helping women effect *physiologic birth*, defined as spontaneous labor onset, progress, vaginal birth, and early mother-newborn contact (American College of Nurse-Midwives, Midwives Alliance of North America, & National Association of Certified Professional Midwives, 2013; Buckley, 2015). High-quality research supports that physiologic birth is safest for most women and babies (Avery et al., 2018; World Health Organization, 2018) because medical intervention to control labor can disrupt essential hormonal processes (Buckley, 2015). With the aim of achieving physiologic birth, midwife-attended birth

has been associated with reducing medical interventions that professional medical organizations have recommended lowering due to overuse and potential risk (American College of Obstetricians and Gynecologists' Committee on Obstetric Practice, 2019; Council on Patient Safety in Women's Health Care, 2016), such as pharmacologic labor induction, episiotomy, and cesarean surgery (American Academy of Nursing, 2016; Attanasio & Kozhimannil, 2018; Sandall, Soltani, Gates, Shennan, & Devane, 2015).

To help raise awareness of physiologic birth benefits and related care approaches that support it, authors of the *Blueprint for Advancing*

For additional detail on the video development process and/or a link to the video, please contact the first author for a related manuscript: Soliday, E., & Ord, G. (2018). *Developing the Birth Education Starts Today* video using a participatory approach. Washington State University Vancouver, Unpublished manuscript.

High-value Maternity Care through Physiologic Childbearing (Avery et al., 2018) recommended developing effective, freely available educational tools. Consistent with that recommendation, we created a video featuring evidence and personal narratives on midwifery care because helping women achieve physiologic birth is central to midwifery care aims, and the general public is often unaware of the benefits of both physiologic birth and midwifery care. This report focuses on how viewing the video affected university students' related attitudes and care preferences for a future hypothetical birth.

BACKGROUND ON MIDWIFERY CARE IN THE UNITED STATES

Due to overall safety and cost-efficiency, midwife-attended birth is a normative practice in high-income nations outside the United States, in which midwives attend more than 50% of births and obstetrician care is reserved primarily for higher-risk cases (Malott, Davis, McDonald, & Hutton, 2009; Malott et al., 2009; NHS Digital, 2015). In contrast, 21st century data have shown that over 92% of U.S. births were attended by obstetric physicians in hospitals, where women received one or more routine obstetric procedures (Martin et al., 2010). The prevalence of obstetrician-attended birth underscores how physiologic birth attended by midwives remains, in terms of frequency, non-normative in the United States, with utilization rates over the past two decades below 10% (Declercq, 1998; Martin, Hamilton, Osterman, Driscoll, & Drake, 2018).

Reasons for the continued dominance of the hospital-based, obstetrician-attended birth paradigm (referred to as *medicalized*, see Davis Floyd, 2001) and correspondingly low rates of midwife-led care in the United States are complex and have been cited to include historical factors, obstetric care culture, institutional and reimbursement structures, and state-level practice policies (Davis Floyd, 2001; Eggleston, Fischer, Ord, & Soliday, 2017; Perl, 2010; Yang, Attanasio, & Kozhimannil, 2016). Continued reliance on medicalized birth care has been at least partly responsible for the United States having the highest cost maternity care system in the world (Truven Health Analytics,

2013), that, paradoxically, has failed to translate into measurably better maternal or newborn health outcomes at the population level (Moos, 2010; Sakala & Corry, 2008).

Following from the above, broadening the current U.S. maternal care paradigm to more effectively integrate midwifery care and its attendant physiologic birth aims stands to reduce unnecessary intervention and its associated risks, to reduce costs, to expand care options, and to help address racial and ethnic disparities in access to maternal care (American Public Health Association, 2001; Avery et al., 2018; Caughey, Cahill, Guise, & Rouse, 2014; Creanga, Syverson, Seed, & Callaghan, 2017; Wharton, Ecker, & Wax, 2017). Establishing midwifery as a normative birth care option in the United States will require systemic shifts in health-care systems and professional training (Avery et al., 2018; Perl, 2010). In addition, intentional efforts to educate childbearing populations on the midwifery approach and care will be necessary to raise awareness of the benefits of high-value maternity care options such as midwifery (Avery et al., 2018), to address knowledge gaps among those who have already given birth (Arcia, 2015; Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013; Soliday, 2012), and to shift mindsets around medicalized birth that young adults who have not yet become parents have endorsed as safest and superior (Soliday, Grant, James, Noell, & Samaduroff, 2017; Soliday & Mammenga, 2015).

Additional practical and policy reasons warrant focusing on people in their late teens and 20s who have not yet become parents—to whom we refer as nulliparous young adults—in learning about birth care options. These years encompass the highest fertility decade of life (Martin, Hamilton, Osterman, Curtin, & Matthews, 2015; Martin, Hamilton, Osterman, Driscoll, & Mathews, 2017), and nulliparous individuals in this life stage have theoretically not had direct experience with any birth care approach that could influence their perspectives. With research indicating that women have historically played a role in shaping obstetric practices, perhaps most famously with their demand for childbirth pain treatment that had been withheld on moral grounds (Pitcock & Clark, 1992; Wertz & Wertz, 1989), educating nulliparous young adults on care options is consistent with person-centered, national health care initiatives (Sakallaris, Miller, Saper, Jo Kreitzer, & Jonas, 2016). Our focus on young adults in university classrooms allowed us to engage those who could, in the future, become either parents or their partners.

