Contraceptive knowledge, norms and attitudes: Do they predict contraceptive risk-taking among young adults?

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Background

Redefinition of the twenties as a new life stage has been gaining momentum both among researchers and in the public eye.[1] The concept of a new phase between adolescence and adulthood has clear relevance for the reproductive health field. The reproductive decisions that this cohort makes will shape not only their own lives but the lives of the next generation. And, the fact that young women in their twenties have higher rates of unintended pregnancy than any other age group, suggests that new strategies are needed both to understand and to assist young people during this transition. In addition to socioeconomic and demographic characteristics, other key factors that have been found to be important to reproductive behavior include knowledge, beliefs, norms and motivations regarding contraceptive practice and pregnancy planning. In order to gain a better understanding about the relative importance of these factors in predicting reproductive behaviors, we analyze data from a nationally representative telephone survey of all 18–29-year-old unmarried women and men living in U.S. households (including both landline and cell phone-only households). The survey interviewed 897 female and 903 male respondents, over-sampling African-American and Latino households.

The survey questionnaire was designed around a theoretical framework of factors expected to impact pregnancy prevention intentions and behaviors. Specifically, a model was adapted using an Institute of Medicine (IOM) model[2] integrating the key components of four[3,4,5,6] major behavioral theories. In the IOM model, the three major factors hypothesized to affect intention (and, through intention, behavior) are (1) attitudes, (2) norms, and (3) self-efficacy. In the adapted version of the model (Figure 1), constructs were added to measure information, knowledge and beliefs (shaded areas) while also including a number of items measuring attitudes, norms and self-efficacy. The initial descriptive analyses of these data, revealed some intriguing results regarding young adults' attitudes, beliefs and knowledge[7]. The current analysis has been designed to examine these relationships using multivariate models—looking specifically at the associations between key factors (knowledge and misperceptions, beliefs and evaluation of consequences, attitudes, norms and self-efficacy) and young adults' pregnancy prevention intentions and behaviors. In addition, we will test the relative strength of different factors in explaining pregnancy prevention intentions and contraceptive use, controlling for social, economic and demographic variables.

Figure 1. Theoretical framework of factors affecting contraceptive use and avoidance of unintended pregnancy
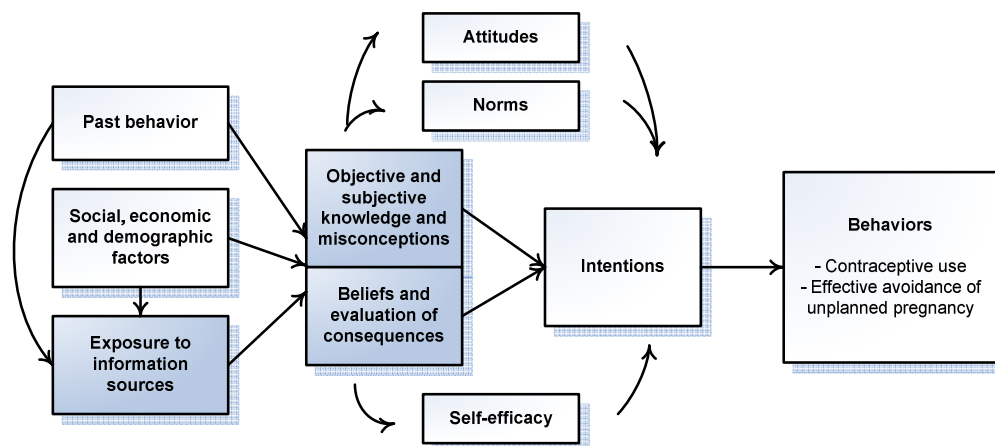
Methods

Data Collection. In 2009, a stratified random sample of both cell phone and land line telephone numbers was used to identify eligible respondents—unmarried males and females aged 18-29. Over 100,000 telephone numbers were dialed in order to identify some 4,800 households with a potentially eligible respondent resident. Eligibility was confirmed for 3,400 households and 1,800 respondents completed the interview. Interviews were conducted in both English and Spanish and respondents received a small monetary incentive for participating. Sample data were weighted to correct for the complex sample design as well as for differential nonresponse and coverage. The data were externally validated by comparing key characteristics with similar measures for a similar subpopulation of respondents to the National Survey of Family Growth.

