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Review article

A Review of Interventions With Parents to Promote the Sexual Health of Their Children

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A B S T R A C T

Purpose: To assess the effectiveness of interventions involving parents or carers intended to improve the sexual health of their children.
Methods: Eleven databases were searched for evaluations of interventions with some parental involvement and with outcomes related to the sexual health of the parents' children. Studies had to be experimental, quasi-experimental, or of the before-and-after type. Results were analyzed in a narrative systematic review, taking account of methodological quality.
Results: We identified adequately robust evaluations of 44 programs, delivered in diverse settings. In nearly all cases, the parenting component focused on improving parent–child communication about sex. In general, where measured, parent–child interaction and adolescents' knowledge and attitudes improved, but sexual behavior outcomes only improved in approximately half the studies. Three programs in which the parenting component made up at least one-fourth of the overall program were found, through randomized controlled trials, to modify some aspect of adolescents' sexual behavior. All programs involved parents for at least 14 hours, were community-based, and encouraged delayed sex.
Conclusions: Targeted programs with intensive parental involvement can modify adolescents' sexual behavior, although the review was limited by the lack of rigorous evaluations. Few programs addressed behavioral control, parent–child connectedness, or parental modeling, all suggested by observational research.

IMPLICATIONS AND CONTRIBUTION

This review assembles the current evidence on whether programs involving parents can improve the sexual health of adolescents. The small number of rigorous evaluations limits identification of what characterizes those programs with best evidence of effectiveness, but they were all targeted and involved at least 14 hours of parental training.

Young people's sexual health is a public health priority in much of the world, owing primarily to the rising number of sexually transmitted infections (STIs) and high pregnancy rates among unmarried teenagers. To date, the many preventative behavioral interventions, primarily directed at young people themselves, have only had modest success (e.g., [1,2]), and previous evaluations have highlighted the importance of broader social factors shaping young people's sexual behavior (e.g., [3,4]).

Recent reviews [5–9] point to four aspects of family life that influence young people's sexual health: family structure, family connectedness, parental monitoring, and parents' attitudes and values about sex.

Longitudinal studies have shown that the absence of a biological parent between ages 11 and 15 years is associated with earlier sexual activity and/or higher numbers of sexual partners several years later [10–15]. Furthermore, those who experience their parents' separation are more likely to start childbearing early [16]. Although the effects of family structure remain after accounting for family processes [11,13], they must be understood in relation to each other.

Young people who perceive their parents as warm, caring, interested, and responsive, often referred to as "parent–child

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connectedness," are more likely to postpone sexual behavior [6,9,17–22], use contraception when they do become sexually active [6,18], and have fewer pregnancies [6,23].

In many studies, greater parental control is associated with delayed sexual initiation and/or the use of protection among teenagers [6,9,13,15,24], whereas more unsupervised time is associated with earlier sexual activity [25–30]. Regarding parental values, two studies found that perceived maternal disapproval of early sex is associated with later age of first sex [17,21], but the impact of mothers' values is mediated by the quality of the mother–child relationship [21].

Recent reviews suggest a complex and somewhat contradictory relationship between parent–child communication about sex and adolescent sexual behavior [5,6,31]. Although most studies found open communication was associated with later sexual initiation and/or higher levels of contraceptive use [22,32,33], others found no clear association [13,34], or even the reverse association [35–37]. The influence of communication depends on its content and messages, as well as the quality of parent–child relationships [38]. In particular, perceived supportiveness seems an important condition for parental communication about sex to be accepted and acted on [6,8,31].

General characteristics of parent–child relationships, such as connectedness [23], supportiveness, and conveying future expectations, appear more influential on children's sexual behavior than sex-specific characteristics, such as communication about sex [39]. Similarly, generic family processes are important in preventing children's substance use [40]. This implies that interventions to modify generic processes may be as effective in reducing sexual risk behavior as interventions to modify sex-specific aspects of parenting, as illustrated by the impact of programs that develop infant attachment on subsequent sexual outcomes in adolescence [41].

Parenting interventions can be effective in reducing other unwanted health outcomes, such as substance use [40,42] or conduct disorder [43]. Interventions with clearly articulated mechanisms of change, for instance, harnessing one or more of the influences outlined previously, are more likely to be effective, but few have proved to be effective with families or children with the most severe difficulties [44].

This review aims to assess the effectiveness of interventions with parents or carers intended to improve the sexual health of their children. How effective are these programs, and which ones are most effective, for instance, in terms of their setting, the dimension of parenting addressed, the target group, and the intensity of the program?

Methods

Selection

Deirdre Fullerton and Daniel Wight sought all primary studies that contained evaluations of an intervention with some parental involvement, with outcomes related to the sexual health of the parents' children, and with an appropriate design. Studies had to be experimental, quasi-experimental, or of the before-and-after type, and had to have baseline and follow-up data. The outcomes could be sexual behaviors or unwanted sexual outcomes, or proxy indicators such as sexual health knowledge and cognitions, or parent–child communication about sex.

Search strategy

The following databases were systematically searched from 1990 to 2009 (unless specified otherwise): Applied Social Sciences Index and Abstracts, British Education Index (1976–2009), Bath Academic Data Services (host) International Bibliography of the Social Sciences (database) (1980–2009), Social Care Online Cumulative Index to Nursing and Allied Health Literature (1982–2009), Cochrane Library, the Excerpta Medica database, HealthSTAR, MEDLINE, National Health Service Health Scotland library database, PsycINFO, and Sociological Abstracts. Search terms varied with databases but included terms for the intervention (e.g., prevention program, sex education, teenage pregnancy), the population (e.g., parents, father, mother, carer, adolescent, teen, youth), parent–child interaction (e.g., parental monitoring, connectedness), sexual health outcomes (e.g., intercourse, contraceptive use, pregnancy, STIs, HIV), and methodological terms (e.g., randomized controlled trial [RCT], experimental, before and after study).

To identify gray literature information on unpublished and ongoing studies was requested from researchers. In addition we searched System for Information on Grey Literature in Europe, Google Scholar, and the Web sites of the Centre of Disease Control, Alan Guttmacher Institute, National Campaign to Prevent Teenage Pregnancy, and Child Trends.

Data extraction

The relevance of studies was assessed from titles and abstracts; where this was not possible, the full article was retrieved. The two authors extracted the data using a standard data extraction form and summarized them in tabular form (Table 1). A third reviewer (AMB) checked the tables for accuracy. If important data were missing, first authors were contacted. Studies reported in several publications were treated as one. Each study was assessed according to nature of program, target population, cost, and evaluation design (experimental or quasi-experimental, comparability of arms at baseline, follow-up period, outcome measures, analysis by subgroups).

Data synthesis

The diversity of programs, target groups, evaluation designs, and outcomes made a meta-analysis inappropriate. Therefore, the main results are presented in tabular form and analyzed in a narrative systematic review, grouped primarily by setting. Throughout, the review takes account of the methodological quality of evaluations. All attitudinal and behavioral outcomes are self-reported.

Results

Overview of programs

We identified 321 articles, of which 84 were relevant. Of these, 15 were reviews, three evaluated programs with sexual health outcomes but which were not designed to improve sexual health, and 22 were either process evaluations or they contained inadequate outcome data. This left adequately robust evaluations of 44 programs, of which 25 were RCTs, 12 were nonrandomized trials, and seven were before-and-after studies.

Table 1
Summary of programs and outcome evaluations

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Secondary school-based programs							
Moberg and Piper [45] Healthy for Life Project Wisconsin	Comprehensive sex ed. and substance abuse Accompanied by peer leadership and community involvement 58 lessons over 12 weeks	1:8 Parent orientation sessions, student homework to interview parents about dating and sexual behaviors	RCT **21 schools** Grades six, seven, and eight N = 2,483 4 years	Not surveyed	No measures	Sexual risk taking = 0 Sex last month = 0	Parent program not fully implemented: Some sexuality messages omitted
Levy et al [46], Weeks et al [47,48] Youth AIDS Prevention Programme (YAPP) + Parent-interactive Programme Chicago	SRH information, substance use, resistance skills, and use of condoms and foam 15 sessions over 2 years with homework assignments	1:3 *Information* provision, *communication*, discuss *values/future* plans Parents participate via: three homework exercises, Parent Teacher Association, phone trees, report card pick ups, attending student presentations, raffles, community publicity	RCT (three arms) **15 schools** Grade seven, mean 12 years, low income area, most black N = 2,392 (baseline) 2 years	Both interventions versus control (at 1 year) Comfort communicating with parents = + Importance of parents' feelings about intercourse = +	Both interventions versus control Knowledge of AIDS and cont. = + Intentions to use condoms with foam = + Self-efficacy acquiring condoms at clinic (at 1 year) = +	Both interventions versus control Frequency alcohol = 0 Ever sex = 0 Frequency sex = 0	With some measures, YAPP alone outperformed combined program Low parent attendance at meetings Most effective recruitment was calls from class teacher
Coyle et al [49–51] Safer Choices California and Texas	SRH information, norms, skills, and condom use Accompanied by school health promotion council, peer resources, and school-community links 20 sessions over 2 years	1:4 SRH *information*, *communication*, parent–child homework Six parent newsletters, parent workshops, parents on health promotion council	RCT **20 schools** 14–16 years N = 3,058 1 year	Communication = 0	Knowledge/Attitudes = + Psychosocial scales = + (7/13)	Sex act. = 0 (3/3) Testing for STIs = 0 (2/2) Condoms use = + (3/4) Cont. use = +	Strong design 12-month follow-up sample <50% initial potential sample Authors suggest high school too late to influence age of first sex much Economic evaluation (Wang et al [52])
Villarruel et al [53] Cuidate! Promueve tu Salud (Take Care of Yourself! Promote Your Health) Mexico: Monterrey	Weekend workshop with parents Communication: General and about sex Two 3-hour sessions	1:1 *Communication*: General and about sex SRH *information* Two 3-hour sessions	RCT 14–17 years. Four schools, **791 pairs children and parents** (84% mothers). 1 year	*Communication in general* = + *Communication* = + *Comfort with communication* = +	None reported	None reported	Little attrition Complex design Rigorous analysis Requires further testing with different populations