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Previous Related Educational Interventions With University Populations

The handful of published studies on birth-related education for university students has shown positive, short-term effects on students' knowledge, attitudes, and care preferences for a hypothetical future birth (or partner's birth). In a report on an evidence-based birth care teaching module delivered in a university classroom, Soliday and Smith (2017) found that approximately one month after presentation, 58% of women and 57% of men selected midwives as preferred care providers, and 53% of women and 57% of men selected a freestanding birth center or home (collectively referred to as out-of-hospital [OOH]) as the preferred setting.

Two studies found positive effects of viewing birth care-related videos on students' attitudes and future behavioral intentions. After viewing a 35-minute video featuring the historical shift from home to hospital birth and midwife to obstetrician led care, students wrote reflections on their views toward birth care. Qualitative analysis indicated new learning and openness toward midwifery care and aspects of physiologic birth associated with video viewing (Cleeton, 2001). In an experimental study, students were randomly assigned to view or not view *The Business of Being Born* (Epstein & Lake, 2008), a professionally produced documentary on hospital obstetric culture and midwife-attended, OOH birth. Prior to video viewing, 5% or fewer students in both groups reported that they would "probably" or "definitely" have a midwife-attended, OOH birth if they had children in the future. On the same question at post-test, the groups diverged significantly ($p < .01$): the percentage of video-viewing students reporting "probably" or "definitely" increased to over 37%. Although the non-viewing group percentage also increased, their post-test percentage was just over 7% (Hans & Kimberly, 2011).

Rationale and Theoretical Framework for the BEST Video

Professionally produced videos such as the *Business of Being Born* have been evaluated in teaching settings, but we saw a need to address critical limitations. First, professional productions usually cost money, which limits their reach. Second, existing products do not clearly distinguish between various midwife credentials, and they link midwife-attended and OOH birth together. From a person-centered

care perspective, clarifying different midwifery practice credentials and scope of practice including practice settings is crucial to informed decision making. Fourth, we aimed to create an educational tool with an intentional, theoretically based focus to achieve our aims of educating viewers.

From those considerations, we developed the *Birth Education Starts Today (BEST)* video in the spirit of action research (AR; Reason & Bradbury, 2001; Willig & Rogers, 2017), which emphasizes fully engaging participants in the research endeavor and intentionally sharing results to maximize the relevance and impact of research and intervention. With the aim of educating the public on credentialed midwifery care and related options, we first drew informational content from studies such as those reviewed herein and from a publicly accessible, peer-reviewed, 10-page companion university Extension publication developed by university and Extension faculty and licensed midwives (Eggleston et al., 2017). Extension publications are consumer-friendly, open access reviews of current peer-reviewed scientific research on contemporary topics designed for a broad, primarily non-academic readership. Informational content focused on midwifery care utilization in the United States and other high-income countries, professional credentialing and scope of practice, professional medical organization policy statements, safety and birth outcome studies, and care costs.

Prior to the current study, the video underwent multiple iterations of content development and revision over the course of field testing with separate focus groups of nulliparous students, childbearing-age students who had children, nulliparous young adult community members, credentialed midwives, and community health nurses. In response to specific content-related concerns raised in the focus groups, we incorporated personal narratives from credentialed midwives and parents (mothers and fathers) who had personally experienced midwifery care in home and hospital settings to enhance the informational content. The resultant 30-minute video, constructed in consultation with university audiovisual

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professionals, consisted of approximately 31% information/fact presentation, 29% midwife interview, and 40% parent interview. The video includes interactive components to engage learners (Kolb, 2014; Merriam & Bierema, 2013) such as brief question-and-answer segments. The interviews were edited to adhere to general narrative principles (e.g., communicating something meaningful, logical sequencing and closure; Herman, 2007; Hinyard & Kreuter, 2007). We included links to a bibliography and additional resources, including those for locating credentialed midwives and birth centers in the state. For additional detail on the video development process and/or a link to the video, please contact the first author for a related manuscript.

Subsequent to developing the video, we conducted the preliminary evaluation with university undergraduates for the current study. Our research question was, “How does viewing the BEST video affect students’ attitudes toward midwife-attended birth, in- and OOH care, and their related care preferences/intentions for a hypothetical future birth (or partner’s birth)?”

METHOD

Design Overview and Statistical Plan

This study was designed to test the causal effect of the video (the intervention) on viewers’ care attitudes and related care preferences/intentions for a hypothetical future birth (the outcomes). We used a single-group, pre-post design with baseline administration of attitude and intention questions (T1), followed by video viewing, followed by repeat administration of the attitude and intention questions (T2). To assess intervention effects on the post-test measures, we use multiple regression. Regression for pre- post-test assessment yields simple, interpretable models with results highly similar to analysis of variance (ANOVA) and offers advantages in robustness (Singer & Andrade, 1997), which we considered important given the variability we expected within our sample. Regression also allowed for entering categorical and continuous predictor variables, yielding standardized coefficients for each, which permitted straightforward interpretation of individual predictors’ relative explanatory power (Kline, 2013).

Participants and Recruitment

The first author’s IRB categorized this study as “exempt.” Participants were undergraduate students

recruited from Fall 2017 classes on two separate campuses (two classes each) within a Pacific Northwest multi-campus university system. “Campus 1” was a metropolitan area commuter campus, and participants came from an introductory human development and a psychology of gender course. “Campus 2” was a traditional university campus in a rural setting, and students from two sections of an introductory human development/communications course participated. Across campuses, class sizes ranged from 60 to 200 students. In each class, students earned extra credit for participating.

