

GENETIC COUNSELORS AND COGNITIVE DISSONANCE: HOW  
GENETIC COUNSELORS ADDRESS HOLDING DIFFERENT PERSONAL  
AND PROFESSIONAL ATTITUDES TOWARD ABORTION

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## Abstract

Genetic counselors regularly work in the ethically ambiguous intersection of religion and genetics. Not only are genetic counselors' patients religious, but, as it turns out, most genetic counselors are as well. Considering the well understood relationship between religiosity and attitudes toward abortion, it is not surprising that genetic counselors have cited termination of pregnancy as a source of conflict with their religious convictions particularly under certain circumstances. In other words a genetic counselor's personal religious beliefs sometimes clash with the professional ethos to discuss all options (including abortion) with pregnant women who are carrying a fetus with a genetic condition or birth defect. Because the majority of discussions surrounding abortion take place in prenatal counseling, we hypothesized that one way genetic counselors might deal with conflict between their personal and professional views toward abortion would be to practice in an area other than prenatal counseling, such as cancer or pediatrics, where the topic of abortion does not typically come up. Our study aimed to determine if a genetic counselor's religious beliefs or attitudes toward abortion predict her specialty area of practice. This aim is a direct test of our hypothesis that cognitive dissonance caused by holding different personal and professional attitudes would lead to specializing in areas that require little discussion of abortion. Genetic counselors listed in the National Society of Genetic Counselors (NSGC) membership directory (N = 1,838) were sent an email inviting them to take an online survey. Survey questions regarding religion and abortion were identical to those that appear on the General Social Survey. The response rate was 44.3% (709/1601) and respondents were representative of genetic counselors based on comparisons made with the 2006 NSGC professional status survey. We find that attitudes toward abortion do not significantly predict area of specialization within the profession, contrary to our hypothesis. We discuss several possible explanations for why this is the case and propose additional research to address more specifically how genetic counselors reconcile the differences in their personal and professional attitudes toward abortion.

## Introduction

During their training in genetic counseling, students are encouraged to explore their personal religious beliefs as part of a broader context of cultural awareness. However, students are also expected to separate their personal beliefs from the information discussed in genetic counseling sessions. Genetic counselors are trained to present information and assist patients in making an informed decision that the individual patient feels is best for them (Biesecker 2001). When options such as abortion are discussed, genetic counselors are expected to do this without letting their own religious or moral beliefs sway a patient (at least under most circumstances). This philosophy was historically referred to as nondirectiveness. Although the question as to whether genetic counselors can or should be nondirective has been hotly debated in the field of genetic counseling over the past few years (Bartels, LeRoy, McCarthy, and Caplan 1997; Michie, Bron, Bobrow, and Marteau 1997; Williams, Alderson, and Farsides 2002), the importance of patient autonomy in decision making continues to be emphasized (Anderson 1999), particularly as it relates to decisions surrounding abortion (Saal 2002).

Despite the training genetic counselors receive, differences between personal and professional values may cause emotional distress, a well known psychological phenomenon known as cognitive dissonance (Festinger 1964; Aronson 1992; for a recent example see Curlin, Odell, Larence, Chin, Lantos, Meador, and Koenig 2007). All of the authors of this paper who are genetic counselors have experienced some cognitive dissonance during counseling sessions. For instance, one of the authors was particularly troubled when a patient decided to abort a healthy fetus because it was not an HLA matched donor for the patient's son who had beta thalassemia. In this instance, the internal conflict was resolved by placing patient autonomy above the counselor's personal and moral concerns and recognizing it was the couple's decision to make, not the counselor's. In contrast to this scenario, a colleague of one of the authors confided that she quit her prenatal position as a result of the cognitive dissonance she experienced any time a patient she counseled chose to terminate a pregnancy. These two anecdotes indicate there are at least two ways to deal with cognitive dissonance that genetic counselors may experience as a result of their location at the intersection of genetic science, religious belief and practice, and morality and ethics: (1) Leave prenatal counseling or the profession or (2) disassociate oneself from the decision being made by remembering that the role of a genetic counselor is to provide *all* the options and help the patients make the best decision for *them*. This paper is an initial step toward exploring one of the possible paths genetic counselors may take if and/or when they experience cognitive dissonance: leaving the situation by no longer providing prenatal counseling.

