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Reliability and Validity of the Dyadic Observed Communication Scale (DOCS)

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Abstract

We evaluated the reliability and validity of the Dyadic Observed Communication Scale (DOCS) coding scheme, which was developed to capture a range of communication components between parents and adolescents. Adolescents and their caregivers were recruited from mental health facilities for participation in a large, multi-site family-based HIV prevention intervention study. Seventy-one dyads were randomly selected from the larger study sample and coded using the DOCS at baseline. Preliminary validity and reliability of the DOCS was examined using various methods, such as comparing results to self-report measures and examining interrater reliability. Results suggest that the DOCS is a reliable and valid measure of observed communication among parent-adolescent dyads that captures both verbal and nonverbal communication behaviors that are typical intervention targets. The DOCS is a viable coding scheme for use by researchers and clinicians examining parent-adolescent communication. Coders can be trained to reliably capture individual and dyadic components of communication for parents and adolescents and this complex information can be obtained relatively quickly.

Keywords

family; observational; coding; dyadic; adolescent

Introduction

Parenting practices are a significant influence on child and adolescent behaviors. During adolescence, parenting practices become especially important for adolescent risk behaviors, including sexual risk taking. Through communication, parents can play an integral role in shaping teenagers' sexual attitudes, behavior, and contraceptive use (Donenberg, Emerson, Bryant, Wilson, & Weber-Shifrin., 2001; Donenberg, Wilson, Emerson & Bryant, 2002; Fisher & Feldman, 1998; Jemmott & Jemmott, 1992; Miller, Benson, & Galbraith, 2001). Supportive relationships with parents and other adults that are characterized as healthy, close, stable, and open can reduce the likelihood that teens initiate high-risk sexual behavior (Biglan et al., 1990; Fisher & Feldman, 1998; Wills, Vaccaro, & McNamara, 1992). Conversely, coercive family interactions, parental criticism and hostility, poor family communication, and conflict between parents and adolescents are implicated in the development of risky sexual behavior (Bettinger et al., 2004; Henggeler, Melton, & Rodrigue, 1992; McBride, Paikoff, & Holmbeck, 2003; Metzler, Noell, Biglan, Ary, & Smolkowski, 1994; Voisin, 2002). Communication about sexual topics between parents and children, low family conflict, and parental supervision are associated with delayed initiation of sexual activity, fewer sexual partners and adolescent pregnancies, better efforts to avoid HIV/AIDS, increased contraceptive use, and more knowledge about AIDS and birth control (Crosby et al., 2002; Guzmán, Schlehofer-Sutton & Villanueva, 2003; Huebner & Howell, 2003; Jessor & Jessor, 1975; Leland & Barth, 1993). Thus, parents who engage in frequent and comfortable conversations about sex with their teens and monitor their activities might prevent adolescent's sexual risk behavior.

Most of the literature examining the relationship between parent-adolescent communication and sexual risk behavior are based on self-report data; few studies have employed observational methods to objectively examine and assess key dimensions or qualities of these relationships. Self-report measures of parent-adolescent communication have been criticized because of limitations with this methodology, such as attribution biases, selective attention, social desirability, and ineffective reporting about communication patterns which occur over extended periods of time or across multiple situations (Bradbury & Fincham, 1990; Noller & Feeney, 2003; Weiss, 1980). Observational methods, while more time-consuming and expensive, allow for assessment of actual behavior, as opposed to participants' perceptions of behavior, and thus may reveal differing patterns of associations (Noller & Feeney, 2003). Additionally, observational measurement allows researchers to examine specific types of communication behaviors most relevant to the outcomes of interest (Noller & Feeney, 2003).

Project STYLE (Donenberg et al., 2011) is a family-based HIV prevention program that was developed to examine the impact of parent-adolescent communication on adolescent sexual risk behaviors. The study employed self-report and observational methods to measure parent adolescent-communication. A coding system was needed to quantify the observational data, consisting of conversations between adolescent participants and their parents. The coding system needed to be sensitive to changes in dyadic communication processes that were targeted by the intervention and also common to other intervention programs, such as negative and positive verbal/nonverbal communication.

