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Using the Integrative Model to Explain How Exposure to Sexual Media Content Influences Adolescent Sexual Behavior

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Abstract

Published research demonstrates an association between exposure to media sexual content and a variety of sex-related outcomes for adolescents. What is not known is the mechanism through which sexual content produces this "media effect" on adolescent beliefs, attitudes, and behavior. Using the Integrative Model of Behavioral Prediction, this article uses data from a longitudinal study of adolescents ages 16 to 18 ($N = 460$) to determine how exposure to sexual media content influences sexual behavior. Path analysis and structural equation modeling demonstrated that intention to engage in sexual intercourse is determined by a combination of attitudes, normative pressure, and self-efficacy but that exposure to sexual media content only affects normative pressure beliefs. By applying the Integrative Model, we are able to identify which beliefs are influenced by exposure to media sex and improve the ability of health educators, researchers, and others to design effective messages for health communication campaigns and messages pertaining to adolescents' engaging in sexual intercourse.

Introduction

Adolescents (ages 8-18 years) spend on average more than 7.5 hours per day with media (Rideout et al., 2010) and throughout this time they are likely to be exposed to sexual content. For example, youths aged 8 to 18 spend an average of 4.5 hours per day watching television content (Rideout et al., 2010). Although the amount of sex content portrayed in television shows is increasing (Kunkel, Cope, & Colvin, 1996; Kunkel, Cope-Ferrer, Biely, & Donnerstein, 2001; Kunkel et al., 2003; Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005), messages pertaining to safer sex and sexual risk and responsibilities (Kunkel et al., 2005) are infrequent. Research suggests that exposure to sexual content on television and other media is associated with cognitive factors such as expectations about sex, perceptions about peer sexual behavior, and permissive attitudes about sex (Annenberg Media Exposure Research Group, 2008; Ashby, Arcari, & Edmonson, 2006; Bleakley, Hennessy, Fishbein, & Jordan, 2008, 2009; Brown et al., 2006; Brown & Newcomer, 1991; Collins, 2005; Collins, Elliot, & Miu, 2009; Escobar-Chaves et al., 2005; L'Engle, Jackson, & Brown, 2006; Pardun, L'Engle, & Brown, 2005; Somers & Tynan, 2006; Ward, 2002; Ward & Friedman, 2006) as well as sexual behaviors as sexual initiation (Collins et al., 2004) and the timing of sexual intercourse (Aubrey, Harrison, Kramer, & Yellin, 2003).

A study by Chandra et al. (2008) also reported a longitudinal association between watching sex on television as a teen (ages 12-17 years) and pregnancy before the age of 20.

Whereas television accounts for the majority of an adolescent's time with media, exposure to sexual content in movies and music is also linked to teen sexual activity (Martino et al., 2006; Pardun et al., 2005). Among White youth aged 12 to 14, the cumulative effects of sexual content exposure from music, movies, television, and magazines on sexual behavior increased the likelihood of having engaged in sexual intercourse 2 years later (Brown et al., 2006), but for African American adolescents there was no significant effect of exposure to sexual content on their precoital or coital sexual behaviors. A growth curve analysis of the trajectories of sexual behavior and exposure to sexual content by Hennessy, Bleakley, Fishbein, and Jordan (2009) also demonstrated that the correlations between changes in exposure to sexual media content in multiple media and changes in sexual

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behavior were much higher for White adolescents than for African American adolescents. For the sample overall, the correlations between sexual activity and exposure to sexual content were modest and declined with the age of the respondent. Thus, although evidence exists to support a relationship between exposure to sex in the media (including television, music, and movies), the results seem to vary across racial and ethnic groups.

Although longitudinal studies such as those discussed above (e.g., Bleakley, Hennessy, et al., 2008; Brown et al., 2006; Collins, 2005; Hennessy, Bleakley, Fishbein, & Jordan, 2009) demonstrate a causal relationship between exposure to sexual content and behavior, the psychosocial mechanisms by which exposure to media sexual content influences sexual behavior is rarely described. One exception is the study by Martino, Collins, Kanhouse, Elliot, and Berry (2005), which uses three sociocognitive variables—safe sex efficacy, peer descriptive norms, and negative outcome expectancies—to explain the relationship between television sexual content and sexual initiation in a sample of virgins ages 12 to 16. The authors found that the relationship between sex and television and sexual initiation was completely mediated by these three sociocognitive variables. This article elaborates on the sociocognitive approach by using the Integrative Model of Behavioral Prediction as a theoretical basis for explaining *how* exposure to sexual content affects specific sociocognitive beliefs that determine an adolescent's intentions to engage, as well as their actual engagement, in sexual intercourse.

Understanding the mechanisms through which sexual content exposure influences sexual behavior has implications for intervention design as well as for the identification of those youth at risk of prematurely engaging in sexual intercourse. Specifically, the information to be learned by applying the Integrative Model improves the ability of health educators, researchers, and others to design effective messages for health communication campaigns and/or messages. As stated by Fishbein and Yzer (2003),

> Proper use of theory should help the researcher identify whether, in any given population, a particular behavior is determined by attitudinal, normative, or efficacy considerations, or some combination thereof. It should further lead to the identification of a number of behavioral, normative, or control beliefs that clearly discriminate between people who do or do not engage in the behavior in question, that, beliefs that are highly correlated with the intention or behavior. The question is which of these beliefs a communication should address. (p. 172)

In the analyses set forth here, we focus on which beliefs important to the prediction of one's intention to have sexual intercourse are influenced by exposure to sexual media content.