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Lederman et al [54] Parents Adolescent Relationship Education (PARE) Texas	PARE Interactive included personalizing information, problem solving, decision making, and assertive communication. Seven sessions, first four over 4 weeks and then at 6-month intervals	1:1 Adolescent development, reproductive changes, peer and media influences Seven sessions, first four over 4 weeks and then at 6-month intervals	RCT 12–14 years Five schools, **N = 784 pairs parents and children**: PARE Interactive = 90, PARE Didactic = 80, C = 634. Follow-up unclear: 6–12 months	Communication = 0	Attitudes to responsible sex = + Intentions to postpone sex = +	No measures	Confusing design: In Lederman and Mian [55] reported as RCT with two conditions, in Lederman et al [55] different design reported
Jorgensen [56], Jorgensen et al [57] Project Taking Charge Delaware; Mississippi	Biology, importance of abstinence, vocational goal setting, family values, and family communication. 30 sessions over 6 weeks	1:10 SRH *information*, *communication* Three sessions	RCT Mean 14.4 years One school, **four classes** N = 91 Six months	Communication = 0	Knowledge = + (3/3) Sexual values = 0	Start sex = +	Parental participation variable
Blake et al [58] Managing the Pressures before Marriage (MPM enhanced—Parent Programme New York State	Importance of abstinence until marriage, risks of early sex, social and media pressures, assertiveness, and communication skills Five 1-hour sessions over 5 weeks	2:3 *Information* child pressures, understanding, *communication* Five homework assignments	RCT **19 classes** Eight grade, 13–14 years N = 351 1 week	Comfort communicating = 0 Communication = + (Except puberty and sexual expectations)	Knowledge = 0 Attitudes = 0 Intentions = + Refusal self-efficacy = +	Alcohol use = +	Short follow-up Positive outcomes had dose effect with amount homework completed
Kirby et al [59] Reducing the Risk California	Encouraged to avoid unprotected intercourse by abstinence or using protection 15 sessions	1:8 *Communication* with children about abstinence and cont. Two homework assignments	CT 14–18 years 13 schools, **46 classes**, N = 758 18 months	Communication about abstinence = + Communication = 0 (but significant for female subjects)	Knowledge = + Perceptions peer sexual behavior = 0 Intention to avoid unprotected sex = 0	Start sex = + Pregnancy = 0 Unprotected intercourse = 0 Cont. = 0	Possible contamination: Half control received sex ed. from intervention-trained teachers Poor parental follow-up: Likely participation bias

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Hubbard et al [60] Reducing the Risk Arkansas	As above	As above	CT 14–18 years **10 school districts**, N = 212 18 months	Communication = + Communication about abstinence = 0	No measures	Start sex = + Protection = +	Arms matched at baseline 58% attrition Some positive findings from subgroups, not full comparisons
Denny and Young [61] Sex Can Wait Arkansas	Abstinence based; self-esteem, relating to others and planning future 5-week program	1:4 *Communication*, self-esteem 6-hour homework assignments	CT **15 schools** N = 680 18 months	Not surveyed	Knowledge = + Intentions = +	Upper elementary Sex act. = + (1/2) Middle school Sex act. = + (2/2) High school Sex act. = 0 (2/2)	Limited analysis of role of homework element Author: "in most cases. . . effect size modest"
Weed and Anderson [62] Choosing the Best (CTB) Atlanta	Abstinence ed. 2-week program	1:2 *Communication* 1-hour training session and homework assignments	CT **15 classes** Grades seven to nine **N = 318** 1 year	Not reported	Attitudes = + (3/4) Personal efficacy = + Intentions = +	Start sex = + Sex last month = +	Possible contamination within school More than half students had regular discussion with parents
Anderson et al [63] Reaching Adolescents and Parents (RAP) Los Angeles	Abstinence based Information, self-esteem, communication, and discuss values with parents Seven sessions	1:4 Communication, concerns. Two sessions, first with children	CT **Community groups** 9–14 years (mean = 10.6) N = 251 1 year	Communication = 0	Attitudes to starting sex = 0	Pregnancy = 0	Participants were young so longer follow-up necessary to assess behavioral outcomes
Hamrick [64] In Between and Family Life Education Memphis	Abstinence based Cognitive and affective activities, including films 8-week program	1:1 *Communication* Number of sessions not specified	CT 10–14 years **Families** N = 215 Parents (mainly mothers, white, married) N = 185: I = 162, C = 23 2 months	*Knowledge* = + *Communication* = +	Knowledge = + Sex attitudes = +		Weak design
Huston et al [65] Texas	Parent-only program	1:0 Abstinence-based SRH *information, communication* Four 2-hour sessions	CT Three schools 11–14 years Parents N = 64 2 months	*Communication* = +	Not reported	Not reported	49% parents did not complete follow-up

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Barnett and Hurst [66 Life's Walk N W Missouri	Abstinence based Research and discussion, role-playing, and Baby Think It Over infant simulators. 12–15 classes over about 3 weeks	1:3 Introductory meeting, homework assignments, infant simulator at home	Before-and-after and CT 17 schools 13 and 15 years Before-and-after: N = 271 CT: N = 86 Before-and-after: End of program CT: 4 months	Before-and-after Communication = + CT Communication = 0	Before-and-after and CT Knowledge = + Benefits of abstinence = + (2/2)	Before-and-after Sex act. = − CT Sex act. = 0	Before-and-after Short follow-up Little detail on parent program
ETR [67] Let's Talk California	Setting: Schools, community centers, churches, homes	1:1 *Communication* One 3-hour training workshop	Before-and-after Mean age: 11 years N = 80 Parents N = 77 3 months	Parental attitudes = + (7/15) Communication: Parent reports = + Child reports = +	Knowledge = +		Weak design Poor follow-up rate
Carton and Carton [68] Living One's Human Sexuality The United States	Different intervention from parents	1:1 Discussions and slides/films. 12 3-hour sessions over 12 weeks	Before-and-after 10–11 years N = 10 Parents N = 8 Follow-up unclear	Communication = +			Small sample
Community-based programs							
Philliber et al [69,70] CAS Carrera Programme	For youth development and reproductive health Five activity components: Job club, academic support, family life and sex ed., arts workshops, sports Two service components: Mental health care, medical care In school year, activities ran all five weekdays, about 3 hr/d Over summer maintenance meetings	1:5 Extensive parent orientation session, staff worked with participant families Little detail provided of parent component	RCT Seven community sites High-risk youth Low SES, black/Hispanic 13–15 years Baseline N = 600 Follow-up N = 484 3 years	No measures	Increased self-reported ability to resist pressure = + Knowledge = +	Start sex = + (female subjects only) Cont. = + (female subjects only) Dual methods = + (female subjects only) Pregnancy = +	Cost $4,000 per person/yr or $16 per day Given limited impact with male subjects, program now directed to younger male subjects before sex. active

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Dilorio et al [71] Keeping It R.E.A.L Atlanta	Two programs, based on: SCT: Four sessions with mothers and adolescents together (HIV, communication, values) three sessions separately (development, SRH, communication). LST: first and seventh session with mothers and adolescents together, rest separate. For adolescents, stress reduction, risk behaviors, community involvement, for example, in senior centers Seven 2-hour sessions over 14 weeks	1:1 *Communication*, SRH *information*, *values* SCT: Sessions plus take-home activities manual LST: Parenting sessions Seven 2-hour sessions over 14 weeks	RCT **11 boys and girls clubs** 11–14 years, black, 46% lived with father, 40% female Black mothers, 67% single, mean age 38 years N = 582 (mothers and adolescents): SCT = 194, LST = 187, C = 201 2 years	SCT and LST Intend to discuss sex = + (2/2) Comfort talking about sex = + Communication = + SCT at 4 months HIV knowledge = +	SCT and LST Comfort talking about sex = 0 (2/2) Knowledge = 0 Intend to delay sex = 0 Refusal skills = 0 Sexual possibility situations = 0	SCT and LST Start sex = 0 Abstinence = 0 Intimate behaviors = 0 Condom use = + (1/2)	Some possible ceiling effects (e.g., condom use 90%–100% at baseline) Design assumed more would initiate sex Control mothers received 1-hour HIV ed.; some believed they were part of intervention
Phetla et al [72] Sisters for Life South Africa	Not directly targeted.	1:0 Women recruited into IMAGE microfinance project with participatory ed. (SfL) Encouragement and skills to *communicate*, raised *awareness of gender inequity* and violence, SRH, cultural norms 10 fortnightly sessions	RCT **Eight villages** Female loan recipients and resident young 14–35 years Young: I = 443, C = 427 Loan recipients: I = 387, C = 363 2 years from start of program	Communication: *Loan recipient reports = + (1/1)* Youth reports = 0 (1/1) Youth comfort communication in household = 0(1/1)	No measures	No measures	Detailed qualitative research confirmed improved communication after initial resistance

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Forehand et al [73] Parents Matter! Programme Atlanta, Georgia and Arkansas	For blacks Children attend fifth session with parents One 2.5-hour session	5:1 *Communication*, parenting practices to reduce risk (positive reinforcement, *monitoring*, effective communication) Five 2.5-hour sessions	RCT Black **families** in three areas Children: Mean 10.7 years Parents: 88% mothers, approximately 40% monthly income <$1,000 Baseline N = 1,115 pairs: Enhanced intervention = 378, brief intervention = 371, C = 366 1 year	Enhanced intervention versus C Communication: Child reports = + (2/2) *Parent reports = + (2/2)*		(Start sex = 0: subgroup analysis only)	Findings unclear. risk ratio not always presented for same groups Effect sizes greater for enhanced versus brief intervention Too few initiated sex for evaluation $25 incentives for every session
Dilorio et al [74] Real Men Atlanta	Parenting and SRH One 2-hour session	7:1 First six sessions for fathers alone, last with sons *Communication, parental monitoring* and relationships with peers, general SRH, and HIV information Manual with take-home activities Seven 2-hour sessions	RCT **Six boys and girls clubs**. Young black men from after-school and summer school programs Sons 12.8 years, adult males 40 years Only 40% fathers N = 263 (fathers and sons) 1 year	Intentions to discuss sex = + Father–son discussion of sex: Father reports = + Son reports = 0	Intend delay sex = +	Intimate behaviors = 0 Sex. abstinence = 0 Condom use = +	Strong design Sample may not be generalizable Authors suggest abstinence message more effective for younger age-group Fathers attended less than half sessions despite incentives
Schuster [75] Talking Parents, Healthy Teens The United States: Southern California	Parent-only program	1:0 *Communication* about sexual health Role-play, video, games, discussion, handouts, and manual Home assignments to strengthen parent–child relations Eight weekly 1-hour sessions in workplace during lunch breaks	RCT **Individual parents** 11–16 years. 72% parents female Youths N = 642, parents N = 541 9 months	*Communication* = + Communication: Child reports = + (3/3) Parents instruct condom use = +		No measures	Rigorous analysis to control for effects Some of C exposed to program Doubtful generalizability