We identified six potentially appropriate coding systems found to exhibit sensitivity to changes in dyadic communication: the Structural Analysis of Social Behavior (SASB; Benjamin, 1974); the coding system developed by Whalen, Henker, Hollingshead, and Burgess (1996) designed specifically for parent-adolescent discussions of AIDS-related topics; the coding system devised by Lefkowitz and colleagues (1996,2000) designed to examine the impact of a sexual communication intervention; the Structural Family Systems

Rating (SFSR; Szapocznik et al., 1991) which has been examined among families of adolescents with behavior problems; the Iowa Family Interaction Rating Scales (Melby et al., 1990); and the Hetherington-Clingempeel coding system (Hetherington et al., 1992); the Family Interaction Coding System (FICS; Dishion, Gardner, Patterson, Reid, & Thibodeaux, 1983).

Four of the six coding systems (SASB, Iowa Rating Scale, the Hetherington-Clingempeel, and Whalen et al., 1996) captured changes in adolescent communication, but the SASB and the Hetherington-Clingempeel were highly time intensive (i.e., a single 10 minute interaction required 4-6 hours of time to code (Benjamin, 1974)) and was therefore cost prohibitive given the large number of videotapes (i.e., 2600). The Whalen et al. (1996) system and the Iowa Family Interaction Rating Scale (Melby et al., 1990) did not examine body language, even though nonverbal behavior accounts for 75% of communication (Freedman, Blass, Rifkin, & Quitkin, 1973; Tepper & Haase, 1978). Given these limitations to previously developed coding systems, we developed the DOCS (Dyadic Observed Communication Scale) to capture parent and adolescent communication, including both verbal and nonverbal behavior.

The aims of the current study were to examine the DOCS's interrater reliability, convergent validity, discriminant validity, associations with subject demographic characteristic, and the associations of the specific codes within the DOCS (i.e., I-Statements (defined later), Negative Vocalizations, Positive Vocalizations, Body Language, and Relationship Quality). We hypothesized that the DOCS would have adequate interrater reliability. We hypothesized that the DOCS would demonstrate good convergent validity by correlating with adolescent and parent self-reports of communication and good discriminant validity through non-significant correlations between the DOCS codes and a measure of adolescent HIV knowledge. We did not expect significant differences on the DOCS codes by demographic variables.

Because the DOCS codes were each developed to reflect unique aspects of communication (positive vocalization as distinct from body language), we anticipated that correlations among the codes would be low to moderate, but in expected directions (e.g., Negative Vocalizations negatively correlated with Positive Vocalizations).

Method

Setting and Participants

Participants (adolescents ages 13 to 18) were recruited from mental health facilities for participation in a large, multi-site family-based HIV prevention intervention study (Project STYLE). The availability of a parent, guardian, or a close relative who had frequent contact with the teen was required for enrollment and randomization. The final sample for the Project STYLE study was 721 dyads and of these a random sample of 71 parent-adolescent dyads baseline videotapes were chosen to code for these analyses. Of these 71 dyads, approximately 50% included a male adolescent. The mean age of the sample was 14.9 ($SD = 1.3$) years. Racial composition of the adolescents was as follows: 59% African-American, 27% Caucasian, 8% more than one race, 2% Asian, 2% American Indian or Alaskan Native, and 2% did not report a racial identity. Nine percent of the adolescents reported a Latino/Hispanic ethnic identity. Ninety percent of the caregivers were female and 80% identified as the biological parent, 12% were adoptive parents, and the remaining 8% of caregivers identified as either step-parents, aunt/uncles, grandparents, or other family members. High school diplomas/GEDs or higher were held by 84% of the caregivers and the average annual income of the enrolled families was \$35,000. No significant demographic differences were

found between the 71 dyads whose observational data were coded compared to the remaining 650 dyads that were not coded for this study.