The Integrative Model of Behavioral Prediction

The "Integrative Model of Behavioral Prediction" (IM; Ajzen & Albarracín, 2007; Fishbein, 2000, 2008; Fishbein & Ajzen, 2010) is a psychosocial model of behavior that is a synthesis of the Theory of Reasoned Action, Social-Cognitive Theory, the Health Belief Model, and the Theory of Planned Behavior. (See Fishbein, 2008, p. 838, for a graphical depiction of the IM.) The focus of the model is one's *intention to perform a specific behavior* (the "target behavior") as both a dependent variable and as a predictor of behavior. That is, the model is concerned with the factors influencing intention formation as well as with the relationship between intentions and subsequent performance of the target behavior. The IM assumes that behavior is primarily determined by intentions, although one may not always be able to act on one's intentions because environmental factors and/or a lack of skills and abilities may make performance difficult if not impossible. Often skills and abilities as well as other contextual environmental factors are not measured and then a measure of perceived control or self-efficacy is used as a proxy for the factors influencing actual control. Therefore, behavior is seen as a function of both intentions and self-efficacy. Intention to perform a specific behavior is a function of one's favorableness or unfavorableness toward personally performing the behavior (i.e., attitudes), perceptions about what others think and do with regard to performing the behavior (i.e., perceived normative pressure), and beliefs about one's ability to perform the behavior assuming that one wanted to do so (i.e., self-efficacy or perceived control). Each of these constructs is determined by a corresponding set of salient underlying beliefs.

For example, attitudes are determined by one's beliefs that performing the behavior will lead to certain positive or negative consequences (i.e., outcome expectancies). Some behavioral beliefs about having sex might be that "having sex will increase intimacy with a partner" or "having sex will result in getting a sexually transmitted disease." The more one believes that the behavior will lead to positive and not negative outcomes, the more favorable should be the attitude toward the behavior. Perceived normative pressure is determined by beliefs that specific referents think the individual should or should not perform the target behavior (these are "injunctive" normative beliefs) and by beliefs about whether similar others such as friends or sex partners are or are not performing the target behavior (these are "descriptive" normative beliefs; see Cialdini, Reno, & Kallgren, 1990). The more one believes that their important others think they should have sex and the more they believe that others like them are having sex, the stronger will be their perceived social pressure to have sex. A third type of belief underlies perceived control or self-efficacy. These beliefs refer to one's ability to perform the target behavior (e.g., having vaginal sex) under a variety of

challenging circumstances, such as if the respondent had no regular sex partner.

Note that in the IM background variables such as personality traits (e.g., sensation seeking), demographic characteristics, media exposure, and past behavior influence behavior only indirectly. That is, the influence of background or precursor variables on behavior is assumed to be completely mediated by the more proximal variables in the IM. But whether a given background variable of interest will or will not have an effect on those proximal variables (i.e., the underlying beliefs) is an empirical question.

How Exposure to Sexual Media Content Might Operate to Affect Adolescent Sexual Behavior

Sociocognitive theories such as the IM assume that children and adolescents, who may not all have firsthand sexual experience, can learn and make inferences about sex and relationships from media exposure. If sexual portrayals in media shape adolescent beliefs, attitudes, perceived norms, and feelings of self-efficacy with respect to sexual behavior, then these sexual portrayals will also influence the adolescents' intentions to engage in, as well as their actual performance of, various sexual behaviors. As Martino et al. (2005) summarize:

> Social-cognitive theory . . . contends that people observe important role models, make inferences and attributions, and acquire scripts, schemas, and normative beliefs that then guide their subsequent behavior. This theoretical perspective would predict that adolescents learn sexual behaviors and their likely consequences by watching TV. (p. 914)

Consistent with this view is the assumption that media provide adolescents with "information" about sex and sexuality in the same way that a friend does. Indeed, some research supports the idea that the media acts as a "super peer" and is a source of information about sex when or if adolescents are unable to learn from their peer group (Brown, Halpern, & L'Engle, 2005). Another study shows that using friends and/or media as sources of information about sex is associated with increased self-efficacy for having sexual intercourse (Bleakley et al., 2009).

To translate these types of empirical findings into the language of the IM as applied to the sexual media content/adolescent sexual behavior association, we would say: "To affect adolescent sexual behavior, the 'information' conveyed in sexual media content must change the underlying beliefs about performing the target behavior." Once the underlying beliefs are determined or altered, these beliefs affect the corresponding direct measures and the direct measures alter intentions to perform the behavior. The increased intentions to perform the behavior should lead to performing the behavior although the causal model reflected in the IM is complex and media

exposure may affect all three IM pathways to behavior (attitudes, norms, and self-efficacy) or only a subset of them.

In this article, we examine which arms of the IM are affected a specific "background/external variable": exposure to sexual media content. Based on prior research (Bleakley et al., 2009; Martino et al., 2005), and what we know about the nature of sexual content in some media (Kunkel et al., 2005), we hypothesize that exposure to sexual content in the media will affect all three determinants of intentions: attitudes, perceived normative pressure, and self-efficacy. Exposure to sexual content will result in more positive attitudes about sexual intercourse, will increase the extent to which adolescents believe their peers are having sexual intercourse (i.e., the descriptive norms), and will also increase their beliefs that they can overcome barriers to having sex (i.e., will increase their self-efficacy).

Method and Measures

The Annenberg Sex and Media Study (ASAMS)

The ASAMS was a 5-year investigation of the relationship between exposure to sex in the media and self-reported sexual behavior in adolescents. It was designed to investigate the extent to which exposure to sexual content in the media shapes adolescents' sexual development. In the ASAMS, the analytic variables used are those of the IM, so ASAMS contains direct measures of intentions, attitudes, perceived normative pressure and self-efficacy with respect to "my having vaginal sex in the next 12 months" as well as of the beliefs underlying these constructs. In addition, it assesses exposure to sexual content in five different media: movies, television, music, magazines, and video games. The self-report sexual data and the measure of exposure to sexual media content are used here in combination with the IM variables to model the relationship between underlying beliefs, the direct measures, intentions to have vaginal sex, and behavior.

ASAMS Study Design

This article uses data from the ASAMS longitudinal survey of adolescents from the greater Philadelphia area. Wave 1 of data collection occurred in the spring and summer of 2005; Wave 2 occurred 1 year later in the spring and summer of 2006, and Wave 3 in the summer of 2007. Only data from Waves 2 and 3 are used for this analysis because we have more variability in the behavioral outcome as our adolescent respondents mature. Adolescents were recruited through print and radio advertisements, direct mail, and word of mouth to complete the survey. Eligibility criteria for the initial survey included age at the time of the survey (14, 15, or 16) and race/ethnicity (White, African American, or Hispanic). A quota samplings design was used to achieve equal strata of adolescents by age, gender, and race. In practice,

Hispanic adolescents were difficult to locate and recruit and are underrepresented in the sample. Written parental consent and teen assent were collected for all participants, and study protocols were approved by the University of Pennsylvania Institutional Review Board.