Ten days prior to the pre-test, participating class instructors (none of whom co-authored this report) alerted students to the study via the web-based course management system. Instructors offered extra credit totaling 1%–1.5% of the final grade for completing the pre- and post-test (half credit was awarded for completing pre-test only). A total of 202 students initiated participation, and 58 (28.7%) were excluded from analyses for the following reasons: 10 (5.0%) had significant missing data; 35 (17.3%) were dropped because they reported having one or more biological children, and this study focused on nulliparous young adults. Twelve (5.9%) scored 2/5 or lower on a “video facts” manipulation check and were thus excluded. One (0.5%) person identified as transgender, and due to small cell size could not be included in further analyses. Each of the four classes comprised approximately 20%–28% of the final sample.

Materials and Measures

At baseline (T1), students completed five demographics questions (e.g., age, race). They also completed two *childbearing* questions: how many children they had already biologically parented, and when in the future they intended to have children, with “don’t plan to have children” as an option.

Because we found no existing validated measures of birth care attitudes, care preferences, or behavioral intentions directly relevant to the video content, we constructed 10 individual items to evaluate effects of video viewing. All items were administered at T1 (before video) and T2 (after video). Items are presented in Table 1.

Four of the 10 items were on *birth care attitudes*. Two were worded in favor of expected normative care in the United States (Table 1 items 2–3) and two were worded in favor of non-normative options (items 1 and 4). Six items assessed *future*

TABLE 1

Video Evaluation Items

Item	Dimension
1. For most births, care by a midwife is as safe as care by a doctor.	Attitude (care provider)
2. A hospital is the only safe place for having a baby.	Attitude (birth setting/normative)
3. Obstetricians are the only professionals who can help women in birth.	Attitude (care provider/normative)
4. With appropriate supports, having a baby at home is a safe option for most women.	Attitude (birth setting)
5. Consider a midwife as the care provider	Care preference/intention
6. Consider having a home birth	Care preference/intention
7. Explore all available options to get the kind of care you wanted for yourself or partner	Care preference/intention
8. Arrange your finances to get the kind of care you wanted for yourself or partner	Care preference/intention
9. Work to convince your partner or family members who did not support your preferences	Care preference/intention
10. Go with whatever a friend or family member recommended.	Care preference/intention

care preferences/behavioral intentions. Students were instructed to imagine a hypothetical scenario in which they or a partner were expecting a baby and then rate their likelihood of considering specific options. All items were rated on a 1 (not at all true/likely) to 10 (very true/likely) continuous scale.

At T2 only, students completed a five-item, author-constructed video comprehension scale. Items were true/false and yielded a summary score from 0 to 5.

Additional items were included that we did not analyze and may at a future date. At T1, we included a mood scale and items on exposure to others' birth stories. At T2, we included an open-ended video feedback question and asked whether students would like us to send them study information and requests for follow-up studies.

Procedure

Students completed the study online. All study materials, including the questionnaires and the video, were optimized for viewing and completion across device types (including mobile) and platforms.

Course instructors announced the study in class and through postings on their course management systems, for which e-mails were automatically generated to alert all students to the opportunity. Course home pages and e-mails contained a study URL that routed students to a consent page (the default was "do not consent"). Presentation of online baseline questionnaires followed for those who consented. After they completed baseline questionnaires, an information page appeared informing students about the nature and duration of the upcoming video. Students had to click on "begin" to start the video. Once the video ended, students had to click on "return to survey" to access the T2 measures. From start to finish,

Qualtrics data indicated that students spent 44 minutes on the study.

RESULTS

Final Sample Characteristics and Related Preliminary Analyses

Preliminary Tests on Sample Characteristics. Table 2 shows full and campus-specific sample characteristics. Preliminary tests (X^2 and T -tests) were conducted for between-campus differences on demographics.

Demographic differences between campuses were consistent with their respective identities as metropolitan/commuter (Campus 1, $n = 67$) and traditional (Campus 2, $n = 83$). The mean age of students in the full sample was 20.4 (standard deviation [SD] = 3.5) years, and students on Campus 1 averaged 2.2 years older than Campus 2 students. Students were relatively evenly distributed across class on Campus 1 compared to Campus 2, where most (76.5%) were first- or second-year students. More Campus 1 students reported planning to have children within the next 5 years compared to Campus 2 (58.5% vs. 16.5%). In the full sample, 12 (8.3%) reported no plans to have children. We included data from those who reported no plans for childbearing based on data indicating that approximately 50% of pregnancies are unplanned, with a higher rate in the 20–24 year old age group (Finer & Zolna, 2016; Mosher, Jones, & Abma, n.d.).

No differences between campuses resulted on participants' sex; 114 (79.2%) of the full sample identified as women and 30 (20.8%) as men. The primary ethnic/racial group with which students identified was similar across campuses, with 39 (27.1%) total students selecting one of five minority categories (e.g., Black, Native American) as their primary ethnic/racial identity.