Recruitment

Adolescents were recruited from inpatient psychiatric settings and outpatient mental health settings in three cities (Providence, Atlanta, and Chicago). Direct referrals from clinicians and discharge coordinators were the primary means of recruitment, accounting for approximately 75% of the participants. The remaining participants were self-referred or passively recruited (i.e., posters and flyers posted in psychiatric treatment settings, learning about the project from friends or family members who had participated). Approximately 80% of eligible parents and adolescents contacted or approached were enrolled in the larger study (N=721; see Brown et al., 2010 for full consort).

Procedure

All procedures were approved by the Institutional Review Boards at each of the study locations. After obtaining assent (adolescents under age 18) and consent (parents with adolescents under age 18 and adolescents over age 18), participants and their parent completed measures using an audio computer-assisted structured interview (ACASI). All parent-adolescent dyads participating in the large Project STYLE study also participated in a 5-minute videotaped discussion and each received \$50 for the baseline assessment. For this study, we examined the observational data from the dyadic conversation, adolescent self-reported HIV knowledge, and parent and adolescent self-reported communication among 71 randomly selected dyads, approximately 10% of the sample available at baseline (N= 721). We chose to examine only the baseline data, including videotaped observational data, in order to remove any potential influence of intervention effect from the preliminary analyses of the DOCS scheme.

Self-Report Measures

The Parent-Adolescent Communication Scale (PACS; Barnes & Olson, 1982) assessed the positive and negative aspects of general parent-adolescent communication independently for parents and adolescents across a total of 20 items. Items were rated on a Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Higher scores on each of the subscales indicate greater openness in communication or greater problems in communication. Internal consistency of the measures' two subscales were good for Open Family Communication for parent-report ($\alpha = .87$) and adolescent-report ($\alpha = .94$) and adequate for Problems in Family Communication for parents ($\alpha = .74$) and for adolescents ($\alpha = .77$).

A twenty-six item HIV-Knowledge scale (Brown & Fritz., 1988) was used to survey adolescent's knowledge about the routes of HIV transmission, casual contact misconceptions, general information, and course of illness. Response options were *True*, *False*, or *Uncertain* for each statement. Correct responses were summed for a final score with higher scores indicating greater knowledge. Internal consistency was adequate ($\alpha = .74$).

Observational Data Collection

The Potential Parent-Child Problems (PPCP; Donenberg & Weisz, 1997) was used to identify a topic for the conflict discussion task. Parents and children independently indicated how much they disagreed about a list of 14 issues (e.g., child's grades or schoolwork, chores, friends, talking on the telephone, watching television, bedtime, curfew, privacy) on a scale of 1 to 5, where 1 = *do not disagree* and 5 = *strongly disagree*. The PPCP was based on a combination of two measures (Christensen & Margolin, 1988; Marshall, Longwell,

Goldstein, & Swanson, 1990) and modified to include topics relevant to adolescents. Consistent with the method used by Marshall et al., (1990) and Christensen & Margolin (1988), the item rated most conflictual by both people, and least discrepant between the two respondents, was chosen as the topic for the conflict discussion task.

Videotaping was conducted prior to receiving the STYLE intervention (baseline) in private research rooms at each of the three study sites and was directed by a trained research assistant. The research assistant did not know the research participants outside of the research setting. 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 timepoint 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 stop the discussion at the end of five minutes.

Windows Movie Maker software was used to capture each videotaped observation by a video editor who was not part of the coding team. 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 and/or site.

