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Authors

Suleiman, Ahna Ballonoff
Lin, Jessica S
Constantine, Norman A

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**Readability of Educational Materials to Support
Parent Sexual Communication With Their Children and Adolescents**

Ahna Ballonoff Suleiman, DrPH
School of Public Health, University of California, Berkeley
Berkeley, CA

Jessica S. Lin, MPH
Center for Research on Adolescent Health and Development, Public Health Institute
555 12th St., 10th floor, Oakland, CA 94607

Norman A. Constantine, PhD
Center for Research on Adolescent Health and Development, Public Health Institute
555 12th St., 10th floor, Oakland, CA 94607
and
School of Public Health, University of California, Berkeley
Berkeley, CA
nconstantine@berkeley.edu

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**Readability of Educational Materials to Support
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Abstract

Sexual communication is a principal means of transmitting sexual values, expectations, and knowledge from parents to their children and adolescents. Many parents seek information and guidance to support talking with their children about sex and sexuality. Parent education materials can deliver this guidance, but must employ appropriate readability levels to facilitate comprehension and motivation. This study appraised the readability of educational materials to support parent sexual communication with their children. Fifty brochures, pamphlets and booklets were analyzed using the Flesch Kincaid, Gunning Fog, and SMOG Index methods. Mean readability grade level scores were 8.3 (range 4.5-12.8), 9.7 (range 5.5-14.9), and 10.1 (range 6.7-13.9) respectively. Informed by NIH recommended 6th to 7th grade levels, and AMA recommended 5th to 6th grade levels, the percentages falling at or below the 7.0 grade level were calculated as 38%, 12%, and 2%, and at or below the 6.0 grade level as 10%, 2%, and 0%, based on the Flesch-Kincaid, Gunning Fog, and SMOG methods. These analyses indicate that the majority of educational materials available online to support parent communication with their children about sex and sexuality do not meet the needs of many or most parents. Efforts to improve the accessibility of these materials are warranted.

A majority of parents report talking with their children about one or more sexual topics at least once, and often more frequently (de Looze et al., 2014; Dilorio, Pluhar, & Belcher, 2003; Eisenberg, Sieving, Bearinger, Swain, & Resnick, 2006; Jerman & Constantine, 2010). Although the likelihood and frequency of such conversations and the topics included are correlated with a child's age and gender, these conversations typically occur across a wide range of ages from middle childhood to late adolescence (Dilorio et al., 2003; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Jerman & Constantine, 2010). Most parents recognize that children and adolescents receive sex and sexuality related information from a variety of other sources, and that the information received from these sources may differ from parents' values and beliefs (Jordan et al., 2000). These parents typically understand that it is important to communicate with their children about sex and sexuality to provide appropriate information and influence the development of their values in these areas.

While some research has found good parent-child communication about sex to be associated with healthy behaviors, including delayed sexual initiation and improved sexual health outcomes (Aspy et al., 2007; Karofsky, Zeng, & Kosorok, 2001; Weinman, Small, Buzi, & Smith, 2008), other studies have not found such positive associations (de Looze et al., 2014; Eisenberg et al., 2006; Henrich, Brookmeyer, Shrier, & Shahar, 2006; Stanton et al., 2004). Despite mixed findings on its relationship to sexual behaviors, parent communication is an important part of child and adolescent sexuality education and sexual socialization (Eisenberg et al., 2006; Goldfarb & Constantine, 2011; Shtarkshall, Santelli, & Hirsch, 2007).

Parents wishing to communicate with their children about sex face a number of challenges. Although a large majority report that they would like to communicate with their children about a variety of sexual issues, many do so superficially, infrequently, or not at all, commonly reporting lack of comfort, skills, or knowledge to do so (Dilorio et al., 2003; Jerman & Constantine, 2010). Many adults lack adequate knowledge on sexual health issues in general and may feel insufficiently equipped to share information with their children. Low literacy parents

face particular challenges to accessing and sharing information with their children. Women who have lower literacy levels are more likely to want information about contraception and tend to have less knowledge about basic sexual and reproductive health topics (Gazmararian, Parker, & Baker, 1999). Such knowledge deficits can present significant barriers for parents seeking to communicate with their children about sex, and can create opportunities for the communication of misinformation to youth. The goal of this study was to explore how well materials designed to provide parents with information and skills to discuss sex and sexuality with their children match their literacy and comprehension needs.

Literature Review

Parents as Sexuality Educators

Parents play primary roles in sexuality education and socialization throughout much of their offspring's lifespans (Shtarkshall, Santelli, & Hirsch, 2007). For example, during infancy this might involve nonverbally communicating values about self-touching through body language or gestures indicating approval or disapproval, whereas early childhood might involve answering first questions about anatomy and reproduction. During adolescent and beyond it might involve openly discussing complex questions associated with sexual pleasure, responsible relationships. Accordingly, parents could benefit from sexual communication support across the full developmental trajectories of their children.

