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The longitudinal impact of a family-based communication intervention on observational and self-reports of sexual communication

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Abstract

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Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. IRB approval was obtained at each study site. IRB included Rhode Island Hospital IRB, Emory University IRB, and the University of Illinois at Chicago IRB.

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Parents can play a vital role in shaping teenagers' sexual attitudes, behavior, and contraceptive use through communication, however, less is known about how to modify parent-adolescent communication among youth with mental health problems. The impact of a family-based sexual risk prevention intervention on both observational and self-report of parent adolescent sexual communication was examined at 12-months among adolescents with mental health problems. Of the 721 parent-adolescent dyads recruited for the study, 167 videotapes of sexual discussions between parents and adolescent were coded for the family-based intervention and 191 videotapes for the active comparison. Longitudinal analyses examined differences between conditions (family-based vs. comparison) in self-reported and observed parent-adolescent sexual discussions and also examined the impact of gender on intervention response. More parent I-statements, healthier parent Body-Language, and fewer adolescent Negative Vocalizations were detected for family-based intervention participants 12 months after participating in the brief intervention (11 hours of total intervention time) relative to those in the comparison condition. Parents in the family-based intervention also self-reported better sexual communication at 12-months. The current study provides supporting evidence that a relatively brief family-based intervention was successful at addressing parent-adolescent sexual communication among a mental health sample.

Keywords

family; observational coding; dyadic; adolescent; intervention; sexual communication

Introduction

During adolescence, parenting practices become especially important for adolescent sexual risk taking. It has been well established that parents can play an integral role in shaping teenagers' sexual attitudes, behavior, and contraceptive use through communication (Clawson & Reese-Weber, 2003; DiClemente, 2001; Donenberg, Wilson, Emerson, & Bryant, 2002; Hadley et al., 2009; Lefkowitz, Sigman, & Au, 2000; McBride, Paikoff, & Holmbeck, 2003; Miller, Benson, & Gailbraith, 2001; Rogers, Ha, Stormshak, & Dishion, 2015; Widman, Choukas-Bradley, Noar, Nesi, & Garrett, 2016). Less is known, however, about how to modify parent-adolescent communication, particularly among high-risk samples. Previous studies have been hindered by a reliance on adolescent and parent self-reports of communication and by a focus on more global constructs of communication as compared to the more modifiable components such as. Understanding which components of parent-adolescent communication change with treatment is an important step in understanding how to improve family-based interventions.

There is good evidence that parent and adolescent sexual communication can be altered within family-based interventions among community samples. Three separate reviews of this literature demonstrated that, in general, while parent-adolescent interventions are effective in positively influencing parent-adolescent sexual communication, the length of impact is variable across studies (immediate post to 24 month's) with the majority showing a degradation of impact on sexual communication after 9 months (Akers, Holland, & Bost, 2011; Downing, Jones, Bates, Sumnall, & Bellis, 2011; Wight & Fullerton, 2013). Only two studies have been shown to impact parent-adolescent communication longitudinally (12 and

24 months respectively) and these findings are for parent self-report only (DiIorio, McCarty, Resnicow, Lehr, & Denzmore, 2007; Stanton et al., 2004). While it is certainly important to impact parental perception of improved sexual communication, this perception may or may not reflect actual changes in communication practices.

To date, only one randomized trial targeting parent-adolescent sexual communication has utilized observational methods to examine parent adolescent sexual communication. This study found that mothers of adolescents in a community sample (N= 50) who were randomized to the communication condition showed a reduction in total talk time (i.e., dominance), an increase in the number of open-ended questions, and a greater number were rated as non-judgmental at the 7-week follow-up relative to those in the comparison condition (Lefkowitz, et al., 2000). This study provided specific insights into modifiable components of parent-adolescent communication. The findings need to be replicated and extended by examining change over a longer follow-up time and adding adolescent and dyadic features to the coding of communication episodes. It is also important to understand how to modify parent-adolescent communication in at-risk samples, such as youth with mental health challenges.

Notably, among youth with psychiatric disorders, research examining parent-adolescent sexual communication is even more limited. Communication is especially important in this population given that youth with mental health problems have been shown to engage in higher rates of sexual risk behavior and are shown to have greater levels of conflict with parents relative to their peers without mental health concerns (Brown, Danovsky, Lourie, DiClemente, & Ponton, 1997; Costello, Egger, & Angold, 2005; Donenberg & Weisz, 1997). There have been no intervention studies for this population that measured modifiable components of parent-adolescent communication. It is not clear how parent-adolescent dyads in this population will respond to a family-based sexual risk-reduction intervention targeting communication.