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Baptiste et al [76] Trinidad and Tobago Family HIV Workshop Trinidad and Tobago, Caribbean	Community AIDS/HIV Mobilization Project (CHAMP) in the United States (Collaborative HIV and AIDS Mental Health Project) adapted for Caribbean. Parents and youths together 12 × 3-hour sessions over 3 months	1:1 *Communication* on puberty, sex, and STI risks Encourages *regulation* Parents and youths together 12 × 3-hour sessions over 3 months	RCT Parent–child dyads Children mean 12.9 years Baseline N = 190 parents: I = 102, C = 88 6 months	*HIV knowledge* = + *AIDS attitudes* = + *Communication* = + *Monitoring* = + *Parent–child conflicts* = + *Daily parenting hassles* = + *Controlling youths' behavior* = 0 *Positive parenting techniques* = 0 *Expanding support networks* = 0	None reported	None reported	
Dancy et al [77] Mother/Daughter HIV Risk Reduction (MDRR) Chicago	Delivered by mothers to daughter in group sessions Intentions and self-efficacy to refuse sex, and HIV risk reduction skills Six weekly 2-hour sessions	3:1 Expert training and support Mothers *teach* daughters what they have been trained Mother–daughter *contract* on sexual abstinence Joint homework assignments 12 weeks' training and then 6 weekly 2-hour sessions	RCT Three arms: (1) MDRR, (2) MDHP nutrition ed. delivered by trained mothers, (3) HERR HIV ed. delivered by professionals (no contract) Low-income black mothers and daughters 11–14 years N = 262: MDRR = 103, MDHP = 62, HERR = 97 2 months	No measures	<u>MDRR versus MDHP</u> Knowledge = + Self-efficacy to refuse sex = + Intention to refuse = + <u>MDRR versus HERR</u> Intention to refuse sex = 0 No difference between MDRR and HERR	<u>MDRR versus MDHP</u> Sex. activity = + <u>MDRR versus HERR</u> Sex. activity = 0 No difference between MDRR and HERR	Short follow-up Mothers as effective as professionals in delivering HIV messages HIV ed. abstinence based but provides condom information
Lefkowitz et al [78] Untitled California	Parent-only program	1:0 Mothers learn about effective *communication*, using audiotapes, role-play Two sessions	RCT **N = 40 families** Children mean 12.6 years Mothers mean 43 years Mother–child communication observed at baseline and follow-up 7 weeks	<u>Observations</u> Mothers' communication style = + (3/5) Time discussing sex = + <u>Self reports</u> Communication: Mother = 0(3/3) Child = + (2/2) Number of sex topics discussed = 0(2/2) Mothers' AIDS knowledge = 0	Perceived vulnerability to AIDS = 0	Not surveyed	Small sample Three methods to measure communication, including observations Participants paid $50

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Pena et al [79] Entre Amigas Nicaragua	Five levels: Girls/ adolescents (trained peer promoters met monthly with groups of 10 girls, dancing, football); family, particularly mothers; community, teaching personnel (monthly SRH sessions from trained school teachers); health staff, NGOs (monthly school visits from SRH services); and society (weekly TV soap opera with role models)	1:4 Mother support groups to encourage and skill them to: *communicate* with daughters about sex and gender equity, demonstrate love; provide information and *role modeling*; *establish limits*, liberties, and responsibilities	CT Pre-post nonequivalent control group Girls 10–14 years N = 599: peer promoters = 54, I = 186, C = 359 15 months from start of program	No measures	Self-esteem = + (2/2) Gender equity values = + (5/5)	No measures	Initial difficulty recruiting mothers Likely contamination through TV and schools Sample recruitment unclear No comparison of I and C groups Relative contribution of intervention components analyzed
Nicholson and Postrado [80,81] Growing Together Dallas, Memphis	Set in girls clubs Five 2-hour sessions	1:1 *Communication* with daughters, SRH *information*, *values* about dating and relationships. Five 2-hour sessions	CT Daughters mean 12.4 years Low SES, majority black All female I = 84, C = 117. 2 years	No measures		Start sex = 0	Authors suggest delivered to younger girls: aged 9–11 years Parent recruitment challenging despite incentives
McKay et al [82,83] CHAMP Family Programme Chicago	Discuss sexual possibility situations, family communication, regulation, support, values, SRH Encourages abstention but if have sex, protection 1.5-hour sessions over 12 weeks	1:1 *Communication*, *regulation*, *information* Delivered to: parent-only, child-only, and multiple family groups 1.5-hour sessions over 12 weeks	Before-and-after for intervention group CT post-test comparison 9–11 years Low-income black families High proportion single parent Approximately 60% female CT N = 465 families End of program	Before-and-after Family decision making = + Comfort communicating = + CT Family decision making = + Parental monitoring = + Family communication = + (2/2)	No measures	No measures	Weak design: Limited control No behavioral data

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Kirby [84] Parent/Child Programme Montana	In community youth organizations Gender-specific sessions with parents Basic SRH information, parenthood, dating, sexual decision making, personal values, communication, and decision making. 2-hour sessions: five for younger and six for older youth	1:1 *Communication, information, values*: as for children 2-hour sessions: five for parents of younger youth and six for parents of older youth	Before-and-after and CT Before-and-after 9–12 years, N = 114 CT 13–17 years, N = 148 3–5 months	Before-and-after Communication about sex and cont. = + (3/4) CT Communication about sex and cont. = + (2/2)	CT Attitudes to sex = + (2/3) Importance of cont. = +		Nonrandom control group with small sample Follow-up period unclear
Summerville [85], Grossman and Pepper [86], Grossman et al [87] Plain Talk Atlanta, New Orleans, San Diego		1:1 Community-based approach to: (1) create adult consensus that youth use consistent cont.; (2) give parents *information* and skills to *communicate* with teens about sex; (3) improve access to good SRH services Broad-range outreach activities to involve community	Before-and-after Three communities, different cities Two black, San Diego mixed race Mean age 15 years, low SES N = 570 young people Both sites N = 1,268 One site 3 years, Two sites 4 years	Overall Communication = + (1/3) Among sexually experienced youth Communication on any topic = +	Overall Know where to access cont. = + Cont. knowledge = + Comfort with condoms = + (Atlanta = 0)	Overall Sex. act. = − Cont. = 0 STI treatment = 0 Sexually experienced youth Cont. = 0 Pregnancy (female subjects) = +	Weak design: Intervention effects entangled with other factors No measures of success for aims 1 and 2
Klein et al [88] PAPSE (Parents as Primary Sexuality Educators) Rochester NYS	Parent-only program	1:0 For parents of children aged < 12 years Mean number of children = 3 *Communication* about sex Four core, two optional workshops over 1 month	Before-and-after 8:1 parents:grandparents 19–77 years (mean: 36) Mixed SES, majority female, and nonwhite N = 174 parents/carers 10 weeks	*Frequency communication* = + *Comfort responding to children's questions* = + *Knowledge of community resources* = +	Not surveyed	Not surveyed	Weak design Small numbers High attrition Participants who missed first and last sessions were excluded from evaluation

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
College-based programs for parents only							
Davis et al [89] Untitled Northwest rural areas	Parent-only program	1:0 Highlight importance of responding to children's sexual curiosity; improve skills and comfort to respond to questions and behavior One 2-hour session	RCT **Eight colleges** Preschool age Mothers 22–38 years **N = 88** (baseline) 1 month	*Appropriate age to discuss sex* = + *Accurate communication* = + *Frequency communication* = + (3/8) *Comfort discussing sexual topics* = 0	Not surveyed	Not surveyed	Small sample and short-term follow-up
King et al [90] Untitled New Orleans	Parent-only program	1:0 Human sexuality: SRH, physiology, future talking with children about sex 42 hours over one semester	CT: Parents starting course versus those completed course 2/3 years earlier Parents of children aged 5 years + attending college 64% female N = 102 2.5–3 years	*Communication = + (3/3)*			Weak design. No preintervention measures: Possible baseline differences between groups Large effects on communication
Home-based video or audio programs for parents and children							
Miller et al [91] Facts and Feelings Northern Utah	Parent-only program	1:0 Abstinence-based interventions: 1. Home-based videos with *information*, *communication*, abstinence values, and newsletters with discussion topics: SRH, communication, values, media Six units with 15-/20-minute video 2. Home-based videos only Biweekly phone calls to both groups to encourage use of materials	RCT **Families** assigned to: first or second intervention or control (nothing) Two semi-rural, two urban areas Upper-middle SES Ethnicity: Majority white/Mormons Two parent families of children aged 12–14 years N = 548 families: I1 = 126, I2 = 132, C = 290 Post-test: I1 = 120, I2 = 122, C = 261 12 months	I1 + I2 versus C *Knowledge = 0* *Abstinence values* = +	I1 + I2 versus C Knowledge = 0 Abstinence values = 0 Norms about pressurizing to have sex = 0 Skills to avoid = 0 Chance of having intercourse = 0 Sexual intentions = 0	I1 + I2 versus C Sex = 0	Strong design but < 9% participation of those invited < 6% in any arm initiated sex, so sexual behavior outcomes difficult Both programs achieved aims to improve parent–child communication