## ***Religious Beliefs and Attitudes Toward Abortion of Genetic Counselors and Other Health Care Professionals***

There has been relatively little research in the area of genetic counselors' religious beliefs. One study (undertaken over 10 years ago and published in abstract form only), examined the influence of genetic counselors' religious views on their counseling practice (Wyatt, Best, Vincent, and Edwards 1996). As part of this study, genetic counselors completed a seven page survey containing questions that explored the effect of their personal religious convictions on what was presented or discussed in their counseling sessions. Almost 95% felt that their personal beliefs did not affect their ability to remain nondirective within the counseling session. However, nearly 22% of respondents reported religious conflict when considering a counseling situation where couples are considering terminating a pregnancy due to a non-lethal isolated birth defect. Nearly 59% felt their religious beliefs conflicted with a counseling situation involving sex selection. Only 36% of counselors felt there were no situations that conflicted with their religious convictions. There were only a few differences reported between religious and non-religious respondents in this study. Counselors who classified themselves as religious reported a greater level of comfort praying with a patient, whereas religiously inactive respondents were more likely to mention adoption as an option when the diagnosis of a non-lethal birth defect is made. In addition, the very small percentage (5%) of counselors who indicated their religion does influence their practice were more likely to mention adoption as an option for a lethal disorder. Because there were very few differences between religious and non-religious counselors the study concluded that genetic counselors "maintain the standards of professional practice against the backdrop of a wide diversity of personal religious beliefs and practices." (Wyatt et al. 1996) Although the counselors felt their personal beliefs did not affect their ability to counsel "nondirectively" there was clearly some conflict with at least certain situations regarding abortion for the majority of counselors.

Just how religious are genetic counselors? A recent study characterizing genetic counseling students included questions about their religious affiliation and whether they practice their religion (Lega, Veach, Ward, and LeRoy 2005). Eighty percent reported a religious affiliation and 47% reported currently practicing that religion. An intriguing contrast group is physicians. Three recent studies show that 90 to 92% of physicians have a religious affiliation (Luckhaupt, Yi, Mueller, Mrus, Peterman, Tsevat, and Puchalski 2005; McCauley, Jenckes, Tarpley, Koenig, Yanek, and Becker 2005; Curlin, Chin, Sellergen, Roach, and Lantos 2006). In a fourth study, 54% identified themselves as somewhat strongly or strongly religious or spiritual (Siegel, Tenenbaum, Jamanka, Barnes, Hubbard, and Zuckerman 2002). Curlin et al. (2005) found that the percentage of physicians who report a religious affiliation (89.4%) is similar to the percentage of the general population (86.7%) with a religious affiliation. Additionally, physicians are more likely than the general population to attend religious services more than twice a month (46% compared to 40%, odds ratio 1.8 with a 95% confidence interval of 1.4 to 2.2).

Of particular relevance to this current paper is the effect of religious belief on medical practice. The effect of physicians' religious beliefs on their practice is the subject of a recent paper in

which Curlin et al. (2007) “suggest that when patients request morally controversial clinical interventions [including abortion], male physicians and those who are religious will be most likely to express personal objections and least likely to disclose information about the interventions or to refer patients to more accommodating providers.” This is of particular interest because this is exactly what genetic counselors are trained to avoid.

Genetic counselors receive training in presenting abortion as an option regardless of personal feelings about it. One study explored the level of “nondirectiveness” employed by genetic counselors as compared to MD and PhD trained geneticists (Wertz 1996). Results show that more genetic counselors than geneticists would counsel nondirectively in 24 of 26 situations involving a decision about abortion for genetic conditions or birth defects of varying severities. However, this study also found that in 20 of the 26 situations, fewer genetic counselors than geneticists would themselves abort. This finding also suggests the potential for cognitive dissonance as genetic counselors are called upon to offer abortion as an option even when they themselves would not choose to terminate a similarly affected pregnancy. A separate publication by Wertz (1998) reported that genetics professionals in the United States, including both genetic counselors and geneticists, would personally have an abortion for 13 of 24 medical conditions. The conditions presented were varied and included anencephaly, severe mental retardation with an early death, cleft lip or palate, and maternal rubella. This was compared to a patient population, in which the majority would personally have an abortion for 9 of the 24 conditions.