Strengthening Today's Youth Life Experiences (STYLE; Donenberg et al., 2012) was a multi-site randomized clinical trial that included 721 youth in mental health treatment and their caregivers. The trial included a family-based HIV-prevention program, a previously validated adolescent-only program (AO Donenberg, et al., 2012) and a health promotion (HP) condition. The STYLE family-based intervention was developed to address the clinical needs of this population, which have not been addressed in previous community studies of parent-adolescent sexual communication. The study employed both self-report and observational methods to measure parent adolescent sexual communication. The primary outcomes of this trial have been published and improvement was found in adolescent self-report of parent-adolescent sexual communication at 3 months post-intervention among dyads randomized to the family- based intervention relative to those in the comparison conditions (Brown et al., 2014). However, a second examination of study outcomes found that this effect was not sustained for the 6-month follow-up assessment (Hadley et al., 2015). Importantly, neither of these previous reports examined the impact on directly observed parent-adolescent sexual communication nor the impact on sexual communication at the 12-month follow-up.

The aim of the current study was to examine the impact of the STYLE family-based sexual risk prevention intervention on both self-report and observational data of parent adolescent sexual communication one year after participating in the intervention among youth with mental health problems. We hypothesized that parents and adolescents participating in the STYLE family-based intervention would demonstrate better directly observed sexual communication relative to those randomized to a time and attention matched comparison interventions (AO or general HP) that did not address parent-adolescent sexual communication. We did not expect to see any differences in self-report of sexual communication between conditions at the 12-month follow-up assessment based on the absence of a difference at 6-months found in the aforementioned study (Hadley, Houck, Barker, & Senocak, 2015).

In addition to this primary aim we examined gender as a potential moderator of intervention effect. Specifically, prior cross-sectional studies have demonstrated that mother-female adolescent dyads typically display more positive sexual communication relative to mother-adolescent males and their caregivers during observed parent-adolescent sexual health discussions (Lefkowitz, Boone, Sigman, & Au, 2002). For the current study, we anticipated that dyads including a female adolescent would evidence a stronger response to the intervention (e.g., more improvement in communication) relative to those dyads comprised of a male adolescent and caregiver.

Method

Participants

Participants (adolescents ages 13 to 18) were recruited from mental health facilities for participation in a large, multi-site risk prevention intervention study (Project STYLE). The availability of a parent, guardian, or a close relative who had frequent contact with the teen was required. Adolescents were recruited from inpatient psychiatric settings and outpatient mental health settings in three cities (Providence, Atlanta, and Chicago). Approximately 75% of the participants were recruited from direct referrals from clinicians and discharge coordinators. The remaining participants were self-referred or passively recruited (i.e., posters and flyers posted in psychiatric treatment settings). Approximately 80% of eligible parents and adolescents contacted or approached enrolled in the larger study (N=721) and, of those, 85% were retained across the 12-month study period (n=615; see Figure 1).

Procedure

All procedures were approved by the Institutional Review Boards at each study location. After obtaining assent (adolescents under age 18) and consent (parents with adolescents under age 18 and adolescents age 18), participants and their parents completed self-report measures. If more than one parent/caregiver was present in the home, the family selected the primary caregiver to participate in the study with their adolescent. All parent-adolescent dyads participating in the large Project STYLE study also participated in a 5-minute videotaped discussion. After completing the baseline assessment dyads were randomly assigned to one of three intervention conditions (e.g., STYLE Family-based, AO, or HP)

using an urn randomization procedure stratified by gender. Parents and adolescents each received \$50 for the baseline and 12-month assessments.

Intervention—The interventions, matched to time and attention, were delivered during an all-day (8-hour) workshop, an individual 2- week booster session (1 hour), and a group booster session (2 hours) at three months. Interventions were delivered in groups of 4 to 8 youth/caregivers and led by two trained facilitators in each group (one female and one male; one master or doctoral-level clinician and one research assistant). Each focused on knowledge, attitudes and self-efficacy as relevant to the interventions health targets, and also addressed the interaction between psychiatric disorders and health behaviors. At the conclusion of the one-day workshop, participants completed a risk reduction plan and were given practice assignments. In all three conditions, competency and delivery of intervention components were rated as having been done “well” to “very well” more than 90% of the time (ratings done on 20% of sessions) at each study site.

