Interventions to Improve Parental Communication About Sex: A Systematic Review

abstract

CONTEXT: The relative effectiveness of interventions to improve parental communication with adolescents about sex is not known.

OBJECTIVE: To compare the effectiveness and methodologic quality of interventions for improving parental communication with adolescents about sex.

METHODS: We searched 6 databases: OVID/Medline, PsychInfo, ERIC, Cochrane Review, Communication and Mass Media, and the Cumulative Index to Nursing and Allied Health Literature. We included studies published between 1980 and July 2010 in peer-reviewed English-language journals that targeted US parents of adolescents aged 11 to 18 years, used an experimental or quasi-experimental design, included a control group, and had a pretest/posttest design. We abstracted data on multiple communication outcomes defined by the integrative conceptual model (communication frequency, content, skills, intentions, self-efficacy, perceived environmental barriers/facilitators, perceived social norms, attitudes, outcome expectations, knowledge, and beliefs). Methodologic quality was assessed using the 11-item methodologic quality score.

RESULTS: Twelve studies met inclusion criteria. Compared with controls, parents who participated in these interventions experienced improvements in multiple communication domains including the frequency, quality, intentions, comfort, and self-efficacy for communicating. We noted no effects on parental attitudes toward communicating or the outcomes they expected to occur as a result of communicating. Four studies were of high quality, 7 were of medium quality, and 1 was of lower quality.

CONCLUSIONS: Our review was limited by the lack of standardized measures for assessing parental communication. Still, interventions for improving parent-adolescent sex communication are well designed and have some targeted effects. Wider dissemination could augment efforts by schools, clinicians, and health educators. Pediatrics 2011; 127:494–510
Adolescent sexual behavior is a normal developmental milestone. However, the social and public health consequences of adolescent sexual activity are tremendous. Of the 18 million sexually transmitted infections diagnosed in the United States each year,12 half occur in adolescents.3–5 Pregnancy affects 750,000 adolescents annually; 80% of which are unintended.6 Despite recent declines in the number of sexually active adolescents, engagement in risky sexual behaviors remains problematic.7 Adolescents who recall a parent talking with them about sex are more likely to report delaying sexual initiation8–10 and increasing condom8,11,12 and contraceptive11,13 use. In light of these findings, interventions for improving parental communication about sex have been developed.14 Although dozens of interventions exist, they have not been rigorously compared. We sought to examine whether interventions for improving parental communication with adolescents about sex are effective at strengthening multiple communication domains and to assess the methodologic quality of these interventions.

METHODS

With the assistance of health science librarians, 6 databases were searched: OVID/Medline (1980 to July 2010), PsychInfo (1980 to July 2010), ERIC (1980 to July 2010), Cochrane Review (until July 2010), Communication and Mass Media (1980 to July 2010), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982 to July 2010). We used terms for parent (eg, parent, caregiver), parenting (eg, mother-child relations, father-child relations), communication (eg, communication, health promotion), sex (eg, sex education, sex counseling), and experimental design (eg, intervention studies, pilot projects, clinical trials) along with Boolean connectors (ie, and, or). To identify additional articles that met our inclusion criteria, we hand-searched the reference list of each article on parent-adolescent communication, including review articles (see Fig 1 for an example of 1 of our search strategies).

Inclusion Criteria

We included studies that were published between January 1980 and July 2010; were published in peer-reviewed, English-language journals; empirically measured the effectiveness of interventions for improving parental communication with adolescents about sex; targeted parents of adolescents aged 11 to 18 years in the United States; and used an experimental or quasi-experimental study design that included a control group and a pretest/posttest design. Studies could target mothers, fathers, or both. Studies could target communication by parents with daughters, sons, or adolescents of both genders.

Data Abstraction

We initially searched each database to create a list of potentially eligible articles on the basis of title review. If there was any question of the article’s relevance based on the title, we reviewed the abstract. If an abstract was not available or the articles’ eligibility remained questionable after reading the abstract, we read the full text. For instances in which a single intervention was described in multiple published articles, we counted the interventions only once. The paper-based abstract and article review forms were pilot-tested and revised 3 times before the final forms were selected. Each pilot test was performed in a new electronic database. After the third pilot test, the forms functioned well for data abstraction from the remaining databases. We double-entered the abstracted data into a structured Excel database (Microsoft, Redmond, WA). Our review protocol is available on request.

Study Characteristics

Abstracted information included the interventions’ inclusion and exclusion criteria, when the intervention was conducted, recruitment strategies, geographic setting, intervention-
control-group characteristics, study design (eg, number of intervention sessions, intervention site and content), data-collection methods, primary outcomes, and attrition rate. Only findings that resulted from statistical tests of hypotheses assessing relationships between the intervention (exposure) and its effects on parental communication (outcome) were extracted. For cases in which multiple postintervention assessments (eg, immediate postintervention, 3-month, 6-month) were made, we abstracted outcome data for each assessment time point. When insufficient data were presented in the published article to determine outcome results, we contacted the study authors to obtain the necessary data. We contacted the authors of 2 studies to obtain the means and SDs for the communication outcome measures they reported to permit comparison with data reported from other included studies. These data also would have aided in calculating effect sizes. In both instances, we reached the study authors but were unable to obtain the necessary data. However, we did not exclude any data. We report study results as they were cited in each author’s original article.