TABLE 2

Sample Characteristics by Campus, *N* = 144

Variable	Total Sample	Campus 1 (<i>n</i> = 67)	Campus 2 (<i>n</i> = 83)	Difference Test
Age (years; <i>M</i> , <i>SD</i>)	20.4 (2.7)	21.6 (3.5)	19.4 (1.0)	$T = 5.1^{**}$
Sex				$\chi^2 = 3.5$
Woman	114 (79.2)	56 (86.5)	58 (73.4)	
Man	30 (20.8)	9 (13.9)	21 (26.6)	
Year in school				$\chi^2 = 32.4^{**}$
1	25 (17.4)	10 (15.4)	15 (19.0)	
2	61 (42.4)	14 (21.5)	47 (59.5)	
3	34 (23.6)	20 (30.8)	14 (17.7)	
4	24 (16.7)	21 (32.3)	3 (3.8)	
Race/ethnic identity				$\chi^2 = .02$
White	105 (72.9)	47 (72.3)	58 (73.4)	
Ethnic/minority	39 (27.1)	18 (27.7)	21 (26.6)	
Work status				$\chi^2 = 22.4^{**}$
Not employed	63 (43.8)	16 (24.6)	47 (59.5)	
Part-time	70 (48.6)	39 (60.0)	31 (39.2)	
Full-time	11 (7.6)	10 (15.4)	1 (1.3)	
Plans for future children				$\chi^2 = 30.1^{**}$
1–2 years away	8 (5.6)	8 (12.3)	0 (0)	
3–5 years away	43 (29.9)	30 (46.2)	13 (16.5)	
6–10 years away	81 (56.3)	24 (36.9)	57 (72.2)	
No plans for children	12 (8.3)	3 (4.6)	9 (11.4)	

Note. *SD* = standard deviation.

All values presented are frequencies and percentages except where otherwise noted.

* $p < .05$. ** $p < .001$.

Participant sex and campus were included as covariates in major analyses. Preliminary analyses indicated no significant effects of ethnic/racial identity on the independent variables, with *T*-test *p* values ranging from .31 to .96. Work status (collapsed into two categories, not employed vs. employed due to small numbers of full-time workers) had a significant effect only on one birth care item, “Arrange finances...” Working students’ mean scores were higher than non-working students, $T(142) = -2.24$, $p = .03$; means were 8.9 ($SD = 1.5$) and 8.3 ($SD = 1.6$), respectively. We did not conduct preliminary tests on age and class given their restricted range.

Inter-item Correlations and Data Reduction. We calculated correlations between the four T1 *attitude* items and the six T1 *care preference/intention* items, respectively. All *attitude* inter-item correlations (six total) were significant at $p < .01$, ranging from a low of $r = -.28$ (midwives are safe; only Obstetricians are safe) to .65 (only hospitals are safe; only OBs . . .). Due to their high correlation and their conceptual tie to normative birth care in the United States, we combined the two “normative care” (OBs, hospitals) into one “normative care” item for major analyses.

Among the six care preference/intention correlations (15 total), seven were significant at $p < .05$,

with all below .35 except between “I would consider a midwife” and “I would consider home birth”: $r = .70$, $p < .001$. Though the “midwife” and “home birth” items were highly correlated, we did not combine them for major analyses to maintain the conceptual distinction that midwifery and home birth do not necessarily go hand-in-hand, and the distinction was made clear in the educational video. Complete correlation tables are available from the corresponding author by request.

Major Analyses

Because this was an initial evaluation of the video’s effects on a range of attitudes and behavioral intentions, we chose to conduct one regression equation per item, with the exception of the combined normative care items. This resulted in nine regression equations, and we set a more stringent *p* value of .01 to address the potential for Type I error. Each equation had three predictor variables: T1 item score, sex, and campus. Item 8 had one additional predictor, work status. The independent (outcome) variable for each equation was the T2 item score. Full model statistics are presented in Table 3.

Table 3 shows that all nine full model equations were statistically significant, with *F* values ranging from 9.46 (“OOH birth is safe . . .”) to 93.94 (OB

TABLE 3

Results of Multiple Regression Analyses on Post-Video Outcomes (*N* = 144)

Outcome Variable	<i>t</i>	<i>p</i>	<i>B</i>	<i>F</i>	<i>df</i>	<i>p</i>	Adj <i>R</i> ²
Midwife safe							
Full model				14.76	3, 139	.000	0.23
Campus	-1.77	.08	-.14				
Sex	-2.90	.004	-.22				
T1	4.64	.000	.36				
Normative care (hospital, OB safe)							
Full model				93.94	3, 139	.000	0.66
Campus	.16	.88	.08				
Sex	.91	.36	.05				
vT1	15.24	.00	.80				
OOH safe							
Full model				9.46	3, 140	.000	0.15
Campus	-1.57	.12	-.1				
Sex	-1.17	.25	-.09				
T1	10.49	.00	.67				
Consider midwife							
Full model				44.97	3, 139	.000	0.48
Campus	-1.43	.15	-.09				
Sex	-.04	.70	-.02				
T1	10.49	.00	.67				
Consider OOH							
Full model				48.74	3, 139	.000	.50
Campus	-.71	-.48	-.04				
Sex	1.18	.23	.07				
T1	11.36	.00	.71				
Explore options							
Full model				30.86	3, 139	.000	.39
Campus	-1.95	.05	-.13				
Sex	-.02	.99	-.00				
T1	8.67	.00	.59				
Willing to pay							
Full model				34.61	4, 139	.000	0.48
Campus	-2.45	.02	-.16				
Sex	-.96	.33	-.06				
Work status	-.35	.73	-.02				
T1	10.68	.00	.66				
Convince others							
Full model				34.33	3, 139	.000	0.41
Campus	.14	.89	.01				
Sex	-2.06	.04	-.13				
T1	9.85	.00	.64				
Go with advice							
Full model				39.11	3, 140	.000	0.44
Campus	2.41	.02	.15				
Sex	.08	.42	.05				
T1	10.02	.00	.63				

Note. OOH = out-of-hospital.

and hospital safe, combined), and all *p* values were < .001. Full model adjusted *R*² values exceeded .15 (“OOH birth is safe”), and most (seven) exceeded .31. Univariate analyses within the regressions indicated that T1 scores were the primary explanatory variable in all equations. *Beta* values indicated moderate to strong T1–T2 changes in expected directions,

with significant increases on items related to midwife care, OOH birth, and care preferences. Changes on the combined normative care items (hospitals and OBs as sole safe options) decreased from T1 to T2, as expected. Score increase was moderate on “Midwives are safe” item, *B* = .36. *Beta* values exceeded .59 for all remaining items.