The STYLE family-based intervention: The STYLE family-based intervention was based on the Social-Personal Framework (SPF; Donenberg & Pao, 2005), which builds on Social Learning Theory (Bandura, 1977) by adding important psychosocial and contextual risk factors (e.g., family and peers) specific to youth with mental health concerns. The SPF framework posits that improving parenting practices, including sexual communication and parental monitoring, in concert with previously validated programs targeting personal factors linked to sexual-risk, will result in improved response to prevention programs. The STYLE family-based intervention included content to improve general parental communication, monitoring and supervision, as well as, skills emphasizing sexual decision making, refusal of sex, abstinence, and condom use. This intervention was developed through an iterative process of qualitative work, feasibility / acceptability testing, and pilot trials in all three cities over one year. In the STYLE family-based intervention both parents and teens attended group sessions separately and then came together to practice skills learned in their respective groups, including exercises focused on improving parent-adolescent sexual communication. Improved parent adolescent sexual communication was targeted through didactic instruction in positive communication, role-play exercises (parents with parents and teens with teens), and finally, all dyads participated in an observed discussion and received feedback from group participants and facilitators. In addition, parents were encouraged to identify their individual values around their teen’s sexual behavior and these values were discussed and clarified prior to parents engaging sexual discussions with their respective adolescents.

The AO intervention: The AO intervention was attended by adolescents only and was based on a previously developed efficacious group intervention for adolescents in mental health treatment (Brown et al., 2011). This intervention mirrored the content of the STYLE family-based intervention minus the involvement of parents and explicit focus on parent-adolescent sexual communication.

The HP intervention: The HP intervention was based on school health promotion programs, targeted exercise, nutrition, sleep and smoking and was attended by adolescents only. HIV/STD and sexual reproductive content mirrored that of the other two conditions.

Measures

Demographics—Adolescents reported on their age, gender, ethnicity, and race. Parents reported on their age, gender, race, ethnicity, education level and family income.

Psychiatric Diagnoses—The Diagnostic Interview Schedule for Children (C-DISC; Schwab-Stone, 1996) is a structured computer-assisted diagnostic interview that generates DSM diagnoses (Shaffer, 2005). The following disorders were assessed: major depressive disorder, generalized anxiety disorder, post-traumatic stress disorder, mania, hypomania, oppositional defiant disorder, conduct disorder, and attention deficit hyperactivity disorder. Disorders were counted if screening threshold was exceeded by either parent or adolescent reports (Garland et al., 2001).

Self-report of Sexual communication (parent and teen)—The Parent-Adolescent Sexual Communication Scale (Dutra, Miller, & Forehand, 1999) assesses the openness of sexual communication through six items; adolescents ($\alpha = .79$) and parents ($\alpha = .61$) completed separate versions. Items include “My teen/My parent and I talk openly about sex.” and “If I have questions about sex I can ask my parent/ my teen can ask me questions about sex”. Items are rated on a 7-point scale from “not true for me” to “very true for me” with higher scores indicating a greater degree of openness in sexual communication.

Coded Observational Data

Data Collection Procedures—The Potential Parent-Child Problems scale (PPCP; Donenberg & Weisz, 1997) was modified to include a list of eleven sexual topics (e.g., what age is it ok to start having sex, using condoms, etc.). Parents and adolescents independently indicated how much they disagreed about each topic on a scale of 1 to 5, where 1 = *do not disagree* and 5 = *strongly disagree*. Consistent with the methods used by others (Christensen & Margolin, 1988; Marshall, Longwell, Goldstein, & Swanson, 1990), the item rated with the highest degree of conflict by both people, and with the least discrepancy in scores between the two respondents, was chosen. For example if both members of the dyad rate a conflict topic as a “4” versus a split rating in which one member rates the topic as a “5” and the other a “3”, the topic rated as a “4” by both members would be chosen.

Videotaping was conducted in private research rooms at each of the three study sites and was directed by a trained research assistant. Prior to videotaping, parent-teen dyads were instructed “You both identified some things that cause disagreements or arguments between the two of you on this sheet you completed. After looking through your responses, I’ve chosen a topic that you both said you argue about the most. The topic you both identified is _____ (topic with highest average from Potential Problems). I would like you both to take the next 5 minutes to discuss the issue with each other. Please use the full 5 minutes to discuss the topic and I will let you know when the 5 minutes are up.” Parents and youth were left alone for 5 minutes to complete the task. Dual microphones were used to improve

the sound quality of videotaped interactions. After video set-up was completed and instructions were delivered to the dyad, the research assistant left the room, pressed “record” on the camera, and placed a labeled sign in front of the camera to record subject ID number and time point for each interaction. Although each dyad was aware that the discussion would last five minutes, the research assistant was responsible for prompting dyads to begin and to stop the discussion at the end of five minutes. Discussions that lasted longer than five minutes were truncated so that only the first five minutes of each discussion were viewed by the person coding the interaction (all extraneous video data was removed from the video presented to the coder). Video editors also stripped the videos of participant ID and any statements which could potentially unblind coders to intervention condition, time-point, and/or site.