The web-based survey was accessible from any computer with Internet access. Participants were given the option of taking the survey at the university or at an off-site location (e.g., home, school, or community library). For example, in Wave 1, the majority of the participants (84.9%) took the survey at home or another off-site location; 15.1% took the survey at the university. Enrolled adolescents were given a password to access the survey, as well as an ID number and personal password to ensure confidentiality and privacy protection. On average adolescents took 1 hour to complete the survey and were given compensation of $25 for completing each wave of the survey. Respondents who completed all three waves received an additional $25.

After submitting participant assent/parental consent forms, 547 adolescents completed the survey at Wave 1. Ninety-two percent of the sample was retained in Wave 2 ($N = 501$), and of those respondents, 95% ($n = 474$) completed the survey in Wave 3. Because of their relatively small sample sizes, adolescents of "other" ethnicity are excluded from the present analysis ($n = 14$), resulting in a final sample of 460 youth who participated in Waves 2 and 3. The sample was 63.3% female, 44.6% African American, 44.6% White, and 11.5% Hispanic. The mean participant age at Wave 2 was 16 years ($SD = 0.81$).

Measures

IM Measures. The survey collected measures of intention, attitudes, perceived normative pressure, and self-efficacy with respect to engaging in sexual intercourse in the next 12 months. In addition, it assessed the behavioral, normative, and self-efficacy beliefs that are assumed to underlie these constructs. The question stems and wording for the direct measures of intention, attitude, perceived social pressure, and self-efficacy are listed below, and the measures for behavioral, normative, and self-efficacy beliefs are presented in Tables 1 and 2. With the exception of descriptive normative beliefs (which were measured on 5-point scales), all other IM items were measured on 7-point scales. The list of belief items was identified through elicitation research using open-ended questions to identify the outcomes, referents, and barriers and facilitators that were most salient in this population with respect to personally engaging in vaginal sexual behavior in the next 12 months. Alphas are not reported for behavioral or normative belief indices since these items are treated as causal indicators and causal indicators need not be unidimensional because individual beliefs may or may not be internally consistent (Jarvis, MacKenzie, & Podsakoff, 2003; Streiner, 2003).

Attitudes. My having sexual intercourse in the next 12 months would be . . . bad/good, foolish/wise, unpleasant/pleasant, not enjoyable/enjoyable, harmful/ beneficial (Scale −3 to 3; Mean = 0.236, $SD = 1.60$, α = .90).

Normative pressure. Most people who are important to me think I should not/should have sexual intercourse in the next 12 months; Most people like me will not/will have sexual intercourse in the next 12 months; Most people like me have not had/have had sexual intercourse; Most people like me have not had/have had sexual intercourse in the past 12 months (Scale −3 to 3; Mean = −0.184, $SD = 1.60$, α = .70).

Self-efficacy. If I really wanted to I am certain that I could not/could have sexual intercourse in the next 12 months (Answer even if you don't have a boyfriend or girlfriend) (Scale −3 to 3; Mean = 0.910, $SD = 2.24$).

Behavioral intentions. I am willing to have sexual intercourse in the next 12 months; I will have sexual intercourse in the next 12 months; I intend to have sexual intercourse in the next 12 months (Scale −3 to 3; Mean = 0.010, $SD = 2.26$, α = .96).

Sexual Behavior Measures. Adolescent respondents were asked the following: "Have you ever had sexual intercourse (i.e., a penis in the vagina) with a partner of the opposite sex?" The response categories were "I have never done this;" "Yes, within the past 12 months;" "Yes, more than 12 months ago;" "Yes, within the past 12 months and more than 12 months ago;" and "Don't want to answer." Since our IM measures in Year 2 specifically ask about having sex in the *next 12 months*, our target behavior is therefore anyone who reported in Year 3 that they had sex in the *past 12 months*. For the purposes of analysis we created a dichotomous sexual behavior variable. Those adolescents who responded either that they had sex "within the past 12 months" or "within the past 12 months and more than 12 months ago" were assigned a value of 1. Those who had sex "more than 12 months ago," or who never had sex were given a zero; "don't want to answer" ($n = 17$) were recoded into missing.

Exposure to Sexual Content Measures. A measure of exposure to sexual content in multiple media was calculated based on two types of variables: respondents' self-reported exposure to selected media titles in five media (i.e., television, movies, music, magazines, and videogames) and the respondents' ratings of the amount of sexual content in each of the media titles. Using an ordinal measure of exposure on a 4-point scale (never, rarely, sometimes, often), adolescents indicated how frequently within the last 12 months they watched each show, listened to each artist, read each magazine, and played each videogame. They also indicated, using a dichotomous measure, whether they had or had not seen each movie title. The lists of media titles were constructed to reflect popular titles for teenagers and/or the general public at the time of the survey. Popular titles were provided by pilot surveys conducted in the year prior to the administration

Table 1. Results of Measurement Model for Behavioral Beliefs and Attitude Scale

Outcome Expectancies If I have sexual intercourse in the next 12 months, it would …	Independent Variable: *Sex Content Exposure*; Dependent Variable: *Outcome Expectancies* (A) Parameters	Independent Variable: *Outcome Expectancies*; Dependent Variable: *Belief Index* (B) Parameters	Independent Variable: *Belief Index*; Dependent Variable: *Direct Measure Attitude Scale* (C) Parameter
Make me feel that someone had taken advantage of me	−.07	**.23**	**.51**
Make me feel good about myself	−.06	**.45**	$R^2 = .27$
Give me HIV/AIDS	−.002	**.23**	
Hurt my relationship with my partner	**.11**	**.24**	
Increase quality of relationship	.01	**.23**	
Increase feelings of intimacy between me and my partner	**−.09**	−.01	
Give me pleasure	.02	**.72**	
Make my parents mad	.06	.07	
Please my partner	.03	.15	
Get me or partner pregnant	−.01	.07	
Gain the respect of my friends	−.03	.04	
Make my friends think badly of me	**.15**	.18	

