Appendix Table 2. Study Design, Populations, and Evidence on Impact of Contraceptive Education

Reference/ Funding	Study design	Population	Intervention	Results	Assessment of study
Kirby et al. 1989[1] U.S. Funding from Population Planning Associates	RCT Assessment times: *5–7 weeks *7 months	2,017 male teens aged 16–17 years; 1,033 in the control group; 985 in the intervention group List of 24,000 names randomly divided into intervention and control group; intervention group received materials by mail; both groups were telephoned 82%–83% white (82% in control group, 83% in intervention), 12% black, 3%–4% Hispanic (4% in control group, 3% in intervention), and 1% Asian 83% lived with both parents, 62% had family incomes >$25,000	<u>Intervention type:</u> Written materials Packet sent in mail containing a cover letter, pamphlet and order coupon for free condoms <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* Knowledge scores on an 11-item knowledge test were higher in the intervention as compared with the control group (83% vs 80%; $p<0.001$) <u>Secondary outcomes:</u> *Intentions to use contraception:* Intervention group was significantly more likely to have ordered condoms by mail (7% vs 1%, $p<0.01$) *Contraceptive use:* Use of condoms at last intercourse did not differ between the intervention and control group	<u>Strengths:</u> *Participation rate among those reached by phone was 86% *Intervention and control groups similar in age, grade, city size, family structure, family income, race/ethnicity, academic performance, receipt of sex education and sexual experience *Double blind design in which interviews did not know randomization assignment <u>Weaknesses:</u> *Response rate for interviews was 53% *Effect of receiving condoms cannot be separated from effect of educational materials *Procedures for concealing

					randomization assignment not described <u>Quality of study:</u> Level I Risk for bias: Low
Paperny and Starn 1989[2] U.S. Funding from March of Dimes	Non-RCT Assessment times: *Baseline *Immediate post-test	367 students from 5 high schools in Oahu Hawaii; 1 classroom from each school was selected for each study arm; students from public and private schools were selected to provide a representative cross-section of adolescents 175 students in control group; 177 students in intervention group Control participants: mean age 14.9 years, 54% female; intervention participants 61% female, mean age 15.2 years	<u>Intervention type:</u> Interactive tool A 40-minute color action game about sexual survival skills, choices, and birth control; written at a sixth-grade level and not requiring supervision; game provided factual information, simulated outcomes, and corrected misconceptions Control participants attended a non-specific health class <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* Compared with control participants, intervention participants showed a significant improvement in knowledge of risks and benefits ($p<0.01$, $p<0.008$, $p<0.02$, and $p<0.03$ for each of the 4 questions) Compared with control participants, intervention participants showed a greater increase in the knowledge that having sex even once without contraception can lead to pregnancy ($p<0.0008$)	<u>Strengths:</u> *100% of students in each classroom participated and took post-test assessment *Controlled for age, ethnicity, school, and sex in analysis <u>Weaknesses:</u> *Selection of schools and classrooms was not random *Distribution of males and females differed for intervention and control groups; age was the only other demographic trait evaluated *Control and intervention groups studied sequentially <u>Quality of study:</u> Level II-1

					Risk for bias: Moderate
Reis and Tymchyshyn 1992[3] U.S. Funding source not stated	Pre-/post-test study Assessment times: *Pre-test *Immediate post-test *6 months	58 women recruited from a Midwestern community college Mean age 22.8 years; range 19–27 years	<u>Intervention type:</u> Interactive tool Information presented in an interactive style using graphics, animation, and sound; games and quizzes allowed participants to apply their knowledge and receive feedback <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* Immediate post-test, participants showed gains in knowledge related to danger signs associated with OCs, the rationale for triphasic and biphasic OCs, health benefits of using OCs, the potential contraceptive benefits of withdrawal, and the reasons why women stop using OCs ($p \leq 0.05$) At 6 months, participants showed increased knowledge of warning signs for OC use; the rationale for triphasic and biphasic OCs; knowledge about rules for missed pills, and the benefits of OCs ($p < 0.05$)	<u>Weaknesses:</u> *Small sample size *Pre-/post-test study design <u>Quality of Study:</u> Level II-3 Risk for bias: High
O'Donnell et al. 1995a,b[4, 5] U.S.	RCT Assessment times:	3,257 men and women aged 17 years or older attending an STD clinic	<u>Intervention type:</u> Videotape, or videotape + facilitator led discussion	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:*	<u>Strengths</u> *Large sample size *96.5% participation rate

CDC, National Center for Prevention Services	*Baseline *Immediate post-test	62% black, 38% Hispanic 60% had history of prior sexually transmitted disease; 61% used condoms rarely or never; 37% of men and 14% of women had 2 or more partners per month Knowledge assessed in a 50% sample of participants (N=1,665; 691 in the control group; 496 in the videotape group, and 478 in the videotape + facilitator led discussion group)	Three study groups: *Control *Videotape *Videotape + facilitator led discussion 20-minute videotape providing information on STDs and their prevention, modeling culturally and gender appropriate strategies for encouraging condom use Interactive group session in which facilitators restated the messages delivered in the videotapes, but encouraged discussion on the basis of experiences and concerns of participants Following participation, each participant was given a coupon that could be used to redeem free condoms <u>Provider feedback:</u>	Compared with participants in the control group, participants who watched the videotape had greater gains in knowledge scores based on a scale including questions about correct condom use ($p<0.001$) Participants in the Videotape + facilitator led discussion group also made greater knowledge gains than participants in the control group, but did not differ from participants in the videotape only group <u>Secondary outcomes</u>: *Intentions to use contraception:* *The videotape increased condom redemption and the videotape in combination with the facilitator-led discussion had an even greater effect *In comparison with participants in the control group, a significantly greater proportion of participants in the	*Validated knowledge scale *Study design allows assessment of provider enhancement of the intervention videotape <u>Weaknesses:</u> *A proportionate randomized sampling plan *Questionnaire to assess knowledge only administered to a 50% random sample of participants <u>Quality of study:</u> Level I Risk of bias: Low

			Provider independent: control and videotape groups; Provider enhanced provider feedback in videotape + facilitator-led discussion group	videotape only group used the coupons they received to redeem condoms (27.6% vs 21.2%; $p<0.0001$) *In comparison with participants in the videotape only group, a significantly greater proportion of participants in the videotape + facilitator-led discussion group used the coupons they received to redeem condoms (36.9% vs 27.6%; $p<0.0001$)	
Smith and Whitfield 1995[6] United Kingdom Funding source not stated	Pre-/post-test study Assessment times: *Baseline *3 months *6 months	449 women aged 17–44 (mean 26.3) years seeking OCs for the first time, or a repeat OC checkup, were recruited from 2 small rural practices and 1 large urban practices	<u>Intervention type:</u> Written materials All patients were given two Family Planning Association leaflets to describe rules for appropriate use of OC and EC <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* From pre-to post-intervention, the percentage of women who knew they could be 12 hours late taking their pill and still be protected increased ($p<0.01$); the percentage who knew they needed to use another method of contraception for 7 days if they were more than 12 hours late also increased ($p<0.05$)	<u>Strengths:</u> *Large analytic sample *Women who responded to the follow-up questionnaire did not differ from the initial group in marital status, work outside the home, prior pregnancies, number of children and number of miscarriages and abortions <u>Weaknesses:</u>

				For EC, the percentage of women who knew the length of time from unprotected intercourse that EC is effective increased (p<0.01)	*Pre-/post-test study design *Change assessment did not control for baseline knowledge Quality of study: Level II-3 Risk of bias: High
Deijen and Kornaat 1997[7] The Netherlands Funding from Wyeth, Hoofddorp	RCT Assessment times: *Baseline *1 month *3 months	1,239 healthy women aged 15–45 years with no contra-indications to OCs; *419 in the control group *381 in the brochure group *364 in the brochure + audiotape group Clients approached to participate during physician visit to start OCs or switch to a new type of OCs Mean education level, at least 10 years of education	Intervention type: Written materials, or written materials + audiotape Both interventions provided information on the action of OCs, advantages and disadvantages of OCs, and instructions for missed pills Three study groups: *Control (standard of care) *Standard of care+brochure; *Standard of care+brochure+ audiotape Provider feedback: Provider independent	Primary outcomes: *Knowledge of risks and benefits and correct method use:* Brochure vs control group: knowledge of missed pill-taking rules higher (Cycle 1, p<0.01 for knowledge related to 1, 2, or 3 missed pills; Cycle 3, p<0.05 for knowledge related to 1, 2, or 3 missed pills) Brochure + audiotape vs control group: knowledge of missed pill-taking rules higher (Cycle 1, p<0.001 for knowledge related to 1, 2, or 3 missed pills; Cycle 3, p<0.08 for knowledge related 1 missed pill; p<0.01 for 2 or 3 missed pills)	Strengths: *Large sample size *Participants in all three groups similar educational level *Controlled for baseline differences *Single blinded Weaknesses: *Follow up 78% at 1 month, but only 36% at 3 months *Procedures for concealing randomization assignment not described. Quality of study: Level I Risk of bias: Moderate

			Brochure + audio group vs brochure group: no significant difference *Positive attitudes about contraception*: Brochure + audiotape group vs. control: participants in the considered OCs to have more medical advantages (Cycle 1: p=0.02; Cycle 3: p<0.04) Brochure vs control group: no significant difference <u>Secondary outcomes:</u> *Correct and/or consistent use of contraception:* At 1 month: 24% of control, 22% of brochure, and 19.5% of brochure + audiotape participants reported missed pills; difference between control vs brochure + audiotape significant (p<0.05) At 3 months: no significant differences between groups.