Genetic counselors and physicians are different both in their religious practice, their attitudes toward abortion, and in some cases their approach to clinical practice. Based on these studies it seems reasonable to assert that because: (1) genetic counselors are 96% female (National Society of Genetic Counselors Professional Status Survey 2006), (2) are less religious than physicians (Lega et al. 2005), and (3) are trained to be “nondirective” in their counseling practices (Oduncu 2002), they will be less likely to allow their personal and religious views to influence their professional practice. Self reported data from genetic counselors supports this assertion, but also indicates that genetic counselors experience cognitive dissonance when their religious convictions conflict with ethical situations (i.e., scenarios surrounding abortion) they encounter.

### ***Purpose of the Present Study***

If genetic counselors experience significant cognitive dissonance as a result of differences that exist between the professions’ expectations that they present abortion as an option and their religious and/or personal attitudes toward abortion than it would make sense for individuals who experience high levels of conflict to either: (1) choose a specialty area within genetic counseling, such as cancer counseling, in which the topic of abortion is rarely, if ever, discussed, (2) leave the counseling profession all together, or (3) find ways to manage the cognitive dissonance by disassociating oneself from the decisions of the patients. In this study, we test the first option by determining if a genetic counselor’s religious beliefs or attitudes toward abortion predict her specialty area of practice.

## **Data**

The institutional review boards of Cincinnati Children's Hospital Medical Center and the University of Cincinnati approved this study in the winter of 2006. The genetic counseling participants were identified through the National Society of Genetic Counselors (NSGC) membership directory. We used both the 2006 online version and the 2005 – 2006 paper version of the directory to gather contact information. Genetic counselors were included if they were full members of the NSGC, worked in the United States, and had an email address available in the online or paper directory. We excluded those who did not meet these criteria. Beginning in February, 2007, we emailed cover letters to eligible genetic counselors, inviting them to participate in an online survey. A link to the online survey was included in the email. Participants were informed that the survey was voluntary and anonymous. All genetic counselors received a second email as a reminder two weeks after the initial request. We sent a third email four weeks after the initial request and included a deadline for completing the survey.

Of the 1838 emails sent to genetic counselors, 233 were returned as undeliverable. Four genetic counselors identified themselves as no longer practicing and were excluded. This left a total of 1601 possible respondents. Of the 791 individuals who viewed or participated in the survey, 82 surveys were excluded because there were fewer than 5 questions answered. The resulting response rate was 44.3% (709 out of 1601). It is possible our response rate is higher than 44.3% given that we do not actually know how many people received an invitation to participate in the survey.

Assuming the 2006 National Society of Genetic Counselor's professional status survey (PSS) is representative of the genetic counseling profession, we compared our data with the PSS. Several comparison of means tests between our data and the PSS found no differences and indicate that our data is representative of the genetic counseling profession.

According to the PSS, male genetic counselors make up only 4% of the membership. To prevent any possible confounding effects of gender, the 26 (4%) male responders to our survey were excluded in the following analysis. Additionally, we excluded 29 cases where no gender was specified.

## ***Instrumentation***

The questionnaire was divided into three sections. The first section assessed basic demographic information (i.e. gender, age, ethnicity, etc.) as well as year of graduation, degrees held, whether the participant counsels patients, and if so, in which primary setting. These demographic questions corresponded to those found on the 2006 NSGC Professional Status Survey (PSS) so we could determine whether the genetic counseling respondents were representative of the

profession. The Professional Status Survey is conducted by the NSGC during even numbered years. It gathers data on all the members of the organization. Although NSGC membership is not required of genetic counselors, it is the only professional membership organization for genetic counselors and hosts the regional and national genetic counseling meetings. The PSS provides the best available description of the genetic counseling profession.

We dummy coded several demographic variables of interest. First, we broke age up into four different variables as we found non-linear age effects in the data: 24-34 years old, 35-45 years old, and 46-60 years old, and 61+ years old. Each of these is dummy coded as “1” for inclusion in that group and “0” for non-inclusion in that group.