Communication Outcomes
We abstracted data on multiple aspects of communication. Our selection of outcomes was guided by the integrated conceptual model (ICM). This model had previously been used to examine parental communication about sex. Developed by a National Institutes of Health consensus panel of health behavior experts, the ICM posits that 3 factors are necessary and sufficient for parent-adolescent communication to occur: skills; intentions; and the absence of environmental barriers or presence of facilitators of the behavior. Four factors influence intentions: self-efficacy; perceived social norms; attitudes toward the behavior; and outcomes expected to occur as a result of engaging in the target behavior. Finally, 2 factors influence the previous 4: knowledge and beliefs about the behavior. We acknowledge that systematic reviews usually select only 1 outcome variable to examine. We included multiple domains of parental communication, because we recognized that a strict approach would severely limit the number of studies that would meet our inclusion criteria and, more importantly, would provide a less robust description of interventions’ effect on parent-adolescent communication. When available, we included outcomes reported by parents and adolescents, because their perspectives regarding whether and how discussions about sex have occurred are often incongruent.

Each study’s test of the relationship between intervention participation and a communication domain was counted as a separate finding. Thus, a single study could contribute multiple findings (eg, communication frequency, quality, self-efficacy). Furthermore, when unadjusted and controlled analyses were reported in the same study, only findings from the controlled analyses were abstracted, because they provide a more precise measure of effect. Two reviewers independently abstracted all data and then met to discuss and compare their findings. The interrater reliability for data abstraction was 0.97.

Data Synthesis
Ideally, each intervention’s effect on a given communication domain would have been converted to an effect size that provides a standardized measure of the magnitude of each intervention’s effect, which would have allowed us to perform a meta-analysis and calculate pooled effect sizes for each communication domain. However, this was not possible because of variability in how communication domains were defined and measured across the studies.

Methodologic Quality
We systematically recorded information regarding each intervention’s methodologic characteristics. We used a previously described and validated methodologic quality scoring (MQS) system. Scores on the 11-item MQS ranged from 0 to 20. Scores were grouped to denote lower- (score of 0–6), medium- (score of 7–14), and higher- (score ≥ 15) quality studies. The data were again abstracted by 2 independent coders, and the interrater reliability was 0.90.

RESULTS
Thirty-three parent-adolescent communication interventions were identified; 12 met inclusion criteria. Fig 2 shows the flow diagram for study inclusion and exclusion. Twenty-one studies were excluded. Several studies met more than 1 exclusion criteria. Four studies were excluded because they lacked a control group; 9 did not report parent-adolescent communication outcome data; 1 did not report outcome data for parent participants, only for adolescent participants; 5 included parents of younger children but did not stratify outcome data on the basis of the age of participating parents’ children; only 1 included parents of preschool-aged children; parents participated in multiple interventions simultaneously in 1 study, which made it impossible to determine the individual effects of the parent-adolescent communication program; and 4 included non-US samples. The studies were published in 11 journals.
that represent a variety of disciplinary fields including psychology, family relations, adolescent health, general medicine, public health, nursing, and sexual health.

Overview of Communication Outcomes

Across all 12 studies, we identified 2 measures of actual communication: the frequency of parent-adolescent discussions about sex-related topics and the content of those discussions. Content of communication was assessed by using 3 measures: the number of sexuality-related topics ever discussed, as well as new and repeated topics discussed between follow-up periods. Specific measures regarding skills, intentions, self-efficacy (or comfort), attitudes, and outcomes expectations were identified. No studies assessed communication knowledge, environmental barriers/facilitators of communication, or perceived social norms regarding communication. Although we also found no measures that were explicitly titled “beliefs about communicating,” items contained in measures of perceived quality of communication seemed to tap parental beliefs about communicating. Hence, we review outcome data on quality measures in “Quality (ie, Beliefs) of Communication.”

Studies varied widely in the number of communication domains assessed. The 2 most common domains measured were frequency and content of communication. Eight studies assessed communication outcomes by using both parent and adolescent reports. Every intervention used different measures to assess each of the communication domains. Most of these measures were developed by the investigators for their individual study.

Intervention Characteristics

Table 1 summarizes the characteristics of each of the 12 interventions included in this review. Six interventions were conducted in the South, 3 in the West, and 1 in the Northeast. Only 2 targeted rural populations. We assigned each intervention an urban/rural designation on the basis of the authors’ report of intervention location and the US Census definition of urban/rural areas. Nine studies were conducted as randomized controlled trials, and the remainder used quasi-experimental designs.

Although the studies targeted parents of adolescents in different age ranges, all of them included parents of middle school students aged 11 to 14. Only 2 included high school students. One-third of the studies specifically targeted fathers or mothers, and the remainder included predominantly mothers despite both parents being eligible. Participants in 3 studies consisted mostly of white respondents, 6 included predominantly black respondents, and the remainder included samples with more than 2 racial/ethnic groups.

Intervention Effectiveness

In general, authors of the studies reported that their interventions increased parental reports of parent-adolescent communication regardless of the communication domain assessed (Table 2).

Compared with adolescents, parents seemed more likely to report that interventions had a positive effect on communication domains and reported larger preintervention/postintervention changes. We summarize the findings for each communication domain below.