Note: Goodness of fit indices: $\chi^2 = 1{,}607$; $df = 67$; $p < .05$; comparative fit index = .16; root mean square error of approximation = .22; $N = 460$. Coefficients in boldface are discernable from zero at .05 or less.

of the baseline survey, website rankings (including www.top5s.com/tvweek, www.boxofficemojo.com, www.imdb.com/boxoffice/rentals, www.billboard.com, www.gamerankings.com), and rankings from an audience research company (TRU data). The titles were designed to provide a sense of the depth and breadth of media use by teens, although we recognized that they could not possibly capture all that teens viewed, played, listen to, or read. To that end, we included opportunities for respondents to write in their "favorite" title for each medium. The number of titles coded for each media in Year 2 is as follows: 52 television shows, 40 movies, 31 music artists, 26 videogames, and 14 magazines.

A team of undergraduates was trained over the course of an academic year to recognize and code the variables. Interrater agreement was calculated, and only variables achieving a minimum of 75% agreement were used in analysis. For the present study, only the rating of "overall sex content" was defined as the prevalence of sexual talk and behavior within the media unit. Coders were asked to indicate if there was *none/a little* (1), *some* (2), or *a lot* (3). Interrater agreement on this measure was 83.3%; the Kappa coefficient was .75.

To calculate the sexual content exposure measure, the cross-product of a respondent's reported exposure measure and the content analysis–based sexual content rating was summed within each type of media, resulting in sex content exposure measures specific to television, movies, music, magazines, and videogames. Each media-specific measure was then standardized since there were different numbers of titles in each media. Standardizing the sums of the media-specific cross-products prevents one media (e.g., television) from having more weight

than another media (e.g., magazines) for which there were fewer titles. The total (multiple media) sexual content exposure measure used in this analysis was thus created by summing the five media-specific, standardized measures (Bleakley, Fishbein, Hennessy, Jordan, Chernin, & Stevens, 2008).

Statistical Analysis

The analysis was conducted in two steps. First, we performed path analysis using Mplus 5.1 software because Mplus allows for models with both categorical and continuous dependent variables. When Mplus encounters ordinal or dichotomous endogenous variables it implements a weighted mean and variance estimator that has been shown to have excellent statistical qualities even with small samples (Flora & Curran, 2004). The estimator assumes a probit (i.e., *Z* score) metric on the unobserved latent variables. Because this estimator does not use maximum likelihood, some of the conventional goodness-of-fit tests are not available (e.g., confidence intervals for the root mean square error of approximation [RMSEA]).

To assess model fit in path analytic and/or models with latent variables, the chi-square test is used to compare the predicted covariance matrix of the observed variables for the model with the actual covariance matrix. However, chi-square is usually augmented by other measures less sensitive to sample size, so this measure is augmented by the RMSEA and the Tucker-Lewis index (TLI). The RMSEA is a measure of average fit based on the square root of the model misfit divided by the model's degrees of freedom, where

Table 2. Results of Measurement Model for Normative Beliefs and Normative Pressure Scale and Efficacy Beliefs and Self–Efficacy Item

Descriptive and Injunctive Normative Beliefs[a]	Independent Variable: *Sex Content Exposure*; Dependent Variable: *Underlying Normative Beliefs*	Independent Variable: *Underlying Normative Beliefs*; Dependent Variable: *Belief Index*	Independent Variable: *Normative Belief Index*; Dependent Variable: *Direct Measure Pressure Scale*
	(A) Parameters	(B) Parameters	(C) Parameter
Females my age have had sexual intercourse	**.11**	.04	**.48**
Female friends have had sexual intercourse	**.15**	**.40**	$R^2 = .23$
Males my age have had sexual intercourse	**.18**	.21	
Male friends have had sexual intercourse	**.26**	.26	
Parents think I should have sexual intercourse	−.05	.03	
Best friend thinks I should have sexual intercourse	−.01	**.77**	
Sex partner thinks I should have sexual intercourse	.06	**.29**	
Brother thinks I should have sexual intercourse	−.01	.03	
Sister thinks I should have sexual intercourse	−.03	−.04	
Grandmother thinks I should have sexual intercourse	−.06	.16	

Barriers to Having Sexual Intercourse[b]	Independent Variable: *Sex Content Exposure*; Dependent Variable: *Barriers*	Independent Variable: *Barriers*; Dependent Variable: *Barriers Index*	Independent Variable: *Barriers Index*; Dependent Variable: *Direct Measure Self–Efficacy Item*
	(A) Parameters	(B) Parameters	(C) Parameter
No regular sex partner	−.03	**.67**	**.40**
No place to be alone	−.01	.06	$R^2 = .16$
No condoms or birth control available	.04	**−.36**	
Parents would be mad	.04	**.52**	
Drinking or using drugs	**−.12**	−.09	
You were lonely or depressed	**−.13**	**.31**	
Having sexual intercourse goes against your religious beliefs	−.08	.18	

Note: CFI = comparative fit index; RMSEA = root mean square error of approximation.
a. Goodness of fit indices: $\chi^2 = 2,260$; $df = 46$; $p < .05$; CFI = .11; RMSEA = .32; $N = 460$. Coefficients in boldface are discernable from zero at .05 or less.
b. Goodness of fit indices: $\chi^2 = 1,069$; $df = 22$; $p < .05$; CFI = .10; RMSEA = .32; $N = 460$. Coefficients in boldface are discernable from zero at .05 or less.

zero represents perfect fit and positive departures reflect poorer fit. Values less than or equal to .05 or .06 are usually considered acceptable (Kaplan, 2000; Maruyama, 1998), whereas values greater than .08 or .10 indicate poor fit (Kaplan, 2000; Kline, 2005). The TLI is a comparison of two fit functions: one from the covariance matrix estimated from

the fitted model and one from a model that assumes no association between the observed items where positive departures from zero reflect the relative advantage of the proposed model compared with the model of no association. The TLI should be greater than .90 to reflect an adequately fitting model, and some researchers argue for a .95 cutoff (Hu & Bentler, 1995; Kaplan, 2000).