The Dyadic Observed Communication Scale—(DOCS; Hadley et al., 2013) The DOCS included separate ratings of three types of parent and adolescent behaviors (Negative Vocalizations, Positive Vocalizations, and Body Language), one parent behavior (I-statements), and one global rating of Relationship Quality, resulting in 8 total codes (4 parent + 3 adolescent + 1 dyadic = 8 total). I-Statements included vocalizations starting with “I” or reference to “I” that express the individual’s point of view, concerns, or feelings regarding the discussion topic for the purpose of communicating one’s feelings, rather than blaming the other person (e.g., “I feel ____ (emotion) ____ when you ____ (behavior is described non-judgmentally and as specifically as possible).”). I-Statements were tallied for a total count. Negative Vocalizations included any short phrases, single words, or utterances that expressed hostility, sarcasm, criticism, or any remarks intended to derail conversation (e.g., “duh”, “psh”, “shut up!”). Vocalizations could be accompanied by negative body language, but body language without vocalization was not coded as a Negative Vocalization. For example, an eye roll accompanied by a simple utterance (e.g., “tsk”, “ugh” etc.) would be counted as a single Negative Vocalization. Negative Vocalizations were tallied for a total count. Positive Vocalizations included any vocalizations intended to let the other person know that the focal is paying attention and listening, as well as any questions or comments intended to encourage dialogue (e.g., “uh-huh”, “yeah, I know what you’re saying”). Statements rephrasing what the other person just said or provided positive unsolicited praise were also included in this category. Positive vocalizations were tallied for a total count. Body Language was scored based on the focal’s (i.e., target individual) physical presentation and nonverbal communication during the interaction. Both parent and teen were scored on Body Language on a scale ranging from 0 (negative body language) to 9 (positive body language) across 9 domains which included: eye contact, distance, orientation, posture, tone of voice, facial expressions, fidgeting, gestures, and head nodding. A score of a 1 was given for an overall display of positive body language in a target area, a score of a 0 was given for an overall display of negative body language in a target area, and a score of a .5 was given for mixed displays of positive and negative body language in a target area. Higher scores indicated more positive Body Language (e.g., good eye contact, oriented toward the other individual) than lower scores (e.g., finger pointing, aggressive gesturing). Relationship Quality was a global rating that measured the overall quality of the dyadic relationship. Each dyad was scored on five dimensions: tone (e.g., warmth vs. hostility), process (e.g., problem solving, collaboration and perspective taking), clarity (e.g., direct communication vs.

“beating around the bush”), time (e.g., degree of give and take), and power. Parents who were clearly “in control” were given a point for power relative to those parents who displayed more passive parenting styles (e.g., wavered on rule setting). Scores ranged from 1–9 per parent-teen dyad. Higher scores indicated a more positive relationship and better communication (e.g., degree and quality of the enjoyment of being in the presence of one another than lower scores. In the rare cases when the sum of ratings across each of the five Relationship Quality dimensions equaled 0, dyads were assigned a Relationship Quality score of 1, the scale minimum.

Coding procedures—Coders received approximately 100 hours of training from study investigators at the primary investigation site, which began with a brief orientation to the study followed by written information and verbal instruction about each of the DOCS codes. Next, coders viewed and discussed a set of fifteen videotaped interactions selected by the study investigators to capture the full range of family interaction patterns and codes. Finally, coders independently coded twelve pre-selected previously coded videotaped interactions, considered “proficiency tapes.” Those who achieved an intra-class correlation of .8 or greater for all nine codes (four parent, four adolescent, and one dyadic) on five consecutive videotaped interactions were considered proficient and proceeded as coders for the study. The final set of coders was comprised of two male and three female bachelor level research assistants. Each 5-minute videotaped interaction required approximately 30 minutes to code. Further details regarding coding procedures can be obtained by contacting the primary author for the full coding manual.