Frequency of Communication

In 5 of the 6 studies that assessed frequency of communication, parents reported an increase in communication from before to after testing. No change was noted in 1 study. Four studies assessed adolescent reports of changes in the frequency of communication: 2 resulted in increases; the adolescent result was not reported for 1 study; and 1 resulted in no change. Only 1 study compared the magnitude of change in the frequency of communication between parents and adolescents; parents reported a larger change than adolescents.
### TABLE 1 Intervention Characteristics: Reviewed Studies and Their Methods and Findings

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Parent Participants</th>
<th>Racial Composition (%)</th>
<th>Intervention Year(s)</th>
<th>Sample Size, Adolescents, n</th>
<th>Sample Size, Parents, n</th>
<th>% Mothers</th>
<th>Region</th>
<th>Urbanicity</th>
<th>Study Design</th>
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<th>Attention, %</th>
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<td>Keepin' it REAL</td>
<td>Mothers of 11- to 14-y-olds</td>
<td>Black (97%); other (3%)</td>
<td>1996–2001</td>
<td>I: 160 (LSK); I: 154 (SCT); C: 156</td>
<td>I: 197 (LSK); I: 194 (SCT); C: 201</td>
<td>100</td>
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<td>Facts and Feelings</td>
<td>Parents of 12- to 14-y-olds</td>
<td>White (95%); other (5%)</td>
<td>1989–1994</td>
<td>I: 126 families (full); I: 132 families (short); C: 290 families</td>
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<td>Frequency</td>
<td>Parents Matter&lt;sup&gt;a&lt;/sup&gt;</td>
<td>9-item scale; 2-point Likert scale (e.g., never, lots of times); higher scores denote more frequent communication</td>
<td>No pre/post outcome data were presented for parents or adolescents, only differences in mean change between each of the 3 intervention arms for each assessment period</td>
<td>See right</td>
<td>Parents and adolescents in the enhanced intervention (2 sessions) reported increased communication compared to single-session intervention or the control group; magnitude of change between pre- and immediate postintervention assessments was reportedly greater among adolescents than parents; at subsequent follow-up postintervention assessments; magnitude of change was reportedly greater among parents than adolescents, although the magnitude of the difference in means decreased over time</td>
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<td></td>
<td>CHAMP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Measure not described or referenced; lower scores denote more frequent communication</td>
<td>Pre: 13.5 (5.0); post: 11.8 (5.2); ( t ) score: (-2.30) (NS)</td>
<td>Pre: NR; post: 14.1 (4.8); ( t ) score: (-6.9)</td>
<td>Parents in the intervention group reported increased frequency of communication relative to the control group</td>
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<td>Huston&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Assess No. of times 11 sexual topics were discussed; 6 response options (ie, 0, 1, 2, 3, 4, 5+ times); responses summed yielding frequency score; compared difference in frequency score pre- and postintervention; higher scores denote more frequent communication</td>
<td>Pre: NR; post: 10.9 (7.3)</td>
<td>Pre: NR; post: (-2.50) (5.86)</td>
<td>Parents in the intervention group reported increased frequency of communication relative to the control group</td>
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<td>Lefkowitz&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Assessment of discussions regarding 10 sexuality- and AIDS-related topics during previous 2 wk; dichotomous response (yes/no); reported mean No. of topics discussed</td>
<td>Parents: pre: 0.5 (0.9); post: 0.4 (1.1)</td>
<td>Parents: pre: 0.3 (0.6); post: 0.4 (1.0)</td>
<td>No difference reported for parents or adolescents</td>
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<td>Facts and Feelings&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Parents: assessed frequency of discussion of 14 topics in previous 3 mo; 4-point Likert scale (e.g., no talk, &gt;4 times); higher scores denote more frequent communication</td>
<td>See right</td>
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<td>Parents: parents in the video-only and the video + newsletter groups showed a larger increase in the frequency of communication than those in the control group; half the gain in communication frequency was lost in both intervention groups by 12 mo; control-group parents experienced a gradual increase in communication. Adolescents: adolescents whose parents were in either intervention group showed a larger increase in the frequency of communication than those in the control group; adolescents whose parents were in the video + newsletter group showed a larger increase than those in the video-only group; at 12 mo, all 3 groups returned to their baseline frequency of communication</td>
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<sup>a</sup>Results were reported for parents only. Adolescents were not assessed.