TABLE 4

Pre- and Post- Video Scores on Care Attitude and Preference Items (*N* = 144)

Item	Pre-Video	Post-Video	Mean Difference
1. Midwife safe	5.57 (2.36)	8.13 (1.93)	2.56
2. Normative care (hospital, OB only safe)	6.98 (3.69)	5.01 (3.56)	-1.97
3. OOH safe	6.09 (2.43)	7.82 (1.97)	1.73
4. Consider midwife	4.48 (2.85)	6.47 (2.86)	1.99
5. Consider OOH	3.35 (2.57)	5.38 (2.89)	2.03
6. Explore options	8.09 (2.11)	8.78 (1.74)	0.69
7. Willing to pay	8.63 (1.58)	8.86 (1.55)	0.23
8. Convince others	6.24 (2.29)	6.67 (2.45)	0.43
9. Go with friend/family advice	3.73 (2.27)	3.47 (2.25)	-0.26

Note. OOH = out-of-hospital.

Significant pre-post video viewing effects found on all items. Significant campus effects found for items 8 and 10. Significant sex effects found for items 1 and 9. See detail in Table 3 and *Results*.

Table 4 contains the full sample pre-post video scores. Mean score changes ranged from a low of -0.26 scale points ("Go with friend/family advice") to a high of 2.56 ("Midwives are safe") scale points.

Full model regressions indicated that campus had significant explanatory value on two care preference items. On the "Willing to pay . . ." item, Campus 1 evidenced a pre-post increase of 0.6 scale points ($M = 8.9$ to 9.3), and Campus 2 evidenced a 0.1 scale point increase ($M = 8.3$ to 8.4), $t = -2.47$, $p < .05$; $B = -.15$. On the "Go with advice" item, Campus 1 evidenced a pre-post decrease of 0.5 scale points (3.4 – 2.9) and Campus 2 evidenced no appreciable change (3.9 – 3.9), $t = 2.41$, $p < .05$; $B = .15$.

Sex had significant explanatory value on one attitude and one care preference item. On the "Midwives are safe" item, women's pre-post video scores increased by 2.8 scale points compared to a 0.5 point increase for men: women's $M = 5.6$ to 8.4 , men's $M = 6.3$ to 6.8 ; $t = -2.90$, $p < .005$; $B = -.22$. Women's pre-post video scores increased whereas men's scores remained relatively stable on the "I would get support for the care I wanted" item: women's $M = 5.3$ to 7.2 , men's $M = 6.2$ to 6.0 ; $t = -2.06$, $p < .05$; $B = -.13$.

DISCUSSION

We evaluated how a 30-minute online video on birth options featuring care by credentialed midwives in- and out-of-hospital (OOH) would affect university students' related attitudes and care preferences/intentions for a hypothetical future birth for oneself or a partner. Statistically significant pre-post score changes on attitude items indicated more favorable views toward midwives and OOH birth after viewing the video. Care preference/intention scores shifted

in the same direction, indicating increased preference for/intention to seek midwifery care in diverse settings. Pre-post score decreases on items assessing attitudes of obstetricians and hospitals as the sole safe birth care options provided additional support for the video's potential to favorably influence attitudes toward midwifery care and OOH birth.

Our findings reinforce those from previous research showing that educating nulliparous U.S. university students on birth care options is associated with more positive attitudes toward and preferences/intentions for non-normative care, including midwives and OOH birth. Like Cleeton (2001), who showed students a video on birth care history in the United States, we found that students' attitudes toward midwifery became more positive after they viewed the BEST video. Our results aligned with those from Hans and Kimberly (2011), who reported that students rated midwife-attended, OOH birth more positively after viewing a commercial video that situated personal experience within the context of the U.S. birth care system. Our findings were also consistent with those from a study that involved live teaching and reading to educate students on physiologic birth and related care options (Soliday & Smith, 2017).

Though only a small number of published studies exist on using educational media to influence nulliparous university students' views on physiologic birth and related care options, those currently available uniformly support the potential to positively influence students' related attitudes and care preferences/intentions for a hypothetical future birth. Relative to the video-based studies specifically, it bears mention that each study used a different video, but that the different videos shared common

content types, including fact-based content and an amount of personal narrative from professionals and parents.

The use of personal narratives in particular was likely key in the positive outcomes across studies using different videos because this communication strategy aligns with established models of health behavior change (Ajzen, 1985, 1991). Specifically, personal narratives have been found to more effectively counter resistant attitudes, lack of modeling, and unsupportive social norms than fact- and statistically based educational content (Zimbardo & Leippe, 1991). In the context of low U.S. rates of midwife-attended birth in and out of hospitals (MacDorman, Declercq, & Mathews, 2013), and young nulliparous adults' endorsement of medicalized birth as safest and superior (Soliday et al., 2017; Soliday & Smith, 2017), it logically follows that personal narratives would help normalize young adults' views on midwifery care and diverse birth settings. Additional evidence for the power of personal narratives to more convincingly persuade than a purely fact-based presentation arose during video development, in which focus group participants ranging from college students to birth care professionals repeatedly recommended that we incorporate personal "stories" from care professionals and parents to "bring the facts to life" (Soliday & Ord, 2018).