The Dyadic Observed Communication Scale (DOCS) included separate ratings of four types of parent and adolescent behaviors (i.e., I-statements, Negative Vocalizations, Positive Vocalizations, and Body Language) and one global rating of Relationship Quality, resulting in 9 total codes (4 parent + 4 adolescent + 1 dyadic = 9 total). Each 5-minute videotaped interaction required approximately 30 minutes to code. Coders watched each videotaped interaction approximately five times. First, coders simply observed the interaction in its entirety without using any of the codes. Coders then selected an individual in the dyad to code by the flip of a coin (heads = parent, tails = teen). Coders then watched each individual, in the order determined by the coin flip, 2-3 times and coded each individual accordingly. The dyadic code of Relationship Quality was assigned last, after all individual codes had been completed. The full coding manual can be obtained by contacting the primary author.

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).”). An example of an I-statement is “I feel worried when you go out at night and I don’t know where you are”. Statements coded within this scale were delivered in a positive or neutral tone. I-Statements were tallied for a total count.

Negative Vocalizations included any short phrases, interruptions, single words, or utterances that expressed dislike, distaste, frustration, anger, sarcasm, or criticism, including any remarks intended to change or derail conversation, sarcastic phrases, rude remarks, name

calling, and critical statements about the other person (e.g., “duh”, “psh”, “shesh”, “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 sigh or 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 were also included in this category. Positive vocalizations included short phrases like “nice job”, “I love you”, “you are great” that were used to compliment or praise the other person. 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 1 (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. When determining which score to give to each target area quality of the body language, duration of the body language and timing of the body language in the context of the conversation were considered. In the rare cases when the sum of ratings across each of the nine body language target areas equaled 0 or .5, focals were assigned a Body Language score of 1, the scale minimum.

Higher scores indicated more positive Body Language (e.g., sitting up straight, good eye contact, oriented toward the other individual) than lower scores (e.g., fidgeting, finger pointing, aggressive gesturing, slouching). A number of factors were considered in generating a score including duration, frequency, and intensity of the behaviors. Developmental differences were also considered, by which coders were stricter in rating parents relative to adolescents. For example, parents who slouched would be given a “0” rating in posture whereas adolescents who slouched may receive a “.5” or “1” depending on the degree of slouching. Adolescents were also given greater latitude on fidgeting, eye contact, and facial expressions.

Relationship Quality was a global rating that measured the overall quality of the dyad’s 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, demonstrated through physical indicators such as touching, smiling, and laughing together, and verbalizations such as compliments and encouragement) than lower scores. In order to receive a score of 9, the dyad must have demonstrated warmth, continuous engagement, perspective taking, good eye contact, and must be oriented throughout the conversation toward the other member of the dyad. Midrange scores were given for those dyads in which positive and negative vocalizations were generally equal and the body language score for each individual also fell within the middle range of scoring.

Lower scores were given to those dyads who were either openly aggressive or avoidant of the conflict topic (i.e., constantly switched topics, talked in parallel to one another). 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.

Two Bachelor-level coders received approximately 100 hours of training from study investigators at the primary investigation site. Coders did not have any contact with the study participants beyond the coding activity. Coders were first given a brief orientation to the study which included an overview of the study design and sample, 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. After coding these tapes, coders met with the study investigators to review their codes for consistency and to discuss discrepancies. Finally, coders independently coded twelve pre-selected previously coded videotaped interactions, considered “proficiency tapes.” Those who achieved an intraclass 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 allowed to code data for the study.

Results

Reliability and Correlations among the scales of the DOCS

Twenty-six of the seventy-one observations (37%) were coded by the two coders to examine interrater reliability. Interrater reliability was analyzed using intraclass correlation coefficients (see Table 1). Intraclass correlation coefficients ranged from .6 – 1.0, with an average reliability of .82. Coefficients greater than .6 are considered acceptable, consistent with previous reports of satisfactory levels of interrater reliabilities (Florsheim, Tolan, & Gorman-Smith, 1996; Mitchell, 1979). Pearson correlations were used to examine the relationships between scales of the DOCS with one another. Correlations among the DOCS codes ranged from .06 - .55. Correlations were higher (.34 - .80) with the Relationship Quality code, which serves as a summary code and captures the spirit of the dyadic interaction.