Data Analyses

For the current study, outcomes were combined across the AO and HP conditions (comparison) given that sexual communication with parents was not addressed within either of these interventions. Pearson correlations were conducted to examine the relationship between dimensions of communication. Missing data was 20% at 12-month assessment for self-report measures and 10% for direct observation. Linear regressions with full information maximum likelihood estimation to account for missing data was used to test the first hypothesis that self-reported sexual communication openness at 12 months post-intervention, when controlling for baseline levels of sexual communication openness, would be predicted by treatment condition, gender, and the interaction of treatment condition and gender. Analogous models were run for teen reported sexual communication openness and parent reported sexual communication openness, unstandardized regression coefficients (*b*) and standard errors (*SE*) are reported. Analyses of covariance were used to examine differences between treatment conditions (STYLE family-based vs. comparison) in observed sexual communication openness at a 12-month follow-up assessment. Because observed sexual communication was only collected at the 12-month follow-up, baseline was not included in the models. To test the moderating role of gender, both gender and the interaction of gender with treatment condition were included in the models. Analyses were conducted using Mplus v.7.4 and SPSS v.22.

Results

Of the 721 parent-adolescents enrolled and randomized to a treatment condition, 85% were retained at the 12-month follow-up visit (see Figure 1 Consort). We coded all of the STYLE family-based intervention videotapes ($n=188$) and a random selection of 50% of dyads from each of the comparison conditions for coding ($n=213$). Only half of these tapes were coded consistent with funding and time constraints of this study. Of these videotapes, approximately nine percent of videotapes could not be coded due to technical difficulties (e.g., equipment failure, user error, corrupted files). In total, 167 videotapes were coded for the STYLE family-based intervention and 191 videos were coded for the comparison conditions from the 12-month assessment. There were no significant differences in baseline characteristics or DOCS codes between families with uncodable videos and the coded sample. There were also no differences between the two combined comparison conditions on any of the DOCS codes. Baseline differences between conditions for the final 12-month sample were not found (see Table 1). Correlations between the variables are presented in Table 2. The relationship between self-report of open sexual communication and the DOCS codes was non-significant.

Reliability and Correlations among the scales of the DOCS

Thirty percent of the videotapes ($n=107$) were double coded to examine interrater reliability. Interrater reliability was analyzed using intra-class correlation coefficients (ICCs). ICCs ranged from .63 – .83. Coefficients greater than .60 are considered acceptable, consistent with previous reports of satisfactory levels of interrater reliabilities (Florsheim, Tolan, & Gorman-Smith, 1996; Mitchell, 1979). The correlations between DOCS codes (see Table 2) were variable with the highest and most frequent correlations found with the relationship quality code.

Parent and Teen Self-report of Open Sexual Communication

Teen report of open sexual communication at 12 months post-intervention, controlling for baseline, was not significantly predicted by treatment ($b = 1.07$, $SE = .70$, $p = .12$), gender ($b = 1.16$, $SE = 1.35$, $p = .39$), or a treatment by gender interaction ($b = .01$, $SE = .94$, $p = .99$).

Parent reported openness in sexual communication at 12 months post-intervention, controlling for baseline, was significantly predicted by treatment condition ($b = 1.15$, $SE = .43$, $p = .01$), but not by gender ($b = 1.19$, $SE = .79$, $p = .16$), or a treatment condition by gender interaction ($b = -.55$, $SE = .56$, $p = .33$). Parents in the family communication intervention reported greater levels of openness in sexual communication than those in the comparison group.

Directly Observed Sexual Communication

Multiple components of parent-teen communication during a sex-related discussion were associated with participation in the STYLE family-based intervention and gender (see Table 3). Specifically, those in the STYLE family-based intervention showed more frequent parent I-statements ($F(1, 353) = 3.83$, $p = .05$), more positive parent body language ($F(1, 352) = 8.48$, $p < .01$) and fewer adolescent negative vocalizations ($F(1, 353) = 4.57$, $p = .03$). There

were no significant treatment effects for parent negative vocalizations, adolescent body language, adolescent and parent positive vocalizations, and relationship quality. Regardless of intervention condition, female teens used more negative vocalizations compared to males ($F(1, 353) = 18.31, p < .001$), while parents of male teens displayed more frequent positive vocalizations ($F(1, 353) = 4.11, p = .04$). Teen gender did not moderate the association of treatment condition with any of the DOCS codes.