Parents report seeking sexual communication information and guidance from multiple sources, including the internet, books, faith leaders, parenting classes, and others (Jordan, Price, & Fitzgerald, 2000). Educational materials have the potential to cost-effectively support such communication through addressing gaps in knowledge, skills, and comfort. While materials-based education for adults targeting their own health issues (e.g., asthma, smoking cessation, and HIV/AIDS prevention) has generally shown disappointing outcomes (Silvestri & Flay, 1989; Walpole et al., 1997; Witte et al., 1998; Gibson et al., 2002), materials-based

education for parents regarding their children's health and development has been more successful. A review of 19 studies of materials-based parent education for pregnant or newly parenting adults found positive outcomes on parenting knowledge, attitudes, or behaviors in 17 of the 19 studies (Sokal-Gutierrez et al., 2003). The reviewers concluded that the most effective parent education materials are tailored to their target audience's concerns, needs, and characteristics. This includes not only providing information that is relevant to the audience, but also developing written materials that are culturally and linguistically appropriate and produced at an appropriate reading level for their intended audience (Sokal-Gutierrez et al., 2003).

Studies also have found that parents can learn from educational materials on sexual communication (Brock & Beazley, 1995; Jordan, Price, & Fitzgerald, 2000; Miller & Whitaker, 2001; E. K. Wilson, Dalberth, Koo, & Gard, 2010). While such materials can be an effective means for parents to access relevant sexual health information and communication strategies, they must be produced at appropriate readability levels to be accessible, understandable, and motivating to a wide range of parents. Parents with lower levels of education and reading comprehension may face particular challenges in finding appropriate accessible materials.

Literacy

Literacy has been defined as "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential," whereas health literacy more specifically refers to "how well an individual can read, interpret, and comprehend health information for maintaining an optimal level of wellness" (Bastable, 2011). In the United States, limited literacy overall and health literacy in particular present challenges to effective communication of health information (Institute of Medicine, 2004; Joint Commission, 2007). The 2003 National Assessment of Adult Literacy found that the average American adult reads at a 7th or 8th grade level, equivalent to the reading ability of a 12- or 13-year old child with 7 to 8 years of education (Kutner, Greenberg, Jin, Paulsen, & White, 2006). Approximately 36% of US adults have literacy skills that are basic (having adequate skills only sufficient to perform

simple, daily literacy tasks) or below basic (ranging from being functionally illiterate to having simple and concrete literacy skills to perform only the most simple literary activities, such as following instructions in simple documents) (Kutner et al., 2006). Low literacy disproportionately impacts low-income and minority individuals. Hispanic (66%), African American (58%), American Native (48%), and multiracial (37%) groups have the greatest percentage of adults with below-basic or basic literacy levels, and the average adult living at or below the federal poverty rate reads at basic literacy levels (Kutner et al., 2006). Adults with limited literacy may struggle with health information, even in a clearly written health pamphlet (Kutner et al., 2006). These data suggest that low-income, minority parents are especially likely to encounter challenges when seeking educational materials to support their communication with their children about sex.

In response to literacy limitations within the US adult population, the National Institutes of Health (2013) has recommended that health promotion materials should be written at the 6th or 7th grade reading level to maximize comprehension of health-related texts, while the American Medical Association (Weiss, 2007) has recommended that written materials should be produced at the 5th or 6th grade level. Studies have consistently found written materials in other health promotion areas exceed these levels, sometimes substantially (e.g., Andrus & Roth, 2002; D'Alessandro, Kingsley, & Johnson-West, 2001; Freda, 2005; Freda, Damus, & Merkatz, 1999; Greenfield, Sugarman, Nargiso, & Weiss, 2005; Hendrickson, Huebner, & Riedy, 2006; Marques et al., in press; Neuhauser et al., 2013; Pizur-Barekow, Patrick, Rhyner, Cashin, & Rentmeester, 2011; Pizur-Barnekow, Patrick, Rhyner, Folk, & Anderson, 2010). No research however, has assessed the readability of parent sexual communication materials.

Internet-based Materials

The internet serves as a primary source of health information for many Americans. In 2010, 79% of American adults used the internet, and that percentage has increased in 2014 to 87% (Fox & Rainie, 2014). Of those using the internet, 72% report searching for health

information online and the majority (77%) begin their search through major search engines such as Google (Fox & Duggan, 2013). While individuals with higher household incomes and education levels are most likely to use the internet, usage now has expanded to all levels and a significant majorities of individuals with a high school education or less (76%) and with household incomes less than \$30,000 per year (77%) access the internet (Fox, Rainie, 2014). Given such broad use of the internet, the need for internet materials accessible by people of all literacy levels is critical. Internet-based parent education brochures can be made available to parents directly through the internet, and also may be downloaded and printed by agencies and service providers for redistribution to parents, for example in a clinic waiting room, at a community based agency, or through the mail.