Little et al. 1998[8] and 2001[9] England Funding from Wessex NHS Regional Research and Development Funds; the Welcome Trust	RCT Assessment times: *3 months	636 women aged 18–45 years attending check-up appointment for repeat prescription for OCs	<u>Intervention type:</u> Written materials A summary credit-card sized leaflet with pill-taking rules, or a full leaflet; in half of the study groups a provider reviewed pill-taking rules through set of interactive questions lasting 2–3 minutes Study groups: *No leaflet, no questions (standard of care; N=96); *Summary leaflet, no questions (N=101); *Full leaflet, no questions (N=112); *No leaflet, with questions (N=124); *Summary leaflet, with questions (N=88); *Full leaflet, with questions (N=115) <u>Provider feedback:</u> Provider independent: Control and intervention groups without iterative questions	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* The percentage of women knowing 12 of 12 pill-taking rules varied by intervention group (X^2=22, p<0.01); all provider-independent interventions (summary leaflet, standard leaflet, and presentation of interactive questions) resulted in a modest improvement in knowledge scores relative to the control condition. An additional benefit of combining a leaflet with the presentation of interactive questions presented by a provider was conferred only with the summary and not the standard leaflet Compared with control participants, the adjusted odds of knowing all 12 pill rules: *Summary, wallet-sized leaflet 4.04 (1.68–9.75)	<u>Strengths</u> *Large sample size *Randomization completed through a random numbers table, and assignment concealed in an opaque envelope. *Single blinded *Used of validated instrument to assess knowledge *Groups comparable with respect to sociodemographics and baseline knowledge levels *Multivariable logistic regression conducted adjusting for covariates <u>Quality of Study</u> Level I Risk for bias: Low

			Provider enhanced: Experimental groups with interactive questions	*Full leaflet 3.43 (1.45–8.09) *Interactive questions 3.03 (1.30-7.07) *Summary leaflet plus interactive questions 6.81(2.85–16.27) *Standard leaflet plus questions 2.58 (1.07–6.18) *Barriers and facilitators for clients or clinics:* Although having further education was associated with increased adjusted odds of knowing all 12 pill rules (AOR=2.95 [1.76-4.96]), education did not interact significantly with the effect of the intervention on increased knowledge (p=0.9 for interaction with leaflet/ summary card; p=0.6 for interaction with provider questions).	
Chewning et al. 1999[10] U.S. Funding from HHS, Office of	Non-RCT Assessment times: *Baseline	949 women aged ≤20 years attending a family planning clinic in Chicago, Illinois or Madison, Wisconsin who had expressed interest in contraception when	<u>Intervention type:</u> <u>Interactive tool</u> Menu-driven program that allows clients to receive tailored information; 15–20 minutes to complete; at	<u>Primary outcomes</u>*:* *Knowledge of risks and benefits and correct method use:* Immediate post-test: knowledge index scores (assessing risks/benefits	<u>Strengths:</u> *Large sample size *High participation rate: 94% at Chicago clinic; 91% at Madison clinic

Family Planning	*Immediate post-intervention *12 months	scheduling their appointment; analysis focused on women selecting OCs. 493 in control group; 456 in intervention group Chicago clients (N=449) 96% African American, 8.2% of patients' mothers had not graduated from high school, 26% received financial public assistance Madison clients (N=500) 94% white, 7.5% of patients' mothers had not graduated from high school, 12% received financial public assistance Intervention and control groups similar in terms of: ever having had intercourse; age of menstruation; age of first intercourse; current age; ever having been pregnant; baseline OC knowledge; history of	end of computer session, decision aid program allows client to enter questions to discuss with provider <u>Provider feedback:</u> Provider enhanced	and method use) significantly higher in the intervention as compared with the control group (p<0.0005) 1-year follow up: knowledge index scores significantly higher in the intervention as compared with the control group at Madison (p=0.031), but not Chicago site. <u>Secondary outcomes</u>: *Contraceptive continuation:* Both sites at 1 year: OC use not significantly different between groups *Pregnancy:* Madison: non-significant trend, participants in the intervention group had fewer pregnancies (3.6% of intervention group vs 8.6% of control group; p=0.074) Chicago: no significant difference in pregnancies (24.5% of intervention	*Follow up extended to 1 year *Participant in the intervention and control arms similar for many characteristics, including baseline OC knowledge <u>Weaknesses:</u> *Some findings not consistent across study sites *Participants assigned sequentially to study groups and not randomly <u>Quality of study:</u> Level II-1 Risk of bias: Moderate

		birth control use; and age of mother's first baby		group vs 27.3% of control group)	
DeLamater et al. 2000[11] U.S. Funding from National Institute of Mental Health (R01-MH48630)	RCT Assessment times: *Baseline *Immediate post-test *1 month *6 months	562 African American males aged 15–19 years Recruited at city health department clinic for sexually transmitted diseases 86% lived in a home without 2 parents	<u>Intervention type:</u> Videotape, or a face-to-face session with a trained health educator Three study groups: *Control *Health Educator (HE) *Videotape (VT) Both interventions 14 minutes: *Videotape: culturally appropriate and theoretically-based; included dialogue, music, lyrics, images, and personal stories *Face-to-face sessions: same messages as in videotape, but with emphasis on personalized risk information and feedback; to ensure comparability with the video tape, the health educator's script mirrored the videotape's script <u>Provider feedback:</u> Independent (VT group)	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use*: Post-test: increase in knowledge based on a 6-item scale was greatest in the HE: *Adjusted mean gains in condom use knowledge score: 0.84 (HE), 0.34 (VT), and 0.04 (control) *HE participants gained more than VT (p<0.001) and control participants (p=0.003); *VT participants gained more than control participants (p<0.001) <u>Secondary outcomes:</u> *Contraceptive use:* Condom use at 1 and 6 months: elevated relative to baseline in all 3 groups (HE, VT and control), but statistical difference between groups not reported	<u>Strengths:</u> *89% participation rate *Participants in all 3 groups similar demographic traits, sexual history, sexual behavior, and condom use *Health educator worked with participants in 1 of the 2 intervention groups, allowing for the effect of the materials and provider interaction to be evaluated separately *Validated scale used to assess knowledge <u>Weaknesses:</u> *Statistical testing between groups for immediate post-test, but not for the 1 and 6 months knowledge of condom use or condom use *Condom use increased in all three

			Enhanced (HE group)		groups so effect of standard of care and provision of condoms cannot be separated from the effect of the interventions *Procedures of concealing randomization assignment not described *Follow-up at 30 days near 100%, but only 33% at 6 months <u>Quality of study:</u> Level I Risk of bias: Low (for knowledge); High (for condom use)
Pedrazzini et al. 2000[12] United Kingdom Funding from West Midlands Regional Health Authority; the North	Pre-/post-test study Assessment times: *Baseline *Immediate post-test	75 teens (43 female, 32 male) aged 13–16 years recruited at a local high school and a local youth club	<u>Intervention type:</u> Videotape Videotape included 8 breaks to give students the opportunity to ask questions and discuss issues <u>Provider feedback</u> Provider enhanced	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* Statistics not provided; based on graphic representation of data, the videotape appeared to increase knowledge about the potential for pregnancy at first intercourse, the use of condoms to protect	<u>Weaknesses:</u> *Small sample size *Pre-/post-test study design *Statistical testing not conducted <u>Quality of Study:</u> Level II-3 Risk for bias: High