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Wu et al [92], Stanton et al [93] FoK with Informed Parents And Children Together (ImPACT) Maryland	FoK: HIV risk reduction program in small groups in community settings Includes discussions, homework assignments, and videos 8 × 1.5-hour sessions over 2months FoK + ImPACT FoK + ImPACT + booster sessions: 4 × 90-minute FoK boosters delivered in small groups reviewing activities from 7 to 16 months	1:8 *ImPACT* delivered to each youth and parent Begins with 20-minute video emphasizing *parental monitoring* and *communication*, then parent and youth role-play vignette of parent learning about child's sexual relationship. Finally, youth and parent practice correct condom use One session: 1.5 hours	RCT **Individuals** from 35 housing developments Low SES, black Age 12–16 years N817 individuals: FoK = 321, FoK + ImPACT = 258, FoK + ImPACT + boosters = 238 about 30% attrition at 12 months 24 months	ImPACT + FoK versus FoK (12months) Parental monitoring = 0 Communication = − ImPACT + FoK versus ImPACT + FoK + booster (12 months) Communication problems = +	ImPACT + FoK versus FoK Refuse sex self-efficacy = + (5/5) Condom self-efficacy = + (1/5)	ImPACT + FoK versus FoK Start sex = 0 Unprotected intercourse = 0(2/2) Asked sex partner if condoms always used = +	Strong design Short-term effects on sexual behavior not sustained for 12 months despite booster sessions Difficult to know impact of parental involvement because control had homework assignment
Stanton et al [94] Informed Parents And Children Together (ImPACT) The United States	Parent-only program	1:0 *ImPACT* ed. emphasizing *parental monitoring* and *discussion* (see above) One session: 1.5 hours	RCT Low SES, black Age 12–16 years, median 13.6 years Parents: 96% female N = 237 parent and youth pairs No details on numbers in I & C arms 6 months	Perception of parental monitoring = 0 Condom use skills: Parents = + Parental monitoring carrying weapons = + Parental monitoring having boy/girlfriend = + Parental monitoring initiation of sex = 0	Condom use skills = +	Youth risk behaviors = 0	Strong design but short follow-up Video based on extensive qualitative research with parents on effective parenting and delivery of support programs

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Winett et al [95] Family/Media AIDS Prevention Project Virginia	Home-based video: prevention of STDs and HIV, family and teen problem-solving skills, teen assertiveness skills, situations for teens and parents to practice Four videos (120 minutes)	1:1 Home-based video: *Information* on prevention of STDs and HIV, family and teen problem-solving skills, teen assertiveness skills; *communication*: situations for teens and parents to practice Four videos (total 120 minutes)	RCT Varied SES Female 41% Age: 12–14 years N = 45 **families**: I = 22, C = 23. 6 months	Family problem-solving skills = +	Knowledge = + Teen assertiveness skills = 0 Teen problem-solving skills = 0		Weak design Participants paid $150 for completing assessment tasks
Winett et al [96] Family/Media AIDS Prevention Project Virginia	Slightly modified from above Two videos with situations to practice at least three times in 2 weeks	1:1 Slightly modified from above. Two videos with situations to practice at least three times in 2 weeks.	RCT **Families** Role-plays audiotaped and scored to measure skills Varied SES Age: 12–14 years 600 families invited, 146 participated: I = 69, C = 77. 4 months	Family problem-solving skills = +	Knowledge = + (2/2) Teen assertiveness skills = 0 Teen problem-solving skills = 0		Improved design
O Donnell et al [97] Saving Sex for Later New York State	Parent-only program	1:0 Parent program to delay sex among high-risk students, encouraging behavioral *regulation* Contains role models for *communication* about *values* and expectations Three 25-minute audio CDs mailed over 6 months	RCT **Parents and students** from seven schools Telephone survey High-risk area Students Black 64%, Hispanic 29% Aged 10–11 years 83% N = 846: I = 423, C = 423 Parents Black 64%, female 92% 88% mothers of enrolled students N = 674: I = 337, C = 337 3 months	*Communication* = + *Self-efficacy* = + *Monitoring* = *0* *Perceived influence on risk behaviors* = + Family support = + Family rules = + Dose effect: More positive effect for parents who listened to more than one CD	Behavioral risks = +	No measures	Strong design High participation in hard-to-reach group Short follow-up (particularly for sexual behavior) 27% intervention parents reported not received CDs

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Mass media programs to encourage parent–child communication							
Evans et al [98] Parents Speak Up National Campaign The United States	Intervention Health ed. and marketing campaign started 2007: PSAs on TV, radio, print, outdoor ads, Web site Based on SCT Messages for children: Advantages of delaying sex, benefits of communication PSAs tailored by ethnicity PSA distribution restricted, but exposure unclear Control Online panel across the United States with minimal exposure to PSAs	3:1 Parents review PSAs at baseline, 4 weeks, and 6 months Messages for parents: Self-efficacy and outcome efficacy with children, benefits of *communication*, health risks of early debut *Modeling* parent–child communication	RCT **Parents** of children 10–14 years (mean: 12.2 years) Sample represents U.S. population, except fewer black and Hispanic, higher ed. level Baseline N = 1,969 parents (57.1% mothers) I = 1280, C = 689 Same intervention booster straight after 6-month follow-up Subset mothers reviewed further PSAs, then surveyed for fourth time 6 months	*Communication = 0 (0/4)* *Recommend delayed sex = + (2/4)* *Visits to Web site = + (2/2)* *6-month booster mothers subset: Communication = 0(2/2)* *Recommend delayed sex = 0 (2/2) (no dose–response)* *Visits to Web site = + (dose–response effect)*	Not surveyed	Not surveyed	Authors claim greater effect on fathers because less communication than mothers at baseline Rigorous analysis to control for other influences Possible contamination: Control group may be exposed to program PSAs in everyday life
Crawford et al [99] Families in Touch: Understanding AIDS Chicago	Intervention See parent component Pupils introduced to program at school Control Not prompted to watch TV or given supplement	1:1 Three components: TV ads; written material describing TV programs on HIV; Sunday newspaper supplement with *facts on HIV*; parent–child interaction exercises re: *conversations*, *values*, decision-making skills. Six 5- to 10-minute segments on TV; 16-page supplement	RCT Eight **schools** Mixed SES Female 60% Eighth grade (mean age: 12.9 years) N = 151: I = 93, C = 58 1 week	*Communication = +* *Communication about AIDS = +*	Knowledge about AIDS = +	No measures	Short follow-up 79% of intervention read supplement, compared with 9% of control

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Doniger et al [100] Not Me: Not Now Monroe County New York	Young people helped develop and starred in TV ads, radio spots, and posters	1:1 Multicomponent including: TV and radio ads, billboards, posters, *educational materials* for parents, an interactive Web site, and community events *Communication* skills-building	Three data sources: Before-and-after middle school survey (cross-sectional) Wave 1N2,324, wave 3 (after 3years) N1578 Youth Behaviour Survey 1992 versus 1997 (exposure to I unclear) Pregnancy rates compared between counties in NY State No SES or gender data 3years	Communication: Young person reports = 0	Middle school survey Awareness of the program = + Beliefs and attitudes = + Resisting peer pressure = + Attitude to abstinence = +	Youth Behaviour Survey Sex by age 15 = + Sex by age 17 = 0 Pregnancy rates = +	Weak evaluation Possible that external factors might account for positive changes in attitudes, delay in sexual initiation at age 15, and lower pregnancy rates
Programs for parents/ carers of children with learning disabilities							
Ballan [101] Growing Up Aware Programme The United States	Parent-only program	1:0 Psychoeducational group intervention to help parents understand and promote children's healthy sexual development *Communication* 100-page training manual Over 5 weeks	RCT Solomon four-group design Parents of child with mild/moderate learning disabilities (aged 5–14 years) 1/3 children Down syndrome 74 female, 38 white, 31 Hispanic Mean age 42 years N = 76: I = 37, C = 39 Immediately after program	*Parental attitudes to sex = + (2/2)* *Sex and mentally retarded knowledge inventory = +* *Self-confidence communication = 0* *Comfort communicating = + (2/2)* *Perceived child's awareness of sex = + (2/2)* *Frequency communicationv= +*	Not surveyed	Not surveyed	Strong design but short follow-up Fairly intensive program Delivered in range of settings to suit parents Partnership with parents in design and delivery of program appeared important to success

Table 1
Continued

Study program location (in United States unless stated otherwise)	Child component: Content, intensity	Parenting component: Ratio to child component, content, intensity	Design, Study population, Sample size, Follow-up interval	Parenting outcomes	Young people outcomes: Knowledge, attitude, intentions, skills	Young people outcomes: Behavior	Comments
Plunkett [102] Responsible Choices for Sexuality Programme The United States	Community-based program for PLD Orientation: 3 hours Total sexuality ed. program: 35 hours	1:1 Parents/carers attended orientation training (4 hours) Presumably gain *information* and learn *communication* Total ed. program: 35 hours	Before-and-after IQ range 20–97 (mean 54) Most participants in supported accommodation Slightly more than half male Age range 12–68 years (mean 35) N = 207 PLD N = 192 parents/carers 6–8 weeks	*Support staff/family caregiver knowledge* = + *Satisfaction with program* = +.	Knowledge = +	Inappropriate behaviors (reported by support staff) = + Inappropriate sexual expression significantly lower for 14 of the 36 behaviors = +	Weak design. Limited info. on delivery of program Parents/carers included within program 28% disclosed past sexual abuse and 13% sexual perpetration
Scotti et al [103] Untitled The United States West Virginia	Parent-only program	1:0 For foster carers of children with learning disability Training included *information* on worldwide statistics; video *ABCs of AIDS*; HIV facts; HIV skills prevention program for PLD 2 hours of training	Before-and-after 121 family carers giving 24-hour care Aged 22–73 (mean 45) years 61 supervisors, for example, social workers, nurses Supervisors had higher ed. level N = 182. Immediately after program.	*Both groups AIDS knowledge* = +	Not surveyed	Not surveyed	Weak design No information on recruitment Short follow-up Limited outcome measures

Column 1: Evaluation in the United States, unless stated otherwise.
Column 3: Ratio = approximate ratio of parenting component to all other components of intervention, based on duration of exposure and proportion participating. Information = provision of information to parents. Words in italics highlight dimension of parenting being targeted.
Column 4: RCT = randomized controlled trial; CT = controlled trial not randomized; sample size = sample at follow-up. Unless stated otherwise, sample sizes for young people. Unit randomized/allocated in bold. Sex ratio not stated if close to 50:50. Longest follow-up interval after completion of program.
Columns 5–7: All outcomes for longest follow-up. 0 = no difference; + = positive difference; − = negative difference; (2/2) = two measures; (1/2) = one of two measures; cont. = contraception; sex = sexual intercourse; sex act. = sexual activity; knowledge = sexual health knowledge; communication = communication about sexual issues, unless stated otherwise. Parents' self-reported outcomes are italicized.
SRH = sexual and reproductive health; communication = communication between parents/adults and children/teens; ed. = education; SCT = social cognitive theory; LST = life skills theory; PSA = public service announcement; FoK = Focus on Kids; PLD = people with learning disabilities; C = control; I = intervention.