In addition to providing additional evidence for the utility of educational media to influence attitudes toward and preferences/intentions for birth care options, our study addressed limitations of previous research. Specifically, Hans and Kimberly (2011) found significant effects of their commercial video on a single item assessing students' *willingness to have a midwife-attended, OOH birth* in the future, consistent with the personal examples featured in their video. We instead assessed midwife-attended and OOH birth with two separate items to align with distinctions made between the two in our video's informational content and the personal narratives. Treating midwife-attended and OOH birth as distinct is vitally important because access to care options varies by geographic location in the United States (e.g., Midwives Association of Washington State, n.d.; Yang et al., 2016). Also, because over 98% of U.S. women give birth in hospitals (Martin et al., 2018), we had concerns about alienating viewers by presenting only the rarely used, OOH birth setting.

Also, in the vein of clarifying and expanding the evidence base, we created three items on specific

actions that participants would be likely to take in a hypothetical future birth for themselves or a partner. The items were based on a previous study of postpartum women in which participants reported steps they took to obtain non-normative care (Soliday, 2012), and these included researching available options, arranging finances, and working to convince others of their preferences. Students reported increased likelihood of engaging in all three actions following video viewing.

As a final point, we consider a study strength to be our design of a video for free online access, an effort first consistent with professional recommendations for internet-based resources to educate the public on care options like those covered in the BEST video (Avery et al., 2018). As a consequence, we were able to conduct an internet-based study which allowed instructors to offer their students a time-flexible, unique learning and research opportunity across structurally different campuses. With the exception of occasional differences between campuses and between women and men on the outcomes that we controlled in major analyses, results were remarkably consistent across demographic subgroups, lending further support to the video's general influence on attitudes and care preferences/intentions.

Study Limitations and Future Research

Though our results supported an educational video's effects in influencing undergraduate students' birth care attitudes and related preferences/intentions for a hypothetical future birth (or partner's birth), we must acknowledge its limitations. Our sample size was modest and came from a single U.S. region where midwifery care and OOH birth rates are among the highest in the United States (MacDorman et al., 2013), thus limiting generalizability. To minimize intrusion into regular classroom routines, we used a single-group, post-test only design, which tempers our confidence in the video's causal effects (Marsden & Torgerson, 2012). All nine regression equations were significant beyond the $p < .01$ value we set, but we must still acknowledge the possibility of Type 1 error. Students completed the study for extra credit, and though we cannot

Statistically significant pre-post score changes on attitude items indicated more favorable views towards midwives and OOH birth after viewing the video.

determine whether that signified greater interest in the topic, the predominance of female participants suggests that extra credit was not the only motivating factor. With only a short-term follow-up, we have no way of knowing whether care preferences/intentions will translate into actual healthcare behavior.

We are addressing study limitations with plans for improved evaluations. We will have a larger sample with “no viewing” and “alternative video” (e.g., video from perspectives similar and divergent from BEST) and greater pre- to post-test temporal spacing. Our data indicated that students spent sufficient time on the study to have viewed the video in full, but we are building in a time tracking capacity to better assess the video’s effects. We have begun contacting students who indicated interest in follow-up participation for annual assessment of long-term influence.

Our planned evaluations will also address limitations stemming from the current study’s focus on university students—who, by virtue of their educational level, would already have a higher probability of using the statistically non-normative birth care options (MacDorman et al., 2013). Because our aim is to raise awareness of birth care options among diverse childbearing aged individuals, we planning to evaluate the video’s effects in community populations that might not otherwise engage in learning about birth care options. These include high-school aged at-risk youth and young adults with limited English language abilities.

CONCLUSION

History has shown that “top-down” institutional and professional culture have influenced birth care practices, and history has also shown childbearing populations have driven changes in birth care practices from the “bottom-up” (Pitcock & Clark, 1992; Wertz & Wertz, 1989). From that perspective, we consider efforts to educate young nulliparous adults on safe, satisfactory, and cost-effective birth options that are rooted in educational and behavioral principles like those we applied to have a place in improving the care culture. We remain hopeful that by the time our study participants and their peers enter the actual experience of pregnancy and birth, professional practices and policies will offer easy access to the care options that young adults in this study reported willingness to adopt.

REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control* (pp. 11–39). Berlin: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. doi:10.1016/0749-5978(91)90020-T
- American Academy of Nursing. (2016). *Don't promote induction or augmentation of labor and don't induce or augment labor without a medical indication; Spontaneous labor is safest for women and infant, with benefits that improve safety and promote short- and long-term maternal and infant health*. Retrieved from <http://www.choosingwisely.org/clinician-lists/nursing-induction-of-labor>
- American College of Nurse-Midwives, Midwives Alliance of North America, & National Association of Certified Professional Midwives. (2013). A consensus statement by ACNM, MANA, and NACPM. *The Journal of Perinatal Education*, 22(1), 14–18. doi:10.1891/1058-1243.22.1.14
- American College of Obstetricians and Gynecologists' Committee on Obstetric Practice. (2019). Committee opinion No. 766 (replaces committee opinion No. 687, February 2017): Approaches to limit intervention during labor and birth. *Obstetrics and Gynecology*, 68(2), e164–e173. doi:10.1097/AOG.0000000000003074
- American Public Health Association. (2001). Supporting access to midwifery services in the United States (position paper). *American Journal of Public Health*, 91(3), 482. doi:10.2105/AJPH.91.3.482
- Arcia, A. (2015). US Nulliparas' reasons for expected provider type and childbirth setting. *The Journal of Perinatal Education*, 24(1), 61–72. doi:10.1891/1058-1243.24.1.61
- Attanasio, L., & Kozhimannil, K. B. (2018). Relationship between hospital level percentage of midwife attended births and obstetric procedure utilization. *Journal of Midwifery & Women's Health*, 63(1), 14–22. doi:10.1111/jmwh.12702
- Avery, M. D., Bell, A. D., Bingham, D., Corry, M. P., Delbanco, S. F., Gullo, S. L., . . . Kozhimannil, K. B. (2018). *Blueprint for advancing high-value maternity care through physiologic childbearing*. Washington, DC: National Partnership for Women and Families. Retrieved from <http://www.nationalpartnership.org/our-work/health/reports/maternity-blueprint.html>
- Buckley, S. J. (2015). *Hormonal physiology of childbearing: Evidence and implications for women, babies, and maternity care*. Childbirth Connection Programs, National Partnership for Women & Families, Washington, DC. Retrieved from <http://transform.childbirthconnection.org/reports/physiology/>
- Caughey, A. B., Cahill, A. G., Guise, J. M., & Rouse, D. J. (2014). Safe prevention of the primary cesarean delivery. *American Journal of Obstetrics & Gynecology*, 210(3), 179–193. doi:10.1016/j.ajog.2014.01.026
- Cleeton, E. R. (2001). Attitudes and beliefs about childbirth among college students: Results of an educational