Staffordshire Hospital Trust; Mates International; Rita Butler				against STDs, the time-frame for using EC, and the advantages and disadvantages of OCs	
Lindenberg et al. 2002[13] U.S. Funding from National Institute for Drug Abuse, NIH; Rockefeller Foundation; Hershey Family Foundation; The Strachan Family Foundation, and the Emory University Research Center	Pre-/post-test study Assessment times: *Baseline *3 months	27 women aged 15–24 years Recruited from 7 public and private primary care clinics serving predominantly indigent persons From a convenience group of 56 individuals, half of participants were assigned to an educational intervention; half were assigned to a more intensive risk-reduction and resilience intervention that did not meet inclusion criteria for this review 79% Mexican, 21% Central American; average educational level 9 years (14% some primary education, 58% some secondary education, and 14% some	<u>Intervention type:</u> Written materials Spanish language pamphlets; included personal diary for participant to document personal reflections and responses for promoting self-protection related to personal risks; specific topic mailings sent once a week over 5 weeks <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct contraceptive use:* There was no significant increase pre- to post-test in sexual risk-taking knowledge scores based on a 10-item true/false question scale	<u>Strengths:</u> *Knowledge scale validated <u>Weaknesses:</u> *Small sample size *Knowledge scale contained 10 items, but several questions addressed risks related to use of alcohol, tobacco and other drugs *Pre-/post-test study design <u>Quality of study:</u> Level II-3 Risk of bias: High

		college education); average age 19 years; 28% married; majority of participants income below the federal poverty level 86% sexually active; 82% had one or more children; 32% pregnant at time of study			
Johnson et al. 2003[14] U.S. Funding source not stated	Sequential cohort Assessment times: *Immediate post-intervention	109 women during their postpartum hospitalization at the Oregon Health Sciences University; 53 in control group; 56 in intervention group Average: age 25 years 45% Hispanic Median education: high school with some college All women delivering were invited to complete an anonymous self-administered questionnaire	<u>Intervention type:</u> Written materials Comprehensive educational materials provided during postpartum hospitalization with information on all contraceptive options available <u>Provider feedback:</u> Provider independent	<u>Primary outcomes:</u> *Satisfaction/comfort with services and decision making:* Women in the intervention as compared with the control group were more likely to state that the information they received helped contribute to their ultimate choice in birth control ($p<0.01$)	<u>Strengths:</u> *Intervention and control groups did not differ by age, Hispanic ethnicity, or education level <u>Weaknesses:</u> *Small sample size *Study groups sequential *27% participation rate <u>Quality of study</u>: Level II-3 Risk of bias: High
Mason et al. 2003[15]	RCT	31 women requesting sterilization who were	<u>Intervention type:</u> Videotape	<u>Primary outcomes:</u>	<u>Strengths:</u>

United Kingdom Funding source not stated	Assessment times: *Immediate post-test	eligible for laparoscopic method; 16 participants in the control group; 15 participants in the intervention group Mean age 33.7 years; videotape group 88% white, 87% married or living with partner; control group, 80% white, 88% married or living with partner	Contained information about what sterilization involves, available alternatives and risks and benefits; included diagrams and photos of the procedure room and equipment <u>Provider feedback:</u> Provider independent	*Knowledge of risks and benefits and correct method use:* Participants in videotape as compared with the control group had significantly higher scores on the knowledge questionnaire (p<0.001) *Satisfaction/comfort with services and decision making:* Participants in the videotape and control group did not differ in their scores on a 6-item test that formed the basis of anxiety state scale	*Used a validated scale to measure anxiety level *Intervention and control group did not differ by age, marital status; race/ethnicity, number of children, or education level *Computer-generated randomization program <u>Weaknesses:</u> *Small sample size *No pre-test assessment of knowledge *Validation of knowledge scale not documented <u>Quality of study:</u> Level I Risk of bias: High
Steiner et al. 2003[16] U.S. Funding from William and	RCT Assessment times: *Baseline *Immediate post-test	433 women aged 18–44 years aged at 5 shopping malls selected; mean age 26 years 147 participants in FDA table group; 144	<u>Intervention type:</u> Written material Contraceptive effectiveness charts, 3 groups:	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* The percentage of participants in all groups who answered	<u>Strengths:</u> *Large analytic sample *Randomization of participants into groups concealed from study staff

Flora Hewlett Foundation	participants in WHO table group; 142 participants in category only table group A convenience sample was used to select the malls, but they were intended to be representative of the race and education profile of the U.S. population Mean education level 13 years; 63% white, 18% black, 12% Hispanic, and 7% other	*FDA: shown table listing actual pregnancy risk with typical and perfect use (highest complexity) *WHO: shown table listing actual pregnancy risk with typical and perfect use, in combination with effectiveness categories (intermediate complexity) *Category only: shown experimental table that contained effectiveness categories only (lowest complexity) <u>Provider feedback:</u> Provider independent	contraceptive effectiveness questions correctly increased from before to when viewing the contraceptive effectiveness chart, but the increase was twice as large in the category only as compared with the FDA and WHO groups (FDA and WHO vs category only, $p<0.05$) *Satisfaction/comfort with services and decision making:* The majority of participants in all groups said that their assigned table provided them with enough information to choose a method of contraception (FDA table 85%; WHO table 85%; category table 77%, significance value for differences between groups not provided) Participants assigned to the category table were less likely to report difficulty in understanding their table (6% for the category only,	*Differing complexity of material allows for assessment of types of written material presented *Used a permuted-block randomization (with random block sizes of six and nine) and concealed group assignment in sequentially numbered, sealed, opaque envelopes <u>Quality of study:</u> Level I Risk of bias: Low

				vs 15% for the WHO table and 19% for the FDA table, $p<0.01$)	
Roberto et al. 2007[17] U.S. Funding from National Institute of Mental Health (R01 MH16876)	Non-RCT Assessment times: *Pre-test *Immediate post-test	887 students from 9 rural high schools were recruited during their freshman year; 337 students in control group; 550 in intervention group Control group 52% female, 48% male, mean age 14.4 years, 98% American European; intervention group 55% female, 45% males, mean age 14.5 years, 95% American European	Intervention type: Interactive tool Six computer-based activities designed to change perceived threat, perceived efficacy, attitudes, and knowledge regarding pregnancy, STD, and HIV prevention Provider feedback: Provider independent	Primary outcomes: *Knowledge of risks and benefits and correct method use:* Based on an 8-item true/false question scale, intervention and control participants were similar at baseline, but intervention participants had higher post-test scores	Strengths: *Large sample size Weaknesses: *Baseline and follow up assessment for control group completed in the school year prior to the baseline assessment for the intervention group Quality of study: Level II-1 Risk for bias: High
Schwarz et al. 2008[18] U.S. Funding from the Veterans Administration and the National Institute of Child Health	RCT Assessment times: *Baseline *6 months	446 women aged 18–45 years recruited from the waiting area of two urgent care clinics in an urban setting; excluded if unlikely to become pregnant in next year (e.g., due to tubal ligation); 227 participants in control group; 219 in intervention group.	Intervention type: Videotape 15-minute videotape on emergency contraception (EC); short introduction, followed by the option to click on any of 9 questions for a "video doctor" to answer questions Provider feedback: Provider independent	Primary outcomes: *Knowledge of risks and benefits and correct method use*: Women in the intervention vs the control group showed a greater increase in number of questions answered correctly ($p<0.03$), and had a greater odds of having learned >1 thing about EC (OR: 1.96; 94% CI: 1.09, 3.51)	Strengths: *Modeling to control for baseline characteristics *Randomization was performed by a computer-generated sequence and allocation was concealed from research assistants until after the participant had

and Development	Race/ethnicity: control group 44% white, 13% black, 15% Latina, 18% Asian, 10% other; intervention group 43% white, 11% black, 14% Latina, 17% Asian, 14% other Education: control group, 4% less than high school, 11% high school only; intervention group 6% less than high school; 13% high-school only Marital status: control 39% married or co-habiting; intervention 39% married or co-habiting	Women in the intervention vs the control group were more likely to have learned EC is safe (p<0.001), will not adversely affect a women's health (p=0.005), will not cause birth defects or miscarriage (p<0.001), and is effective 3–5 days after unprotected sex (p=0.005) *Positive attitudes about contraception:* Women in the intervention vs the control group tended to have a more positive attitude about EC (p=0.06); among women who had reported a personal or religious concern about EC at baseline, only 33% of women in the intervention group vs 50% in the control group retained this concern <u>Secondary outcomes:</u> *Use of contraception*: There was a non-significant trend for a higher percentage of	completed the educational module *Intention to treat analysis *Follow-up rate similar for intervention (61%) and the control (58%) participants <u>Quality of Study</u> Level I Risk for bias: Low

				women in the intervention group to use EC (6% of intervention group vs. 3% of controls; p=0.09) *Pregnancy:* Fewer women in the intervention group were pregnant at the 6 months follow-up (0.8% of intervention group vs 6.5% of controls; p=0.01)	
Whitaker et al. 2010[19] U.S. Funding from Center for Family Planning Research, Magee-Women's Hospital	Pre-/post-test study Assessment times: *Baseline *Immediate post-test	56 women aged 14–24 (mean 18.8) years who had heard about IUDs. 44% black, 53% white, 3.5% other 19% less than high school education, 12% high school diploma, 46% some college, 23% college graduate or higher	<u>Intervention type:</u> Videotape A 3-minute demonstration about the effectiveness, risks and benefits, and costs of the copper and levonorgestrel-releasing IUDs Sessions included a demonstration of the insertion and removal processes, and the opportunity to see and touch the IUD samples. <u>Provider feedback:</u> Provider enhanced	<u>Primary outcomes:</u> *Positive attitudes about contraception:* Among women who had heard of the IUD prior to the intervention, the percentage who had a positive attitude about IUDs increased from 38% prior to the intervention, to 64% after the intervention (p<0.01)	<u>Weaknesses:</u> *Pre-/post-test study design *Small sample size *Verbal administration of survey may have biased results in favor of improvement in attitude <u>Quality of study:</u> Level II-3 Risk of bias: High
Regland et al. 2011[20]	Pre-/post-test study	Women aged ≥18 years recruited from the waiting	<u>Intervention type:</u> Written materials	<u>Primary outcomes</u>:	<u>Strengths</u>:

U.S. Funding: not stated	Assessment times: *Pre-test *Immediate post-intervention *1–5 months post intervention	room of an academic medical center women's clinic. Exclusion criteria: unable to read and speak English or not mentally competent. *116 participants at baseline and immediate post-test *101 participants agreed to follow up at 1 month, of which 53 were successfully contacted Participant demographics: *Age: 18–19 years, 18%; 20–24 years, 38%; 25–30 years, 26%; >30 years 18% *Race: white, 51%; nonwhite 49% *Education: HS or below, 57%; some college or above 43% *Income: ≤$20,000, 86%; >$20,000, 14%	Pharmacist delivered information during a 10 minute session using a flip chart as a visual aid. Topics addressed included definition of EC, how EC works, adverse effects, proper administration, effectiveness, availability, facts and myths, and a list of other contraceptive methods. Participants also provided written information on EC and other contraceptive methods if desired. Provider feedback: Provider enhanced (participants able to ask pharmacist questions)	*Knowledge of risks and benefits, and correct method use:* Immediate post-test: *Knowledge score increased significantly from 5.3±4.1 to 10.7±1.4 from baseline to immediate post-test (p<0.001). 1–5 months follow-up: *Knowledge scores remained elevated (10.3±1.6) and were significantly higher than at baseline (p-value not stated) *Barriers and Facilitators for Clients or Clinics* Participant education level interacted significantly with the intervention (p=0.016); however, while participants with a HS education or below vs college or above had lower overall knowledge scores (p=0.015), this difference was primarily attributable to their baseline scores, with both groups making	*Analysis controlled for race, income, counselor, age, and education Weaknesses: *Short follow-up *High percentage (48%) lost to follow-up at 1–5 months *Pre-/post-test study design Quality of study: Level II-2 Risk for bias: Moderate

				significant gains following the intervention: *Scores for HS or below: baseline: 4.5; post-test: 10.6; 3-months: 10.5 *Scores for some college or above: pre-test: 7.2; post-test: 10.9; 3-months: 11.4	
Castano et al., 2012[21] Hall et al. 2013[22] and 2014[23] U.S. Funding: Affinity Health Plan Making a World of Difference Grant Program; the William and Flora Hewlett Foundation; and a National Institute of Child Health and Human Development	RCT Assessment times: *Baseline *6–8 months	Study population: Sexually active women younger than 25 years who owned a cell phone with text messaging functionality and requested OCs. *Intervention 480 enrolled; 365 included in analysis *Control 480 enrolled; 337 included in analysis Intervention and control groups did not differ by demographics including: *Race ethnicity (intervention: 39% African American; 29% Hispanic; 27% white; 5% Asian; control: 45% African American; 25% Hispanic; 26% white; 4% Asian)	<u>Intervention type</u>: Text messages Intervention group received 180 daily text messages over a 6 month period that included an introductory message, three reminder messages to change contact information or message time, and 47 educational messages repeated up to four times. *educational messages incorporated six domains of OC knowledge: risks, benefits, side effects, use, effectiveness, and mechanisms of action. Intervention and control groups received routine care following health center protocols, including	<u>Primary outcomes</u> *Knowledge of risks and benefits and correct method use:* *Mean knowledge scores at baseline did not differ for intervention (22.8) vs control participants (22.7; p=0.75), but at 6 months, scores were significantly higher for intervention (25.5) versus the control participants (23.7; p<0.001), corresponding to a 7% versus a 3% increase for the intervention as compared to the control group (p<0.001). *Also at 6 months, intervention as compared to control participants had higher mean scores on knowledge of OC mechanisms of action	<u>Strength:</u> *Randomization by random-number tables *Intention-to-treat analysis *Intervention and control participants similar in most aspects *Follow-up rate similar for intervention and control participants *Demonstrated that knowledge mediated OC continuation <u>Weaknesses:</u> *Randomization could not be blinded *Self-reported data on contraceptive continuation and missed pill use

K-12 Career Development grant to Kelli Stidham Hall	*Education (intervention: completed 13±2.0 years of school; control: completed 13±2.2 years of school *Age at first sex (intervention 16.3 years; control 16.2 years) *Pregnancy history (intervention: 53% never been pregnant; control: 55% never been pregnant) A higher percentage of intervention as compared to control participants had a history of forgetting to: *take pills (intervention 61%, control 54%), *take pills two or more times per month (intervention 61%, control 54%)	contraceptive counseling by staff and an educational information handout detailing use, effectiveness, benefits, and risks. <u>Provider feedback:</u> Provider independent	(p=0.004), effectiveness (p<0.001), side effects (p=0.03) and benefits p<0.001). *Barriers and facilitators for clients or clinics* Although knowledge scores varied by education level at baseline (p<0.001) and follow-up (p=0.001), change in knowledge scores did not vary by education level (p=0.49) <u>Secondary outcomes</u>: *Contraceptive continuation:* *Continued use of OCs at 6 months was higher among intervention (64%) as compared to control participants (54%) (p=0.005); this effect remained after adjusting for age, race/ethnicity, age at first sex, pregnancy history, and prior use of OC (AOR: 1.44 [1.03, 2.00]). *Continued contraceptive among participants with follow up at 188 days or	*Educational effect and reminder effect of daily messages cannot be separated *Low participation rate (65%) *Short follow up time for behavioral outcomes <u>Quality of study:</u> Level I Risk of bias: Moderate

		more (after text messages stopped) was not significantly higher for intervention (60%) vs control participants (54%; p=0.16). *Contraceptive continuation by knowledge scores:* *OC continuers had >2-point higher OC knowledge scores at 6 months than discontinuers (p<0.001); *In multivariable regression models, each correct response on the baseline and 6-month knowledge assessments was associated with a 4% and 6% increased odds of OC continuation, respectively. *Correct and consistent use of contraception:* A higher percentage of intervention as compared to control participants reported: *No interruptions in OC use (59% of intervention vs

				48% of control participants; p=0.006). *No missed pills in the past month (39% of intervention vs 27% of control participants; p=0.04). *OC use at last intercourse (69% of intervention vs 60% of control participants p=0.03).	
Garbers et al. 2012a,b[24, 25] U.S. Funding: National Campaign to Prevent Teen and Unplanned Pregnancy; the Bridge the Gap Foundation; and a private foundation	RCT Assessment times: *Immediate post intervention *4 months.	English and Spanish speaking family planning patients aged ≥16 years attending an urban family planning clinic serving predominantly foreign-born Latinas. Exclusion criteria: patients were excluded if they were: *Walk-in patients for a pregnancy test; *Not at risk for unintended pregnancy because they were pregnant, seeking pregnancy, had a tubal ligation, or a current partner with a vasectomy;	<u>Intervention type</u>: Interactive tool Computer-based contraceptive assessment module, accounting for: patient preferences; medical, obstetric, gynecologic and contraceptive history; and sexual health risk factors. Median time for completion was 15.2 minutes. Three study groups: *Computer-based contraceptive assessment module + tailored health materials based on responses *Computer-based contraceptive assessment	<u>Primary outcomes:</u> *Selection of more effective contraceptive methods:* In both the intent-to-treat and as-treated analysis, compared to participants in the control arm, both participants in the tailored and the generic message arm were more likely to select an effective contraceptive method (<10 pregnancies/100 women with 1 year of typical use) as compared to a less effective method or no method: Intention-to-treat: *Tailored vs control: 75% vs 65%, OR=1.56 (1.23, 1.98), p<0.001;	<u>Strengths:</u> *Randomization was assigned by a computer using a nondeterministic algorithm *Intent-to-treat-analysis conducted by using clinical administrative data for participants who did not complete module *No significant differences in demographics by study arm *78% participation among eligible subjects; 81% completion rate

	*reported that they were going through or had completed menopause. 2,448 women included in intent-to-treat analysis, 1,983 with complete follow; among participants with complete follow-up, no significant difference were found in demographics. Overall: *Mean age: 27.7 years *Race-ethnicity: 68.6% Hispanic; 13.5% non-Hispanic black;16.5% non-Hispanic non-black *75.5% foreign born *49.0% <100% FPL *40.2% Medicaid or other income-eligible public insurance *Education: 26.9% <HS; 40.3% HS graduate/GED; 32.5% some college. Subset of participants randomly selected for follow up study on continuation, and correct and consistent use:	module + generic health materials *Control Participants in the tailored health materials arm received printed materials listing contraceptive methods based on their responses: *Green* – fit with life goals well and prevent pregnancy best; *Yellow* – either less good at preventing pregnancy or may be a problem for patient; *Red* – medically contraindicated Scoring of methods based on responses, with effectiveness weighted more heavily for more as compared to less effective methods Participants in the generic health intervention arm received a generic handout Participants in the control used the same touch	*Generic vs control: 78% vs 65%, OR=1.74 (1.35, 2.25), p<0.001; As-treated: *Tailored vs control: 76% vs 66%, OR=1.55 (1.21, 1.99), p=0.001; *Generic vs control: 76% vs 66%, OR=1.56 (1.21, 2.04), p=0.001; 22% of participants in the tailored arm and 24% of participants in the generic arm, as compared to 15% of participants in the control arm selected a method with <1% pregnancy rate/year with typical use (chi squared test p<0.001). <u>Secondary outcomes</u>: *Contraceptive continuation:* Compared to participants in the control arm, participants in the tailored but not the generic arm were more likely to continue their chosen method:	*Contraceptive selection validated with clinical records <u>Weaknesses:</u> *Randomization was not blinded to providers (participants bought tailor, generic or no health materials to their appointment) *Participants without complete follow-up were significantly more likely to have low educational attainment, to have used the Spanish version of the module, and to be foreign born (p<0.001 for each) *Potential recall bias for continuation from self-reported data <u>Quality of study:</u> Level I Risk of bias: Low