Given the importance of parent sexual communication with their children and adolescents, the need for support in this area that many or most parents exhibit, the potential of internet-accessible brochures, pamphlets, and booklets, and the well documented problems with high readability demands of health promotion materials in others health areas, this study was designed to address the following questions:

Research Question 1: To what extent do brochures, pamphlets, and booklets available via the internet to support parent sexual communication with their children and adolescents meet NIH guidelines for grade level readability?

Research Question 2: To what extent do brochures, pamphlets, and booklets available via the internet to support parent sexual communication with their children and adolescents meet AMA guidelines for grade level readability?

Method

Collection Procedures

Using the Google search engine, the first author conducted multiple searches employing the primary key words of “parents” and “sex education” combined with the additional key words

of “sexuality,” “brochures,” “communication,” “child,” “teen,” and “adolescent.” The intent of these searches was to identify print formatted educational materials supporting parent communication with their children or adolescents about sex and sexuality. The first 200 results for each search were examined. All brochures, booklets, and pamphlets that focused on improving parent knowledge or skills to facilitate parent-child or parent-adolescent sexual communication were identified for further review (n=67). In addition, if a website linked to another organization’s website that included additional pamphlets or other materials, these items were also included (n=12). Materials that addressed only sexual orientation or were directed primarily at youth audiences were excluded, as were materials not written in English, not produced by US-based agencies from 1999-2011, or not available to view, download, or order from the website (n=29). The remaining 50 brochures, booklets, and pamphlets were designated as the analysis sample.

Sample

Table 1 lists the 50 included materials, which were published by twenty-seven different authoring agencies. Many of these materials were available to order in paper format for distribution in clinics and other health settings, leading to the possibility of parents’ accessing them in either print or online format. Materials that could not be reviewed online but could be ordered through the website were ordered and reviewed in their paper form, and transcribed into electronic files for analysis. All items available for download or viewable directly through a web portal were downloaded and reviewed as text or PDF files. Materials ranged in length from one to eighty pages, with a mean length of 9.5 pages. Twenty-one of the reviewed materials were also available in Spanish translation; one item was also available in Chinese. For the purposes of this study, only English language materials were reviewed. In several of the longer booklets, sections on sex and sexuality were included along with sections on other topics, such as violence or substance use. Only sections focused on sex and sexuality within these longer materials were analyzed. Sixty-two percent of the documents focused on parents with children

across a wide range of ages from preteen to late adolescence, 36% focused on parents of adolescents rather than preteens, and 2% focused on parents of preteens rather than adolescents.

Document Preparation

Document preparation and cleaning was conducted by the first author, reviewed by the second author, and discussed as necessary to resolve any questions or concerns. The text from each of the materials was entered into a Microsoft Word file either by copying and pasting (as the PDF format allowed) or direct data entry. Once text was pasted, all documents were reviewed and cleaned to ensure that all text had been carried over correctly. Hyphens were removed from any hyphenated words to eliminate potential confusion in the readability analyses. Because readability analyses are partially based on sentence length, bulleted lists lacking punctuation can prove problematic for analysis. Documents were carefully reviewed for unpunctuated sentences. One document was a fully bulleted list without any punctuation. To allow for accurate analysis, the text was revised to include a period at the end of every bullet. The addition of punctuation was not necessary for any other materials. Typos, grammatical errors or misspellings found in the original text were not revised in the Word document prior to analysis. Three of the documents included one or more of these types of errors. References and resource lists were excluded from the readability calculations due to the challenges that proper names, web addresses, abbreviations, and numbers create for the calculators.

Readability Analyses

Readability analyses estimate the literacy level required for a reader to grasp and comprehend the information presented in a block of text (DuBay, 2004). While readability scores do not assess the quality of a document's content, layout, or style, they do provide insight into how well textual information will be understood by the consumer (Redish, 2000).

A number of readability formulas have been developed based on calculations of the numbers of characters, syllables, words or sentences in a text sample. Following

recommendations to employ multiple readability formulas to fully assess reading levels, readability ratings for this project were calculated using the Flesch Kincaid scale, Gunning Fog (Frequency of Gobbledygook¹) index, and SMOG (Simple Measure of Gobbledygook), three of the most frequently used readability formulas in assessments of health-related literature (Center for Medicaid and Medicare Services [CMS], 2012; Friedman & Hoffman-Goetz, 2006; Meade & Smith, 1991; Ridpath, Greene, & Wiese, 2007; Rosales, 2010; Stossel, Gliatto, Fallar & Karani, 2012). These indices have been demonstrated to have good validity and have been extensively used in assessing the readability of health information (Freda, Damus & Merkatz, 1999; Friedman & Hoffman-Goetz, 2006; Kim et al., 2007; Meade & Smith, 1991). The Flesch Kincaid, Gunning Fog, and SMOG formulae's readability scores were calculated using a web-based calculator (http://www.online-utility.org/english/readability_test_and_improve.jsp; Adamovic, 2009).