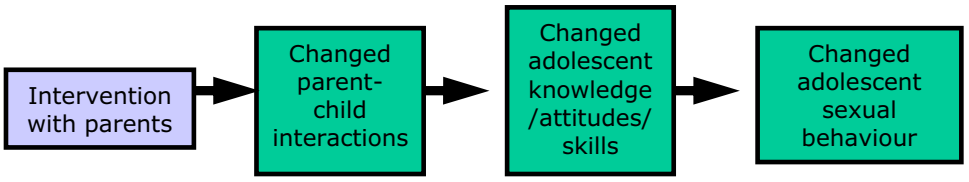

Figure 1. Implicit causal pathway of most parenting interventions.

All programs, apart from four, were implemented in the United States and included one-to-one support, workshops, homework assignments, videos, written material, and media messages. Of the programs, 16 were secondary school based, 15 were community based, two were college based, five used videos in the home, three were mass media, and three were specifically for parents of children with learning disabilities. In 42 of 44 programs, the parenting component, and, by implication, the intended causal pathway, focused on improving parent–child communication about sex. Of these 42 programs, the parenting component was overwhelmingly about communication about sex in 14 programs, whereas the others also covered sexual and reproductive health (SRH) information (13), SRH information and children's future values or future plans (six), values and regulation of the child's behavior (seven), and parental modeling of appropriate behavior (two). In two programs, the parenting component consisted overwhelmingly of the provision of SRH information.

The intensity of the parenting component within the overall program varied considerably, from being the entire program in 11 cases, to more than three-fourths in three cases, to approximately one-fourth to one-half in 21 cases, and to less than one-fourth in nine cases. However, this ratio was often difficult to estimate. Most interventions with parents have an implicit causal pathway similar to Figure 1. This suggests it is inappropriate to attribute a program's outcomes to the parenting component unless it constituted a substantial element [104]. We have drawn an admittedly arbitrary line at one-fourth of the overall program. However, given observational findings that parents' perceived sexual values influence their children's behavior [17,21], it is possible that minimal parental involvement might lead children to think that their parents endorse a program and therefore contribute to its outcomes.

Evaluation follow-up ranged from immediately after the program to 4 years. Thirty-one studies measured parent–child communication about sex; two measured parental monitoring; 18 measured adolescents' sexual knowledge; 25 measured adolescents' sexual attitudes, intentions, or self-efficacy; and 21 measured sexual behavior, STIs, or pregnancy.

Secondary school-based programs

Schools are the main setting for adolescent sex education programs, and many incorporate a parenting component (Table 1). We identified 16 such programs, of which seven were evaluated through RCTs, seven through nonrandomized trials, and two only through before-and-after studies. Follow-up varied from 1 week to 4 years.

Parents' involvement included homework assignments [46,58–60,66], after-school sessions for parents and young people [56,57,63,64], and encouraging parents to learn about the program [50].

Half the school-based programs promoted abstinence from sex and did not teach about safer sex or contraception [50,58,61–66], whereas the other half were "comprehensive" programs that taught both the advantages of delaying sexual activity and how to minimize sexual harm if having sex [45,48,50,53,54,60,67,68]. Only two of the abstinence-focused programs were evaluated through RCTs, both with small sample sizes [57,58], whereas five of the comprehensive programs were evaluated through RCTs, most with large samples and follow-ups of at least 1 year [45,48,50,53,54].

Overall, despite different rigor of evaluation, outcomes between comprehensive and abstinence-focused programs were similar. Where measured, four of six abstinence-based programs were found to improve parent–child communication, versus five of seven comprehensive programs. Figures for young people's knowledge and/or attitudes were six of six abstinence-based programs versus five of five comprehensive programs, and for sexual behavior, three of five [57,61,62] versus two of four [50,60], respectively, one of these being an RCT [50].

However, of the five secondary school-based programs with evidence of reduced sexual risk behavior, in four, this was probably attributable to the teacher-delivered components. Only *Choosing the Best* [62] had a parenting component of approximately one-fourth or more. It involved abstinence education lessons with brief video vignettes, a student manual, hands-on activities, and homework. Delivered over 2 weeks by trained teachers, each lesson required parent–child discussion of the issue for homework, which was checked in the next lesson. There was also a 1-hour parent training session. Ten interactive discussions that a parent might have with their child were mailed to parents. In a small nonrandomized trial, the intervention group had improved abstinence-related attitudes and reported less sexual activity after 1 year.

Community-based programs

Fifteen programs were delivered in the community, varying considerably in intensity, from an all-year youth development program for at least 2 years [70] to a two-session program with mothers [78]. Nine of these programs were assessed through RCTs, four quasi-experimentally, and two only with before-and-after data. Follow-ups ranged from immediately after program completion to 3 years.

Overall, where measured, improvements were found in parent–child communication in 11 of 11 programs, in young people's knowledge and/or attitudes in eight of eight programs, and in sexual behavior in five of seven programs, four of which were evaluated through RCTs. Of the five with positive behavioral outcomes, the parenting component was at least approximately one-fourth of the overall program in four [71,74,77,87].

Keepin' It R.E.A.L. [71] tested two interventions to delay adolescents' sexual intercourse and improve mother's communica-

tion with children about sex. Both consisted of seven 2-hour sessions with African American mothers and their adolescent daughters or sons. One, based on social cognitive theory, focused on comprehensive SRH information and communication skills. The other, based on problem behavior theory, focused on general risk behaviors. In both interventions, adolescents were, at 24 months, 11% and 15%, respectively, more likely to report condom use at last sex, compared with control subjects in an RCT. However, no differences were found for other sexual behavior measures.

Real Men [74] involved seven 2-hour sessions with African American fathers, focusing on abstinence information, how to communicate about sexual issues with one's son, and parental monitoring, followed by a single 2-hour session with sons. An RCT found that, after 12 months, participating young men were less likely to report unsafe sex, but there was no change in other sexual behavior measures, and basic frequencies are not provided to show size of effect for condom use. Dilorio et al [74] suggest that the increased condom use is attributable to the involvement of fathers, despite them participating in less than half the sessions.

Mother/Daughter HIV Risk Reduction [77] involved a 12-week training course with African American mothers based on communication skills and regulating children's behavior. The mothers then participated in six 2-hourly group sessions with their daughters, which included agreeing to an abstinence contract with them. In an RCT, participants reported less sexual activity after 2 months, but this was achieved regardless of whether the course for daughters was delivered by their mothers or by health workers.

The *Plain Talk* program aimed to improve adults' communication skills with sexually active youth and to motivate adults to encourage contraception [87]. A weak before-and-after evaluation found, over 4 years, improved knowledge, attitudes, and parent–child communication. Reported age of first intercourse did not change, but pregnancy rates dropped [86]. Unfortunately, the evaluation did not measure changes in adults' attitudes to sexual health, despite this being a key aim.

College-based programs for parents

Two college-based programs for parents were identified. The first program, evaluated experimentally, gave parents of preschool children in a 2-hour session, skills to respond to their children's sexual curiosity [89]. After 1 month, participating parents were more ready and skilled to discuss sexual issues than control subjects.

The second program, a quasi-experimental evaluation of a 42-hour human sexuality module for undergraduate parents of children aged 5 years or older, found increased parent–child communication [90], possibly attributable to the program's intensity [105]. Neither program involved children directly.

Home-based video or audio programs for parents and children

We identified four programs, or combinations of programs, that attempted to reach parents and children at home through videos, and one using audio CDs. All were evaluated through RCTs, with follow-up periods from 3 to 12 months. Overall, all five programs had improvements in parent–child communication or monitoring, although when *Informed Parents and Children Together* (*ImPACT*) was combined with *Focus on Kids*, child–parent communication problems *increased* [92]. Improvements were found in young people's knowledge, skills, and/or attitudes in four of five programs, but not in sexual behavior in the three programs with such measures. In all these programs, the parenting component constituted at least approximately half.

The *Facts and Feelings* program [91] included six brief videos, written materials, and regular newsletters. The videos provided information, modeled parent–child communication in dramatic situations, and encouraged abstinence. Weekly phone calls encouraged families to use the materials. A trial found improved young people's knowledge and parent–child communication at 3 months but not at 12 months.

ImPACT combined a personally delivered program with a 22-minute video emphasizing parental supervision and communication, provided information on safer sex and abstinence, and involved structured discussions and role-plays. A trial with African American parents [94] showed improved parental monitoring and increased skills but no change in risk behaviors after 6 months. When *ImPACT* was combined with *Focus on Kids*, an eight-session HIV risk reduction program delivered to young people, there was a reduction in sexual activity and unsafe sex at 6 months but not at 12 or 24 months [92,93].

The Family/Media AIDS Prevention Project used videos to provide information on the prevention of STDs and AIDS, model problem-solving and teen assertiveness skills, and got teens and parents to practice at least three times in 2 weeks [96]. Two different trials [95,96] found improvements in sexual knowledge and family problem-solving skills, but none in young people's skills.

Saving Sex for Later [97] was a parent education program using audio CDs. It aimed to delay early sex among high-risk urban fifth- and sixth-grade students, and was developed with extensive community input. Three 25-minute CDs containing role models to identify "teachable moments" to talk to children about values and expectations were mailed to parents over 6 months. An RCT found that, after 3 months, intervention families reported better parent–child communication, family support, and family rules, but there were no sexual behavior measures.

Media programs to encourage parent–child communication

In the United States, media campaigns have attempted to increase parent–child communication about sexuality, using a variety of TV broadcasts, adverts, and billboards, combined with booklets, leaflets, and postcards [105]. Although evaluations of such programs are difficult, we identified three, of which two were RCTs. Improvements were found in parent–child communication in two of three programs, in young people's knowledge and/or attitudes in the two programs where measured, and in sexual behavior in the one program where measured, using nonexperimental data [100]. In all three programs, the parenting component constituted at least half.

The *Parents Speak Up National Campaign* was based on TV, radio, print, billboard, and Web site public service announcements and was tailored for ethnic minorities. An RCT with 6-month follow-up showed increased use of the Web site and more parents advocating delayed sex, but there were no outcomes with young people [98].