		*for condom users, "Did you use a condom every time you had sex?"; *for oral contraceptive users, "Have you taken your pills in the past 2 weeks?"; *for contraceptive patch users, "Did you place a patch in the last 2 weeks?"; *for Depo-Provera users, "Have you had your second shot?"	screen to answer demographic questions <u>Provider feedback:</u> Provider enhanced (tailored materials arm) Provider independent (generic health materials arm)	*Tailored vs control: 95% vs 77%, OR=5.48 (1.72, 17.42), *p*=0.004; *Generic vs control: 82% vs 77%, OR=1.31 (0.58, 2.98), *p*=0.518. *Correct and consistent use of contraception:* Compared to participants in the control arm, those in the tailored but not the generic arm were more likely to use their method correctly/consistently: *Tailored vs control: 86% vs 69%, OR=2.74 (1.21, 6.21), *p*=0.016; *Generic vs control: 65% vs 69%, OR=0.81 (0.40, 1.64), *p*=0.557.	
Vogt and Schaefer 2012[26] Funding: Baeyer HealthCare Pharmaceuticals Germany	Pre-/post test study [Study designed as RCT, but intervention arms combined for pre-/post-test analysis]	Women aged 18–24 years; equal numbers of current, past, and never users were recruited. Exclusion criteria: previous or current pregnancy, non-native German speakers, those with a medical background, and those who participated in	<u>Intervention type:</u> Written materials One of two comprehensive information brochures about COCs, their benefits and risks, and alternative contraceptive methods. Two study arms	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:* *For both study arms combined, knowledge scores increased significantly from 18.9 (SD 4.2) at baseline to 26.9 (SD 5.4) immediate post-test (*p*<0.001).	<u>Strengths</u>: *Double blinded *High recruitment and follow up rates <u>Weaknesses</u>: *Many potential confounders not assessed *Pre-/post-test analysis

	Assessment times: *Baseline *Immediate post-test *3 months	similar research in the past 12 months. Of 162 eligible women recruited, 132 (81%) consented to participate; 66 randomized to Standard Evidence-based approach and 66 randomized to Mental Models approach; 97% in Standard approach and 91% in Mental Models approach had complete follow up. Participants in the Standard and Mental Model approach were similar with respect to the following traits, with the respective values: *Mean age: 20.65 vs 20.70 years *Currently sexually active: yes (36% vs 35%), no (24% vs 27%), not disclosed (6% vs 4%) *Pre-intervention # of correct answers on knowledge test (19.4 vs 18.5)	*Standard evidence-based approach: content based on manual of the German Medical Association, Arzltliches Zentrum fur Qualitat in der Medizin (AZQ) *Mental Models approach: same content, but restructured on a risk communication approach from cognitive psychology dealing with differences in mental models of consumers and experts; stronger focus on incorrect beliefs and insufficient knowledge. <u>Provider feedback:</u> Provider independent	*For both groups combine, among women with complete follow-up, knowledge scores of 19.0 (SD 4.23) at baseline increased significantly to 26.7 (5.3) immediately post intervention, and remained significantly increased over baseline at 3 months (23.5; $p<0.001$). *Positive attitudes about contraception:* *For both groups combined, score for positive attitude about COCs increased significantly from 2.73 (SD 0.5) at baseline to 2.88 (SD 0.39) immediately post-intervention ($p<0.001$); *Score at 3 months dropped to 2.82 (SD 0.45) but was still significantly higher than at baseline ($p=0.036$) *Positive attitudes about contraception by knowledge scores:* *For both groups combined, immediately	*Findings on attitudes and intentions to use COCs not separated by intervention arm/based on pre-posttest analysis. <u>Quality of study:</u> Level II-1 Risk for bias: Moderate

	*Pre-intervention attitude, mean level of agreement (2.7 vs 2.7) *Pre-intervention intentions, mean level of agreement (3.0 vs 3.1) Participants in the Standard and Mental Model approach different by level of education (significance level not stated): *Years of schooling: <9 (6% vs 10%); 10–11 (24% vs 27%); ≥12 years (41% vs 31%)	post-test, an increase in knowledge scores was positively associated with a change in positive attitudes (r=0.284, p=0.001); at 3 months the association was somewhat weaker (r=0.206), but still significant (p=0.022). <u>Secondary outcomes</u>: *Intentions to use contraception:* *For both groups combined, score for intention to consider, recommend and use COCs increased significantly from 3.05 (SD 0.93) at baseline to 3.12 (SD) immediate post-intervention (p=0.045); *Score at 3 months dropped to 3.06 (SD 0.87), which was not significantly different from baseline. *Intentions to use contraception by knowledge scores:* *For both groups combined, immediately post-test, an increase in

				knowledge scores was positively associated with intentions to consider, recommend, and use COCs (r=0.212, p=0.015), but was no longer significant at 3 months (r=0.133, p=0.142)	
Schwarz et al. 2013[27] U.S. Funding: Society for Family Planning	RCT Assessment times: *Immediate post-intervention *3 months	Women aged 18–45 years seeking care in an emergency department or urgent care center. Exclusion criteria: not in need of contraception (currently pregnant, trying to get pregnant, had undergone a hysterectomy or tubal ligation or had a partner with a vasectomy, had an IUD or implant in place, or reported only having sex with women) Of women randomized to the intervention, 290 met inclusion criteria, of which 214 (74%) completed the module and 117 (40%) completed 3 months follow-up; of women randomized to	<u>Intervention type:</u> Interactive tool Interactive computer program providing information about contraceptives and the opportunity to request a prescription. *Content was adapted from evidence-based sources of information, including CDC *Medical Eligibility Criteria* and contraceptive effectiveness charts. *Participants were able to choose which contraceptives they wanted to learn about, and were given the opportunity to request a prescription for a combined oral contraceptive, progestin-	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:* The percentage of women of women who correctly answered the following questions was not significantly different between study groups: *IUDs and implants are as effective as tubal ligation (intervention: 21.4%; control: 15.0%; p=0.26) *The ring and patch are as effective as birth control pills (intervention: 86%; control 78.8%; p=0.16) *1 in 7 women using condoms typically become pregnant within the first year of use (intervention: 28.2%; control 23.8%; p=0.49).	<u>Strengths</u>: *Controlled for demographic variables; intervention and control participants did not differ by demographic traits *Randomization conducted by health system computer-based kiosk program <u>Weaknesses</u>: *Study underpowered *High percentage of subjects lost to follow-up *Loss to follow-up differed for intervention and control participants *No intention-to-treat analysis

	control, 301 (75%) completed the module, and 81 (20%) completed the 3 months follow-up Intervention vs control participants did not differ significantly by the following traits, with the respective values: *Age: 18–21 years (16.4% vs 16.1%), 22–30 (64.4% vs 64.2%), 31–45 years (17.2% vs 19.8%); *Race: white (67.0% vs 63.8%), black (26.1% vs 32.5%), other (7.0% vs 3.8%) *Education: HS or less (13.7% vs 16.1%) some college (26.5% vs 29.6%) graduated college (24.8% vs 22.2%), more than 4 year degree (34.2 vs 32.1%) *Health insurance: private (67.5% vs 66.7%), public (17.1% vs 23.5%), none (11.1 vs 7.4%) *Household income: <$20,000 (18.8% vs 23.5%), $20,000–$39,000 (26.5% vs 21.0%),	only pill, contraceptive ring, or patch. Control module provided information about screening for chlamydia infection. <u>Provider feedback:</u> Provider independent (study clinician spent <2 minutes reviewing blood pressure measurements and ordering requested prescriptions)	*Eligible women who did and did not complete the modules (intervention or control) may have differed. *Use of contraception measured at 3 months, but effect of intervention on contraceptive use cannot be separated from the intervention tool providing a prescription <u>Quality of study:</u> Level I Risk for bias: High