In this article, the path analysis models the effects of exposure to sexual content on sexual behavior as being mediated by intentions and its primary determinants, the direct measures of attitudes toward personally performing the behavior, perceived normative pressure, and self-efficacy. Note that nowhere in the IM is there an explicit theory about the causal order of the direct measures of attitude, normative pressure, and self-efficacy on each other. Thus, an appropriate structural equation modeling (SEM) approach is to estimate the correlations between the error terms of the direct measures (Preacher & Hayes, 2008). This penalizes the SEM model in terms of R^2 for the mediating IM direct measures because correlated error terms do not contribute to R^2. However, correlated errors do not reduce model fit because recursive causal paths between variables and correlated errors between the same variables are "equivalent models" (MacCallum, Wegener, Uchino, & Fabrigar, 1993).

The second step of the analysis demonstrates the effect of exposure on the specific underlying belief items for each of the three IM determinants. The generic model for this step in the analysis is presented in Figure 1. For each arm of the IM (e.g., attitudes, perceived normative pressure, self-efficacy), we first predict the specific underlying belief items from our measure of exposure to sexual media content. These correlations (parameter group A) reflect the sensitivity of the beliefs to exposure to sexual media content. The beliefs, in turn, are viewed as causal indicators (Bollen & Lennox, 1991) defining a composite belief index. These results are parameter group B. The belief index predicts the direct measure scale, and this correlation is parameter C. We expect substantial correlations for the C parameter because in the IM the belief index is the defining proximal cause of the direct measures. However, we are uncertain about the A parameters. If exposure to sexual media content does not affect all underlying beliefs, then the generic model applied to the three theoretical arms of the IM will show low values for some A correlations and higher values for other A correlations.

Results

Results of Path Analysis for IM Model

The path analysis results are shown in Figure 2, and the coefficients are fully standardized. The model fit is excellent: $\chi^2 = 2.409$, $df = 3$, $p = .49$; comparative fit index [CFI] = 1.00; TLI = 1.007; RMSEA = 0.00. Exposure to sexual content in the media is significantly associated with perceived normative pressure about having sexual intercourse but not with
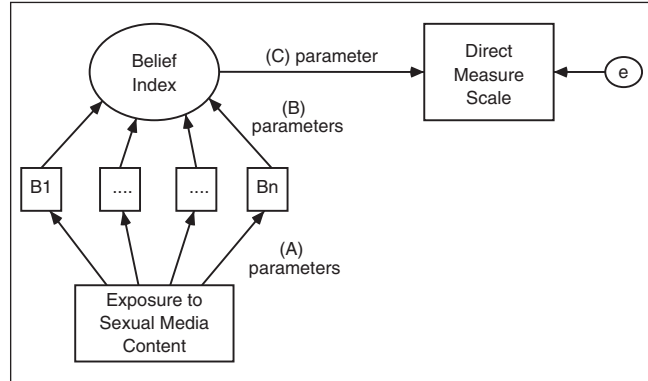

Figure 1. Generic measurement model for analyzing the associations between exposure, underlying beliefs, and direct measures
Note: Bs represent belief items. Error terms of causal indicator belief items not shown for clarity.

attitudes toward having sex or with self-efficacy. Attitudes, perceived normative pressure, and self-efficacy account for 54% of the variance in intentions. Attitudes toward having sexual intercourse carries the most weight ($\beta = .41$), followed by normative pressure ($\beta = .35$), and then self-efficacy ($\beta = .15$). Thus, intentions to have sex in the next 12 months are primarily a function of attitudes and perceived normative pressure with self-efficacy playing a relatively small (but significant) role as a determinant of these intentions. Finally, it can also be seen that these intentions to have sex in the next 12 months predicted sexual intercourse 1 year later, explaining 29% of the variance in behavior.

Results for the Analysis of the Underlying Beliefs by IM Arm

Tables 1 and 2 show the results of the generic model for attitudes (Table 1) and norms and self-efficacy (Table 2). The entries are standardized regression coefficients, identical to correlations in the bivariate case (i.e., parameter groups A and C). For attitudes (Table 1), two of the underlying beliefs are predicted by exposure to sexual media content ("Hurt my relationship with my partner" and "Increase feelings of intimacy between me and my partner") while six of the beliefs are the major determinants of the behavioral belief index. Note however that exposure influences only one of the six determinants of the underlying belief index ("Hurt my relationship with my partner"). The association between the belief index and the latent measure of direct attitudes is .51. For the normative beliefs (Table 2), exposure to sexual media content predicted each of the descriptive normative belief items and none of the injunctive normative beliefs. Three of the beliefs (one descriptive and two injunctive) are the major determinants of the normative belief index. In this case, one of the three major determinants is influenced by exposure. The association between the belief index and the latent measure of perceived
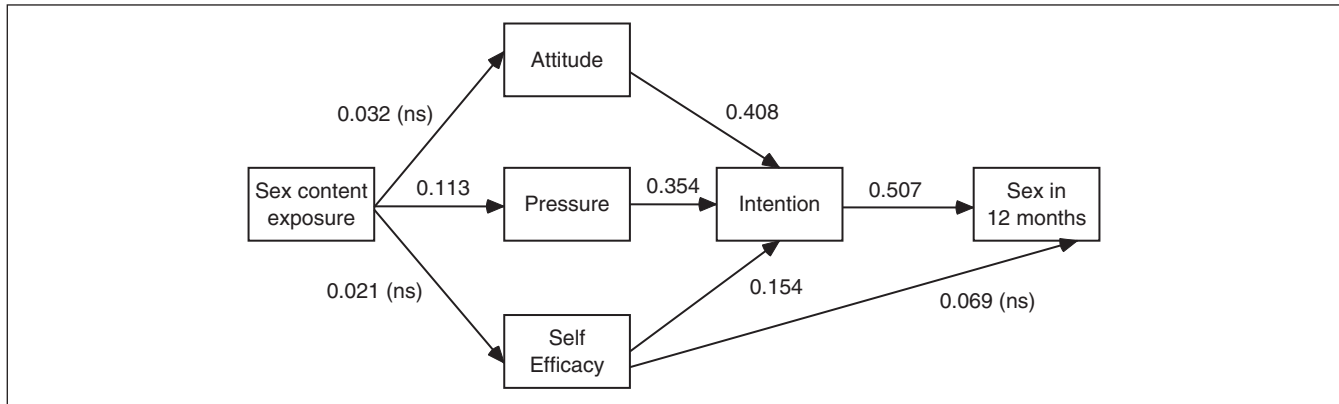
Figure 2. Path analysis results for the direct measure integrative model (*N* = 460)
Note: All coefficients are standardized. Correlations between error terms: Attitude and Normative Pressure, .46; Attitude and Self-Efficacy, .34; Normative Pressure and Self-Efficacy, .43. ns = not discernable from zero.