Analysis. The current analysis includes both the examination of bivariate tabulations and the construction of multivariate models. During the first phase of analysis, frequencies, correlations, and factor analysis have been used to guide decisions about which variables to use, and whether and how variables should be combined into scales or composite measures. During phase two, we are developing full multivariate models, to examine the associations between background characteristics, plus measures for knowledge, beliefs, self-efficacy, norms, attitudes, and various measures of respondent's behavior as the dependent variables. Two dependent variables include the percentage of respondents reporting that it is likely that they will have unprotected sex in the next three months, and the percentage reporting that they (or their partner) are not currently using a hormonal or long-acting method of birth control (among only those respondents who are at risk for unintended pregnancy because they are sexually active and not currently pregnant or trying to get pregnant). [Additional dependent variables being explored include consistency of contraceptive use and the whether or not female respondents are currently using a hormonal or long-acting method or would consider using such a method in the future.]

Because our key dependent variables are dichotomous, we use multiple logistic regression to test these associations. Models are constructed by entering blocks of variables according to their placement in the overarching model. For example, the background characteristics are entered first and evaluated; and then each block of predictor variables is entered (along with the background variables) and the R2 for each block can be compared to assess relative strength in predicting behavior. The analysis is being conducted using SPSS, version 18. Weights and other complex-survey-design-variables are being used so that significance tests will correctly account for the survey design.

Predictors. The predictor variables include several variables within each of the major domains. *Knowledge* – includes a scale summing respondents self-rating of their knowledge about each major type of contraceptive method, a scale summing the number of correct answers across 23 true/false questions assessing knowledge about specific methods and pregnancy prevention, and two variables measuring over or underestimation of the likelihood of pregnancy given no method or given use of oral contraceptives. *Self-efficacy and beliefs about personal risk* – includes several variables measuring respondents' overestimation of the likelihood of side effects from hormonal methods, their overestimation of their own likelihood of being infertile, a belief that they have/don't have the information they need to avoid pregnancy and a couple of variables measuring fatalism. *Norms* – includes beliefs about the acceptability of unmarried childbearing and their friends experience with unplanned pregnancy and belief in importance of using contraception. *Attitudes* – includes one measure of the importance of avoiding pregnancy now and one measure that combines responses from four items measuring how much respondent feels mistrustful of the medical system and government regulation of contraception.

Results

Table 1 provides preliminary results for four full models showing the associations between selected factors and respondents likelihood of having unprotected sex in the near future and their propensity to not be using a hormonal or long-acting method. Initial exploratory runs indicated that the models for men and women were quite different so we have chosen to include only the separate models. Each of these models comprises the final model in a set of 6 models where variables for each domain were entered separately. The results of the R^2 for each of these domain-specific models are presented in Table 2.

For both women and men, knowledge is strongly associated with behavior. For women both their own assessment of how much they know and how much they actually do know, exhibit strong and independent influences on their behavior. Lower levels of correct knowledge are associated with a greater likelihood of having unprotected sex and a greater likelihood of not using hormonal or long-acting methods. For men, actual knowledge is more strongly related to behavior than is self-rating of knowledge. (In the male model predicting unprotected sex, the scale of actual method knowledge and the overestimation of pregnancy using pills were both significant in the initial domain-specific model, but their association was attenuated just below significance in the final model.) The variable measuring knowledge self-rating was unrelated to behavior for men in all models.

Related to knowledge are respondent's beliefs about the likelihood of certain side effects from use of hormonal or long-acting methods. Some of the side effects counted here are one that may occur for some women (eg, gaining weight) and others that are simply false (causing cancer). Overall, the more side effects that women and men think are likely, the more likely they are to engage in risky behavior. And, for women, feeling that they don't have all the information they need is related to a greater likelihood of having unprotected sex.