		$40,000 to $59,000 (15.4% vs 16.1%), $40,000-$59,999 (15.4% vs 16.1%), >$60,000 (26.5% vs 23.5%), don't know/missing (12.8% vs 16.1%)			
Schwarz et al. 2014[28] and Lee et al. 2015[29] U.S. Funding: Office of Population Affairs	Sequential cohort Assessment times: *Immediate post intervention *3 months	Women seeking walk-in pregnancy testing (Lee et al. 2015) and/or EC (Schwarz et al. 2014) at an inner-city Title X family planning clinic who wished to avoid pregnancy for at least 6 months Exclusion criteria: currently pregnant, using an IUD, implant tubal sterilization. <u>Women seeking pregnancy testing:</u> Participant follow-up: *Pre-intervention group: of 453 women, 131 (29%) enrolled/completed pre-visit survey; of enrolled women, 95 (73%) completed immediate post-survey, and 71	<u>Intervention type:</u> Written materials During the intervention period, providers where instructed to use a checklist to remind them to ask about: (1) pregnancy intentions; (2) unprotected sex within the past week; and (3) whether the participant wished to be tested for sexually transmitted infections. *Additionally, participants were read a short script describing the effectiveness of IUDs and implants relative to other methods and the use of the copper IUD for emergency contraception. *Women who reported unprotected sex were	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:* Immediate post-intervention (among women seeking pregnancy test): *Intervention as compared to pre-intervention participants had significantly greater knowledge regarding the effectiveness, duration of use and reversibility of IUDs and implants ($p<0.05$ for all 3 knowledge measures). Immediate post-test (among women seeking EC): *Intervention as compared to pre-intervention participants had significantly greater	<u>Strengths</u>: *Medical record used to verify method use <u>Weaknesses</u>: *Low recruitment and follow up rates *Differential follow-up rates *Sequential cohort study design *Intervention and pre-intervention group differed by race, health insurance and method use at baseline (among women seeking pregnancy) *Short follow-up *Most analyses do not adjust for potential confounders. *For IUD use, effects of education intervention cannot be separated from effects

	(54%) completed 3 month survey *Post-intervention group: of 1,100 women, 272 enrolled/completed pre-visit survey; of those enrolled, 228 (84%) completed immediate post-survey, 167 (61%) completed 3 month survey Pre-intervention vs intervention group did not differ significantly by the following traits, with respective values: *Mean age: 21.4 vs 22.0 years *Education: 34.8% vs 26.8% no HS; 33.7% vs 41.7% HS or GED; 24.7% vs 28.9% some college; 4.2% vs 1.3% college *Household income: 14.7% vs 17.5% <$5,000; 24.2% vs 30.3% $5,000–$20,000; 7.4% vs 7.9% >$20,000; 53.7% vs 44.3% don't know/no answer	offered emergency contraception. *Women who had not had unprotected intercourse during the prior 8–14 days were offered same day placement of an implant or IUD. Participants in the pre-intervention group received information in an unstructured fashion and were not offered same-day placement of IUDs or implants. <u>Provider feedback:</u> Enhanced	knowledge regarding the effectiveness of IUDs (p=0.01) and implants (p=0.02); the duration of IUDs (p=0.007) and implants (p=0.004); and the copper IUD as a hormone-free option (p=0.02). *Intervention as compared to prevention did not differ significantly in terms of their knowledge of the reversibility of IUDs (p=0.26) and implants (p=0.15). 3 month follow-up (among women seeking EC): *Intervention as compared to pre-intervention participants had significantly greater knowledge regarding the effectiveness of IUDs (p=0.02) *Intervention as compared to pre-intervention participants did not differ significantly in terms of their knowledge related to the effectiveness of implants (p=0.18); their	of contraceptive provision. *Blinding of study arm not possible <u>Quality of study:</u> Level II-3 Risk of bias: High

	*Pregnancy history: 51.6% vs 56.1% no prior pregnancy Pre-intervention vs intervention group differed significantly by the following traits with respective values as follows: *Race: 70.5% vs 78.5% black (ns); 20.0% vs 9.7% white (p=0.01); 9.5% vs 11.8% other/bi-racial (ns); -Health insurance: 58.9% vs 75.4% public (p=0.0003); 11.6% vs 9.6% private (ns); 25.9% vs 14.9% none/no response (p=0.002). *Use of no method at last intercourse: 26.8% vs 48.7% (p=0.05) <u>Women seeking EC:</u> Participant recruitment: overall 57% of eligible women agreed to participate (i.e., take post-intervention surveys) Participant follow-up:	knowledge of the duration for IUDs (p=0.82) and implants (p=0.82); their knowledge of reversibility of IUDs (p=0.07) or implants (p=0.15); or their knowledge of the copper IUD as a hormone-free option (p=0.026). *Satisfaction/comfort with services and decision making*: Intervention as compared to pre-intervention participants (among women seeking EC) were significantly more likely to report: *All their questions about birth control had been answered (96% vs 88%; p<0.001), *Being satisfied with the discussion of birth control they had at their visit (76% vs 63%; p=0.03)

	*Pre-intervention group: of 82 women seeking EC, 37 (45%) completed immediate post-survey, 23 (28%) completed 3 month survey *Post-intervention group: of 235 seeking EC, 149 (63%) completed immediate post-survey, 112 (48%) completed 3 month survey Pre-intervention vs intervention group did not differ significantly by the following traits, with the respective values: *Mean age: 24.6 vs 23.8 years *Race: 56.8 vs 67.6% black; 21.6% vs 18.2% white; 21.2% vs 14.2% other/bi-racial (ns); *Education: 22.2% vs 16.6% no HS; 38.9% vs 37.9% HS or GED; 27.8% vs 37.2% some college; 11.1% vs 8.3% college degree *Household income: 23.8% vs 23.8% <$5,000; 38.1% vs 33.6% $5,000–	

		$20,000; 14.3% vs 12.6% $20,001–$50,000; 7.1% vs 1.4% >$50,000; 16.7% vs 28.7% don't know/no answer *Health insurance: 78.4% vs 84.6% public; 11.1% vs 6.1% private; 1.1% vs.9.4% none/no response. *Pregnancy history: 25% vs 26% no prior pregnancy *Report of multiple episodes of unprotected sex in past month: 55.5% vs 55.8%			
Gilliam et al. 2014[30] U.S. Funding: Office of Population Affairs	RCT Assessment times: *Immediate post-intervention	Sexually experience, English speaking women aged 15–30 years presenting for contraceptive services at a Title X clinic; majority identified as black/African American (78.9%). Exclusion criteria: currently pregnant, desiring pregnancy within the next year, currently using a LARC or scheduled for a LARC-	<u>Intervention type:</u> Interactive tool Brief (<15 minute) opportunity to use theory-based iOS application that: (1) reflected the tenets of the theory of planned behavior; (2) filled gaps in LARC awareness while providing information on the full range of contraceptive options; (3) appealed to a variety of learning styles with text, video, and	<u>Primary outcomes:</u> *Knowledge of risks and benefits, and correct method use:* *At baseline, median score for both intervention and standard of care participants was 1 (p=0.83, for baseline difference); *For intervention group, median posttest score was 1.5, a significant increase from baseline (p=0.001) *Selection of more effective contraceptive methods*	<u>Strengths:</u> *Providers blinded to treatment arm *Selection of contraceptive method verified through chart review *Intention-to-treat analysis conducted *Intervention and standard of care arm participants similar on most traits *Randomization performed in advance using a random

	related visit, and reliance on male partner sterilization for contraception. Intervention (N=28) and control (N=24) participants did not differ significantly by the following traits, with the respective values: *Median age (23 vs 21.5 years); *Race/ethnicity (non-Hispanic black: 81.2% vs 75.0%; non-Hispanic white: 10.7% vs 12.5%; Hispanic 7.1% vs 4.2%; multiple/other/unknown: 0.0% vs 3.9%); *Relationship status (living with partner 14.3% vs 0.0%; casual partner: 46.4% vs. 37.5%; single: 39.3% vs 62.5%); *Education (HS or less: 14.3% vs 29.2%; some college 57.1% vs 45.8%; college or higher 28.6 vs 25.0%) Intervention as compared to standard of care	imagery; (4) featured unbiased, evidence based content; and (5) complemented existing clinic flow. Video testimony from LARC users also inserted. Goal of iOS app was to increase LARC awareness and interest prior to clinic visit. Design features based on preferences expressed during design process included: *Use of absolute numbers vs percentages (e.g., <1 pregnancy per 100 rather than >99% effective) *Use of peer testimonials *Ability to use tool for multiple information aspects for each method (e.g., "How does it work", "What can I expect", "What will he think") <u>Provider feedback:</u> Provider independent (providers were blinded to participant study arm)	The percent of participants choosing a LARC did not differ for intervention (22.6%) and standard of care (25.8%) participants (p=0.77).	numbers generator with assignments concealed in sequentially numbered opaque envelopes <u>Weaknesses:</u> *Short follow up *Small sample size *Clinic staff at baseline highly skilled at removing barriers to LARC, and thus clinic setting may not be generalizable – high baseline use of LARC may have masked effect of app on LARC uptake <u>Quality of study:</u> Level I Risk of bias: Moderate