We included several additional demographic variables in our analysis, such as race and geographic region, as previous research indicates that these variables have correlated with attitudes toward abortion in the past (Jelen and Wilcox 2003). We dummy coded race with black equaling “1”; all other races equal 0. We included two regional measures that are also dummy coded, live in the South or live in the West. Both variables are coded 1 if the respondent lived in that region; 0 if she did not.

The dependent variable in this study is whether participants perform any prenatal counseling. We first asked participants if they do any counseling, “Do you counsel patients, either in a clinical or research setting?” If they responded “yes” to this question, we then asked them, “Do you provide any prenatal counseling?” This is a dichotomous variable coded: 1 - indicating they provide prenatal counseling and 0 - indicating they do not. As a dichotomous dependent variable, we use logistic regression to determine which independent variables predict whether or not someone does prenatal counseling. We provide descriptives for all of these variables in Table 1.

The second section of the survey contained questions addressing basic information about religious beliefs and practices. Most of these questions were taken directly from the General Social Survey (GSS) because these questions had been previously validated and were considered reliable.

The questions pertaining to religious beliefs included various aspects of religious experience. We asked participants their religious affiliation, with the following response options: Protestant, Catholic, Jewish, other, and none. We then recoded responses into three new variables shown to be affiliated with abortion which include Catholic, Jewish, or none (Jelen and Wilcox 2003). All three variables were dummy coded with a “1” to indicate membership in the specific religion or “0” if not a member. We report the percentage of respondents who fall into each of these categories in Table 1.

We also asked participants how often they attend religious services. Technically this is an ordinal variable, but it is common practice to use it as an interval-like ordinal variable, which is how we employ it in this analysis. The response options include: (1) never; (2) less than once a year; (3) about once or twice a year; (4) several times a year; (5) about once a month; (6) 2-3

times a month; (7) nearly every week; (8) every week; and (9) several times a week. The mean frequency of attendance is reported in Table 1.

We also asked participants if they believe in an afterlife. This was dichotomized into a yes/no response. We also asked participants how often they pray. Response options include: (1) never; (2) less than once a week; (3) once a week; (4) several times a week; (5) once a day; (6) several times a day. This, too, is an interval-like ordinal variable, which is how we employ it in this study. Belief in afterlife and frequency of prayer are also reported in Table 1.

Finally, we asked participants to rate both how “religious” and how “spiritual” they consider themselves on a 10 point scale. We intentionally left the meaning of these two terms ambiguous to allow individuals to define what is meant by “religious” and “spiritual.” Higher values on the scale indicate higher self-ratings of religiosity and spirituality. Genetic counselors, on average, rate themselves as more spiritual than religious, but both are in the upper half of the scale, indicating that, on average, genetic counselors consider themselves both spiritual and religious.

Section three of the survey addressed attitudes about abortion and contained questions taken from the GSS. Participants were asked whether it should be possible for a woman to obtain a legal abortion under seven different circumstances including: (1) the presence of a serious defect in the baby, (2) the woman does not want any other children, (3) her own health is seriously endangered, (4) the family cannot afford any more children, (5) the pregnancy was the result of rape, (6) the woman is not married and does not want to marry the man, and (7) the woman wants it for any reason. Response options were (1) yes or (0) no (or “do not know,” which we label as missing). The responses to the seven situations were considered to be reflective of the genetic counselors’ *professional* views toward abortion.

Female genetic counseling participants were then asked whether they would *personally* consider an abortion under the same seven circumstances. We considered responses to the second set of abortion questions reflective of genetic counselors’ personal attitudes toward abortion.

[Insert Table 1 here.]