Demographic associations with the DOCS

Pearson correlations and t-tests were used to examine associations among demographic variables and the DOCS codes (see Table 2). Girls were more likely to display a greater number of negative vocalizations than boys and lower family income was associated with fewer parent I-statements, fewer parent positive vocalizations, poorer parent body language, and lower overall relationship quality. In addition, a higher level of education was associated with a greater likelihood of parent I-statements and parent positive vocalizations.

Convergent and Discriminant Validity

Correlations between the DOCS' codes and the self-report measures are reported in Table 3. Five of the seven codes were correlated with adolescent and parent self-reports of communication (i.e., correlated both with Openness and Problems), suggesting convergent validity. Adolescent HIV knowledge was not significantly associated with the DOCS, with the exception of parent body language, providing preliminary support to the coding system's discriminant validity.

Discussion

The preliminary data on the newly developed DOCS indicates that this may be a reliable and valid measure of observed communication among parent-adolescent dyads and shows potential for use by others examining parent-adolescent communication. Both parent and adolescent communication skills were assessed using the same four codes which included I-statements, Positive vocalizations, Negative vocalizations, and Body Language. In addition to this individualized communication data, the quality of the dyadic interaction was also captured using the Relationship Quality code. The DOCS allows a range of behaviors that are typical intervention targets to be measured, with minimal coding time. In addition, ICC's ranged from satisfactory (.60) to strong (1.0), with an average reliability of .82. These reliability indicators are consistent with the coding schemes that were originally evaluated as potential candidates for the Project STYLE study (e.g., ICC range=.55-.85 for Iowa scale; Conger et.al., 1992; ICC range=.58-1.0 for SASB; Benjamin, 1974).

To examine the stability of the DOCS codes across demographic groups (i.e., males vs. females, Latinos vs. non-Latinos, etc.), 61 bivariate analyses were conducted and of these, three demographic variables demonstrated significant associations with the DOCS codes. First, adolescent girls had more negative vocalizations than boys, which may not be surprising since they talk more in general and talk more than their male counterparts during interactions with parents (Leaper & Smith, 2004). However, their positive comments were no more frequent than boys. Perhaps, this trend reflects the frequent negative affect of female adolescents with a history of mental health problems, resulting in more criticism and greater sarcasm. Alternatively, the increase in negative vocalizations may be related to increased rates of observed verbal aggression that has been found in previous samples of adolescent females relative to their male peers (Card, Sawalani, Stucky, & Little, 2008). Importantly, this tendency toward negative communication may influence an adolescent girl's ability to successfully negotiate safer sex with a romantic partner. Second, a lower family income showed a consistent and negative association across a number of observational measures of parent's communication (e.g., fewer Positive Vocalizations, poorer Body Language, and poorer Relationship Quality). However, higher education was related to parent I-statements and a greater number of parent vocalizations, potentially indicating a distinct role of household income on parenting practices. Perhaps, the stress of managing a household with fewer economic resources impacts a parent's ability to show positive regard toward their adolescents when communicating. In fact, this finding is consistent with a previous study by Conger and colleagues (1992) which found that family economic pressure was associated with less positive parenting for mothers and fathers. Increasing parental awareness of how stressors (including finances) can influence their parenting may be an important step in improving parent-adolescent communication.

The analyses of the DOCS scores suggest adequate convergent and discriminant validity with appropriate measures. The observed correlations between self-report and the DOCS observational measures of communication were all in the expected direction and are consistent with previous studies reporting low to moderate convergent validity ($r = .2-.4$; Benjamin, 1974; Conger et.al., 1992). These low to moderate correlations are a reflection of different methods of data collection and their different biases (such as social desirability of self-report; Hahlweg, Kaiser, Christensen, Fehm-Wolfsdorf, & Groth, 2000). Although this study provides preliminary information on the reliability and validity of the DOCS, future research will need to examine the relationship of the DOCS to other measures, its utility in longitudinal studies, and its sensitivity to the impact of a dyadic intervention.