Families in Touch: Understanding AIDS—a campaign of six short segments on TV, a 16-page supplement in the Sunday papers, and written materials providing facts about HIV and AIDS—was

Table 2
Results by proportion of parenting component within programs

Type of program	N	Influence on parent–child interaction	Influence on adolescent sexual knowledge/attitudes	Influence on adolescent sexual behaviors
All programs	44	32/37, 1 negative	26/30	13/21, 2 negative
≥One-fourth parenting component	35	30/32	17/20	7/13, 2 negative
<One-fourth parenting component	9	2/5,1 negative	9/10	6/8
≥One-fourth parenting component and evaluated with RCT	20	18/19	9/12	3/7
≥One-fourth parenting component not evaluated with RCT	15	12/13	8/8	4/6, 2 negative

evaluated through an RCT with follow-up of just 1 week [99]. This demonstrated increased parent–child communication about sex and children's improved knowledge about AIDS.

Not Me, Not Now combined TV and radio ads, billboards, posters, educational materials for parents, an interactive Web site, and community events. A nonexperimental evaluation that included county pregnancy rates found improved attitudes, a reduction in sex by age 15, and reduced pregnancy rates [100].

Programs for parents/carers of children with learning disabilities

Three programs for parents or carers of children with learning disabilities were identified. The first was delivered to parents, the second to foster carers, and the third to people with learning disabilities, with an orientation session for parents or carers. The first, the *Growing Up Aware Programme*, was evaluated through a Solomon four-group RCT, a strong design but with follow-up immediately after the program [101]. It found improvement on seven parenting measures. No data were collected from the children. The other two programs were evaluated through before-and-after studies.

Overall results by proportion of parenting component and rigor of evaluation

It is striking that for all programs where influence on parent–child interaction or on adolescent sexual knowledge or attitudes was measured, there were overwhelmingly positive outcomes, although in one, there was also a negative outcome [92] (Table 2). Where adolescent sexual behavior was measured, two-thirds had a positive impact, one had a negative outcome [66], and one was mixed [86]. In the 35 programs in which the parenting component constituted, approximately, at least one-fourth of the overall program, there was little difference in overall results (Table 2). For the remaining nine programs with minimal parenting components, it is unsurprising that in only two of the five with measures of parent–child interactions were there positive outcomes.

In general, the more rigorous an evaluation is, the less likely it is to have positive outcomes [106]. Therefore, it is surprising that, where the parenting component was more than one-fourth of the whole, results from the 20 RCTs did not differ much from the 15 less rigorous evaluations (Table 2).

Overall results by main content for parents

Table 3 presents RCT results by the main content of the parenting part of the program, where this was at least one-fourth of the overall program (n = 20). Where measured, all the programs had evidence of improved parent–child interaction, with the exception of the one program [54] restricted to improving parents' SRH information. Nearly all the studies showed improved adolescent sexual knowledge or attitudes, where measured. Only seven evaluated adolescents' sexual behavior, preventing meaningful comparison between types of program.

Three RCTs were identified among programs in which the parenting component constituted at least one-fourth and that modified adolescents' sexual behavior. However, for each, there was only one positive behavioral outcome among several. The studies have been described previously and are outlined in Table 4. All were implemented in the United States, targeted, and community-based, and the parenting component was intense, lasting at least 14 hours.

Discussion

This review identified a broad range of programs in many different settings that involved parents to improve the sexual health of their children. Of the 44 programs with adequately robust evaluation, one-third were school based and one-third were community based. The ratio of parenting to other components within each program varied from < 1:10 to being the entire program. In nearly all programs, the parenting component focused on improving parent–child communication about sex. Only seven addressed the regulation of children's behavior; two

Table 3
Results of programs with one-fourth or more parenting component evaluated through RCTs, by main content for parents

Content	N	Influence parent–child interaction	Influence adolescent sexual knowledge/attitudes	Influence adolescent sexual behaviors
Communication alone	4	4/4	0/1	ND
Communication + SRH information	5	5/5	3/4	1/1
Communication + SRH information + values/future plans	4	4/4	1/2	0/2
Communication + values + regulation	5	4/4	4/4	2/4
Communication + modeling behavior	1	1/1	ND	ND
SRH information	1	0/1	1/1	ND

Communication = communication about sex; ND = no data; SRH = sexual and reproductive health.

Table 4
Characteristics of programs that influence behavior, evaluated through RCTs

Title Study	Target group	Main parenting content	Parent: Child components	Outcomes
Keepin' It R.E.A.L Dilorio et al [71]	Black mothers: Adol. daughters + sons	1. "Comprehensive" SRH info.; communication; parenting skills; 2. Discussing general risk behaviors	7 × 2-hour sessions: 7 × 2-hour sessions	More condom use 24 months
Real Men Dilorio et al [74]	Black fathers: Adol. sons	Abstinence info.; communication; parental monitoring	7 × 2-hour sessions: 1 × 2-hour session	More condom use 12 months
Mother/Daughter HIV Risk Reduction Dancy et al [77]	Poor black mothers: Adol. daughters	Mothers teach daughters SRH; abstinence contract	12-week training + 6- week course: 6-week course	Less sexual activity 2 months

Adol. = adolescent; info. = information; SRH = sexual and reproductive health; RCT = randomized controlled trial.

addressed parental modeling of appropriate behavior; and none addressed parent–child connectedness or bonding, yet observational research suggests that these are the parenting dimensions most clearly associated with children's sexual outcomes [9].

There were several challenges to this review, the most obvious being the lack of rigorous evaluations. Some used a delayed intervention as comparison, preventing long-term follow-up, whereas in some quasi-experiments, the control groups were not strictly comparable. Several studies had short follow-ups; only half the studies included behavioral outcomes; and nearly all outcomes were self-reported. Further, the findings have limited generalizability, given that all but four studies were from the United States. However, it is important to remember that lack of evidence of effectiveness is not the same as evidence of ineffectiveness.

Many evaluation reports had inadequate descriptions of the intervention, recruitment methods, or outcome data. It would be implausible to attribute program outcomes to the parenting component if this was minimal. Our arbitrary threshold for "minimal" was less than one-fourth of the overall program, but judging this was often approximate. Many practitioners find it difficult to involve parents in adolescent sexual health programs, particularly fathers. Unfortunately, few studies provided details on parent recruitment, with some exceptions [87,107,108]. Only one study provided data on costs, but the parenting component constituted less than one-fourth [70].

Comparisons of the studies were hampered by a number of practical and methodological factors, thereby preventing us from identifying the most effective types of program by, for instance, children or parents targeted, setting, level of input for parents, mode of delivery, or mode of recruitment and retention. The fundamental problem was the heterogeneity of programs, in terms of approaches, target groups, and intended outcomes, and heterogeneity of their evaluation, in terms of design, outcome measures, and length of follow-up. Consequently, it was only possible to conduct a narrative review of programs, grouped by settings, size of parenting component, and evaluation design, rather than a meta-analysis.

It was beyond the scope of this review to assess whether those programs based on explicit theories of behavior change are more effective and, if so, which theories seem most effective. To do so properly would require analyzing how well interventions incorporate the theories on which they claim to be based, and how well they were implemented. This would be a useful focus for a future review, especially if it clarified the mechanisms of change.

By and large, where outcomes were measured, they showed positive results, but sexual behavior outcomes were only positive in slightly more than half the studies where they were measured. Contrary to the general pattern [106], less rigorous evaluations were not more likely to have positive findings, although there might be some indication of this regarding behavioral outcomes (Table 2). Many studies do not present basic outcome frequencies or effect sizes.

Despite these limitations, the review did identify three studies of programs in which the parenting component constituted at least one-fourth, with experimental evidence of impact on sexual behavior (Table 4). They all targeted African American parents of adolescent children and encouraged abstinence. *Mother/Daughter HIV Risk Reduction* [77] and *Real Men* [74] focused on communication skills and regulating children's behavior. The former delayed sexual activity and the latter increased condom use, although neither study provided basic frequencies. The *Mother/Daughter HIV Risk Reduction* evaluation compared mothers' delivery of the program with health workers' delivery. Both achieved the same outcomes, which might imply that the mothers' active involvement was not critical. Finally, *Keepin' It R.E.A.L* [71] was, in fact, an evaluation of two programs, one focused on communication and SRH knowledge and the other on general risk behaviors. Both resulted in increased reported condom use at last sex (11% and 15% differences, respectively, from control subjects). All these programs involved at least 14 hours of intensive training with the parents.

Beyond these programs with experimental evidence of effects on sexual behavior, there were another 12 programs with a parenting component of at least one-fourth that had experimental evidence of impact on child–parent interactions but no measures of sexual behavior. For instance, the *Trinidad and Tobago Family HIV Workshop* [76] and *Saving Sex for Later* [97] were found to improve parental regulation, as well as improved parent–child communication about sex, at 6 months and 3 months, respectively. Given strong observational evidence that behavioral regulation discourages risky sexual behaviors [9,13], it is reasonable to assume that these programs might be effective in changing such behavior.

Four programs with a parenting component of at least one-fourth had experimental evidence of improved parent–child communication on sexual matters after at least 9 months but no evidence of impact on sexual behavior: *Sisters for Life* [72], *Cuidate! Promueve tu Salud* [53], *Parents Matter*! [73], and *Talking Parents, Healthy Teens* [109]. More generally, this was the most common positive outcome for all studies. It is unclear from ob-

servational research whether this inevitably improves sexual outcomes [5,13,34,36], but communication that explicitly discourages risky behavior in a supportive way is associated with better outcomes [31,38]. These programs might therefore also be effective in reducing sexual risk behaviors.

Restricting this overview to the 20 programs in which the parenting component was at least one-fourth, and that were evaluated through RCTs, there was inadequate evidence to show whether the effectiveness of programs was patterned by settings or target group (in terms of children's age or ethnicity). Community-based programs *seem* the most promising, whereas home-based media programs seem the least promising. In terms of the dimensions of parenting addressed, central to the mechanism of change, although the data are limited, Table 3 suggests that programs encouraging parental regulation have greatest evidence of effectiveness. The clearest characteristic of those programs that reduced sexual risk behaviors was their intensity for parents: all involved at least 14 hours of parent training sessions, whereas the child component varied considerably (Table 4). Apart from *Parents Matter!*, with 12.5 hours of parent training sessions, all the other programs with no impact on behavior had considerably less intense parenting components.