For relationship quality, we conducted secondary analyses to examine individual components of the relationship quality code (see Table 4). We found that dyads in the STYLE family-based intervention evidenced significantly better relationship clarity ($M = 1.02, SD = .71$) than those in the comparison groups ($M = .86, SD = .63; F(1, 353) = 5.19, p = .02$). Relationship tone ($F(1, 353) = 3.47, p = .06$), process ($F(1, 353) = .40, p = .53$), time ($F(1, 353) = .16, p = .69$), and power ($F(1, 353) = .52, p = .47$) did not differ by treatment. Similarly, there were no significant gender differences in relationship quality tone ($F(1, 353) = .33, p = .67$), process ($F(1, 353) = .48, p = .49$), time ($F(1, 353) = .13, p = .72$), power ($F(1, 353) = 2.13, p = .15$), or clarity ($F(1, 353) = .14, p = .71$). Further, teen gender did not moderate the association of treatment condition with relationship tone ($F(1, 353) = 1.74, p = .19$), process ($F(1, 353) = .88, p = .35$), time ($F(1, 353) = .14, p = .71$), power ($F(1, 353) = 1.10, p = .30$), or clarity ($F(1, 353) = .13, p = .72$).

Discussion

This is the largest study to date to examine the impact of a family based prevention intervention targeting sexual communication in youth in psychiatric care, and the largest study, among all adolescent populations, using directly observed sexual communication. We were able to train five bachelor level coders over a 2-month period on the DOCS coding scheme. ICC's ranged from satisfactory (.63) to strong (.83), and are consistent with other well established coding schemes [e.g., ICC range=.55–.85 for Iowa scale (Conger et al., 1992); ICC range=.58–1.0 for SASB (Benjamin, 1974)]. In addition to attaining high reliability on this scheme, our coding system included both verbal and non-verbal aspects of communication. Non-verbal communication is notoriously absent from the majority of self-report measures but purportedly accounts for as much as two-thirds of the meaning that is conveyed within discussions (Burgoon, 1985). Finally, the DOCS was able to detect intervention impact at 12 months post assessment and provided detailed information about aspects of communication that were impacted longitudinally.

This study found that both verbal and nonverbal components of parent-adolescent sexual communication were impacted among dyads participating in the STYLE family-based intervention relative to the comparison conditions. Notably, we detected more parent I-statements and healthier body-language, greater discussion clarity, and fewer adolescent negative vocalizations 12-months after receiving a relatively brief (11 hours in total) STYLE family-based intervention that focused on improving parent-adolescent sexual communication. In addition to these findings, parents randomized to the STYLE family-based intervention also self-reported more openness in sexual communication at the 12-month assessment.

Gender differences in communication patterns were observed, but we did not detect any gender by treatment interactions. The gender related findings are similar to the initial validation study of the DOCS scheme (Hadley, et al., 2013), wherein teen girls demonstrated more negative vocalizations than boys at the one year followup. We also found that parent positive vocalizations were lower among adolescent female-parent dyads relative to adolescent male-parent dyads. It is possible that in response to greater verbal hostility from teen girls, parents tended to make fewer positive verbalizations. Interestingly, our findings are inconsistent with the only prior study examining parent-adolescent sexual communication among a mental health sample, wherein there were no gender associations (Wilson & Donenberg, 2004). This discrepancy may be due to greater power within the current study to detect gender effects, but will need further evaluation before any definitive conclusions can be made.

Across genders adolescent negative vocalizations were lower at 12-months for those participating in the STYLE family-based intervention. This is promising given that parent adolescent communication is thought to serve as the “training ground” for adolescent communication with sexual partners (Shoop & Davidson, 1994). By reducing negative vocalizations, which include criticism and dismissive comments, teens may be better able to negotiate safer sex with romantic partners (e.g., condom use or avoidance of intercourse) and this may reduce the likelihood of interactions escalating to partner violence. Further research in this domain is warranted to better understand how parent-adolescent sexual communication may impact partner communication.

In terms of parental communication behaviors, this study found that the STYLE family-based intervention was associated with a greater use of I-statements and more positive body language 12-months after participating in the intervention. Targeting the use of I-statements within the context of communication training has been a central tenet of many evidence based interventions (Linehan, 1993; Markowitz & Weissman, 2004). I-statements are posited to provide modeling of emotional awareness, while providing feedback on specific behaviors that are of concern, and also facilitating a non-judgmental conversation environment. The impact on I-statements within this study is comparable to a prior study by Lefkowitz and colleagues (2000) which demonstrated that mothers participating in a sexual communication intervention were coded as less judgmental, during observed sexual discussions with their adolescents, seven weeks after participating in the intervention. Notably, our study was able to detect these same effects 12-months after participation in the STYLE family-based intervention. Other studies targeting parent-adolescent sexual communication may be having similar effects, but without the use of detailed observation this impact may be missed.