The *Flesch-Kincaid formula* was originally developed to assess readability for the Department of Defense (Kincaid, Fishburne, Rogers, & Chissom, 1975). Flesch-Kincaid assesses the difficulty of text based on the number of average words per sentence and average syllables per word and provides a grade-based score ranging from 5th grade to college level (Kincaid et al., 1975). While Flesch-Kincaid is highly correlated to other readability formulas, computer-calculated scores recognize each period as the end of a sentence, which can lead to improper coding of abbreviations, numbers with decimals, and punctuated lists, and result in underestimated assessments of text complexity (Friedman & Hoffman-Goetz, 2006; Weiss, 2007). One of the primary readability formulas used to assess health information, Flesch-Kincaid has been used to evaluate a wide range of health-related print and web-based materials (Cochrane, Gregory, & Wilson, 2012; McInnes & Haglund, 2011), including psychometric instruments on HIV risk (Balogun et al., 2010) and brochures on cancer prevention, treatment

¹ Gobbledygook (2015) is defined by Meriam Webster as “speech or writing that is complicated and difficult to understand.”

and therapy (F. Wilson, Baker, Brown-Syed, & Gollop, 2000), pediatric patient education (Freda, 2005), asthma education (Croft & Peterson, 2002), and anticoagulation therapy (Estrada, Hryniewicz, Higgs, Collins, & Byrd, 2000).

The *Gunning Frequency of Gobbledygook (Fog) Index*, developed in 1952 by Robert Gunning, assesses readability by comparing the number of complex words to overall words in a text (Employment Security Department of Washington State, 2011). The Gunning Fog Index assesses the ratio of polysyllabic to overall words in a sentence, resulting in a grade-based score ranging from the 4th grade to college level (Friedman & Hoffman-Goetz, 2006). The Gunning Fog Index is highly correlated with other readability indices, although it has been argued that its assessment based on word length does not account for variation in difficulty level across multisyllabic words and that it might overestimate the reading level required to comprehend some words that are lengthy but commonly understood (Friedman & Hoffman-Goetz, 2006, Meade & Smith, 1991). Adopted by the U.S. Army, Navy, and Air Force and extensively used by newspapers and industrial writers (Gunning, 1969), the Gunning Fog Index has also been used to evaluate a wide range of health-related materials, including online health information (McInnes & Haglund, 2011) and patient education materials (Cherla et al., 2013; Edmunds, Barry, & Denniston, 2013; Stossel, Gliatto, Fallar & Karani, 2012; Yin et al., 2012).

The *Simple Measure of Gobbledygook (SMOG) readability formula*, developed in 1969 by G.H. McLaughlin, determines a grade-based readability based on the number of polysyllabic words in 10-sentence excerpts taken from the beginning, middle, and end of a publication (McLaughlin, 1969). While highly correlated to other grade based readability calculators, SMOG defines readability as 100% comprehension, resulting in calculated grade levels that can range from 1 to 2 grades higher on average than other grade-based readability systems (D'Alessandro, Kingsley, & Johnson-West, 2001; Freda, 2005; Mailloux, Johnson, Fisher, & Pettibone, 1995; Meade & Smith, 1991). SMOG has been widely used to assess the readability of health information brochures produced by a number of national health agencies and

organizations, including the U.S. Center for Mental Health Services (Adkins, Elkins, & Singh, 2001), the American Academy of Pediatrics (Freda, 2005), and the American College of Obstetrics and Gynecology (Freda et al., 1999), and is the readability formula of choice recommended by the U.S. National Cancer Institute (1979) and Centers for Medicare and Medicaid Services (2012).

Results

Fifty brochures, pamphlets, or booklets produced by twenty-seven different agencies were evaluated. Across all documents, mean grade levels were 8.3 (range 4.5 to 12.8) using the Flesch-Kincaid, 9.7 (range 5.5 to 14.9) using the Gunning Fog, and 10.1 (range 6.7 to 13.9) using the SMOG (Table 1). We found no correlation between the readability of the materials and the target age groups of the parents' children. The three documents with the lowest grade levels across all three methods were "Talking the talk together" by the Campaign for Our Children (4.5, 5.5, 6.7), "You don't want to talk about sex. Your kids don't want to talk about sex. Here's how to talk about sex" by the Department of Health and Human Services (4.6, 6.2, 7.3), and "Keep your kids safe and healthy – Talk to them about sex" by the California Family Health Council (5.2, 6.4, 7.6). The three with the highest levels were "Puberty" by SIECUS (11.4, 13.3, 12.6), "Staying connected: A guide for parents on raising an adolescent daughter" by the American Psychological Association (12.8, 14.6, 13.5), and "It's important to talk about abstinence" by SIECUS (12.8, 14.9, 13.9).

Informed by NIH-recommended 6th to 7th grade levels and AMA-recommended 5th to 6th grade levels, percentages falling at or below the 7.0 grade level were calculated as 38%, 12%, and 2%, and at or below the 6.0 grade level as 10%, 2%, and 0%, based on the Flesch-Kincaid, Gunning Fog, and SMOG methods respectively.