These inconclusive findings mean only tentative recommendations are possible. Observational research suggests that future programs that seek to involve parents in improving their children's sexual health should focus on: (a) developing greater parent–child attachment or connectedness, which is probably best done from an early age [41]; (b) improving parents' monitoring and regulation of behavior; (c) helping parents communicate their values around sexual relationships; and/or (d) encourage parents to model the behaviors they want their children to follow [5–9,110]. Of the three interventions identified with substantial parenting components that improved adolescent sexual behavior, two combined (b) and (c), whereas the third was based on improved communication and SRH information.

Given the gaps in evidence of effectiveness, it is obvious that future programs should ideally be subject to careful process and outcome evaluations. Wherever possible, these should be experimental designs with a range of measures reflecting the theory of change, sexual health outcomes, large sample sizes, detailed information on parental involvement, and follow-up periods of at least 2 years.

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References

[1] DiCenso A, Guyatt G, Willan A, Griffith L. Interventions to reduce unintended pregnancies among adolescents: Systematic review of randomised controlled trials. Br Med J 2002;324:1426–30.
[2] Michielsen K, Chersich MF, Luchters S, et al. Effectiveness of HIV prevention for youth in sub-Saharan Africa: Systematic review and meta-analysis of randomized and nonrandomized trials. AIDS 2010;24:1193–202.
[3] Henderson M, Wight D, Raab GM, et al. Impact of a theoretically based sex education programme (SHARE) delivered by teachers on NHS registered conceptions and terminations: Final results of cluster randomised trial. Br Med J 2007;334:133–5.
[4] Wight D, Stephenson J. School based sex education: Evaluating teacher-delivered (SHARE) and peer-delivered (RIPPLE) programmes. In: Baker P, Guthrie K, Hutchinson C, eds. Teenage Pregnancy and Reproductive Health. London, UK: Royal College of Obstetricians and Gynaecologists, 2007:263–74.
[5] Dilorio C, Pluhar E, Belcher L. Parent–child communication about sexuality: A review of the literature from 1980–2002. J HIV/AIDS Prev Educ Adolescents Child 2003;5:7–28.
[6] Miller B, Benson B, Galbraith K. Family relationships and adolescent pregnancy risk: A research synthesis. Dev Rev 2001;21:1–38.
[7] Fullerton D. Promoting positive adolescent sexual health and preventing teenage pregnancy—A review of recent effectiveness research. Dublin, Ireland: Crisis Pregnancy Agency, 2004.
[8] Lezin N, Rolleri LA, Bean S, et al. Parent-child connectedness. implication for research, interventions and positive impacts on adolescent health. Santa Cruz, CA: ETR Associates, 2004.
[9] World Health Organization. Helping parents in developing countries improve adolescents health. Geneva, Switzerland: Department of Child and Adolescent Health and Development, 2007.
[10] Feldman L, Brown N. Family influences on male sexuality: The mediational role of self restraint. Soc Dev 1993;4:15–35.
[11] Sweeting H, West P, Richards H. Teenage family life, lifestyles, and life-chances. Associations with family structure, conflict with parents and joint family activity. Int J Law Policy Fam 1998;12:15–46.
[12] Ngom P, Magadi MA, Owuor T. Parental presence and adolescent reproductive health among the Nairobi. J Adolesc Health 2003;33(Suppl 5):369–77.
[13] Wight D, Williamson L, Henderson M. Parental influences on young people's sexual behaviour: A longitudinal analysis. J Adolesc 2006;29:473–94.
[14] Vesely SK, Wyatt VH, Oman RF, et al. The potential protective effects of youth assets from adolescent sexual risk behaviors. J Adolesc Health 2004;34:356–65.
[15] Zimmer-Gembeck M, Helfand M. Ten years of longitudinal research on U.S. adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. Dev Rev 2008;28:153–224.
[16] Kiernan K. Lone motherhood, employment and outcomes for children. Int J Law Policy Fam 1996;10:233–49.
[17] Blum R. Mothers' influence on teen sex: Connections that postpone sexual intercourse, Vol 90. Minneapolis, MN: Center for Adolescent Health and Development, 2002:1879–84.
[18] Markham CM, Tortolero SR, Escobar-Chaves SL, et al. Family connectedness and sexual risk-taking among urban youth attending alternative high schools. Perspect Sex Reprod Health 2003;35:174–9.
[19] Inazu JK, Fox GL. Maternal influence on the sexual behaviour of teenage daughters: Direct and indirect sources. J Fam Issues 1980;8:81–102.
[20] Jaccard J, Dittus PJ, Gordon VV. Maternal correlates of adolescent sexual and contraceptive behavior. Fam Plann Perspect 1996;28:159–65.
[21] Jaccard J, Dodge T, Dittus P. Maternal discussion about pregnancy and adolescents' attitude toward pregnancy. J Adolesc Health 2003;33:84–7.
[22] Hutchinson MK, Jemmott JB, Jemmott LS, et al. The role of mother-daughter sexual risk communication in reducing sexual risk behaviors among urban adolescent females: A prospective study. J Adolesc Health 2003;33:98–107.
[23] Markham CM, Lormand D, Gloppen KM, et al. Connectedness as a predictor of sexual and reproductive health outcomes for youth J Adolesc Health 2010;46:S23–41.
[24] Li X, Feigelman S, Stanton B. Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. J Adolesc Health 2000;27:43–8.
[25] Cohen D, Falery TA, Taylor SN, et al. When and where do youths have sex? The potential role of parental supervision. Pediatrics 2002;110:66.
[26] Manlove J, Terry-Humen E, Pappilo AR, et al. A good time—After school programme to reduce teen pregnancy. Washington, DC: Child Trends, 2004. Available at: http://www.teenpregnancy.org.
[27] Miller K, Forehand R, Kotchick B. Adolescent sexual behaviour in two ethnic minority samples: The role of family variables. J Marriage Fam 1999;61:85–90.