In addition to the impact on parental use of I-statements, the STYLE family-based interventions impact on parent body language is notable. Previous studies (Kerig & Lindahl, 2008) have demonstrated that better parental body language, defined by more relaxed posture, provision of adequate space, and less negative gesturing (e.g. finger pointing), provides the foundation for more relaxed discussions. In fact, one qualitative study found that more positive body language during a parent adolescent sexual discussion was associated with more interactive conversations in which both parent and adolescent contributed to the conversation as opposed to conversations in which parents dominated the

discussion (Pluhar & Kuriloff, 2004). It is remarkable that this aspect of communication demonstrated impact one year after the intervention.

Finally, on a dyadic level, participation in the STYLE family-based intervention was associated with greater clarity between parents and adolescents during sexual discussions. Given that prior studies have shown that when parents values are clearly expressed adolescents are more likely to adopt these values (Small & Luster, 1994) and that greater clarity regarding behavioral expectations coupled with perspective taking has been related to fewer externalizing problems among male adolescents (Sher-Censor, Assor, & Oppenheim, 2015), our relatively brief family intervention appears promising. It is possible that by impacting a number of domains of parent-adolescent communication (e.g., parental body language, adolescent negative vocalizations), in addition to differences that were non-significant (e.g., adolescent body language), the overall climate of these discussions was impacted allowing for open and honest expressions of opinion by both parents and adolescents. Additionally, within the STYLE family-based intervention, parents were explicitly coached to identify their personal values around adolescent sexual behaviors and through role-plays with other parents were provided with feedback about the clarity of their views. Teens were not coached in this same manner but by creating an open and comfortable environment parents may have been better able to solicit adolescent views on these sensitive topics. This finding highlights the importance of directly addressing parental values around adolescent sexual behaviors.

Limitations

While this study contains a number of strengths it is limited in other domains. Most notably we did not have pretest observational data on parent-adolescent sexual communication which limited our statistical power. In addition we did not examine the specific content of discussions nor was reciprocity in discussions examined. Given the large volume of data that the current study generated from the 12-month follow-up assessment (>350 videotaped interactions), we attempted to abstract the information of most relevance (targeted mediators of the STYLE family-based intervention) and so in the interest of time eliminated coding of these other domains. Although the DOCS was examined using a sample of adolescents recruited from inpatient and outpatient mental health treatment settings in three different cities, the results may not generalize to all youth with psychiatric disorders or to other at-risk samples. Third, consistent with previous studies examining family-based interventions, a relatively small proportion of caregivers were male (<10% of sample); thus, limiting our ability to examine the influence of caregiver gender intervention impact. Therefore it is not clear from this study what impact parental gender may have had on response to the STYLE family-based intervention. Finally, we did not examine the 12 month associations of sexual communication with sexual risk behaviors within the current study because we felt it went beyond the primary scope of the paper which was to determine whether the STYLE family-based intervention had a sustainable effect on sexual communication. Future studies will be needed to examine this important association.

In conclusion, the current study provides additional supporting evidence that the relatively brief STYLE family-based intervention was successful at addressing parent-adolescent

sexual communication. The study also provides further validation of the DOCS as a viable coding scheme for use by researchers and clinicians examining parent-adolescent communication. The challenge, as with the majority of evidence based interventions, will be implementation in community settings. Although the STYLE family-based intervention required only 11 total hours of time and can be delivered to multiple families at a single session, this format may still be inaccessible to many families with numerous demands as well as community organizations who are focused on treating the primary mental health disorder. It will be important to examine other avenues for delivering the STYLE family-based intervention that would reduce time and place constraints for parents and providers (e.g., online programs, DVDs). The challenge within these programs will be determining the best approach to providing tailored feedback to individuals within the dyad on patterns of communication that are targeted for change. However, as this longitudinal study highlights, effecting change is possible and can be long lasting even among families challenged by the presence of a mental health disorder.

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Figure 1.
Project STYLE Consort.