The various abortion scenarios were further collapsed into two groups: medical and social-psychological (Jelen and Wilcox 2003). The medical reasons refer to abortion if the woman’s health is endangered, there is a serious defect in the baby, and the pregnancy was the result of rape. The remaining four scenarios - the woman does not want any other children, the family cannot afford any more children, the woman is not married and does not want to marry the man, and the woman wants it for any reason - are considered nonmedical, or social-psychological reasons for abortion. We combined these responses into two scale measures, one for the medical and one for the social-psychological variables. To create the scale measures we added individual responses on each abortion question together (1 is yes, 0 is no) to get a scale measure of attitudes

toward abortion for either medical or social-psychological reasons. As there are three medical-related questions, this scale ranges from 0 to 3; 3 indicates very permissive attitudes toward abortion for medical reasons (inter-item reliability  $\alpha = .784$ ). There are four social-psychological abortion questions; this scale ranges from 0 to 4; 4 indicates very permissive attitudes toward abortion for social-psychological reasons (inter-item reliability  $\alpha = .973$ ). We created identical scale measures for genetic counselors' personal attitudes toward abortion (personal medical scale inter-item reliability  $\alpha = .865$ ; personal social-psychological inter-item reliability  $\alpha = .920$ ). We present descriptives for these measures in Table 1.

## Results

We used logistic regression to predict whether or not a genetic counselor provides any prenatal counseling (1 = yes; 0 = no). We report the results of five logistic regression models in Table 2. The first model regresses just our control variables (our demographic variables) on our dependent variable, whether or not a genetic counselor does any prenatal counseling. None of the variables are significant predictors. Intriguingly, living in the South reduces the odds of prenatal counseling while living in the West increases the odds. Note, also, that we include four age groups. The reference group reflected in the constant is counselors over 60 years of age (61+). Controlling for age in this way allows us to detect non-linear age effects and control for age at the same time.

In Model 2 we add the variables measuring religiosity. With a variety of religiosity and spirituality variables included, only one variable is mildly significant – self-rating of spirituality: the more spiritual you consider yourself, the lower your odds of doing prenatal counseling. Given the number of tests we are conducting, it is possible that this is simply a random finding. This is particularly likely given the alpha ( $p < .05$ , but just barely), which should probably be adjusted given the number of tests we are conducting.

[Insert Table 2 here.]

Model 3 finally adds our attitudes toward abortion scale measures. With the abortion scale measures included, only one variable is significant – individuals in the 46-60 year age group. The significance of this variable is probably due to the small number of participants in this group resulting from case-wise deletion caused by the inclusion of so many variables. This is indicated by the extremely high odds ratio, which often indicates there are only a few individuals in that age range included in the analysis. In short, Model 3 clearly illustrates that attitudes toward abortion do not predict whether or not a genetic counselor does prenatal counseling.

Models 4 and 5 confirm this by varying which scale measures are included in the regression. In Model 4, only the professional attitudes are included. The larger number of cases results in the 46-60 year age range no longer being significant, but one other variable becomes significant – frequency of prayer. Again, this may be a random relationship given the high alpha. Given the number of tests we are doing, we should probably use a Bonferroni correction in our alpha. But because this is exploratory in nature, we kept our alpha level at the standard level of .05. Model 5 uses only the personal attitude scale measures and finds no relationship with prenatal counseling. The 46-60 year age range is again significant, confirming that this is probably due to case-wise deletion in this particular model as there are only 193 cases included

A few final elements in Table 2 are worth noting, specifically, the goodness of fit measures at the bottom of the table. The most intuitive measures are the pseudo- $R^2$  measures and the Classification Tables. The pseudo- $R^2$  measures indicate the amount of variation in prenatal counseling that is explained by the variables in the models. With a large number of cases included in the analysis (Models 1, 2, and 4), these are all very small, somewhere between 1% and 4%. In the models with relatively few cases (Models 3 and 5), the percentage of variation explained in prenatal counseling increases, but this is inversely related to the number of cases – fewer cases with large numbers of predictors inflates  $R^2$  estimates, which is why this has to be interpreted with caution. Because of this limitation, we put greater confidence in Models 1, 2, and 4. The change in the percentage of observations or cases accurately classified indicates the same thing as the pseudo- $R^2$  measures – at best we see an improvement (in the Models with large numbers of cases) of roughly 1%, which is not a substantial improvement. We interpret these findings as indicating that the variables we include in this analysis to predict whether or not a genetic counselor does prenatal counseling are not significant predictors. We discuss why we believe this is the case below.