- intervention. *Birth*, 28(3), 192–200. doi:10.1046/j.1523-536x.2001.00192.x
- Council on Patient Safety in Women's Health Care. (2016). *Safe reduction of primary cesarean birth (+AIM)*. Washington, DC: Author. Retrieved from <https://safehealthcareforeverywoman.org/patient-safety-bundles/safe-reduction-of-primary-cesarean-birth/>
- Creanga, A. A., Syverson, C., Seed, K., & Callaghan, W. M. (2017). Pregnancy-related mortality in the United States, 2011–2013. *Obstetrics & Gynecology*, 130(2), 366–373. doi:10.1097/AOG.0000000000002114
- Davis Floyd, R. (2001). The technocratic, humanistic, and holistic paradigms of childbirth. *International Journal of Gynecology & Obstetrics*, 75(S1), S5–S23. doi:10.1016/S0020-7292(01)00510-0
- Declercq, E. (1998). "Changing childbirth" in the United Kingdom: Lessons for US health policy. *Journal of Health Politics, Policy and Law*, 23(5), 833–859. doi:10.1215/03616878-23-5-833
- Declercq, E. R., Sakala, C., Corry, M. P., Applebaum, S., & Herrlich, A. (2013). *Listening to mothers III: Pregnancy and birth*. New York: Childbirth Connection.
- Eggleston, K., Fischer, V., Ord, G., & Soliday, E. (2017). *An introduction to midwifery care and out-of-hospital birth in Washington State. Washington State University extension fact sheet, FS291E*. Retrieved from <http://extension.wsu.edu/publications/pubs/fs291e/>
- Epstein, A., & Lake, R. (2008). *The business of being born*. Burbank, CA: New Line Home Entertainment.
- Finer, L. B., & Zolna, M. R. (2016). Declines in unintended pregnancy in the United States, 2008–2011. *New England Journal of Medicine*, 374(9), 843–852. doi:10.1056/NEJMsa1506575
- Hans, J. D., & Kimberly, C. (2011). An educational intervention to change planned behavior concerning midwife-assisted out-of-hospital childbirth. *Journal of Midwifery & Women's Health*, 56(4), 371–375. doi:10.1111/j.1542-2011.2011.00036.x
- Herman, D. (2007). Toward a definition of narrative. In D. Herman (Ed.), *The Cambridge companion to narrative* (pp. 22–35). Cambridge: Cambridge University Press.
- Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, 34(5), 777–792. doi:10.1177/1090198106291963
- Kline, R. B. (2013). *Beyond significance testing: Statistics reform in the behavioral sciences*. Washington, DC: American Psychological Association.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Upper Saddle River, NJ: Pearson FT Press.
- MacDorman, M. F., Declercq, E., & Mathews, T. J. (2013). Recent trends in out-of-hospital births in the United States. *Journal of Midwifery & Women's Health*, 58(5), 494–501. doi:10.1111/jmwh.12092
- Malott, A. M., Davis, B. M., McDonald, H., & Hutton, E. (2009). Midwifery care in eight industrialized countries: How does Canadian midwifery compare? *Journal of Obstetrics and Gynaecology Canada*, 31(10), 974–979. doi:10.1016/S1701-2163(16)34328-6
- Marsden, E., & Torgerson, C. J. (2012). Single group, pre- and post-test research designs: Some methodological concerns. *Oxford Review of Education*, 38(5), 583–616. doi:10.1080/03054985.2012.731208
- Martin, J. A., Hamilton, B. E., Osterman, M. J., Curtin, S. C., & Matthews, T. J. (2015). Births: Final data for 2013. *National Vital Statistics Reports*, 64(1), 1–68. Retrieved from <http://www.systems.wsu.edu/scripts/wsual.pl?url=http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=25603115&site=ehost-live>
- Martin, J. A., Hamilton, B. E., Osterman, M. J., Driscoll, A. K., & Drake, P. (2018). Births: Final data for 2016. *National Vital Statistics Reports*, 67(1), 1–49.
- Martin, J. A., Hamilton, B. E., Osterman, M. J. K., Driscoll, A. K., & Mathews, T. J. (2017). Births: Final data for 2015. *National Vital Statistics Reports*, 66(1), 1–70. Retrieved from <http://www.systems.wsu.edu/scripts/wsual.pl?url=http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=28135188&site=ehost-live>
- Martin, J. A., Hamilton, B. E., Sutton, P. D., Ventura, S. J., Mathews, T. J., Kirmeyer, S., & Osterman, M. J. K. (2010). Births: Final data for 2007. *National Vital Statistics Reports*, 58(24), 1–72. Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_24.pdf
- Merriam, S. B., & Bierema, L. L. (2013). *Adult learning: Linking theory and practice*. Hoboken, NJ: John Wiley & Sons.
- Midwives Association of Washington State. (n.d.). *Directory*. Retrieved from <https://maws.wildapricot.org/directory>
- Moos, M. K. (2010). From concept to practice: Reflections on the preconception health agenda. *Journal of Women's Health*, 19(3), 561–567. doi:10.1089/jwh.2009.1411
- Mosher, W. D., Jones, J., & Abma, J. C. (n.d.). *Intended and unintended births in the United States: 1982–2010. National health statistics reports; no 55*. Hyattsville, MD: National Center for Health Statistics.
- NHS Digital. (2015). *National health service [NHS] maternity statistics - England, 2013–14*. Retrieved from <http://digital.nhs.uk/catalogue/PUB16725>
- Perl, L. M. (2010). A practitioner perspective: The birth and death of VBACs in a rural community hospital. *Birth*, 37(3), 257–258. doi:10.1111/j.1523-536X.2010.00414.x
- Pitcock, C. D. H., & Clark, R. B. (1992). From fanny to fernand: The development of consumerism in pain control during the birth process. *American Journal of Obstetrics & Gynecology*, 167(3), 581–587. doi:10.1016/S0002-9378(11)91553-1
- Reason, P., & Bradbury, H. (2001). *Handbook of action research: Participative inquiry and practice*. Thousand Oaks, CA: Sage.
- Sakala, C., & Corry, M. P. (2008). *Evidence-based maternity care: What it is and what it can achieve*. New York, NY: Milbank Meml Fund. Retrieved from <http://www.milbank.org/reports/0809MaternityCare/0809MaternityCare.html#sidebar4>