Table 1

Demographic Variables by Intervention Group

	Family n=167	Comparison n=191
Teen Age (years)	15.97 (1.32)	16.02(1.37)
Teen Gender	57% Female	54% Female
Teen Hispanic/Latino	13%	7%
Teen Race/Ethnicity	59% Black 35% White	62% Black 33% White
Teen Psychiatric Diagnosis	91%	82%
Teen Sexually Active	73%	70%
Parent Relationship to Teen	80% Natural Parent	74% Natural Parent
Parent Gender	95% Female	88% Female
Parent Hispanic/Latino	8%	4%
Parent Race/Ethnicity	61% Black 38% White	64% Black 36% White
Parent Highest Level Education	26% High School/GED	27% High School/GED
Income (median)	\$20,000–\$30,000	\$20,000–\$30,000

Note. Treatment groups did not differ on any demographic characteristic.

Table 2

Pearson Correlations among the Observational and Self-Report Variables (N =358)

Variables	1	2	3	4	5	6	7	8	9	10
1. I-statement (P)		.01	.05	.09	.05	.02	-.02	.07	.07	.03
2. Pos Vocalizations (P)			-.07	.24**	.02	.02	-.01	.25**	-.01	-.04
3. Neg Vocalizations (P)				-.38**	.05	.49**	-.19**	-.31**	-.08	-.04
4. Body Language (P)					.09	-.27**	.43**	.63**	.19*	.13*
5. Pos Vocalizations (A)						-.03	.30**	.28**	.02	.02
6. Neg Vocalizations (A)							-.38**	-.27**	-.06	-.13*
7. Body Language (A)								.59**	.20**	.20**
8. Relationship Quality									.18**	.18**
9. SR Communication (P)										.28**
10. SR Communication (A)										

Note. SR= Self-report; P= parent; A= adolescent.

* p<.05,

** p<.01.

Table 3
Association of Intervention Treatment Group, Gender, and their interaction with Parent-Teen Communication Style

DOCS Code	Family M(SD)	Comparison M(SD)	Male M(SD)	Female M(SD)	Predictor	F
Parent I-Statements					Intervention	3.83 *
	.07 (.30)	.03 (.16)	.06 (.28)	.04 (.20)	Gender	.61
					Intervention × Gender	1.06
Parent Body Language					Intervention	8.48 **
	5.66 (1.38)	5.20 (1.46)	5.45 (1.33)	5.38 (1.53)	Gender	.23
					Intervention × Gender	1.21
					Intervention	2.94
Adolescent Body Language	4.69 (1.68)	4.40 (1.58)	4.53 (1.52)	4.55 (1.72)	Gender	.01
					Intervention × Gender	.20
	2.10 (2.64)	2.29 (3.03)	2.14 (2.93)	2.26 (2.80)	Intervention	.30
Parent Negative Vocalizations					Gender	.13
					Intervention × Gender	.08
	1.99 (2.58)	2.73(3.83)	1.57 (1.94)	3.05 (4.00)	Intervention	4.57 *
Adolescent Negative Vocalizations					Gender	18.31 **
					Intervention × Gender	1.72
	6.11 (5.14)	6.12 (4.53)	6.70 (5.09)	5.63 (4.55)	Intervention	.004
Parent Positive Vocalizations					Gender	4.11 *
					Intervention × Gender	.37
	3.56 (3.20)	3.73 (3.19)	3.81 (3.50)	3.54 (2.93)	Intervention	.31
Adolescent Positive Vocalizations					Gender	.50
					Intervention × Gender	.75
					Intervention	2.61
Relationship Quality	5.9 (1.63)	4.90 (1.52)	5.03 (1.56)	5.04 (1.60)	Gender	.01
					Intervention × Gender	1.10

Notes.

* p<.05

10^d
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Table 4
Association of Intervention Treatment Group, Gender, and Interaction with Relationship Quality Subscales

DOCS Code	Family M(SD)	HP/Adol M(SD)	Male M(SD)	Female M(SD)	Predictor	F
Relationship Tone	1.13 (.71)	.97 (.75)	1.02 (.73)	1.06 (.73)	Intervention Gender Intervention × Gender	3.47 .33 1.74
Relationship Process	.61 (.57)	.65 (.60)	.66 (.57)	.61 (.60)	Intervention Gender Intervention × Gender	.40 .48 .88
Relationship Clarity	1.03 (.71)	.86 (.63)	.92 (.70)	.95 (.65)	Intervention Gender Intervention × Gender	5.19* .14 .13
Relationship Time	1.46 (.67)	1.49 (.58)	1.47 (.63)	1.49 (.61)	Intervention Gender Intervention × Gender	.16 .13 .14
Relationship Power	.95 (.21)	.93 (.25)	.96 (.19)	.92 (.27)	Intervention Gender Intervention × Gender	.52 2.13 1.10

Notes.

*

p<.05

**

p<.01