The number of documents produced by the 27 individual authoring agencies ranged from one to six. Figure 1 shows authoring agencies' mean readability estimates employing each

of the three estimation methods. Authoring agency means ranged from 5.6 to 12.8 based on the Flesch-Kincaid formula, from 6.7 to 14.6 based on the Gunning Fog index, and from 7.7 to 13.5 based on the SMOG full comprehension formula. Across all three methods, Campaign for Our Children materials had the lowest mean readability levels (5.6, 6.7, 7.7), and American Psychological Association had the highest (12.8, 14.6, 13.5). None of the 27 agency means based on the SMOG full comprehension method was below the 7.0 grade level, whereas 2 of the 27 means based on the Gunning Fog method and 6 of the 27 based on the Flesch-Kincaid method were. No agency means by either the SMOG or Gunning Fog methods were at or below the 6.0 grade level, while one based on the Flesch-Kincaid method was.

Between-document variation in readability of materials can be illustrated by examining how different materials addressed similar topics across the range of readability levels. For example, a low-literacy level paragraph (Flesch Kincaid 4.9; Gunning FOG 5.7; SMOG 6.7) regarding communication tips states:

Don't preach. Share. Let your children know how you felt when you were their age. So they know you understand what they're going through. And don't just talk, ask questions. This absolutely needs to be a two-way discussion. Because kids really respond better when they're talked with, not at. Believe it or not, your kids actually do want to know how you feel about sex and how you want them to behave. Of course they may never ask you about it. So you need to take the first step. Try these suggestions. And visit our site for more helpful ideas. You can do this. (U.S. Department of Health and Human Services, 2009).

Similar tips are described by a mid-level document (Flesch Kincaid 9.2; Gunning Fog 13.2; SMOG 10.8) in the following manner: "Being *askable* is a lifelong component of relationships. It opens doors to closer relationships and to family connections. It's never too late to begin," (Huberman & Alford, 2005). And a high-level document (Flesch Kincaid 17.1; Gunning FOG 15.6; SMOG 16.4) states:

As always, open communication during childhood and through adolescence will help you define and augment the information your daughter has already received from watching you and from listening to myriad other voices. Providing an accepting environment at home will further enable her to feel comfortable discussing sensitive topics with you. (American Psychological Association, 2001).

Readability levels also varied within documents. For example, one mid-level material (Flesch Kincaid 8.6; Gunning FOG 10.0; SMOG 10.0 overall) included elementary school level statements such as:

Say, for instance, the mother of an 8-year-old's best friend is pregnant. You can say, "Did you notice that David's mommy's tummy is getting bigger? That's because she's going to have a baby and she's carrying it inside her. Do you know how the baby got inside her?" then let the conversation move from there. (Dumas,1999).

This same document also included university level text, for example: "As a parent, you have a wonderful opportunity to talk with your child early, before anyone else can confuse your child with incorrect information or explanations that lack the sense of values you want to instill." (Dumas,1999).

Discussion

These findings reinforce prior studies' conclusions that many educational materials designed to support parents in caring for or communicating with their children do not meet the accessibility needs of the general population (D'Alessandro, Kingsley, & Johnson-West, 2001; Freda, 2005; Hendrickson, Huebner, & Riedy, 2006; Pizur-Barnekow, Patrick, Rhyner, Cashin, & Rentmeester, 2011; Pizur-Barnekow, Patrick, Rhyner, Folk, & Anderson, 2010). Based on the SMOG formula's assessment of the necessary literacy level for full comprehension, 88% of available materials were written above the 6th to 7th grade level recommended for the general public. Using the less demanding Flesch-Kincaid and Gunning Fog formulas, 52% and 70% were beyond the recommended level. The readability of most of the assessed materials exceeds the reading capacity of most parents, especially those who may most need this type of information and support, including non-white, low-income, and less educated parents. That these items were available through a general web search also suggests that parents may access these materials online without any additional discussion with a health educator, medical or mental health provider, or other expert, resulting in parents having incomplete or insufficient access to information to support their sexual communication with their children.

Many of the agencies producing these brochures might not have intended for them to be low literacy and did not promote these materials as such. Some of the materials might have been targeted for parents with higher than average education levels. Several agencies provided grade level estimates for their materials that were similar to those calculated for this study and might be helpful in guiding parents looking for materials at a particular level of readability. Nevertheless, an overwhelming majority of these materials were written at levels above the 6th to 7th grade reading level recommended for health-related materials for the general population by the National Institutes of Health, and the 5th to 6th grade level recommended by the American Medical Association—many of them substantially so. This suggests that these materials will be inaccessible or difficult to comprehend for a large subset of parents, particularly among those with the greatest need.

Despite agencies' best intentions to support parents, a variety of factors may contribute to the challenge of producing educational materials that are accessible to and appropriate for their audience. Limited funding, staffing, and timing to appropriately develop, test, and evaluate materials can present a challenge to agencies attempting to produce high quality, accessible materials (Gal & Prigat, 2005). Distributing materials via the Web adds additional challenges, as online availability limits the ability of agencies to account for or address the needs of specific audiences, or to supplement written materials with in-person support (Gal & Prigat, 2005). While these barriers are real, agencies providing information to parents about child and adolescent sexual health can still improve upon the accessibility of currently available materials.