<sup>b</sup>Measure not described or referenced; lower scores denote more frequent communication.
<table>
<thead>
<tr>
<th>Communication Domain</th>
<th>Intervention</th>
<th>Description of Outcome Measure</th>
<th>Intervention-Group Outcomes</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Families in Toucha</td>
<td>The modified Fisher scale measured parent-child communication about sex by using a 4-item scale; 4-point Likert scale, scores ranged from 0-32; higher scores denote more frequent communication</td>
<td>Parent:</td>
<td></td>
<td>Parents:</td>
<td>Parents in the intervention group reported increased frequency of communication relative to control group</td>
</tr>
<tr>
<td>Families in Toucha</td>
<td>Discussions about AIDS reported by using 1 of the items from the Fisher scale (described above); higher scores denote more frequent communication</td>
<td>Parent:</td>
<td></td>
<td>Adolescents:</td>
<td>Parents in the intervention group reported speaking with their adolescent more about AIDS compared to the control group</td>
</tr>
<tr>
<td>Ever discussed</td>
<td>Talking Parentsa</td>
<td>Parents: assessed whether ever discussed 24 sex-related topics at baseline and summed the responses; at each postintervention assessment, calculated the No. of new topics discussed between visits and the No. of repeated topics</td>
<td></td>
<td>Adolescents:</td>
<td>The mean No. of new topics parents and adolescents reportedly discussed between baseline and the immediate postintervention assessment increased; the magnitude of the mean difference in the No. of new topics reportedly discussed by parents and adolescents in the intervention and control group was the same at 3 and 9 mo as at 1 wk after the intervention; the difference in the mean No. of repeated topics reported by parents and adolescents increased significantly at 3 and 9 mo</td>
</tr>
<tr>
<td>Communication Domain</td>
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<tr>
<td>Lefkowitz&lt;sup&gt;a&lt;/sup&gt;</td>
<td>One item assessed whether ever communicated about AIDS; 5-point Likert scale (eg, not at all, a lot)</td>
<td>Exact point estimates for pretest or postintervention outcomes not presented</td>
<td>See right</td>
<td>No increase in communication about AIDS reported by mothers or adolescents</td>
<td></td>
</tr>
<tr>
<td>Lefkowitz&lt;sup&gt;a&lt;/sup&gt;</td>
<td>One item assessed whether ever communicated about sexuality; 5-point Likert scale (eg, not at all, a lot)</td>
<td>Exact point estimates for pretest or postintervention outcomes not presented</td>
<td>See right</td>
<td>No increase in communication about sexuality reported by mothers or adolescents</td>
<td></td>
</tr>
<tr>
<td>Lefkowitz&lt;sup&gt;a&lt;/sup&gt;</td>
<td>One item assessed whether ever communicated about birth control; 5-point Likert scale (eg, not at all, a lot)</td>
<td>Parents: pre: NR; post: NR Adolescents: pre: 1.5 (1.0); post: 2.2 (1.4)</td>
<td>Parents: pre: NR; post: NR Adolescents: pre: 1.7 (1.1); post: 1.8 (1.3)</td>
<td>Increased communication about birth control reported among intervention adolescents but not mothers</td>
<td></td>
</tr>
<tr>
<td>REAL Men&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Fathers: assessed whether 16 topics had ever been discussed between fathers and sons; 3 response options (eg, not discussed, discussed a lot); responses summed to yield a summary score that ranged from 0 to 48</td>
<td>Fathers: pre: NR, 3 mo: 22.60 (14.22); 6 mo: 22.98 (13.97); 12 mo: 23.33 (14.37)</td>
<td>Fathers: pre: NR, 3 mo: 18.29 (15.89); 6 mo: 20.38 (16.01); 12 mo: 19.77 (15.27)</td>
<td>Fathers: intervention fathers reported having ever discussed more topics than control-group fathers at 3 and 12 mo but not at the 6-mo postintervention assessment</td>
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<tr>
<td>Saving Sex for Later&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Assessed whether 14 topics had ever been discussed; responses summed to yield a score that ranged from 0 to 14; scores outcome denotes percent reporting lower scores</td>
<td>Adolescents: pre: NR, 3 mo: 23.19 (12.57); 6 mo: 22.73 (13.97); 12 mo: 23.33 (14.37)</td>
<td>Adolescents: pre: NR, 3 mo: 20.54 (13.51); 6 mo: 21.93 (14.35); 12 mo: 22.02 (13.75)</td>
<td>Adolescent sons: there were no significant differences between reports of discussions by sons whose fathers were in the intervention group; did not report more discussions than those in the control groups at any of the postintervention assessments</td>
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<tr>
<td>Strong African American Families&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Assessed whether 9 topics had ever been discussed; 3 response options (ie, no, yes, quite a bit)</td>
<td>Pre: 22.6%; post: 13.9%</td>
<td>Pre: 18.7%; post: 25.7%</td>
<td>Parents in the intervention group were less likely to report low levels of communication after the intervention</td>
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<tr>
<td>Keep It REAL&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Assessed whether mothers had ever discussed 15 items; reported percentage of topics discussed in the previous 3 mo</td>
<td>Pre: 4.97 (3.01); post (3 mo): 0.14 (0.12)</td>
<td>Pre: 5.76 (3.03); post (3 mo): −0.16 (0.15)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Parents reported greater communication between the pretest and posttest assessments</td>
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<tr>
<td>Skills</td>
<td>Lefkowitz</td>
<td>External assessment of maternal and adolescent speaking time and 4 maternal communication behaviors (asking questions, asking open-ended questions, showing support, being nonjudgmental) when discussing sexuality and AIDS</td>
<td>Conversations about sexuality Speaking time: NR Asking questions: pre: 3.8 (1.5); post: 4.3 (1.0); F statistic: 1.49 (2.9) Asking open-ended questions: pre: 3.2 (1.1); post: 3.6 (1.3); F statistic: 3.80 (3.60)</td>
<td>Conversations about sexuality Speaking time: NR Asking questions: pre: 3.6 (1.8); post: 3.4 (1.4) Asking open-ended questions: pre: 3.4 (1.5); post: 28 (1.4)</td>
<td>Parents: intervention mothers spoke less at time 2 than at time 1 compared with the delayed control group when discussing AIDS, intervention mothers were less judgmental at time 2 than at time 1 compared with the delayed control group when discussing AIDS, intervention mothers asked more open-ended questions at time 2 than at time 1 compared with the delayed control group when discussing AIDS or sexuality.</td>
</tr>
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<tr>
<td>Showing warmth/support:</td>
<td>pre: 3.6 (0.6); post: 3.4 (0.8); F statistic: 0.35 (0.47)</td>
<td>Showing warmth/support: pre: 3.9 (0.5); post: 3.4 (1.2)</td>
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<tr>
<td>Being non-judgmental:</td>
<td>pre: 4.8 (0.4); post: 4.8 (0.5); F statistic: 2.05 (0.19)</td>
<td>Being non-judgmental: pre: 4.8 (0.5); post: 4.4 (1.2)</td>
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<tr>
<td>Conversations about AIDS Speaking time:</td>
<td>38 s less than controls (P = .4)</td>
<td>Conversations about AIDS Speaking time: 38 s more than intervention (P = .4)</td>
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<tr>
<td>Asking questions:</td>
<td>pre: 3.0 (1.4); post: 3.4 (1.3); F statistic: 0.62 (0.44)</td>
<td>Asking questions: pre: 3.0 (1.7); post: 2.9 (1.2)</td>
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<td>Asking open-ended questions:</td>
<td>pre: 2.3 (1.3); post: 3.2 (1.3); F statistic: 6.03 (0.02)</td>
<td>Asking open-ended questions: pre: 2.7 (1.5); post: 2.3 (1.2)</td>
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<tr>
<td>Showing warmth/support:</td>
<td>pre: 3.6 (0.8); post: 3.6 (0.7); F statistic: 0.30 (0.59)</td>
<td>Showing warmth/support: pre: 3.8 (0.5); post: 3.7 (0.8)</td>
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<tr>
<td>Being non-judgmental:</td>
<td>pre: 4.7 (0.4); post: 5.0 (0.2); F statistic: 9.08 (0.004)</td>
<td>Being non-judgmental: pre: 4.9 (0.4); post: 4.6 (0.6)</td>
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**Intentions**