Two unexpected findings emerged. First, the frequency of I-statements was extremely low (parents = 6 (<10% of the parent sample), adolescents = 0). Although I-statements are a

relatively common clinical focus, especially within family therapy or parenting programs, data from the current study suggests that it is a relatively uncommon naturally occurring act of communication. Given that this was a target of our family based communication intervention, we have chosen to retain I-statements, for both parents and adolescents and anticipate that they may provide us with an obvious marker of intervention effect over time. Secondly, better parent body language was associated with greater HIV knowledge by their adolescents. This association was not predicted and will need to be explored in future studies of the DOCS to understand how to explain this relationship.

This is the first study to examine the DOCS and therefore its limitations should be noted. The DOCS was examined using a sample of adolescents recruited from inpatient and outpatient mental health treatment settings in three different cities, but the results may not generalize to all youth with psychiatric disorders or to other at-risk samples. As shown, some of the DOCS results may be influenced by the nature of the sample (i.e., females and negative vocalizations) but we do not expect that the general components of communication will be different among parent-adolescent dyads in community settings and therefore believe the DOCS will be sensitive to important patterns in communication across all parent-adolescent dyads. Second, the current study used a relatively small sample to examine the DOCS codes, which may have limited our ability to detect significant demographic influences; however, the sample size was consistent with previous observational studies (Florsheim & Moore, 2007; Lefkowitz, Boone, Sigman, & Au, 2002) and the randomly selected dyads did not differ from those of the larger study. Third, convergent and discriminate validity is suggested by the pattern of associations but only five self-report scales were examined. Notably, across parent and adolescent self-reports of problems in communication, only one correlation was significant (e.g., adolescent positive vocalizations and adolescent report of problems). The lack of associations with other DOCS codes may be due to both a restricted and skewed range of responses on the problems in communication subscale, among this sample of youth in mental health treatment relative to the community validation sample (Barnes & Olson, 1985). In addition, the lack of associations between the DOCS and self-report measures may be a function of the DOCS codes tapping the process of communication rather than problematic symptoms of communication (PACS subscales). Further research will need to examine the pattern of relationships between DOCS codes and other measures tapping similar communication constructs, as well as, examining relationships among parent-adolescent dyads that are not in mental health treatment to determine the validity of this coding system.

The DOCS demonstrates several clear advantages relative to other previously developed coding schemes. First, coders were able to reliably score a single 5 minute interaction across the 9 codes (8 individual and 1 dyadic) in approximately 30 minutes; which is less than 20% of the time than other systems (SASB, 4-6 hours; Benjamin, 1974; Iowa Family Interaction Rating System, 3-8 hours; Melby et al., 1990; and the Hetherington-Clingempeel coding system; Hetherington et al., 1992). Second, the DOCS captures the body language of both parents and adolescents relative to other systems that either exclude this code entirely (e.g., SFSR; Szapocznik et al., 1991; Whalen, et al., 1996), have subsumed it within other coded behavior, such as positive vocalizations (Hetherington, et al., 1992; Lefkowitz et al., 2002; Dishion et al., 1983), or included only a single dimension of body language, such as body orientation toward the focal (Melby et al., 1990). Anecdotally parents participating in the communication intervention for Project STYLE describe body language, including eye contact, facial expressions, and posture as some of the most important aspects of their adolescent's communication. Parents report that even subtle changes in body language, such as eye contact, absence of eye rolling, and being oriented increases a sense of positivity and connection in the dyad. Finally, this is the first coding scheme to include both micro and macroanalytic ratings of mothers, fathers, and adolescents, using both continuous and

ordinal scales to capture parent-adolescent communication. While other previously developed scales have included some of these components, no other scale, prior to the DOCS, has been as inclusive, therefore allowing the DOCS to capture an array of communication components.