Several limitations to this study should be considered. First, it is important to recognize that even materials with lower literacy levels do not guarantee user comprehension or cultural relevance (Davis, Crouch, Willis, Miller, & Abdehou, 1990; Wilson et al., 2000). Furthermore, readability indices do not account for tone or other stylistic elements that can impact comprehension (CMS, 2012; Gunning, 1969). Other factors related to readability, including white space, font size and other formatting issues, and typos, also were not assessed. In

addition, this study reviewed only materials found online. Additional materials are likely to be available through local clinics, health departments and other community-based agencies. Local materials might be better tailored to the needs of local populations, have more cultural relevance, or include lower-literacy level text. Due to logistical constraints it was not possible to determine the availability of other educational materials in these venues or to assess the readability of materials produced in other languages. Despite these limitations, this study provides an objective, structured assessment of the overall readability of a large carefully specified sample of parent sexuality education support materials.

The analyses reported here lead to the unambiguous conclusion that most educational materials available online to support parents in communicating with their children and adolescents about sex and sexuality will not be accessible to low and even average literacy parents. Accordingly, there is a critical need for improvement in the quantity and quality of lower literacy level parent education materials available on the Web. Authoring agencies should formally assess the readability of their existing and future parent materials by employing structured readability assessments such as those used in this study, together with pilot testing and review across the full range of target audience members (i.e., parents). Expert consultation together with parent input and review should be engaged in revising or developing new materials, and principles of effectively communicating text-based health information (e.g., Bastable, 2011; NIH, 2013; Rudd et al., 2004; Stableford & Mettger, 2007) should be followed.

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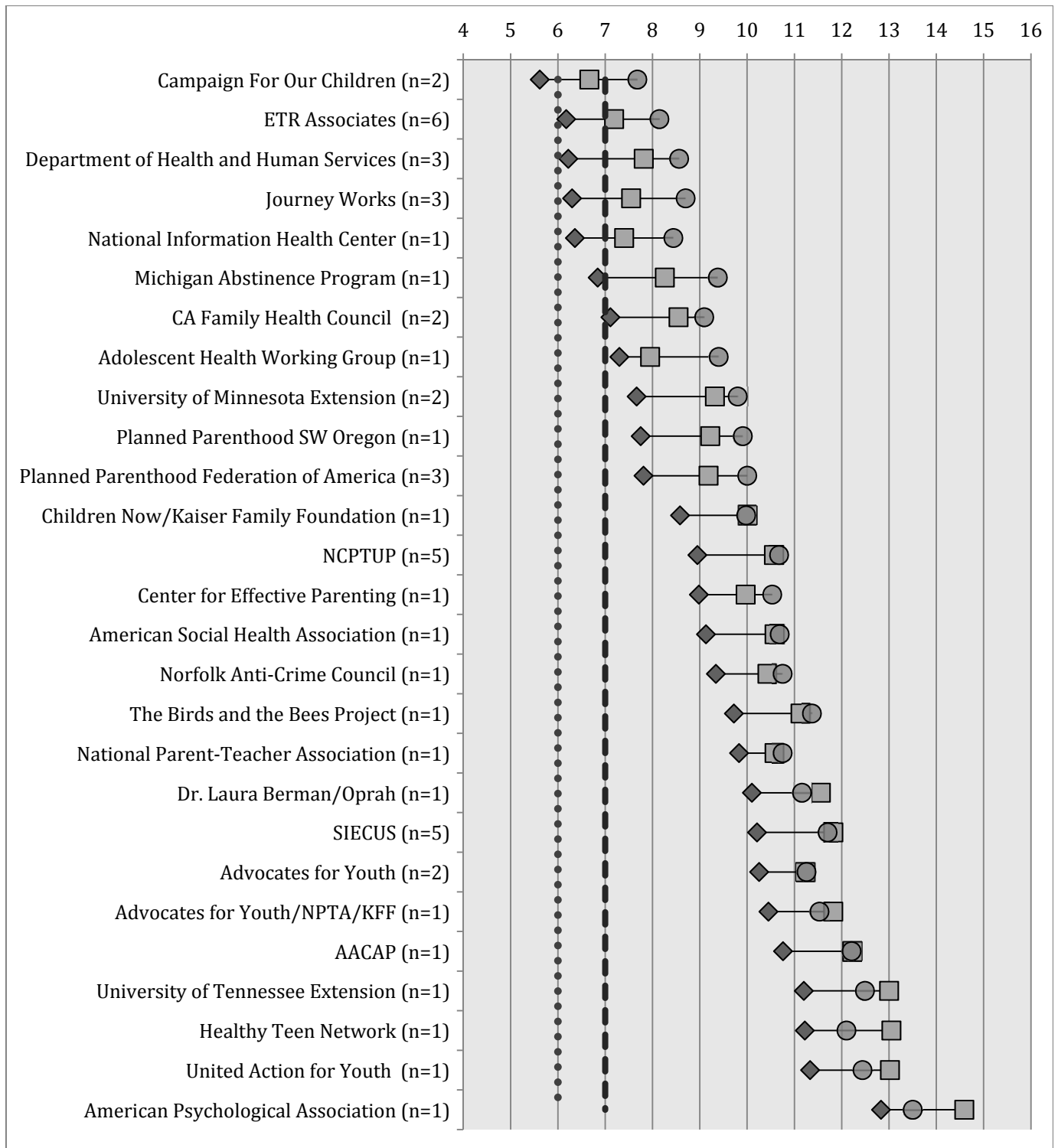
Table 1. Readability Levels by Document