- Sakallaris, B. R., Miller, W. L., Saper, R., Jo Kreitzer, M., & Jonas, W. (2016). Meeting the challenge of a more person-centered future for US healthcare. *Global Advances in Health and Medicine*, 5(1), 51–60. doi:10.7453/gahmj.2015.085
- Sandall, J., Soltani, H., Gates, S., Shennan, A., & Devane, D. (2015). Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database Systematic Reviews*, 9, 1–114. Retrieved from https://www.pdcp.cz/Texty/Topics/Sandall_et_al-2015-The_Cochrane_Library.pdf
- Singer, J. M., & Andrade, D. F. (1997). Regression models for the analysis of pretest/posttest data. *Biometrics*, 53(2), 729–735. doi:10.2307/2533973
- Soliday, E. (2012). *Childbirth in a technocratic age: The documentation of women's expectations and experiences*. Amherst, NY: Cambria Press.
- Soliday, E., Grant, G., James, J., Noell, B., & Samaduroff, J. (2017). University women's and men's mindsets surrounding postcesarean birth: Findings and implications for practice and policy. *Birth*, 44(4), 377–383. doi:10.1111/birt.12297
- Soliday, E., & Mammenga, S. (2015). Views on medical and natural birth in university women and men. *Journal of Prenatal & Perinatal Psychology & Health*, 30(1), 30–41.
- Soliday, E., & Ord, G. (2018). Developing the Learning about Midwives and Birth Settings (LaMBS) video for teaching about birth options. *International Journal of Childbirth*, 8(4), 242–251.
- Soliday, E., & Smith, S. R. (2017). Teaching university students about evidence-based perinatal care: Effects on learning and future care preferences. *The Journal of Perinatal Education*, 26(3), 144–153. doi:10.1891/1058-1243.26.3.144
- Truven Health Analytics. (2013). *The cost of having a baby in the United States. Truven health analytics market scan study*. Retrieved from <http://transform.childbirthconnection.org/reports/cost/>
- Wertz, R. W., & Wertz, D. C. (1989). *Lying-in: A history of childbirth in America*. New Haven, CT: Yale University Press.
- Wharton, K. R., Ecker, J. L., & Wax, J. R. (2017). Approaches to limit intervention during labor and birth. Committee opinion No. 687. American college of obstetricians and gynecologists. *Obstetrics & Gynecology*, 129, e20–e28. doi:10.1097/AOG.0000000000001905
- Willig, C., & Rogers, W. S. (2017). *The SAGE handbook of qualitative research in psychology* (2nd ed.). Thousand Oaks, CA: Sage.
- World Health Organization. (2018). *WHO recommendations: Intrapartum care for a positive childbirth experience*. Geneva: World Health Organization. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK513809/>
- Yang, Y. T., Attanasio, L. B., & Kozhimannil, K. B. (2016). State scope of practice laws, nurse-midwifery workforce, and childbirth procedures and outcomes. *Women's Health Issues*, 26(3), 262–267. doi:10.1016/j.whi.2016.02.003
- Zimbardo, P. G., & Leippe, M. R. (1991). *The psychology of attitude change and social influence*. New York, NY: McGraw-Hill.

DISCLOSURE

The authors have no relevant financial interest or affiliations with any commercial interests related to the subjects discussed within this article.

ACKNOWLEDGMENTS

The authors wish to acknowledge Kristin Eggleston, LM, and ViviAnne Fischer, LM, two midwives who contributed their expertise to this project along with the families and undergraduate research students who contributed to the video.

FUNDING

The author(s) received no specific grant or financial support for the research, authorship, and/or publication of this article.

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