**REAL Men**

Assessed intentions regarding discussing 16 sexual topics in the future; 5 response options (eg, definitely won’t, definitely will); responses summed to yield a summary score that and ranged from 16 to 80.

Pre: NR; 4 mo: NR, 12 mo: NR, 24 mo: 78% (SCT); 89% (LSK)

Mothers in the SCT and LSK groups reported greater intentions to discuss topics compared with those in the control group.

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**Self-efficacy**

**Parents Matter**

Parents: 5-item scale; 3-point Likert scale (eg, not true at all, very true); higher score denotes greater self-efficacy

Adolescents: 6-item scale; 3-point Likert scale; higher score denotes greater perceived parental self-efficacy

No pre/post outcome data were presented; only differences in mean change between assessment periods

See right

Enhanced intervention (2 sessions) showed improved parental self-efficacy (parental and adolescent reports) compared with single-session intervention or control group.

Magnitude of change between preintervention and immediate postintervention assessments was greater among adolescents than parents; at subsequent follow-up visits, magnitude of change was reportedly greater among parents than adolescents, although the magnitude of difference in means declined over time.
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<tr>
<td></td>
<td>Saving Sex for Later&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Assessed how prepared parents felt to discuss specific sexual health issues; 7-item scale; 4 response options (eg, not at all, very prepared); responses summed to yield a score that ranged from 7 to 28; scores were dichotomized; outcome denotes the percentage with lower scores</td>
<td>Pre: 32.9; post: 16.4</td>
<td>Pre: 27.0; post: 23.6</td>
<td>Parents in the intervention group were less likely to report low levels of self-efficacy compared to control group parents</td>
</tr>
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<td></td>
<td>Keepin’ it REAL&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16-item scale assessing parenting self-efficacy for talking with adolescents about sex; 7-point scale (eg, not sure at all, completely sure); higher scores denote greater self-efficacy</td>
<td>Exact point estimates for pretest or postintervention (4, 12, and 24 mo) outcomes were not presented</td>
<td>See right</td>
<td>Data were not reported, but authors stated that self-efficacy for communication increased over time</td>
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<td>REAL Men&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Assessed confidence talking with sons about sex; 17 items; 7-point Likert scale (eg, not sure at all, completely sure); responses summed to yield a summary score that ranged from 17 to 119; higher scores denote greater confidence</td>
<td>Pre: NR; 3 mo: 96.55 (13.16)</td>
<td>Pre: NR; 3 mo: 88.73 (21.80)</td>
<td>Fathers in the intervention group had increased self-efficacy scores compared to control group fathers</td>
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<td>Talking Parents&lt;sup&gt;a&lt;/sup&gt;</td>
<td>One item assessed ability to communicate about sexual health topics; 7-point Likert scale (eg, excellent, terrible)</td>
<td>Exact point estimates for pretest or postintervention (1 wk, 3, and 9 mo) outcomes not presented</td>
<td>See right</td>
<td>Parents: intervention parents reported significantly higher self-efficacy for communication at each follow up assessment (1 wk, 3 and 9 mo) Adolescents: intervention adolescents reported significantly higher self-efficacy for communicating with parents at 3 and 9 mo</td>
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<td>CHAMP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Number and type of items not described, 4-point Likert scale</td>
<td>Pre: 16.2 (4.3); post: 9.5 (3.8); t score: −17.4</td>
<td>Pre: NR; post: 17.3 (4.2); t score: −10.4</td>
<td>Increased comfort with communicating among intervention group relative to control group Increased comfort with general communication reported by adolescents but not mothers</td>
</tr>
<tr>
<td></td>
<td>LeFkowitz&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Comfort talking about 10 sexuality-related topics; 7-point Likert scale; responses summed and mean score reported</td>
<td>Parents: pre: 4.6 (1.4); post: 4.8 (0.9) adolescents: pre: 5.0 (0.7); post: 5.2 (0.6)</td>
<td>Parents: pre: 5.1 (0.6); post: 5.0 (0.7) adolescents: pre: 4.7 (1.0); post: 4.5 (1.0)</td>
<td>Mothet in the SCT and LSK groups reported greater comfort compared to the control group</td>
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<tr>
<td></td>
<td>Keepin’ it REAL&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Assessed comfort discussing each of 13 topics; reported percentage of topics mothers found comfortable discussing in the previous 3 mo</td>
<td>Parents: pre: NR; 4 mo: NR; 12 mo: NR; 24 mo: 62% (SCT), 38% (LSK)</td>
<td>Parents: pre: NR; 4 mo: NR; 12 mo: NR; 24 mo: 44%</td>