## Discussion

Genetic counselors have substantial differences between their personal and professional attitudes toward abortion (Wertz 1996). Additionally, genetic counselors have reported conflict between their religious beliefs and some counseling situations involving abortion (Wyatt et al. 1996). Based on these studies we presume that certain situations cause conflict resulting from differences between personal and professional beliefs.

If genetic counselors do experience cognitive dissonance they do not appear to deal with it by moving into a specialty - such as cancer counseling - where they will not be faced with the professional responsibility of discussing abortion as one of a number of options. This conclusion stems from the inability of our models to predict which genetic counselors provide prenatal counseling based on multiple religious factors and attitudes toward abortion.

If our variables do not predict/explain which genetic counselors go into prenatal counseling, the explanation must be other forces. One likely candidate is availability of jobs. It may be the case

that genetic counselors take whatever job they can and consider more prescient factors, like location and pay, over the particular specialty area. Unfortunately, we do not have data on availability of jobs and have not seen any data on this subject. Another possibility is that counselors who experience substantial cognitive dissonance may leave the profession. Unfortunately testing attrition from the profession is nearly impossible as counselors who leave the profession are not captured in survey data on genetic counselors.

A third possibility is that counselors do experience some cognitive dissonance but do not find it disturbing enough to steer clear of prenatal counseling. Alternatively, it may be that the training genetic counselors receive may be influencing how they deal with the cognitive dissonance they experience in practice and in training. Based on the personal experiences of the authors of this paper, it seems as though it is common for genetic counselors to deal with cognitive dissonance by reminding themselves of the value the profession places on autonomy. This was certainly the case in the anecdote described at the beginning of this paper – the parents made the decision, not the genetic counselor. Examining whether training minimizes the cognitive dissonance experienced by genetic counseling in prenatal settings is feasible. Future research should explore this issue qualitatively by interviewing genetic counselors – in particular those who hold very different personal and professional attitudes toward abortion – to determine how they manage the cognitive dissonance they experience.

The finding that the vast majority of genetic counselors feel abortion should be a choice under all circumstances, may reflect the value genetic counselors' place on patient autonomy, which is a strong theme within the genetic counseling profession (Oduncu 2002). Given the possibility that genetic counseling training may influence genetic counselors' beliefs, another future research direction would be a longitudinal study to determine whether attitudes toward abortion change during the training process of becoming a genetic counselor. Such a study could also explore whether individuals with more permissive attitudes toward abortion are more likely to become genetic counselors in the first place.

Regardless of when genetic counselors develop permissive professional attitudes toward abortion, our findings suggest they may be able to separate their personal values and beliefs about abortion from their professional attitudes. However, one item that is of concern to us in this study is the number of genetic counselors who did not feel a woman should have the option of terminating a pregnancy when there is a strong chance of a birth defect (about 4% of those who do prenatal counseling feel this way when asked their professional opinions). This finding contradicts genetic counselors' training to be non-directive and discuss all options. It is possible that respondents misinterpreted this question or felt that women should not have the option to terminate unless we know with more certainty that the fetus is affected. However, if this is not the case it causes us to wonder if they are presenting abortion as an option, how it is presented, or if they are referring the patient to another genetic counselor. Unfortunately we have no way of following up on these cases given the anonymity requirements of our survey.

Physicians who refer their patients to genetic counselors should feel reassured that their patients are presented with all options and their patients' decisions regarding termination of a pregnancy

will not be unduly influenced by the personal attitudes of genetic counselors. Our finding that genetic counselors can hold such differences between their personal and professional beliefs yet continue to do prenatal counseling where they are faced with situations that admittedly cause cognitive dissonance was unexpected. However, it may simply be a tribute to their ability to separate their personal and religious beliefs from their practice. After all, genetic counselors can and do have differing personal and professional attitudes towards abortion, yet it appears they are permissive with regard to giving women options for abortion and those with less permissive personal attitudes toward abortion are no less likely to provide prenatal counseling than other genetic counselors with more accepting personal attitudes toward abortion.