In conclusion, the DOCS appears to be a viable coding scheme for use by researchers and clinicians examining parent-adolescent communication. Coders can be trained in a relatively short time frame to reliably capture individual and dyadic components of communication for parents and adolescents and this complex information can be obtained rapidly (30 minutes to examine a single 5 minute interaction) across an ethnically and racially diverse sample of parent-adolescent dyads. When the Project STYLE study is completed, the large sample will provide power to examine the DOCS's predictive validity for adolescent sexual risk behavior and to determine whether the DOCS is sensitive to the impact of the family based intervention. We anticipate that the DOCS will be a valuable tool in helping us understand longitudinal patterns of communication among parents and teens with a history of mental health problems and also discover specific communication targets for future interventions targeting parent-adolescent communication.

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Table 1

Intraclass Correlations (ICC) and Pearson Correlations among the Observational Variables (N=71)

DOCS Variables	1	2	3	4	5	6	7	8	M
1.I-statement (P)	(-.79)	.08	-.08	.12	.06	.06	.05	.12	.10
2.Pos Vocalizations (P)		(-.80)	-.39**	.51**	.20	-.03	.28*	.45**	2.59
3.Neg Vocalizations (P)			(-.77)	-.55**	-.14	.38**	-.31**	-.61**	2.14
4.Body Language (P)				(-.60)	.16	-.27*	.42**	.59**	6.66
5.Pos Vocalizations (A)					(-.70)	-.06	.31**	.34**	1.28
6.Neg Vocalizations (A)						(-.94)	-.41**	-.54**	2.2
7.Body Language (A)							(-.89)	.80**	5.11
8.Relationship Quality								(-.88)	5.37

Note. ICCs are on the diagonal (n=21). P= parent; A= adolescent.

*
p<.05

**
p<.01

Table 2

Demographic Associations with DOCS Variables

DOCS Variables	Age (A)	Income	Education (P)	Gender (A) ^{a,c}	Race (A) ^{b,c}
1. I-statements (P)	.18	.37**	.25*	0.0/0.2	0.0/0.2
2. Pos Vocalizations (P)	-.16	.37**	.30*	2.6/2.5	2.3/2.1
3. Neg Vocalizations (P)	-.12	-.20	-.04	2.4/1.7	2.5/2.6
4. Body Language (P)	.09	.35**	.13	6.6/6.7	6.6/6.6
5. Pos Vocalizations (A)	-.03	.05	-.02	1.3/1.3	1.3/1.2
6. Neg Vocalizations (A)	.09	-.11	.18	1.3/3.4**	1.6/3.2
7. Body Language (A)	-.08	.23	.03	5.0/5.3	5.3/4.9
8. Relationship Quality	-.11	.32**	.10	5.3/5.5	5.5/5.3

Note. P= parent; A= adolescent; X= insufficient data.

^a males= 38/females= 35.

^b African Americans= 41/ other= 28.

^c Means of data.

* p<.05;

** p<.01.

Table 3

Pearson Correlations Examining Convergent and Discriminant Validity (N = 71)

DOCS Variables	Self-Report Variables				
	PACS Problems		PACS Openness		Knowledge
	Parent	Adolescent	Parent	Adolescent	Adolescent
I-statement (P)	.18	.04	-.02	-.04	.07
Pos Vocalizations (P)	-.10	-.16	.16	.15	.10
Neg Vocalizations (P)	.12	.14	-.22	-.29*	-.21
Body Language (P)	-.09	.00	.16	.21	.36**
Pos Vocalizations (A)	-.01	-.27*	.15	.30*	.02
Neg Vocalizations (A)	.19	.10	-.26*	-.25*	.06
Body Language (A)	-.23	-.09	.11	.29*	.16
<i>M</i>	28.21	29.82	35.97	35.51	12.25
<i>SD</i>	7.55	8.43	8.45	11.22	4.04

Note: A= adolescent;

P= parent.

*
p<.05,

**
p<.01.