Different types of norms are important for different kinds of behavior. Believing that it is ok for an unmarried woman to have a child is associated with a higher likelihood of having unprotected sex; while having friends that don't think using birth control is important is associated with a propensity to not be using hormonal or long-acting methods.

For women, feeling that it is not very important to avoid pregnancy is strongly associated with expecting to have unprotected sex and being more mistrustful of the medical system predicts nonuse of hormonal or long-acting methods.

The results of Table 2, suggest that for both men and women, knowledge is relatively the most important domain measured here (after controlling for background characteristics); though for women, self-efficacy and beliefs about personal risk are nearly important. For men, norms were second in importance.

Further work is being done to evaluate these associations and compare the relative importance of different predictors. Conclusions will be made about ways this information can be used to design interventions that target young people with information and services that may improve their ability of avoid unintended pregnancies.

Table 1. Adjusted odds ratios from logistic regression models examining factors associated with young adults (aged 18-29) likelihood of having unprotected sex in the next 3 months (percent saying they are slightly/somewhat/very likely to have unprotected sex) and with young adults propensity to be not using either a hormonal or long-acting contraceptive, both among men and women at risk of unintended pregnancy, 2009 Survey of Young Adults

Selected factors		Likely Unprotected Sex		Not Using Hormonal/LARC	
		Women	Men	Women	Men
Number of respondents		591	563	597	577
Background characteristics*					
Age	18-19	1.00	1.00	1.00	1.00
	20-24	1.09	1.10	0.95	**0.52** *
	25-29	0.68	0.67	0.59	0.71
Race/ethnicity	White/other	1.00	1.00	1.00	1.00
	Black	**3.14** ***	0.62	**2.91** ***	0.78
	Hispanic-US born	1.81	0.80	**2.50** *	0.99
	Hispanic-Foreign born	**4.00** **	**0.46** *	2.18	**3.61** *
Relationship status	Not in relationship	1.00	1.00	1.00	1.00
	In current relationship	**2.32** **	1.31	**0.43** ***	**0.25** ***
Knowledge					
Scale of contraceptive method knowledge self-rating (Scale from 0-8)		**0.85** *	0.99	**0.79** **	0.89
Scale of actual method knowledge (Number of correct responses, 0-23)		**0.93** *	0.95	**0.87** ***	**0.87** ***
Overestimate pregnancy chance using pills	No	1.00	1.00	1.00	1.00
	Yes	**2.09** **	1.43	1.03	0.83
Underestimate pregnancy chance using no method	No	1.00	1.00	1.00	1.00
	Yes	0.88	**2.91** ***	1.10	0.96
Self-efficacy and beliefs about personal risk**					
Overestimate side effects from hormonal or long-acting methods	0-1 Likely	1.00	1.00	1.00	1.00
	2 Likely	**2.08** **	**1.58** *	0.93	1.62
	3+ Likely	**1.83** *	**2.13** **	0.86	**2.25** *
Overestimate likelihood of being infertile	Not likely/na/dk	1.00	1.00	1.00	1.00
	Slightly likely	0.85	0.78	1.12	1.29
	Quite/Extremely likely	1.00	1.49	1.06	**0.39** **
Belief that have information needed to prevent pregnancy	Strongly agree	1.00	1.00	1.00	1.00
	Somewhat agree	1.28	1.43	1.05	1.00
	Disagree	**2.69** **	1.10	1.45	1.41
Norms					
Belief that it is ok for unmarried female to have kid	Strongly agree	1.00	1.00	1.00	1.00
	Somewhat agree	0.96	0.85	0.99	0.83
	Disagree/dk	**0.49** *	**0.46** **	0.77	0.88
Believe that many friends have unplanned pregnancies	Strongly agree	1.00	1.00	1.00	1.00
	Somewhat agree	1.38	1.56	1.07	0.90
	Disagree/dk	**2.18** **	0.79	0.85	0.76
Belief that friends think using BC is important	Strongly agree	1.00	1.00	1.00	1.00
	Somewhat agree	0.95	0.79	1.18	**1.89** *
	Disagree/dk	1.25	0.95	**3.72** ***	**2.46** **
Attitudes					
Importance of avoiding pregnancy now	Very Important	1.00	1.00	1.00	1.00
	Somewhat/a little important	1.60	0.70	0.70	0.66
	Not important	**3.86** **	1.01	1.17	1.25
Scale measuring medical mistrust	Not mistrustful	1.00	1.00	1.00	1.00
	A little mistrustful	1.56	0.91	1.68	1.56
	Mistrustful	1.50	0.83	**1.84** *	0.89
	Nagelkerke R square	0.307	0.219	0.313	0.337