normative pressure is .48. In the self-efficacy model (Table 2), two barriers were predicted by sexual content in the media ("Drinking or using drugs" and "You were lonely or depressed") and only the latter was one of three statistically significant determinants of the self-efficacy belief index. The association between the belief index and the direct measure of self-efficacy is .40.

In contrast to the path analysis of the direct measures, all these underlying belief models fit poorly. This is due to the preponderance of small or zero associations/regression coefficients in the results, especially for parameter group A. However, these nonsignificant findings are of substantive importance because the purpose of the analysis is to identify which underlying beliefs are related to exposure to sexual media content and which are not. Thus, we make no attempt to "improve the fit" by deleting nonsignificant parameters (Hennessy et al., 2010). A more subtle issue refers to the choice of appropriate model-wide goodness-of-fit measures for IM analysis. There are multiple options here because the available measures incorporate different operational definitions of "a good fit." For example, some comparative fit measures (e.g., the TLI) are designed to penalize the goodness-of-fit estimate for nonsignificant parameters, a feature that is justified through the quest for statistical parsimony (similar to the rationale for the difference between the adjusted and nonadjusted R^2 in the case of a single regression equation).

Our preference is not to use such parsimony-adjusted measures with the IM because the purpose of the analysis does not include theoretical "model trimming" based on empirical results. That is, because of the a priori nature of the IM, nonsignificant parameters are important substantive findings not statistically irrelevant coefficients that should be constrained to zero. This has an important practical implication because it suggests that the CFI, for example, is a superior measure of goodness of fit than the TLI because the purpose of the SEM in an IM context is to identify if *for a*

particular behavior and/or for a particular population group intention to perform the target behavior is a function of some or all of the IM's three main determinants (e.g., Smith-McLallen & Fishbein, 2009).

Discussion

These results highlight the utility of using an explicit behavioral theory to explain a correlation between a background causal variable (exposure to sexual media content) and a behavioral outcome (adolescent sexual behavior). The results of the path analysis demonstrate that the theoretical IM at the global level fits the data very well and suggest that adolescent sexual behavior and intention to have sexual intercourse are primarily determined by positive attitudes toward having sex, secondarily determined by perceived normative pressure to have sex, and to a lesser extent determined by self-efficacy with respect to having sex. Exposure to sexual media content, however, has the largest correlation with perceived normative pressure. We find that in this sample of adolescents exposure to media sex content is unrelated to overall *attitudes* toward having sex and *self-efficacy* to perform this behavior. What this implies is that exposure to sex content in this sample of youth has essentially no statistically significant effect on the variable that is the most important determinant of adolescents' intentions to engage in sexual behavior. In other words, the "media effects" variable is not highly correlated with the best predictor of intentions.

The secondary analyses presented here corroborate the path analysis results. Despite strong correlations between the behavioral belief index and attitude and between the efficacy belief index and self efficacy, the changes in the belief indices that were associated with media exposure were insufficient to produce a change in neither attitudes nor self-efficacy. *In contrast, all the descriptive normative beliefs were positively associated with exposure to sexual media content.*

In summary, exposure to sexual media content increases adolescent sexual behavior by increasing their perceptions of social pressure to have sex. More specifically, exposure to sex content leads to increased beliefs that people like them, including their friends and peers their age, are having sex. Because perceived normative pressure is not the primary determinant of one's intention to engage in sex, these changes produce only relatively small increments in intention and behavior. Given that one's attitude toward having sex is the best predictor of the intention to have sex, the influence of exposure to sexual media content on adolescent sexual behavior would be significantly stronger if exposure positively increased more of the critical behavioral beliefs underlying this attitude.

Much can be learned by considering why beliefs are or are not affected by sex media content. In this instance, it is helpful to consider the nature of the sexual content in media to which adolescents are exposed. Sexual messages and images depicted in the media vary widely, and "sex in the media" is more often implied or discussed than explicitly shown (Martino et al., 2005). For example, Kunkel and his colleagues have been tracking sexual portrayals on television for over a decade using both random sampling methods to select "average weekly" programming and targeted sampling of nationally popular shows based on Nielsen ratings. In their analysis, they differentiate between "talking about sex," "precursory" sexual behaviors (e.g., flirting, passionate kissing, intimate touching), and sexual intercourse (either implied or depicted). In general, the former are far more common than the latter:

> Nearly twice as many shows include talk about sex as contain sexual behavior. Similarly, the number of scenes per program with talk about sex is almost twice as high as the number of scenes with sexual behavior. Precursory behaviors, such as passionate kissing or intimate touching, are the most common form of sexual activity shown on television. Still, about one of every seven programs on television (excluding news, sports, and children's programming) presents sexual intercourse either by depicting it directly or by portraying characters who are about to begin or have just finished having sex. (Kunkel et al., 2003, p. 16)

It, therefore, follows that both implicit and explicit depictions of sexual intercourse and "precursory behaviors" could lead adolescents to perceive a meta-message that lots of people like the respondent are having sex (Sorsoli, Ward, & Tolman, 2009). Such a meta-message might have a strong influence on descriptive normative beliefs and perceived normative pressure.