<td>More in the SCT and LSK groups reported greater comfort compared to the control group</td>
</tr>
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<tr>
<td>Attitudes</td>
<td>Parent, Young Adolescent Family Life Education (PYAFLE) project&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Assessed self-reported personal attitudes toward parent-adolescent communication with adolescent about sex; No. of items not provided; 4-point Likert scale (eg. strongly agree, strongly agree)</td>
<td>Parents: pre: NR (PO); NR (AD); NR (PAT); NR (PAS); NR (PAST); 2 mo: NR (PO); NR (AD); NR (PAT); NR (PAS); NR (PAST)</td>
<td>Parents: pre: NR; 2 mo: NR</td>
<td>Parents: the difference between pretest and posttest means for the control and all intervention groups was “minimal”; the control group experienced no change in the pretest and posttest means; the PO and PAT groups experienced a decrease in mean attitudinal scores between the pre- and postintervention assessment; the greatest improvement in self-reported personal attitudes was among parents in the PAS group</td>
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<td>Adolescents: pre: 2.84 (NR) (PO); 2.71 (NR) (PO); 2.82 (NR) (PAS); 2.83 (NR) (PAST); 2 mo: 2.95 (NR) (PO); 2.78 (NR) (AD); 2.90 (NR) (PAT); 2.83 (NR) (PAS); 2.92 (NR) (PAST)</td>
<td>Adolescents: pre: 2.82; 2 mo: 2.83</td>
<td>Adolescents: the control group and the PAS and PAT groups experienced no change; the greatest improvement in attitudes was among the PO and PAST groups</td>
</tr>
<tr>
<td>Outcome expectations</td>
<td>Keepin’ it REAL&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Assessed mothers’ perception of outcomes associated with talking about sexual topics using a 15-item scale; 5-point scale (eg. strongly disagree, strongly agree); responses summed to yield a summary score that ranged from 15 to 75; higher scores denote greater perceived positive outcomes</td>
<td>Exact point estimates for pretest or postintervention (4, 12, and 24 mo) outcomes were not present</td>
<td>See right</td>
<td>There was no difference between pre- and postintervention assessment in outcome expectations</td>
</tr>
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<td></td>
<td>REAL Men&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Perceptions of outcomes expected to occur after talking with sons about sexual topics; 23 items; 5-point Likert scale (eg. strongly agree, strongly disagree); responses summed to yield a summary score that ranged from 23 to 115; higher scores correspond to more positive outcomes</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
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<tr>
<td>Quality</td>
<td>Facts and Feelings&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Parents: 5 items assessed quality of communication; 5-point Likert scale (eg. strongly agree, strongly disagree); higher scores denote higher quality</td>
<td>Exact point estimates for preintervention and postintervention outcomes not presented</td>
<td>See right</td>
<td>Parents: parents in the video-only and the video+newsletter groups showed a larger increase in the quality of communication than those in the control group; observed increase decreased by half in both intervention groups by 12 mo; control-group parents showed no change across assessment periods. Adolescents: there was no difference in adolescent reports of the quality of communication from pre- to postintervention assessment</td>
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<td>Adolescents: 10 items; 5-point Likert scale (eg. strongly agree, strongly disagree); higher scores denote higher quality</td>
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</table>

<sup>a</sup> Parent, Young Adolescent Family Life Education (PYAFLE) project

<sup>b</sup> Outcomes were assessed using the Keepin’ it REAL and REAL Men surveys.
Two studies assessed communication intentions. In both studies, parents reported an increase in their intentions to communicate.45,48 Data were not collected from adolescents in either study.

Five studies assessed parental self-efficacy for communicating. Data were reported from only 4 studies.45–48,51 In all 4 studies, parents reported an increase in their self-efficacy for communicating with their children. In the second study, adolescents reported an increase in their perception of their parents' self-efficacy for communicating with them. In the third study, adolescents reported an increase in their self-efficacy for communicating with their parents. Only 1 study compared the magnitude of change reported by parents versus adolescents, and the authors noted that parents reported a larger change than adolescents.45

Three studies reported communication comfort instead of or in addition to self-efficacy.44–46 Parents reported an increase in comfort in 2 studies.44,45 Only 1 study reported data from adolescents, and the authors noted an improvement.46 The magnitude of the change in communication comfort reported by parents and adolescents was not compared in any of these studies.