[28] Hogan D, Kitagawa E. The impact of social status, family structure, and neighborhood on the fertility of black adolescents. Am J Sociol 1985;90: 825–55.
[29] Smith CA. Factors associated with early sexual activity among urban adolescents. Soc Work 1997;42:334–46.
[30] Mott FL, Fondell MM, Hu PN, et al. The determinants of first sex by age of 14 in a high-risk adolescent population. Fam Plann Perspect 1996;28:13–8.
[31] Meschke LL, Bartholomae S, Zentall SR. Adolescent sexuality and parent-adolescent processes: Promoting healthy teen choices. J Adolesc Health 2002;31(Suppl 6):264–79.
[32] Wellings K, Nanchahal K, Macdowall W, et al. Sexual behaviour in Britain: Early heterosexual experience. Lancet 2001;358:1843–50.
[33] Todd J, Currie C, Smith R. Health behaviour of Scottish school children: Technical report sexual health. Edinburgh, UK: University of Edinburgh, 1999.
[34] Huebner AJ, Howell LW. Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. J Adolesc Health 2003;33:71–8.
[35] Moore KA, Petersen KK, Furstenberg F. Parental attitudes to the occurrence of early sexual activity. J Marriage Fam 1986;48:777–82.
[36] Bersamin M, Todd M, Fisher DA, et al. Parenting practices and adolescent sexual behavior: A longitudinal study. J Marriage Fam 2008;70:97–112.
[37] Clawson CL, Reese-Weber M. The amount and timing of parent-adolescent sexual communication as predictors of late adolescent sexual risk-taking behaviors. J Sex Res 2003;40:256–65.
[38] Sneed CD. Parent-adolescent communication about sex: The impact of content and comfort on adolescent sexual behavior. J HIV/AIDS Prev Child Youth 2008;9:70–83.
[39] Parkes A, Henderson M, Wight D, Nixon C. Is parenting associated with teenagers' early sexual risk-taking, autonomy and relationship with sexual partners? Perspect Sex Reprod Health 2011;43:30–40.
[40] Velleman RD, Templeton LJ, Copello AG. The role of the family in preventing and intervening with substance use and misuse: A comprehensive review of family interventions, with a focus on young people. Drug Alcohol Rev 2005;24:93–109.
[41] Olds D, Henderson CR, Jr, Cole R, et al. Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized trial. JAMA 1988;280:1238–44.
[42] Carlson JM, Moore MJ, Pappas DM, et al. A pilot intervention to increase pilot-child communication about alcohol avoidance. J Alcohol Drug Educ 2000;45:59–71.
[43] Lindsay G, Davis H, Strand S, et al. Parenting early intervention pathfinder evaluation. London, UK: Department for Children Schools and Families, 2008.
[44] Moran P, Ghate D, van der Merwe A. What works in parenting support. London, UK: Department for Education and Skills, 2004.
[45] Moberg DP, Piper DL. The Healthy for Life Project: Sexual risk behavior outcomes. AIDS Educ Prev 1998;10:128–48.
[46] Levy SR, Perhats C, Weeks K, et al. Impact of a school-based AIDS prevention program on risk and protective behavior for newly sexually active students. J Sch Health 1995;65:145–51.
[47] Weeks K, Levy S, Zhu C, et al. Impact of a school based AIDS prevention programme on young adolescents' self-efficiacy skills. Health Educ Res 1995;10:329–44.
[48] Weeks K, Levy SR, Gordon AK, et al. Does parental involvement make a difference? The impact of parent interactive activities on students in a school-based AIDS prevention program. AIDS Educ Prev 1997;9(Suppl 1):90–106.
[49] Coyle K, Basen-Engquist K, Kirby D, et al. Short-term impact of safer choices: A multicomponent school-based HIV, other STD, and pregnancy prevention program. J Sch Health 1999;69:181–8.
[50] Coyle K, Basen-Engquist K, Kirby D, et al. Safer choices: Reducing teen pregnancy, HIV and STDS. Public Health Rep 2001;11:S82–93.
[51] Coyle K, Kirby D, Parcel G, et al. Safer choices: A multicomponent school-based HIV/STD and pregnancy prevention program for adolescents. J Sch Health 1996;66:89–94.
[52] Wang LY, Davis M, Robin L, et al. Economic evaluation of safer choices: A school based HIV, Sexually Transmitted Infections, and pregnancy prevention program. Arch Pediatr Adolesc Med 2000;154:1017–24.
[53] Villarruel AM, Cherry CL, Cabriales EG, et al. A parent-adolescent intervention to increase sexual risk communication: Results of a randomized controlled trial. AIDS Educ Prev 2008;20:371–85.
[54] Lederman R, Chan W, Roberts-Gray C. Sexual risk, attitudes and intentions of youth aged 12–14. Survey comparisons of parent-teen prevention and control groups. Behav Med 2004;30:155–61.
[55] Lederman RP, Mian TS. The Parent-Adolescent Relationship Education (PARE) Program: A curriculum for prevention of STDs and pregnancy in middle school youth. Behav Med 2003;29:33-41.
[56] Jorgensen SR. Project taking charge: An evaluation of an adolescent pregnancy prevention program. Fam Relat 1991;40:373–80.
[57] Jorgensen SR, Potts V, Camp B. Project taking charge −6-month follow-up of a pregnancy prevention program for early adolescents. Fam Relat 1993; 42:401–6.
[58] Blake SM, Simkin L, Ledsky R, et al. Effects of a parent–child communications intervention on young adolescents' risk for early onset of sexual intercourse. Fam Plann Perspect 2001;33:52–61.
[59] Kirby D, Barth RP, Leland N, Fetro JV. Reducing the risk: Impact of a new curriculum on sexual risk-taking. Fam Plann Perspect 1991;23:253–63.
[60] Hubbard BM, Giese ML, Rainey J. A replication study of Reducing the Risk: A theory based sexuality curriculum for adolescents. J Sch Health 1998;68: 243–7.
[61] Denny G, Young M. An evaluation of an abstinence-only sex education curriculum: An 18-month follow-up. J Sch Health 2006;76:414–22.
[62] Weed S, Anderson N. Evaluation of Choosing the Best. Salt Lake City, Utah: Institute for Research and Evaluation, 2005.
[63] Anderson NL, Koniak Griffin D, Keenan CK, et al. Evaluating the outcomes of parent–child family life education. Scholarly inquiry for nursing practice. An Int J 1999;13:211–34.
[64] Hamrick HM. Parent, adolescent FLE: An evaluation of five approaches. Fam Life Educ 1985;4:12–5.
[65] Huston RL, Martin LJ, Foulds DM. Effect of a program to facilitate parent-child communication about sex. Clin Pediatr 1990;29:626–30.
[66] Barnett JE, Hurst CS. Abstinence education for rural youth: An evaluation of the Life's Walk program. J Sch Health 2003;73:264–70.
[67] ETR Associates. Final report of the let's talk program evaluation. Scotts Valley, CA: ETR Associates, 1993.
[68] Carton J, Carton J. Evaluation of a sex education program for children and their parents: Attitude and interactional changes. Fam Coord 1971;21: 377–86.
[69] Philliber S, Kaye JW, Herrling S. The national evaluation of the Children's Aid Society–Carrera Model Programme to prevent teenage pregnancy. New York: Philliber Research Associates, 2001.
[70] Philliber S, Kaye JW, Herrling S, West E. Preventing teenage pregnancy and improving health care access among teenagers: An evaluation of the Children's Aid Society–Carrera Programme. Perspect Sex Reprod Health 2002; 34:244–51.
[71] Dilorio C, Resnicow K, McCarty F, et al. Keepin' it R.E.A.L.!: Results of a mother-adolescent HIV prevention program. Nurs Res 2006;55:43–51.
[72] Phetla G, Busza J, Hargreaves JR, et al. "They have opened our mouths": Increasing women's skills and motivation for sexual communication with young people in rural South Africa. AIDS Educ Prev 2008;20:504–18.
[73] Forehand R, Armistead L, Long N, et al. Efficacy of a parent-based sexual risk prevention program for African American pre-adolescents: A randomized controlled trial. Arch Pediatr Adolesc Med 2007;161:1123–9.
[74] Dilorio C, McCarty F, Resnicow K, et al. REAL Men: A group-randomized trial of an HIV prevention intervention for adolescent boys. Am J Public Health 2007;97:1084–9.
[75] Schuster MA. "Authors' reply." BMJ 2008;337:a1595.
[76] Baptiste DR, Kapungu C, Miller S, et al. Increasing parent involvement in youth HIV prevention: A randomized Caribbean study. AIDS Educ Prev 2009;21:495–511.
[77] Dancy B, Crittenden K, Talashek M. Mothers' effectiveness as HIV risk reduction educators for their daughters. J Health Poor Underserved 2006; 17:218–39.
[78] Lefkowitz ES, Sigman M, Au TK. Helping mothers discuss sexuality and AIDS with adolescents. Child Dev 2000;71:1383–94.
[79] Peña R, Quintanilla M, Navarro K, et al. Evaluating a peer intervention strategy for the promotion of sexual health-related knowledge and skills in 10- to 14-year-old girls. Findings from the "Entre amigas" project in Nicaragua. Am J Health Promot 2008;22:275–81.
[80] Nicholson HJ, Postrado LT. Girls incorporated preventing adolescent pregnancy: A development and research project. New York, NY: Girls Incorporated, 1991.
[81] Nicholson HJ, Postrado LT. A comprehensive age phased approach: Girls incorporated. In: Miller B, Card J, Paikoff R, Peterson J. eds. Preventing Adolescent Pregnancy: Models Programs and Evaluations. Newbury Park, CA: Sage Publications, 1992:110–38.
[82] McKay MM, Coleman D, Paikoff R, et al. Preventing HIV risk exposure in urban communities: The CHAMP family program. In: Pequegnat W, Szapocznik J, eds. Working with Families in the Era of HIV. Thousands Oaks, CA: Sage Publications, 2000.
[83] McKay MM, Taber-Chasse K, Paikoff R, et al. Family level impact of the CHAMP family program: A community collaborative effort to support urban families and to reduce youth HIV risk exposure. Fam Proc 2004;43: 70–93.
[84] Kirby D. Sexuality education: An evaluation of programmes and their effects. Santa Cruz, CA: ETR/Network, 1984.
[85] Summerville G. The plain talk implementation. Baltimore, MD: Public/Private Ventures, 2002.
[86] Grossman J, Pepper S. Plain talk and adolescent sexual behaviour. Philadelphia, PA: Public/Private Ventures, 1999.

[87] Grossman J, Karen W, Lauren JK, et al. Adult communication and teen sex: Changing a community. Philadelphia, PA: Public/Private Ventures, 2001.
[88] Klein JD, Sabaratnam P, Pazos B, et al. Evaluation of the parents as primary sexuality educators program. J Adolesc Health 2005;37:s94–9.
[89] Davis SL, Koblinsky SA, Sugawara AI. Evaluation of a sex education program for parents of young children. J Sex Ther 1986;12:32–6.
[90] King BM, Parisi LS, Dwyer KR. College sexuality education promotes future discussions about sexuality between former students and their children. J Sex Educ Ther 1993;19:285–93.
[91] Miller BC, Norton MC, Jenson GO, et al. Impact evaluation of facts and feelings—A home-based video sex-education curriculum. Fam Relat 1993; 42:392–400.
[92] Wu Y, Stanton BF, Galbraith J, et al. Sustaining and broadening intervention impact: A longitudinal randomized trial of 3 adolescent risk reduction approaches. Pediatrics 2003;111:e32–38.
[93] Stanton B, Cole M, Galbraith J, et al. Randomized trial of a parent intervention: Parents can make a difference in long-term adolescent risk behaviors, perceptions, and knowledge. Arch Pediatr Adolesc Med 2004;158:947–55.
[94] Stanton BF, Li X, Galbraith J, et al. Parental underestimates of adolescent risk behavior: A randomized, controlled trial of a parental monitoring intervention. J Adolesc Health 2000;26:18–26.
[95] Winett RA, Anderson ES, Moore JF, et al. Family/media approach to HIV prevention: Results with a home-based, parent-teen video program. Health Psychol 1992;11:203–6.
[96] Winett RA, Anderson ES, Moore JF, et al. Efficacy of a home-based human immunodeficiency virus prevention video for teens and parents. Health Educ Q 1993;20:555–67.
[97] O'Donnell L, Stueve A, Agronick G, et al. Saving sex for later: An evaluation of a parent education intervention. Perspect Sex Reprod Health 2005;37: 166–73.
[98] Evans WD, Davis KC, Ashley OS, et al. Efficacy of abstinence promotion media messages: Findings from an online randomized trial. J Adolesc Health 2009;45:409–16.
[99] Crawford I, Jason LA, Riordan N, Kaufman J. A multimedia-based approach to increasing communication and the level of AIDS knowledge within families. J Community Psychol 1990;18:361–73.
[100] Doniger AS, Adams E, Utter CA, Riley JS. Impact evaluation of the "not me, not now" abstinence-oriented, adolescent pregnancy prevention communications program, Monroe County, New York. J Health Commun 2001;6: 45–60.
[101] Ballan M. A psychoeducational group intervention to train parents to become sexuality educators for their children with mental retardation: An effectiveness study. Diss Abstr Int 2004;64.
[102] Plunkett SW. An evaluation of a community-based sexuality education program for individuals with developmental disabilities. Electron J Hum Sex 2002;5.
[103] Scotti JR, Ujcich KJ, Nangle DW, et al. Evaluation of an HIV/AIDS education program for family-based foster care providers. Ment Retard 1996;34: 75–82.
[104] Mayne J. Addressing attribution through contribution analysis: Using performance measures sensibly. Can J Program Eval 2001;16:1–24.
[105] Kirby D, Miller BC. The impact of interventions designed to promote parent–child communication about sexuality. New Directions Child Adolesc Dev 2002;97:93–110.
[106] Guyatt GH, DiCenso A, Farewell V, et al. Randomized trials versus observational studies in adolescent pregnancy prevention. J Clin Epidemiol 2000;53:167–74.
[107] Paikoff R. Chicago HIV and adolescent mental health project. Bethseda, MA: National Institute of Mental Health, 1992.
[108] Walker KE, Kotloff L. Plain talk: Addressing adolescent sexuality through a community initiative. Baltimore, MD: Public/Private Ventures, 1999.
[109] Schuster MA, Corona R, Elliott MN, et al. Evaluation of Talking Parents, Healthy Teens, a new worksite based parenting programme to promote parent-adolescent communication about sexual health: Randomised controlled trial. BMJ 2008;337:a308.
[110] Conger RD, Cui M, Bryant CM, Elder GH. Competence in early adult romantic relationships: A developmental perspective on family influences. J Pers Soc Psychol 2000;79:224–37.