A limitation of our study is that our exposure measure does not take into account the specific nature of the sexual content to which the respondents were exposed. The content analysis rating used to calculate the sexual content exposure score represented the overall pervasiveness of sexual content in a particular media title; the valence of the content was not captured. To understand more precisely why sexual content exposure is associated a change in specific beliefs about having sex, it may be necessary to examine the nature of the content and media messages. That being said, we do know generally about the nature of sexual content in some media. Kunkel et al. (2005) state that messages of "risk and responsibility" with regard to having sexual intercourse are rare in television shows. In addition, the 2008 report "Managing the Media Monster" asserts that movies contain more sexually explicit content than television programming and that magazines with primarily youth audiences, compared with more general audiences, were more likely to depict couples engaged in sexual activity and to feature adolescent female models that are posed and dressed suggestively (Brown, 2008).

Additionally, we were unable to include exposure to sexual content on the Internet into our exposure measures. The study was conducted prior to the emergence of social networking sites as a mainstay of adolescent Internet use. During formative research for the project, elicitation of frequently visited sites yielded mostly the web addresses of search engines that could not be content analyzed. Therefore, we did not include the Internet in the media captured by our exposure measure.

Another limitation of the current study is the absence of an analysis on how these results may differ by race and/or ethnicity. African American youth spend more time with media when compared with their White counterparts (Kunkel et al., 2005), and findings from Brown et al. (2005) demonstrated that the effect of sexual content exposure on sexual initiation was limited to White youth; the effects were not statistically significant among African American youth. However, a report that is based on the same data as this article (Hennessy, Bleakley, Fishbein, & Jordan, 2009) showed that the sexual behavior and exposure to sexual media content trajectories are different by *both gender and race*. In our sample of adolescents, it is necessary to look simultaneously at race/gender interactions, and a larger sample is needed to produce stable estimates. To examine differences only by race with these data would be misleading, but future studies should investigate if such differences are present. The magnitude and direction of the effect of sexual content exposure on specific beliefs vary, and which beliefs are affected by exposure to sexual media content, if any at all, may be different by gender and race groups.

Implications for Practice

As discussed earlier, the utility of using the Integrative Model helps those who work with youth to understand the primary determinants of their intention to engage in sexual intercourse. In this sample, the behavior was primarily driven

by attitudes but was a combination of attitudinal, normative, and efficacy considerations. Perhaps more important, specific beliefs associated with increased intentions to have sex, and their relationship to sexual content exposure, were identified. Communication campaigns and health educators can work to counter these beliefs.

In conclusion, our findings offer *an explanation of the mechanism* by which exposure to sexual content in the media affects adolescents' sexual activity. Exposure to media sex increases normative pressure to have sex. However, it is equally important that there is an absence of an effect of exposure on attitudes toward having sex and self-efficacy with regard to performing the behavior. Because the primary determinant of intention to have sexual intercourse is attitudes, our findings help clarify why the effect of exposure to sexual content in media on sexual behavior is often weak in research samples of adolescents. Future research using the Integrative Model should be conducted with larger samples of adolescents and should examine racial differences to determine if these findings hold across different racial and ethnic groups.

Declaration of Conflicting Interests

References

Ajzen, I., & Albarracín, D. (2007). Predicting and changing behavior: A reasoned action approach. In I. Ajzen, D. Albarracín, & R. Hornik (Eds.), *Prediction and change of health behavior* (pp. 1-22). Mahwah, NJ: Lawrence Erlbaum.

Annenberg Media Exposure Research Group. (2008). Linking measures of media exposure to sexual cognitions and behaviors: A review. *Communication Methods and Measures*, *2*, 23-42.

Ashby, S., Arcari, C., & Edmonson, B. (2006). Television viewing and risk of sexual initiation by young adolescents. *Archives of Pediatric and Adolescent Medicine*, *160*, 375-380.

Aubrey, J., Harrison, K., Kramer, L., & Yellin, J. (2003). Variety versus timing: Gender differences in college students' sexual expectations as predicted by exposure to sexually oriented television. *Communication Research*, *30*, 432-460.

Bleakley, A., Hennessy, M., Fishbein, M., & Jordan, A. (2008). It works both ways: The relationship between exposure to sexual content in the media and adolescent sexual behavior. *Media Psychology*, *11*, 443-461.

Bleakley, A., Hennessy, M., Fishbein, M., & Jordan, A. (2009). How source of sexual information relates to adolescents'

belief about sex. *American Journal of Health Behavior*, *33*, 37-48.

Bleakley, A., Fishbein, M., Hennessy, M., Jordan, A., Chernin, A., & Stevens, R. (2008). Developing respondent based multimedia measures of exposure to sexual content. *Communication Methods and Measures*, *2*, 43-64.

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin*, *110*, 305-314.

Brown, J. (Ed). (2008). *Managing the media monster: The influence of media (from television to text messages) on teen sexual behavior and attitudes*. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy.

Brown, J. D., Halpern, C. T., & L'Engle, K. L. (2005). Mass media as a sexual super peer for early maturing girls. *Journal of Adolescent Health*, *36*, 420-427.

Brown, J. D., L'Engle, K. L., Pardun, C. J., Guo, G., Kenneavy, K., & Jackson, C. (2006). Sexy media matter: Exposure to sexual content in music, movies, television, and magazines predicts back and white adolescents' sexual behavior. *Pediatrics*, *117*, 1018-1027.

Brown, J. D., & Newcomer, S. (1991). Television viewing and adolescents' sexual behavior. *Journal of Homosexuality*, *21*, 77-91.

Chandra, A., Martino, S. C., Collins, R. L., Elliot, M. N., Berry, S. H., Kanouse, D. E., & Miu, A. (2008). Does watching sex on television predict teen pregnancy? Findings from a national longitudinal survey of youth. *Pediatrics*, *122*, 1047-1054.