One study assessed attitudes toward parent-adolescent communication about sex.45 The magnitude of the change in communication comfort reported by parents and adolescents was not compared in any of these studies.

Data were reported from both parents and adolescents.

Data were reported from parents only.

Responses are reported as mean (SD), unless otherwise noted.

Compared pretest/posttest means for the intervention group only.

Compared posttest means for the intervention group to the control group.

Change in mean scale score between preassessment and postassessment periods with SD deviation in parentheses.

The F statistic tests the treatment effect at the posttest while controlling for the pretest result.

z score.

Reported results are significant unless otherwise specified. NS indicates not significant; NR, not reported; SCT, social cognitive theory; LSK, life skills program; PO, parent only; AO, adolescent only; PAT, parent and adolescent together; PAS, parent and adolescent separate; PAST, parent and adolescent separate then together.

a Data were reported from both parents and adolescents.

b Data were reported from parents only.

c Responses are reported as mean (SD), unless otherwise noted.

d Compared pretest/posttest means for the intervention group only.

e Compared posttest mean for the intervention group to the control group.

f Change in mean scale score between preassessment and postassessment periods with SD deviation in parentheses.

g The F statistic tests the treatment effect at the posttest while controlling for the pretest result.

h z score.
Outcomes Expected to Occur After Communicating

Two studies assessed the outcomes expected to occur as a result of parent-adolescent discussions about sex.45,48 Both studies assessed only parental perspectives, but the authors of only 1 study reported actual data for this outcome49 and noted no change in outcome expectations.

Quality (ie, Beliefs) of Communication

Quality of communication was included as a marker of parental beliefs about communicating. In both studies that assessed the quality of communication, parents reported improvements.51,53 The most commonly used measure was the MQS.44,45,47–51 The duration of this effect seemed to decline over time in 1 study53 yet continued to improve significantly in the other.51 Adolescents reported improvement in the quality of communication in 1 study45 but no change in quality in the other.53 The magnitude of the change in quality reported by parents and adolescents was not compared in either study.

Methodologic Quality

The frequency distributions for each element of the MQS are listed in Table 3. MQSs ranged from 6 to 16 points (mean: 12 ± 3) (Table 4). Only 1 study had an MQS in the lower-quality range44, 7 were of medium quality,44,46,48,49,51,52,55 and 4 were of high quality.45,47,50,53

Reliability/Validity Assessment

Studies infrequently reported validity or reliability data for the measures used to assess study outcomes. For 7 studies the communication outcome measures were developed de novo,46,47,49,51,55–55 and psychometric data were reported for their scales in only 3 studies.

Theoretical Grounding

The authors of 7 studies reported using a theoretical framework to guide the intervention design and analytic inquiry.44,45,47–51 The most commonly used theory was social cognitive theory.45,48

Research Paradigm

All the interventions used a quantitative, questionnaire-based analytic paradigm; follow-up cross-sectional study designs were the most frequently used. None of the studies used a qual-
ative research paradigm or mixed-methods evaluation approach.

Study Design
Five studies used a longitudinal design (ie, postintervention assessment with at least 1 additional follow-up assessment). Four of these studies conducted 1 immediate postintervention assessment and 2 additional follow-up assessments; the other study included 1 postintervention assessment and 1 additional follow-up assessment. In these longitudinal studies, participants were followed for a maximum of 9, 12, 17, 48 or 24 months.

Sample Size and Design
Nine studies used a medium size 44, 48, 50, 53, 54 (100–300 participants) or larger 45, 47, 49, 51 (>300 participants), but the majority of them used convenience, nonprobability samples. None of the studies included a sample that was both randomly selected and nationally representative. Conduction of a power calculation to determine the sample size needed to assess the study outcomes was reported for only 2 studies.

Analytic Approach
Half the studies used multiple or logistic regression techniques to analyze their data, whereas one-third reported only bivariate methods (eg, correlations or analysis of variance). The authors of only 2 studies cited using a repeated-measures design. Similarly, few authors reported using analytic techniques to account for nested study designs for studies in which the participants participated in group-based facilitated interventions or when they were recruited from multiple settings (eg, schools, community organizations). Use of multivariate analytical techniques (eg, structural equation modeling) was not reported from any study.

Inferences of Causality
Given many of the studies’ sample and design limitations, we were interested in assessing each researcher group’s awareness and acknowledgment of their study’s limitations and ability (or not) to establish cause-effect relationships. Among the reviewed studies, limitations of the findings were accurately reported for 10; authors of 2 reports inaccurately stated or implied that their intervention was effective despite multiple threats to internal validity (eg, sample size, analytic approach, limited follow-up data) that made such determination difficult.

DISCUSSION
We compared the effectiveness and methodologic quality of select interventions that met our inclusion criteria and were designed to improve parents’ ability to communicate with their adolescents about sex. Our evaluation was limited by the fact that every study used a different measure to assess the same communication domain. Which measures are used will certainly affect whether significant findings are observed. Despite this heterogeneity among the communication-outcome measures, the data suggest that parent-adolescent communication interventions have some targeted effects. Compared with controls, parents who participate in these interventions experience improvements in multiple communication domains. We noted improvements in the frequency, quality, intentions, comfort, and self-efficacy for communicating. We did not find any effect on parental attitudes toward communicating or the outcomes they expected to occur as a result of communicating.