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Table 1. Descriptives and comparisons of means for variables in analysis.

nominal variables	%	
age 24-34 (=1)	56.2	
age 35-45 (=1)	26.3	
age 46-60 (=1)	16.5	
age 61+ (=1)	1.1	
race (black=1)	0.6	
live in south (=1)	26.8	
live in west (=1)	15.4	
provide prenatal counseling (=1)	64.5	
do believe in afterlife (=1)	65.7	
Catholic (=1)	20.2	
Jewish (=1)	9.8	
no affiliation (=1)	23.6	

  

continuous variables <sup>†</sup>	mean	sd
frequency of attendance	4.29	2.358
frequency of prayer	3.03	1.687
self rating of religiosity	6.65	2.736
self-rating of spirituality	8.18	2.355
professional – medical reasons	2.96	0.27
personal – medical reasons	2.80	0.67
professional – socpsych reasons	3.52	1.28
personal - socpsych reasons	1.54	1.74

<sup>†</sup> See descriptions in text for how these variables are coded.

Table 2. Prenatal counseling regressed on control, religion, and abortion attitudes variables.

	Model 1 n=528		Model 2 n=505		Model 3 n=165		Model 4 n=409		Model 5 n=193	
	B/logit	odds ratio	B/logit	odds ratio	B/logit	odds ratio	B/logit	odds ratio	B/logit	odds ratio
control variables										
age 24-34 (=1)	1.368	3.928	1.417	4.124	1.815	6.139	1.140	3.128	1.774	5.894
age 35-45 (=1)	1.341	3.824	1.389	4.012	2.102	8.179	1.064	2.897	2.137	8.478
age 46-60 (=1)	1.318	3.735	1.428	4.169	3.076	21.666 *	1.209	3.349	3.055	21.217 *
race (black=1)	0.187	1.206	0.236	1.266	-6.706	0.001	-5.661	0.003	-0.507	0.602
live in south (=1)	-0.061	0.941	-0.073	0.930	-0.252	0.777	-0.036	0.965	-0.233	0.792
live in west (=1)	0.044	1.045	0.052	1.054	0.057	1.059	0.033	1.033	0.078	1.082
religion variables										
frequency of attendance			-0.068	0.935	-0.242	0.785	-0.089	0.915	-0.171	0.843
do not believe in afterlife (=1)			0.000	1.000	-0.219	0.804	-0.123	0.884	-0.234	0.791
frequency of prayer			0.123	1.131	0.163	1.177	0.222	1.249 *	0.143	1.154
self rating of religiosity			0.062	1.064	0.135	1.145	0.035	1.036	0.118	1.125
self-rating of spirituality			-0.114	0.892 *	0.029	1.029	-0.109	0.897	0.007	1.007
Catholic (=1)			0.136	1.146	0.548	1.730	0.014	1.014	0.808	2.244
Jewish (=1)			-0.040	0.961	-0.015	0.985	-0.062	0.939	-0.002	0.998
no affiliation (=1)			-0.242	0.785	-0.091	0.913	-0.239	0.787	-0.004	0.996
abortion attitudes										
professional – medical reasons					-0.172	0.842	-0.032	0.969	-	-
personal – medical reasons					-0.148	0.863	-	-	-0.213	0.808
professional – socpsych reasons					0.019	1.019	-0.041	0.960	-	-
personal - socpsych reasons					-0.009	0.991	-	-	0.059	1.061
constant	-0.812	0.444	-0.394	0.674	-0.986	0.373	0.187	1.206	-1.463	0.232
-2 Log likelihood										
	684.740		644.341		191.361		521.926		227.129	
Cox & Snell R <sup>2</sup>										
	0.010		0.026		0.107		0.032		0.102	
Nagelkerke R <sup>2</sup>										
	0.013		0.036		0.149		0.044		0.141	
Classification Table 1										
	64.000		64.400		66.700		63.800		65.800	
Classification Table 2										
	64.400		65.500		71.500		65.500		68.900	

\* p < .05; \*\* p < .01; \*\*\* p < .001

Note: We found that there is some response bias in our data: more religious people were less likely to answer the questions about abortion. We used Heckmann corrections to test whether the response bias changed our results and did not find that the response bias variables were significant predictors of providing prenatal counseling. As a result, we omit those variables from the table for parsimony.

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