Cialdini, R., Reno, R., & Kallgren, C. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, *58*, 1015-1026.

Collins, R. (2005). Sex on television and its impact on American youth: Background and results from the RAND Television and Adolescent Sexuality Study. *Child and Adolescent Psychiatric Clinics of North America*, *14*, 371-385.

Collins, R. L., Elliot, M. N., Berry, S. H., Kanouse, D. E., Kunkel, D., Hunter, S. B., & Miu, A. (2004). Watching sex on television predicts adolescent initiation of sexual behavior. *Pediatrics*, *114*, e280-e289.

Collins, R., Elliot, M., & Miu, A. (2009). Linking media content to media effects: The RAND Television and Adolescent Sexuality Study. In A. Jordan, D. Kunkel, J. Manganello, & M. Fishbein (Eds.), *Media messages and public health: A decisions approach to content analysis* (pp. 154-172). New York, NY: Routledge.

Escobar-Chaves, S. L., Tortolero, S. R., Markham, C. M., Low, B. J., Eitel, P., & Thickstun, P. (2005). Impact of media on sexual attitudes and behaviors. *Pediatrics*, *116*, 303-326.

Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, *12*, 273-278.

Fishbein, M. (2008). A reasoned action approach to health promotion. *Medical Decision Making*, *28*, 834-844.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior*. New York, NY: Taylor & Francis.

Fishbein, M., & Yzer, M. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, *13*, 164-183.

Flora, D., & Curran, P. (2004) An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods*, *9*, 466-491.

Hennessy, M., Bleakley, A., Fishbein, M., & Jordan, A. (2009). Estimating the longitudinal association between adolescent sexual behavior and exposure to sexual media content. *Journal of Sex Research*, *46*, 586-596.

Hennessy, M., Bleakley, A., Fishbein, M., Brown, L., DiClemente, R., Romer, D., . . . Salazar L. (2010). Differentiating between precursor and control variables when analyzing reasoned action theories. *AIDS and Behavior*, *14*, 225-236.

Hu, L., & Bentler, P. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications* (pp. 76-99). Newbury Park, CA: Sage.

Jarvis, C., MacKenzie, S., & Podsakoff, P. (2003). A critical review of construct indictors and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research*, *30*, 199-218.

Kaplan, D. (2000). *Structural equation modeling*. Thousand Oaks, CA: Sage.

Kline, R. (2005). *Principles and practice of structural equation modeling*. New York, NY: Guilford.

Kunkel, D., Biely, E., Eyal, K., Cope-Ferrer, K., Donnerstein, E., & Fandrich, R. (2003). *Sex on TV3: A biennial report to the Kaiser Family Foundation*. Menlo Park, CA: Kaiser Family Foundation.

Kunkel, D., Cope, K., & Colvin, C. (1996). *Sexual messages on family hour television: Content and context*. Oakland and Menlo Park, CA: Children Now and the Kaiser Family Foundation.

Kunkel, D., Cope-Ferrer, K., Biely, E., & Donnerstein, E. (2001). *Sex on TV2: A biennial report to the Kaiser Family Foundation*. Menlo Park, CA: Kaiser Family Foundation.

Kunkel, D., Eyal, K., Finnerty, K., Biely, E., & Donnerstein, E. (2005). *Sex on TV 2005*. Menlo Park, CA: Kaiser Family Foundation.

L'Engle, K. L., Jackson, C., & Brown, J. D. (2006). Early adolescents' cognitive susceptibility to initiating sexual intercourse. *Perspectives on Sexual and Reproductive Health*, *38*, 97-105.

MacCallum, R., Wegener, D., Uchino, B., & Fabrigar, L. (1993). The problem of equivalent models in applications of covariance structure analysis. *Psychological Bulletin*, *114*, 185-199.

Martino, S., Collins, R., Kanhouse, D., Elliot, M., & Berry, S. (2005). Social cognitive processes mediating the relationship between exposure to television's sexual content and adolescent's sexual behavior. *Journal of Personality and Social Psychology*, *89*, 914-924.

Martino, S., Collins, R., Elliott, M., Strachman, A., Kanouse, D., & Berry, S. (2006). Exposure to degrading versus nondegrading music lyrics and sexual behavior among youth. *Pediatrics*, *118*, e430-e441.

Maruyama, G. (1998). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage.

Pardun, C., L'Engle, K., & Brown, J. (2005). Linking exposures to outcomes: Early adolescents' consumption of sexual content in six media. *Mass Communication & Society*, *8*, 75-91.

Preacher, K., & Hayes A. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879-891.

Rideout, V., Foehr, U., & Roberts, D. (2010). *Generation M²: Media in the lives of 8 to 18 year olds*. Menlo Park, CA: Kaiser Family Foundation.

Smith-McLallen, A., & Fishbein, M. (2009). Predicting intentions to engage in cancer prevention and detection behaviors: Examining differences between Black and White adults. *Psychology, Health & Medicine, 14*, 180-189.

Somers, C., & Tynan J. (2006). Consumption of sexual dialogue and content on television and adolescent sexual outcomes: Multiethnic findings. *Adolescence*, *41*, 15-38.

Sorsoli, L., Ward, M., & Tolman, D. (2009). (De)coding television's representation of sexuality. In A. Jordan, D. Kunkel, J. Manganello, & M. Fishbein (Eds.), *Media messages and public health: A decisions approach to content analysis* (pp. 137-153). New York, NY: Routledge.

Streiner, D. (2003). Being inconsistent about consistency: When coefficient alpha does and doesn't matter. *Journal of Personality Assessment, 80*(3), 217-222.

Ward, L. (2002). Does television exposure affect emerging adults' attitudes and assumptions about sexual relationships? Correlational and experimental confirmation. *Journal of Youth and Adolescence*, *31*, 1-15.

Ward, L. M., & Friedman, K. (2006). Using TV as a guide: Associations between television viewing and adolescents' sexual attitudes and behavior. *Journal of Research on Adolescence*, *16*, 133-156.