Communication is a complex process. We assessed specific aspects of the communication process defined by our guiding conceptual model. However, other facets of communication and other conceptual frameworks are likely equally important. For example, Jaccard identified 5 aspects of parent-adolescent communication as important: the extent of communication as measured by frequency and depth of discussions; the style or manner in which information is communicated; the content of the information discussed; the timing of communication; and the general family environment or overall relationship between the parent and child. Had we assessed a different set of communication outcomes, our overall perception of the effectiveness of these interventions may have differed.

Although positive effects on the frequency, content, and psychosocial mediators of parental communication with adolescents about sex were noted for most interventions, few studies assessed the durability of these effects over time. Those that did found mixed results. Because adolescents’ sexual knowledge and behaviors change throughout adolescence, parents’ approach to discussing sex with their adolescents must change as well. It remains unclear whether participation in these interventions provides sufficient support for parents’ communication efforts throughout their child’s adolescence. Future studies should seek to clarify the long-term effect of these interventions on parent-adolescent communication about sex.

The explicit teaching and measurement of communication-skills acquisition received little attention in the studies included in this evaluation. Yet, the results indicate that the approaches parents take when talking with their adolescent about sex may have a tremendous influence on the adolescent. For example, parents who dominate conversations (ie, talk more) have adolescents who are less knowledgeable about sexual health topics. Because communication skills are important, researchers have suggested that parents be taught certain general communication skills such as how to talk less and listen more, be less directive, ask more questions of their ad-
olescent, and behave in a nonjudgmental fashion. Adolescents whose parents engage in these behaviors report greater comfort discussing sex with their parents and discussing more topics. Research in this area needs a greater focus on identifying which communication skills are most effective for transmitting sexual health knowledge and decision-making skills to their adolescents.

With 1 exception, mothers were the primary participant in all interventions. None of the studies compared intervention effects on fathers and mothers. Although mothers primarily communicate with adolescents about sex, fathers do play a role in their adolescents’ sexual socialization. However, mothers and fathers play different roles. Kirkman et al examined the role of fathers in family discussions about sex through in-depth interviews with parents and adolescents of both genders. They found that the pubertal transition often disrupts the relationship and communication patterns fathers have with their children; that fathers find discussions about sex difficult and distressing; and that fathers generally leave the task of talking about sex to mothers, although fathers perceive the responsibility of communicating to be a shared one. Additional work is needed to explore intervention effects on mothers versus fathers, because interventions for improving parental communication about sex may require tailoring to maximize their effectiveness among each. Similarly, none of the included interventions explored whether intervention effects varied according to adolescent gender. Given that parental discussions about sex vary in frequency and content for adolescent boys and girls, additional work is needed to determine if these interventions produce differential effects based on adolescent gender.

**Implications**

Despite the limitations inherent in parent-adolescent communication interventions, our interpretation of the data is that these interventions, at a minimum, improve the frequency and content of discussions about sex between parents and their adolescents. Wider dissemination of the interventions seems warranted but should be done in conjunction with additional studies that clarify these interventions’ effects. For example, communication measures should be standardized, and differential intervention effects among mothers versus fathers and among adolescent boys versus girls should be explored.

The need to expand delivery of interventions for improving parental communication with adolescents about sex is exemplified by a recent troubling report. The report cited data from 1988, 1995, and 2002 and showed significant declines in US female adolescents’ reports of contraception use and sexually transmitted infections and stable but low reporting by adolescent boys of discussions with parents about contraception. These declines coincided with decreases in adolescent reports of receiving school-based sex education and increases in adolescent birth rates. Thus, adolescents seem to be experiencing a historic reversal in reproductive health trends while receiving less information about sexual health topics from both parents and schools. Increasing delivery of content via parent-adolescent communication interventions could play a critical role in reducing adverse outcomes among adolescents.

A major challenge in scaling up delivery of parent-adolescent communication interventions is achieving economy of scale. As noted in our review, most existing interventions involve face-to-face facilitated formats. Face-to-face interventions require trained personnel, require significant time commitments by parents, and have limited reach because few parents can be accommodated per training cycle. Mass media, multimedia, and some of the new social-networking programs may be critical for disseminating these interventions more widely. They are less costly once development costs have been expended, which makes them potentially more affordable and easier to disseminate. Few of the interventions included used mass-media formats, and none of them used small media (eg, Web, text-messaging).

**Limitations**

When evaluating interventions, it is useful to know not only whether an intervention is effective but to understand what intervention components are most correlated with success. Because we were unable to calculate effect sizes, we cannot state whether more effective studies have specific characteristics or components in common. Moreover, few authors reported whether their sample size was sufficiently powered, which makes it impossible to know whether the findings are truly significant. Each study used different communication measures, often creating them de novo and infrequently providing details about the measures’ psychometric properties. Lack of detail about the measures’ generalizability or reliability when tested in different populations makes it difficult to compare results across studies. It also means we were unable to determine which communication domains are most strongly affected by parent-targeted interventions.

**Conclusions**

Parent-targeted interventions for improving parental communication with adolescents about sex have been well designed and improve multiple facets of family communication. However, communication measures need to be standardized to make it easier to compare the effectiveness of various interventions.
ventions. The relative effect of these interventions among mothers and fathers are unknown. Given that parental communication is associated with positive effects on adolescent sexual behavior, these interventions may represent a valuable tool for improving adolescent sexual and reproductive health.

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