* Additional background characteristics included in model are education, employment/school status, reciept of public aid and having ever had an unintended pregnancy.

**Additional variables measuring self-efficacy included in model, but not significant, include belief that 'things just happen to me' and belief that 'when it is your time, pregnancy will happen'.

Table 2. Summary of R2 (Nagelkerke) values for each of 6 models for each dependent variable to assess how much predictive value each model adds above the background variables.

Model	Likely Unprotected Sex		Not using hormonal or LARC	
	R2	added R2*	R2	added R2*
Women only				
M1: Background only	0.153		0.142	
M2: Background + Knowledge	0.222	0.069	0.233	0.091
M3: Background + Beliefs/Self-efficacy	0.219	0.066	0.174	0.032
M4: Background + Norms	0.169	0.016	0.196	0.054
M5: Background + Attitudes	0.186	0.033	.173	0.031
M6: Full Model	0.307	0.154	.313	0.171
Men only				
M1: Background only	0.076		0.200	
M2: Background + Knowledge	0.137	0.061	0.264	0.064
M3: Background + Beliefs/Self-efficacy	0.126	0.050	0.239	0.039
M4: Background + Norms	0.100	0.024	0.248	0.048
M5: Background + Attitudes	0.087	0.011	0.211	0.011
M6: Full Model	0.219	0.143	0.337	0.137

* Added R2 is the difference between that model's R2 and the R2 for Background alone.

References

[1] Setterson RA, Furstenberg FF, Rumbaut RG (Eds). 2005. On the Frontier of Adulthood: Theory, Research, and Public Policy. Chicago: University of Chicago Press.

Arnett, JJ. 2004. Emerging Adulthood: The Winding Road from the Late Teens through the Twenties. New York: Oxford University Press.

Hulbert, A. 2005, Oct 9. Post-Teenage Wasteland? *The New York Times Magazine.*

Grossman, L. 2005, Mar 17. Meet the Twixters. *Time Magazine.*

[2] Institute of Medicine (IOM). 2003. Speaking of Health: Assessing Health Communications Strategies for Diverse Populations. Washington, DC: National Academy of Sciences.

[3] Becker MH (ed.), 1974. The health belief model and personal health behavior. *Health Education Monographs*, 2(4).

[4] Ajzen I and Fishbein M. 1980. Understanding attitudes and predicting social behavior. Prentice-Hall, Englewood Cliffs, NJ.

[5] Ajzen I and Madden TJ. 1986. Prediction of goal-directed behavior: attitudes, intentions and perceived behavioral control. *Journal of Experimental Social Psychology 22*( ):453-474.

[6] Bandura A. 1986. Social foundations of thought and action: A social cognitive theory. Prentice-Hall, Englewood Cliffs, NJ.

[7] Kaye, K., Suellentrop, K., and Sloup, C. (2009). *The Fog Zone: How Misperceptions, Magical Thinking, and Ambivalence Put Young Adults at Risk for Unplanned Pregnancy*. Washington, DC: The National Campaign to Prevent Teen and Unplanned Pregnancy.