Title	Flesh Kincaid	Gunning Fog	SMOG
Talking the talk together (2009) ^a	4.5	5.5	6.7
You don't want to talk about sex. Your kids don't want to talk about sex. Here's how ... (2009) ^b	4.6	6.2	7.3
Keep your kids safe and healthy - Talk with them about sex (n.d.) ^c	5.2	6.4	7.6
Birth control: Talking with your daughter (n.d.) ^d	6.3	6.8	7.6
Birth control: Talking with your son (n.d.) ^d	6.0	7.0	7.7
Encouraging abstinence: Ten tips for parents (2009) ^e	5.6	6.7	7.9
HIV: Talking with your teen (n.d.) ^d	6.2	7.1	8.1
STD: Talking with your teen (n.d.) ^d	6.1	7.4	8.4
Talk to your kids about sex (2010) ^f	6.4	7.4	8.4
Sexual responsibility: Talking with your child (n.d.) ^d	6.4	7.3	8.5
Abstinence: Talking with your teen (n.d.) ^d	6.0	7.6	8.6
How to talk with your kids about sex (2009) ^a	6.7	7.8	8.7
Materials for parents (2009) ^b	6.4	8.1	8.7
How to talk to your child about sexuality - A parent's guide (2007) ^g	6.4	7.8	8.9
Adolescents would prefer parents as primary sexuality educators (n.d.) ^h	6.8	8.2	8.9
Helping your teenager build healthy relationships (2010) ^e	6.8	7.9	9.0
Teaching your teens about sexual responsibility (2004) ^e	6.5	8.0	9.2
How to talk to your kids about sex (2003) ⁱ	6.8	8.3	9.4
How to talk with your children and teens about healthy relationships (2010) ^j	7.3	8.0	9.4
The facts of life - A guide for teens and their families (2008) ^g	7.0	8.1	9.4
Parents, speak up! A guide for discussing relationships and waiting to have sex (2007) ^b	7.7	9.2	9.7
Teen talk fact Sheet: I'm in love - I'm not going to get pregnant (2007) ^k	7.8	9.1	9.8
Teen talk fact Sheet: I've met someone special (2007) ^k	7.5	9.6	9.8
There's no place like home for sex education (2002) ^l	7.8	9.2	9.9
Aunt Sarah's list (n.d.) ^m	8.8	9.5	10.0
Talk with your kids...Before everyone else does (1999) ⁿ	8.6	10.0	10.0
Are you an askable parent? (2005) ^o	9.7	9.8	10.1
Talking to children about sex (2006) ^p	9.0	10.0	10.5
10 tips for parents to help their children avoid teen pregnancy (2008) ^m	8.6	10.5	10.6
Facts about teens and sex: Parents can make a difference (2005) ^e	9.1	10.7	10.6
Be an askable parent: How to talk with your child about sex and sexuality (2009) ^q	9.1	10.6	10.7

Talking with kids about HIV/AIDS (2003) ^f	9.8	10.6	10.8	
Everybody is talking to your child about sex - What are they hearing from you? (n.d.) ^g	9.3	10.4	10.8	
What is normal childhood sexual development? (2004) ^h	8.7	10.4	10.8	
Parent power: What parents need to know and do to prevent teen pregnancy (2001) ^m	8.9	10.8	10.8	
Talking back: What teens want adults to know about teen pregnancy (2010) ^m	8.7	10.8	10.9	
The sex ed handbook: A comprehensive guide for parents (2009) ^t	10.1	11.6	11.2	
Relationship redux: Tips and scripts for talking to your kids about relationships (2009) ^m	9.8	11.3	11.2	
How do I talk to my kids about sex? (n.d.) ^u	9.7	11.1	11.4	
It's important to talk with children about HIV/AIDS (2003) ^h	10.3	11.6	11.5	
Talking with kids: A parent's guide to sex education (2002) ^v	10.5	11.8	11.5	
Human sexuality - What children should know and when they should know it (2007) ^g	10.1	11.6	11.7	
Health care, birth control & confidential services - A guide for parents ^w	11.2	13.1	12.1	
Facts for families: Talking to your kids about sex (n.d.) ^x	10.8	12.2	12.2	
Parents: Talking with your children about sexuality (2010) ^y	11.3	13	12.4	
Parents it's time to talk (2002) ^o	10.8	12.7	12.5	
Spotlighting teen issues for parents: Talking about sex (2010) ^z	11.2	13	12.5	
Puberty (2002) ^h	11.4	13.3	12.6	
Staying connected: A guide for parents on raising an adolescent daughter (2001) ^{aa}	12.8	14.6	13.5	
It's important to talk about abstinence (2003) ^h	12.8	14.9	13.9	
	Mean	8.3	9.7	10.1
	Standard Deviation	2.1	2.3	1.7
	Minimum	4.5	5.5	6.7
	Maximum	12.8	14.9	13.9