		participants differed significantly age at first pregnancy (17 years vs 20 years, respectively; p=0.34).			
Kofinas et al. 2014[31] U.S. Funding: American College of Obstetricians and Gynecologist/ Bayer HealthCare Pharmaceuticals Research Fellowship in Oral Contraceptive Benefit/Risk Communication	RCT Assessment times: *Immediate post-intervention	English-speaking women aged 18–45 years receiving care at an urban academic center obstetrics and gynecology clinic who were not currently pregnant. Facebook intervention (N=74) and standard pamphlet (N=69) participants did not differ significantly by the following traits, with the respective values: *Age: 18–25 years (29.0% vs 37.8%), 26–30 years (26.1% vs 25.7%), 31–35 years (31.9% vs 24.3%); *Race-ethnicity: Hispanic (39.1% vs 43.2%), Caucasian (42.0% vs 32.4%), Asian (4.4% vs 2.7%), African (5.8% vs 2.7%); *Marital status: single (73.9% vs 73.0%),	Intervention type: Interactive tool Participants in the intervention Facebook group were allowed to interact with a Facebook page for 30 minutes, which presented content in video, diagram, and game format. All content was based on American College of Obstetricians and Gynecologist fact sheets. Standard pamphlet participants were given 30 minutes to review a pamphlet with identical content to the materials on the Facebook page. The Facebook and standard pamphlet groups both received a 15 minute, one-on-one counseling session, from a single	Primary outcomes: *Knowledge of risks and benefits, and correct method use:* *At baseline, participants in the standard pamphlet as compared to the Facebook arm had higher knowledge scores (p=0.04) *Post-intervention, knowledge scores were higher in the Facebook (15 points) as compared to the pamphlet arm (12 points; p<0.001). *Increase in knowledge scores from base-line to post-intervention was greater for participants in the Facebook as compared to the standard pamphlet arm (Facebook: 36% increase; pamphlet: 12% increase; p<0.001). *Satisfaction/comfort with services and decision making:*	Strengths: *Use of a validated contraceptive knowledge survey *Providers blinded to intervention arm *Intervention and standard of care arm participants similar on most traits *Demonstrated knowledge mediated attitudes about contraception *Randomization assignment concealed through use of opaque envelopes Weaknesses: *No intention to treat analysis *Short follow-up Quality of study: Level I Risk of bias: Low

	married (26.1% vs 27.0%) *History of previous pregnancy: yes (63.8% vs 54.1%), no (36.2% vs 46.0%) At baseline, the Facebook and pamphlet group did not differ in use of hormonal methods, sterilization or non-use, although a lower percentage of in the Facebook (26.1%) as compared to pamphlet group (43.2%) was using a barrier method at baseline (p=0.03). At baseline, the median contraceptive knowledge inventory score was also significantly lower for the Facebook (6 points) as compared with the pamphlet (7 points) group (p=0.04)	healthcare provider to guarantee uniformity. <u>Provider feedback:</u> Provider independent (provider was blinded to intervention)	*Median scores for satisfaction with counseling were higher in the Facebook (10 points) as compared to the pamphlet arm (6 points; p<0.001). *Positive attitudes about contraception:* *A significantly greater proportion of Facebook as compared to standard pamphlet participants expressed an interests in LARCs (57% vs 35%; p<0.01) and implants in particular (35% vs 9%; p<0.01), although there was no difference between groups in expressed preference for IUDs in particular (22% vs 26%; p<0.58) *Positive attitudes about contraception by knowledge scores:* Increases in the contraceptive knowledge inventory score were associated with an increased relative risk (RR) of preferring LARC:

				*4% increase in the knowledge score yielded a RR of 1.06 (95% CI 1.02, 1.10) of preferring LARC *12% increase in the knowledge score yielded an RR of 1.19 (95% CI 1.06, 1.34) of preferring LARC *24% increase in the knowledge score yielded a RR of 1.43 (95% CI 1.13, 1.80) of preferring LARC *36% increase in the knowledge score yielded a RR of 1.71 (95% CI 1.20, 2.42) of preferring LARC	
Davidson et al. 2015[32] U.S. Funding from the Society of Family Planning Research Fund	RCT Assessment times: *Baseline *Immediate post intervention	Women aged 18–29 years presenting for a surgical abortion and not desiring pregnancy in the next 12 months Exclusion criteria: having a nonviable or anomalous pregnancy, having a pregnancy resulting from a sexual assault, and inability to speak read and/or write in English. Intervention (N=96) and control (N=95) groups did	<u>Intervention type</u>: Video Theory based video intervention presented on iPad prior to routine contraceptive counseling. Video lasted 7 minutes and was comprised of three segments: *A healthcare provider delivering basic information about LARC methods, including: mechanisms of action, side effects, and efficacy; display of LARC devices;	<u>Primary outcomes</u> *Satisfaction/comfort with services and decision making:* Satisfaction scores (ranging from 1=strongly disagree to 5=strongly disagree) were high (>4.5) and did not differ significantly between the intervention and control group for all five questions, including: *"I was given enough information to make an informed decision about	<u>Strengths:</u> *Randomization procedures included random sequence generation using an online random number generator *Provider blinded to participant assignment *Participants in both arms had similar demographics <u>Weaknesses:</u> *Study underpowered – sample size

		not differ by demographics including: *Mean age (intervention 23.1 years, vs control 23.6 years) *Race/ethnicity (intervention 53% black, vs control 49%) *Income (intervention 46% uninsured vs control 51%) *Lacks health insurance (intervention and control 30%) *<12 grade education (intervention 4% vs control 1%) *Marital status single (intervention 87% vs control 92%)	and information on safety, ease of use and effectiveness (1 segment) *Narrative comments from patients who had used LARC following abortion, describing how and why they decided to use LARC, their impression of the insertion procedure, and their overall experience with the method, including how they had managed any negative aspects of LARC use (2 segments) Control video was the same length and discussed stress management. Intervention and control groups both provided no-cost contraception. <u>Provider feedback:</u> Provider independent (participants were instructed not to discuss the video with clinic staff)	my use of birth control" (p=0.94) *"Whether I chose to use birth control, the decision was ultimately my own" (p=0.21) *"The staff respected my decisions regarding birth control" (p=0.54) *"I am satisfied with my birth control decision" (p=0.94) *"I am satisfied with the counseling I received about birth control" (p=0.82)	calculated assuming lower baseline prevalence of LARC uptake than actually occurred during the 2 months before and after study *Provision of free contraception to all study participants increased the overall rates of LARC initiation and may have masked any effect of the intervention *Participants could not be blinded to study arm *Inclusion of abortion patients only may not be generalizable <u>Quality of study:</u> Level I Risk of bias: Moderate
Garbers et al. 2015[33]	Pre-/post-test study	Females age 18–45 years from the U.S. or Puerto	<u>Intervention type:</u> Videotape	<u>Primary outcomes:</u>	<u>Strengths:</u> <u>Weaknesses:</u>

U.S. Funding: National Campaign to Prevent Teen and Unplanned Pregnancy	Assessment times: *Immediate post-intervention	Rico who clicked on a banner add. Of 3,539 potential participants, 977 excluded because they exited the add immediately, were too young (N=425), too old (N=9), not female (N=227), resided outside of U.S. or Puerto Rico (N=508), or were not randomized to the video as part of a larger study (N=705) Of 688 randomized, 288 did not complete the baseline survey, and 85 did not complete the post-video survey. Characteristics of the 315 participants: *Age: 70.8% 18–25 years; and 29.2% 26–45 years; *Race ethnicity: 65.6% Hispanic; 28.2% non-Hispanic white; 3.9% non-Hispanic black; 2.3% non-Hispanic other or multiple races;	Single-session online video intervention about IUDs, incorporating social learning and cognitive theories. Reviews myths and misinformation about IUDs, debunking with factual information. <u>Provider feedback:</u> Provider independent	*Knowledge of risks and benefits, and correct method use:* *The percentage of subjects who knew that the IUD is more effective at preventing pregnancy than the pill increased from 33% prior to the intervention to 64% after the intervention (p<0.001). *The percentage of subjects who knew that a young woman who has never had a child can use an IUD increased from 29% prior to the intervention to 77% after the intervention (p<0.001). <u>Secondary outcomes:</u> *Intentions to use contraception:* *The percentage of subjects who intended to use an IUD in the next 3 months increased from 18% prior to the intervention to 36% after the intervention (p<0.001).	*Low recruitment rate *Short follow-up *Selection of IUD not confirmed *Limited aspects of knowledge evaluated *Pre-/post-test study design <u>Quality of study:</u> Level II-3 Risk of bias: High

		*Partner status: 33.6% married; 22.7% living as married; 39.0% single, never married; 4.7% divorced, separated or widowed; *Highest education: 33.9% some HS or less; 26.8% some HS or GED; 27.2% some college; 12.1% college graduate or higher; *Parity: 46.3% nulliparous; 53.7% one or more live births.			
Regland et al. 2015[34] U.S. Funding: University of Arkansas College of Pharmacy Student Research Fellowship Grant	Pre-/post-test study Assessment times: *Pretest *Immediate post-intervention *1–3 months post intervention	English speaking women aged 18–45 years recruited at a grocery store pharmacy. Exclusion criteria: unable to read and speak English or not mentally competent. *87 participants at baseline and immediate post-test *80 participants follow-up at 1 month, of which 34 were successfully contacted	<u>Intervention type:</u> Written materials Pharmacist delivered information during a 5 minute session using a flip chart as a visual aid. Topics addressed included definition of EC, how EC works, adverse effects, proper administration, effectiveness, availability, facts and myths, and a list of other contraceptive methods. <u>Provider feedback:</u>	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:* Immediate post-test: *Knowledge score increased significantly from 8.5±2.5 to 11.7±1.0 from baseline to immediate post-test (p<0.001). 1–3 month follow-up: *Compared to baseline, knowledge scores at follow up (9.9±1.1) were significantly higher (p=0.014	<u>Strengths</u>: *Analysis controlled for race, income, counselor, age, and education <u>Weaknesses</u>: *High percentage (47%) lost to follow-up at 1–3 months *Small sample size *Pre-/post-test study design <u>Quality of study:</u> Level II-2

		Participant demographics: *Age: 18–19 years, 6.9%; 20–24 years, 20.7%; 25–30 years, 26.4%; >30 years, 56% *Race: white, 55.7%; nonwhite, 44.3% *Education: HS or below, 9.2%; some college or above, 90.8% *Income: ≤$20,000, 44.2%; >$20,000, 57.8%	Provider enhanced (participants able to ask pharmacist questions)	*Compared to immediate post-test, knowledge scores at follow-up declined significantly (p<0.001)	Risk for bias: Moderate
Sridhar et al. 2015[35] U.S. Funding: Society for Family Planning	RCT Assessment times: *Immediate post intervention	Women aged 18–45 years, literate in English, not currently using a method or willing to switch to a new method, currently sexually active with a male partner, and intending to avoid pregnancy for at least 1 year. Exclusion criteria: not at risk for unintended pregnancy because they were pregnant, seeking pregnancy within the next 12 months, had a history of surgical sterilization or a partner who had had a vasectomy, using a long-acting reversible method,	<u>Intervention type:</u> Interactive Tool Smart phone app displaying information to users about common nonpermanent birth control methods. Content adapted from 3 commonly used patient information resources: (1) the California Family Planning, Access, Care, and Treatment (Family PACT) birth control education materials; (2) the California Family Health Council fundamentals of family planning;	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:* The mean knowledge score did not differ significantly for intervention (5.35, range 0–6) and control (5.56, range 0–6) participants (p=0.30). *Satisfaction/comfort with services and decision making:* The percentage of women reporting that they were very satisfied was significantly lower for the intervention (33%) vs control (54%) group (p<0.001).	<u>Strengths</u>: *Intention-to-treat analysis *Contraceptive choice verified through medical records *Knowledge and satisfaction scales evaluated through pilot testing *Prescribing physician blinded to condition <u>Weaknesses</u>: *High percentage of urban college students may not be representative of population of women needing contraceptive services

	or were going through or had completed menopause. Total of 120 participants randomized to intervention (N=60) and control (N=60) arms. Participants in the intervention and control arm did not differ significantly by the following traits, with the respective values: *Mean age: 25.9 vs 25.9 years *Education: some HS (1.7% vs 3.3 %); HS or GED (5.0% vs 3.3%); some college (55.0% vs 43.3%); college graduate (28.3% vs 26.7%); master's degree or higher (10.0% vs 23.3%); *Maternal education: <8th grade (11.7% vs 8.3 %); some HS (5.0% vs 5.0%); HS or GED (20.0% vs 25.0%); some college (20.0 vs 16.7%); college graduate (30.0% vs 23.3%); master's	(3) Bedside site developed by the National Teen Pregnancy Prevention Campaign. *Introductory screen emphasizes the importance of overall health, preconception care, protection against sexually transmitted infections, and tips to choose birth control methods based on reproductive and life goals. *Subsequent screens present methods in order of effectiveness; *Information about each birth control method systematically placed under 7 headings: "what is it," "how does it work," "how to use it," "how well it works," "what are the benefits," "side effects," and "warning signs." *Contains simple questions to screen for medical eligibility Control group received standard counseling from	*Selection of more as compared to less effective methods:* The percentage of women choosing a very effective method (IUD or implant) did not differ significantly for intervention (52%) and control (57%) participants (p=0.753).	*Highly trained health educators (control) may not have been representative of standard of care *Short follow-up *Small sample size *Randomization procedures not reported <u>Quality of study:</u> Level I Risk for bias: High

		degree or higher (10.0% vs 18.3%); do not know (3.3% vs 3.3%).	a health educator, using the same content as the mobile application as their guide; health educator was instructed to talk with participants about the most effective methods first and then move to less effective methods. All participants met with a physician after receiving information from the app or health educator. <u>Provider feedback:</u> Provider independent		
De Reilhac, et al. 2016[36] France Teva Pharmaceutical Industries	RCT Assessment time: *Immediate post intervention	Women age >16 to <40 years with no prior history of oral contraceptive use (combined or progestin only), and starting pills based on conventional basis (excludes quick start). Intervention: N=324 (mean age 20 years; 35% rural; 52% beyond high school education)	<u>Intervention type</u>: Written materials Essential information checklist for women receiving COCs for first time; includes information determined to be essential through a Delphi interview process among 100 gynecologists, including: *How the pill works (how to take the pill; what to do if a pill is missed; what to do in case of vomiting;	<u>Primary outcomes:</u> *Knowledge of risks and benefits and correct method use:* Mean understanding score higher in intervention (16.16±2.59) vs the control group (13.95±2.69); $p<0.001$ Total number of women who had a score >18 was higher in the intervention verses the control group (31% vs 7%, respectively; $p<0.001$)	<u>Strengths:</u> *Importance of knowledge domains evaluated through Delphi Process *Analysis controlled for age, university education, previous pregnancy consultations *Computer generated randomization <u>Weakness:</u> *Intervention and control differed by age

		Control: N=307 (mean age 21 years; 35% rural; 46% beyond high school education)	cycle control in the beginning) *Benefits of cycle control (length, bleeding, intensity) *Cardiovascular risk, if current smoking or known risk factors *Necessity to inform all physicians about pill use *Information about the risk of sexually transmitted infections. Control group received unstructured information from provider <u>Provider feedback:</u> Provider enhanced Items on essential checklist delivered by provider, who answered questions.	Significantly more women in the intervention as compared to the control group knew about: *How the pill works (p<0.0001) *Number of active pills in a pack (p<0.01) *When to start the next pack (p<0.01) *What to do if >12 hours late (p<0.01) *What to do with the rest of the pack if >12 hours late (p<0.0001) *What to do if you have sex after being >12 hours late (p<0.01) *What to do if vomit within 4 hrs. (p<0.0001) *Increased risks with smoking (p<0.05) *Need to inform surgeon if using the pill (p<0.001) *About the need to inform provider using pill if receiving new medications (p<0.05)	and the percentage who ≥1 full term pregnancy <u>Quality of study:</u> Level I Risk of bias: Low
Michie et al 2016[37]	RCT Assessment times:	Women aged ≥16 years attending abortion clinic and considering using	<u>Intervention type:</u> Video	<u>Primary outcomes</u>: *Knowledge of risks and benefits, and correct method use:*	<u>Strengths</u>: *High recruitment rate (85%)

United Kingdom Funding: HRA Pharma	*Immediate post test *3 months	Nexplanon for the first time. Exclusion criteria: previous use of the contraceptive implant, need for interpreter. Intervention (N=35) vs control group (N=15) did not differ significantly by the following traits, with respective proportions as follows: *Mean age: 24 vs 23 years *Deprivation index: 20% vs 7% deprived (not affluent or moderate) *Had prior birth: 34% vs 33% *Had prior abortion: 31% vs 20% *No prior contraceptive use: 6% vs 0% *Prior use of IUD: 6% vs 7%	DVD covering modes of action, insertion, removal, contraindications, risks and side effects; duration 9 minutes. Control group received traditional face-to-face consultation with a doctor or nurse according to routine practice. <u>Provider feedback:</u> Provider enhanced (provider consulted to answer questions after participant watched DVD)	Immediate post-intervention *A significantly greater percentage of intervention (94%) as compared to control participants (47%) answered question correctly about the effect of the implant on mood and skin changes (p=0.004); *Intervention and control participants did not differ significantly in terms of their knowledge related to how long the implant would last, the mechanism of action, delays in return to fertility. 3 month follow-up: knowledge scores not presented <u>Secondary outcomes</u>: *Intentions to use contraception* *The percentage of intervention (86%) and control (87%) who intended to proceed to obtaining the implant did not differ (ns).	*Intervention and control group did not differ by any demographic traits *Randomization via sequentially numbered opaque sealed envelopes produced by a computer-generated randomization sequence <u>Weaknesses</u>: *Population not generalizable to full population of women of reproductive age *Small sample size, pilot *Provider not blinded to intervention arm *Short follow-up and contraceptive knowledge not assessed at 3 months <u>Quality of study:</u> Level I Risk for bias: Moderate

		Contraceptive continuation -At 3 months, the percentage of intervention (80%) and control (100%) participants who continued use of the implant did not differ significantly (p=0.29).

CDC, Centers for Disease Control and Prevention; CI, Confidence interval; COC, Combined oral contraceptives; EC, Emergency contraception; FDA, Food and Drug Administration; GED, General equivalency diploma; HE, Health educator; HHS, Health and Human Services; HIV, Human immunodeficiency virus; HS, High school; IUD, Intrauterine device; LARC, Long-acting reversible contraception; NS, Not significant; OC, Oral contraceptives; OR, Odds ratio, PACT, Planning, Access, Care and Treatment; RCT, Randomized controlled trial; SD, Standard deviation; STD, Sexually transmitted disease; VT, Videotape; WHO, World Health Organization.