^aCampaign for Our Children; ^bDHHS– Parents Speak Up; ^cCA Family Health Council; ^dETR Associates; ^eJourney Works; ^fNational Information Health Center; ^gPlanned Parenthood; ^hSIECUS; ⁱMichigan Abstinence Program; ^jAdolescent Health Working Group; ^kUniversity of Minnesota Extension; ^lPlanned Parenthood of SW Oregon; ^mThe National Campaign to Prevent Teen and Unplanned Pregnancy; ⁿChildren Now/ Kaiser Family Foundation; ^oAdvocates for Youth; ^pCenter for Effective Parenting; ^qAmerican Social Health Association; ^rNational PTA; ^sNorfolk Anti-Crime Council; ^tDr. Laura Berman/ Oprah; ^uThe Birds and the Bees Project; ^vAdvocates for Youth/ National PTA/ Kaiser Family Foundation; ^wHealthy Teen Network; ^xAmerican Academy of Child and Adolescent Psychiatry; ^yUnited Action for Youth; ^zUniversity of Tennessee Extension; ^{aa}American Psychological Association

Figure 1. Mean Readability Level by Authoring Agency



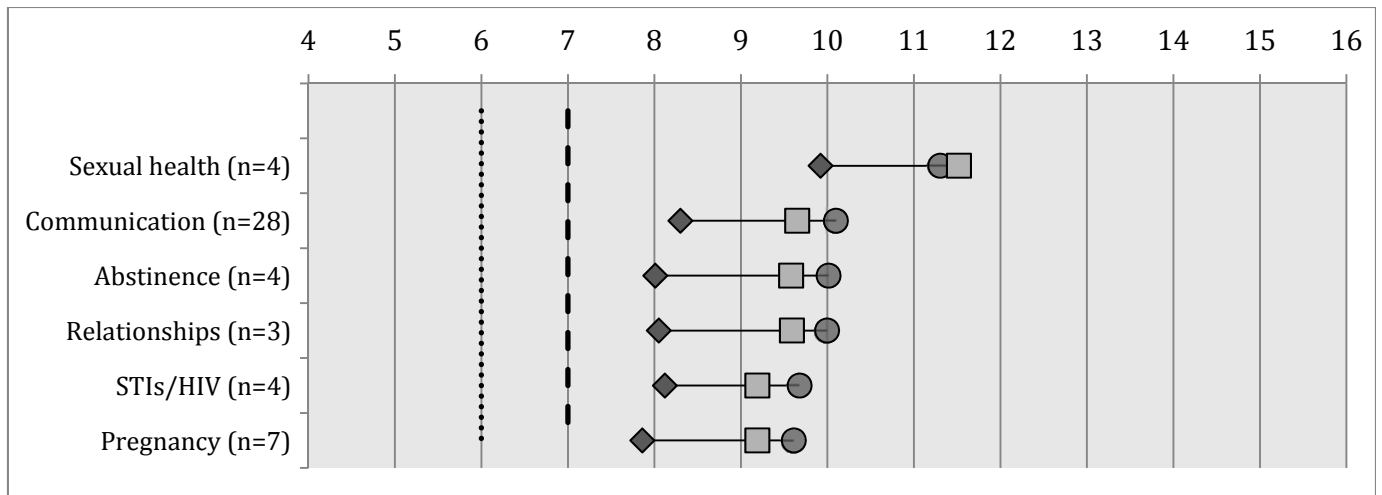
Key:

- ◆ Flesch Kincaid Grade Level
- Gunning Fog Index
- SMOG Index
- NIH recommended grade level (6th-7th)
- AMA recommended grade level (5th-6th)

Abbreviations:

- NCTUP: National Campaign to Prevent Teen and Unwanted Pregnancy
- SIECUS: Sexuality Information and Education Council of the United States
- NPTA: National Parent-Teen Association
- KFF: Kaiser Family Foundation
- AACAP: American Academy of Child and Adolescent Psychiatry

Figure 2. Mean Readability Level by Primary Topic



Key:

- ◆ Flesch Kincaid Grade Level
- Gunning Fog Index
- SMOG Index
- NIH recommended grade level (6th-7th)
- AMA recommended grade level (5th-6th)